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STATE OF NEW JERSEY  
BOARD OF PUBLIC UTILITIES  
FRIDAY, SEPTEMBER 7, 2018

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ENERGY MASTER PLAN  
STAKEHOLDER MEETING  
  
CLEAN AND RENEWABLE POWER  
-----\*

HELD AT:  
THE COLLEGE OF NEW JERSEY  
GITENSTEIN LIBRARY  
2000 PENNINGTON ROAD  
EWING TOWNSHIP, NEW JERSEY  
11:47 A.M.

BEFORE:  
  
KENNETH SHEEHAN  
Director  
Division of Clean Energy

PANEL MEMBERS:  
  
ALANA BURMAN  
STEPHEN MYERS  
KARL HARTKOPF  
MICHAEL L. HORNSBY  
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1                   (Whereupon a short recess was  
2 held.)

3                   MS. GRIFFETH: Hello. I'm Nancy  
4 Griffeth of Unitarian Universalist Faith Action.  
5 And, I'd like to thank the EMP Committee for  
6 letting me speak today. My group is partners with  
7 Jersey Removes, and we support almost all of the  
8 revisions, so we would like to move faster than  
9 they want to to a hundred percent renewable energy.  
10 We do support Governor Murphy's one hundred percent  
11 by 2050, and we would like it to go faster.

12                   Now, we focus on environmental justice  
13 and we've been working closely Reverend Ronald  
14 Tuff, the energy director of GreenPlay. And when I  
15 finish my comments he's going to make some  
16 comments, additional comments, about environmental  
17 justice.

18                   So, thirty years ago we could have  
19 fixed our climate change problem much more easily.  
20 And, ten years ago New Jersey was actually on a  
21 great track to take care of stuff, but that was  
22 unpassable. So, now we're going to have to move a  
23 lot faster, and it's going to be much more  
24 difficult.

25                   Here are the four essential things

1 that Unitarian Universalist Faith Action supports:

2           First, don't allow anymore fossil fuel  
3 infrastructure. There was a discussion on stranded  
4 assets, so from the financial point of view those  
5 assets are going to be stranded ultimately. Let's  
6 just not invest anymore.

7           Secondly, the cleanest energy is no  
8 energy. So, let's focus on energy efficiency and  
9 reducing our use.

10           Third, the transportation sector is  
11 the biggest user of energy, so we have to focus on  
12 that. We need to encourage the use of electric  
13 vehicles while converting the electrical grid to  
14 clean energy. We need to convert fleets in New  
15 Jersey Transit to electric. We need to require  
16 trucks to reduce their emissions and convert to  
17 electric as fast as possible.

18           Fourth, last point, poorer communities  
19 are overburdened by emissions from vehicles and  
20 power plants, and by the consequences of climate  
21 change including flooding. We need to take action  
22 to lift this burden. And, as we convert to new  
23 industries, we should provide jobs and job training  
24 in these communities.

25           The cost in dollars may be high, but

1 the cost in human suffering will be much higher if  
2 we do too little. Thank you for listening to me.  
3 And, let me introduce Reverend Ronald Tuff or  
4 GreenPlay.

5 REVEREND TUFF: Good afternoon,  
6 everyone. I'm going to address the economic  
7 justice, and I'm going to address Question Number  
8 17; how will the state consider and integrate  
9 overburdened communities into the clean energy  
10 advancement?

11 The state must first address both the  
12 public health and economic aspects of the problem  
13 in low-income communities. First, for public  
14 health, the issues are primarily air quality and  
15 increase flooding due to global warming. For air  
16 quality, the state must put its priority on  
17 overburdened communities for reducing the number of  
18 fossil fuels and on vehicles. This can begin with  
19 what the state controls. First of all, New Jersey  
20 Transit. We ought to be talking about electric  
21 buses and electric vehicles. And as the vehicles  
22 are replaced, they must be replaced with electric  
23 vehicles. And, this should happen first in the  
24 overburdened communities.

25 Economics. The state must support the

1 development of jobs and job training in  
2 overburdened communities. Incentives to develop  
3 its need only to be for the need now to be  
4 financial, but could include moving the developers  
5 up in their queues for approval of projects. And  
6 if they provide jobs and job training in  
7 overburdened communities, it would be a great help  
8 and a major part in working with the low and  
9 moderate-income people.

10           Finally, the benefits of clean energy  
11 can be provided in overburdened communities in two  
12 ways. One is to provide clean energy alternatives  
13 and the generation of electricity. And, this is  
14 available but not widely known, and confusing to  
15 understand. Educational programs should be  
16 developed to help consumers in all communities, but  
17 especially overburdened communities, to understand  
18 the possibilities of using clean energy. The  
19 community solar pilot offers an opportunity for  
20 renters and people in houses not suitable for  
21 solar, but to obtain the benefits of using solar,  
22 ultimately including lower electricity prices. It  
23 is important that we bring this industry to our  
24 community. And, it's also important that we  
25 develop jobs. Another industry is the electric

1 vehicle industry. We're not involved in the  
2 beginning of the industry, in the distribution of  
3 the industry. So, we're talking about developing  
4 jobs in the low-income communities.

5 And, finally, I'd like to close with  
6 -- if we're going to talk about low and  
7 moderate-income folks, we ought to have these  
8 hearings in low and moderate-income community. And  
9 we ought to be sitting at this table and become  
10 part of what the solution are. Because whatever we  
11 come up with is going to affect our community.

12 So, today I'm going to invite you to  
13 the clergy meetings, about 75 churches meets every  
14 Monday in Newark. So, I'd like to invite one of  
15 your hearings to be centered in Newark. We'll get  
16 the clergy there, we'll get the community there, so  
17 we can be part of the process in the master energy  
18 plan, in order to help get jobs into our community.  
19 And, also, to educate our community so they can  
20 understand and be part of the solution. Thank  
21 you.

22 MR. SHEEHAN: Our next speaker is Pat  
23 Sonti. And, in the meantime I just want to  
24 recognize the Commissioner Chivukula has joined us.  
25 Thank you, Commissioner. Appreciate you being

1 here.

2 MR. Sonti: Thank you very much. I'm  
3 Pat Sonti for Maxim. Our global headquarters is in  
4 San Francisco, California.

5 First of all, we applaud the state  
6 government and the Board of Public Utilities for  
7 undertaking the energy master plan. As a company  
8 we have worked in with international governments,  
9 also in the United States on the federal and state  
10 level, especially in developing energy master  
11 plans. And, we have submitted written comments,  
12 but I will summarize a very few key bullet points.

13 Number one. We believe the EMP  
14 should provide guidelines for comprehensive  
15 framework and legislative policy, clearly defining  
16 renewable power, clean power, and solar wind  
17 bio-mass, bio-fuels, et cetera. The other aspect  
18 is it also has to provide guidelines for base load  
19 transition from the current energy mix to an  
20 optimal energy mix, which does have to include  
21 carbon capture, sequestration, energy storage,  
22 thermal energy storage. Also, it should provide  
23 guidelines for fiscal financial incentives, credits  
24 and tax provisions. Guidelines for grid  
25 integration of renewal energy, analysis and access

1 which is very critical. And, moreover, guidelines  
2 for mail order dispatch, demand response, and  
3 demand side management which are very critical for  
4 market integration of renewable and clean energy.

5           Second. Detailed market assessment  
6 trends and forecasts up to 2050 of energy supply,  
7 demand, and pricing in terms of levelized cost of  
8 energy, levelized cost of storage, based on an  
9 optimal energy mix.

10           Number three. The EMP should provide  
11 guidelines for key market-ready technologies. We  
12 recommend technology readiness greater than nine,  
13 which can be deployed, including energy storage and  
14 thermal energy storage by project developers and  
15 project sponsors. Key emphasis is on  
16 techno-economics and viability.

17           Number four. For proper economic  
18 growth and jobs creation there should be succinct  
19 and clear guidelines for potential investors in  
20 terms of equity, project developers, sponsors, and  
21 lenders because at the end of the day debt capital  
22 is critical for achieving financial closure and  
23 commercial operation.

24           Number 5. It's important for the EMP  
25 to provide guidelines advocating proper technical



1 and commercial due diligence process with a list of  
2 mandatory studies, assessments, and reports, which  
3 are required for cleaner renewable power for  
4 receiving proper approval, and permitting a project  
5 at the BPU level and other stakeholders in the  
6 approval process.

7           And, lastly. End of the day, New  
8 Jersey does require a fingerprint pneumatic capital  
9 for a base project to reach commercial operations.  
10 So, it's important to elaborate on smoother project  
11 financing guidelines, with some clarity on  
12 long-term PBA's, which is the traditional, versus  
13 the SRECs, ORECs, for offshore wind. But there's  
14 got to be more clarity on the focus for bankable  
15 funding mechanisms, and financing mechanisms, along  
16 with payment structures and plans. And at this  
17 point, the financial community is embarking on a  
18 corporate blocktin technology as a way through the  
19 distributed electric process, which could be  
20 leveraged for New Jersey's benefit across all  
21 stakeholders, all demographics, on a non-exclusive  
22 basis.

23           We look forward and the honor to work  
24 with the BPU and the state governor on empowering  
25 the Energy Master Plan. And, we look forward to

1 being part of the stakeholder process throughout.  
2 And thank you for this great opportunity to be here  
3 today. Appreciate it very much.

4 MR. SHEEHAN: Thank you very much.  
5 Our next speaker Lawrence Furman. Lawrence Furman.  
6 Did we lose you?

7 Going to move on to Derek Phelps.

8 MR. PHELPS: Good afternoon, Director  
9 Sheehan, distinguished members of the BPU, governor  
10 staff, and committee members of the EMP.

11 My name is Derek Phelps, and I'm the  
12 Director of Market and Project Development at Fuel  
13 Cell Energy. We're in our 50th year of operation,  
14 headquartered in Danbury, Connecticut, with a  
15 manufacturing facility in Torrington, Connecticut.  
16 We employ over 450 people. And, the fuel cell  
17 products we manufacture in the northeast are  
18 exported all over the world.

19 We currently have over 250 megawatts  
20 of stationary fuel cells installed and backlogged  
21 on three continents. Our clean, efficient fuel  
22 cells generated over seven billion kilowatt hours  
23 of power. Our stationary carbon and fuel cells  
24 are well-suited to many application as a  
25 distributed energy in generation resource. Our

1 carbon shore source fuel cells come in three size;  
2 1.4 megawatts, 2.8 megawatts, and 3.7 megawatts,  
3 and are scalable for any project size.

4           We have previously provided testimony  
5 in comments to the Board of Public Utilities  
6 concerning our products, value, proposition, and  
7 contributions to a group resiliency and reduction  
8 of greenhouse gases. I will not repeat those  
9 comments here, but instead offer a brief synopsis  
10 and more wholesome testimony that we will file in  
11 writing prior to the October 12th deadline.

12           We are pleased to participate in the  
13 development of New Jersey's Energy Master Plan to  
14 achieve Governor Murphy's goal of one hundred  
15 percent clean energy usage in New Jersey by 2050.  
16 And, respectfully submit that fuel cells can make  
17 an important contribution to New Jersey's clean  
18 energy goals.

19           It is important to note that there is  
20 no silver bullet or perfect solution when it comes  
21 to clean energy. And, that clean energy is not  
22 necessarily synonymous with zero carbon. The  
23 smartest most secure clean energy strategy is in  
24 all of the above strategy, where a diverse  
25 portfolio of clean energy resources with their

1 intended strengths and benefits are employed, can  
2 ensure the lowest possible emissions at the lowest  
3 possible cost, while advancing grid reliability and  
4 resiliency and smart land use policy.

5           With respect to the various questions  
6 posed in your recently circulated discussion points  
7 memo, FCE respectfully suggests that New Jersey  
8 policy makers should look and ensure that clean  
9 energy power resources are defined to include  
10 resources in a position to meet the diverse and  
11 immediate energy needs of New Jersey's residents,  
12 by obtaining the lowest possible emissions from the  
13 most resilient, reliable, and cost-effective  
14 electrical grid possible. In practical terms,  
15 that means around-the-clock reliable, easily-sited  
16 resources such as stationary fuel cells should be  
17 in the equation.

18           Fuel cells are a form of clean energy  
19 that provide reliable consistent around-the-clock  
20 power where the power is needed most. Fuel cells  
21 emit negligible NOx and SOx and particulate  
22 pollutants. That is because in a fuel cell there  
23 is no combustion. Power is efficiently produced  
24 from fuel through a chemical reaction. As a  
25 result, all fuel cells do emit some carbon dioxide,

1 it is only a fraction of the carbon dioxide emitted  
2 by traditional grid generators because of the  
3 inherent efficiency of direct power conversion  
4 without combustion. As compared to the best  
5 available natural gas combined cycle power plant,  
6 our fuel cells emit 99 percent less particulate  
7 pollution, 99 percent less SOx, 80 percent less  
8 NOx. And, depending on configuration, 20 percent  
9 less carbon dioxide. Unlike renewable zero carbon  
10 resources, fuel cells provide steady continuous  
11 power, avoiding the need for backup or peaking  
12 generation to solve intermittency issues.

13 Over emphasis on zero carbon power  
14 generation will have the unintended consequence of  
15 masking the direction that carbon-reducing policy  
16 efforts should be headed towards; that is the  
17 reduction in transportation-based carbon.  
18 According to the US Energy Information  
19 Administration, power generation is no longer the  
20 greatest source of greenhouse gas emissions in the  
21 United States. Transportation is, as several  
22 speakers have pointed out so far today. Global  
23 fuel cell power can be utilized to advance hydrogen  
24 production and electricity for vehicle charging,  
25 thus producing not only grid emissions, but

1 transportation emissions, as well. Thus, the  
2 definition of clean energy will need to remain  
3 flexible in order to account for new and emerging  
4 technologies, as well as to ensure that the grid is  
5 progressively getting cleaner and greener.

6 State policies should also take into  
7 account land use impacts of clean energy  
8 installations. Our sure source fuel cells are  
9 easy to site, occupying less than an acre of land  
10 for ten megawatts installed. This compared to  
11 approximately seventy acres per ten megawatts  
12 installed of solar. Fuel cells are often sited in  
13 dense urban areas, providing power directly where  
14 the load is, thus avoiding transmission. In any  
15 evaluation process, large scale solar projects that  
16 displace core forest or farmland should be assigned  
17 with the carbon footprint that would have otherwise  
18 been absorbed by the forest removed to accommodate  
19 such an installation.

20 Our capacity and available factors  
21 exceed 90 percent as compared to an average of  
22 between 15 to 25 percent for solar and wind.  
23 Providing steady, reliable power irrespective of  
24 weather, creating resiliency where the grid goes  
25 down, and on site where it is needed. Fuel cells

1 in urban areas also contribute to the remediation  
2 and restoration to the tax rolls of brown fields.  
3 Fuel cell energy has constructed numerous projects  
4 in dense urban areas, such as the fifteen megawatt  
5 project in downtown Bridgeport, Connecticut where  
6 the fuel cell project was placed in the heart of a  
7 distressed urban community, remediating a  
8 long-vacant and polluted property, and restoring it  
9 to the city's tax rolls. At completion, the  
10 project became the largest property tax payer on  
11 the first square footage basis in the city.

12 Frankly, fuel cells are the perfect  
13 clean energy solution for dense urban communities  
14 where large tracts of open space are simply not  
15 available. Where smaller tracts of brown fields  
16 are right for project development. Where  
17 emissions are highest. And where local property  
18 taxes are sorely needed. As noted, fuel cell  
19 installations in urban areas can also provide  
20 hydrogen fueling and clean power for electrical  
21 vehicle charging. It also bears noting that more  
22 than 93 percent of the content of our fuel cells  
23 are recycled at end of life. Unlike most battery  
24 and solar technologies, our fuel cells do not end  
25 up in landfills, leaking lead or cadmium as they

1 degrade. Recent news reports have noted the  
2 difficulties in disposal of renewable energy  
3 technologies at end of life. Germany, for  
4 instance, reportedly had to manage 54,000 tons of  
5 waste from rotor blades from decommissioned wind  
6 turbines in 2014 alone. Fuel cell energy has also  
7 put in place measures to deal with end of life  
8 recycling of our product, further contributing to  
9 the environmental goals of New Jersey. We  
10 respectfully submit that any clean energy plan  
11 developed addressed end of life disposal and  
12 recycling.

13 To its credit, New Jersey has taken  
14 several steps to develop a thoughtful clean energy  
15 program and a Clean Energy Master Plan, encouraging  
16 the use of a wide array of new generation  
17 technologies. To help ensure the success of this  
18 program, Fuel Cell Energy suggests that it is now  
19 important to implement the program tools necessary  
20 to meet these important goals.

21 Thank you for your time. Fuel Cell  
22 Energy looks forward to contributing to New  
23 Jersey's pathway to clean energy, and being a part  
24 of New Jersey's Clean Energy Master Plan.

25 MR. SHEEHAN: Thank you very much.



1 Our next speaker is Doug O'Malley. And then the  
2 five up on deck are Ed Kelly, Joanne Milliken,  
3 Shihab Kuran, Bill Wolfe, and Gaylord Olson.

4 MR. O'Malley: Hi. My name is Doug  
5 O'Malley, I'm the Director of Environment New  
6 Jersey. And, I wanted to start off by thanking  
7 Commissioner Chivukula for his attendance at this  
8 hearing, as well as the leadership of the chair of  
9 the Energy Master Plan process, Grace Strom-Power,  
10 as well as the work of Ken Sheehan. And, really,  
11 just a thank you to all of you. I think this is  
12 on some ways a very painful process for us to be  
13 disconnected from Wi-Fi for a long time, and forces  
14 us to listen to what all of us are saying. And, I  
15 think there's value in that. A painful value, but  
16 there's value there.

17 That being said. I do just want to  
18 talk about the logistics of these meetings. I  
19 wanted to emphasize that, you know, I think we can  
20 think not only holding these hearings at this site,  
21 but to consider the State House for some of the  
22 future meetings. And then, most importantly, to be  
23 thinking of people that don't live or breathe  
24 energy and that can't be here at ten o'clock on a  
25 Friday morning. So, look at communities all around

1 the state, specifically environmental justice  
2 communities. You know. The E023 process and  
3 environmental justice has hearings in Newark and  
4 Camden in the evening hours. That's a process that  
5 we'd recommend that you replicated here.

6 That being said. I do think it's  
7 important to note that the BPU and the  
8 collaboration here on the Energy Master Plan  
9 process, is the first step. And unlike the  
10 Christie administration where you see a draft and  
11 have another set of hearings in the spring. And  
12 that does not go unnoticed. So, I also wanted to  
13 thank the BPU on that process. We obviously want  
14 to move full speed ahead.

15 I want to just talk about some global  
16 comments, and then talk specifically about Question  
17 1 and Question 5. Because I think that's really  
18 the heart, from at least our concern, with the  
19 clean renewable power hearing that we're holding  
20 today. I think the global comments -- and this  
21 cannot be reiterated enough -- is that we are in a  
22 climate crisis on global warming. The northeast  
23 just had its warmest climates on record. New  
24 Jersey just had its second warmest in August in  
25 record. For those of you that are familiar with

1 California, the climate crisis is not so an  
2 esoteric issue anymore. And then when we thing  
3 about what this impact is on New Jersey, all we  
4 need to do is look at the groundbreaking research  
5 of Professor Bob Cobb from Rutgers to look at the  
6 impacts of sea level rise on the state. And,  
7 again, these are not academic issues. We already  
8 are seeing property value loss on the Jersey shore  
9 from the impacts of climate change. Talk to anyone  
10 who lives in Norfolk, Virginia, and suddenly  
11 coastal flooding does not seem like a far away  
12 issue. And, so, that needs to be a guiding  
13 principal of this process.

14 One of the other aspects that have  
15 been mentioned, but there needs to be a larger  
16 emphasis, is the economic cost and the public  
17 health cost of our continued inability to have air  
18 quality that's healthy to breathe in this state.  
19 A vast majority of Jersey's counties, including  
20 Mercer, fail -- according to the American Lung  
21 Association -- for ground level ozone. And, I  
22 think it's ironic because we're kicking off the  
23 school year here in New Jersey, we are seeing not  
24 closures and early dismissal dates on snow days,  
25 but on heat days. That process will only move

1 forward.

2           In that vein, I think it is critical  
3 to note that the process in 2015 during the  
4 Christie administration wasn't just flawed in  
5 process, but also was flawed in the sense that  
6 climate change was a four-letter word. And, we  
7 obviously are very thankful that the administration  
8 is moving forward on a process that acknowledges  
9 that climate change is a real crisis. Especially  
10 in light of the Trump administration's climate  
11 denialism.

12           And, I wanted to obviously reference  
13 the importance of Governor Murphy's commitment for  
14 this process to have one hundred percent clean  
15 energy by 2050. And, the fact that, as the  
16 governor said, New Jersey should work to be the  
17 California of the east coast. As some of you  
18 probably saw, California just passed groundbreaking  
19 legislation to get one hundred percent clean  
20 renewable energy by 2045 through its legislature,  
21 and is awaiting signature by Governor Brown.  
22 That's where this state needs to go.

23           And then when we're speaking  
24 specifically about Question 1 -- because this  
25 question ultimately is -- you know, all of the

1 questions flow from Question 1. Which is, what is  
2 our definition of clean power. And, specifically,  
3 the definition and the title here is clean and  
4 renewable power. And, I think it's critical as the  
5 ratepayer counsel, those comments represented the  
6 clean renewable power does not include fossil fuel  
7 generation. We've lived through generations of  
8 treating our open skies like sewers for carbon.  
9 That needs to end. And then we also need to ensure  
10 the waste of energy, as the euphemism is, i.e.  
11 incinerators, are not considered to be clean  
12 renewable power. And, I think it's also critical  
13 to note that our nuclear fleet is not a renewable  
14 source of energy. And nuclear energy should not be  
15 considered a clean renewable source of energy. And  
16 I think it's important to note as we talk about  
17 2050, the Salem 1, Salem 2, and Hook Creek have  
18 retirement dates of 2036, 2040 and 2044. So, I  
19 certainly think that the planning process we should  
20 be respecting the current NRC licensing, and not  
21 planning for the extension of those facilities.  
22 And, really, we should be planning for the early  
23 retirement of those facilities in order the whole  
24 scale changes in our electricity grid over the  
25 course of the next three decades.

1           I wanted, also, to reference the  
2 importance of Question Number 5, because this  
3 ultimately gets at the challenge that is at the  
4 heart of a transition to one hundred percent clean  
5 renewable energy future. And, that is, we cannot  
6 continue to invest in fossil fuel infrastructure.  
7 And, we would urge this administration to implement  
8 a full moratorium on new planned fossil fuel  
9 infrastructure projects until the Energy Master  
10 Plan process is finalized next June. And,  
11 specifically, as part of this process the state  
12 needs to incorporate a full carbon life cycle of  
13 all proposed fossil fuel infrastructure projects.  
14 And, these incorporate an independent analysis  
15 relying on the office of ratepayer counsel and the  
16 actual stated need, which is removed as a part of a  
17 lobbying effort through EDECA, a generation ago in  
18 the late 90s. And, also, to incorporate a social  
19 cost carbon methodology that actually looks at the  
20 full impacts of any new proposed fossil fuel  
21 infrastructure. This is detailed in comments that  
22 Environment New Jersey submitted regarding the BPU  
23 OREC proposal.

24           And then, finally, we need to  
25 incorporate global warming emission analysis into a

1 new proposed air permits. That being said. We  
2 have multiple proposed fossil fuel projects around  
3 this state. Whether they be the Penny's Pipeline,  
4 whether they be the South Jersey Gas or New Jersey  
5 Natural Gas pipeline through the Pinelands -- which  
6 New Jersey Sierra Club Pinelands Preservation  
7 Alliance and Environment New Jersey are actually  
8 engaged in litigation. We have a new proposal to  
9 have a power plant in the heart of the Meadowlands  
10 for 1200 megawatts to go through New York, that  
11 would exist for generations. We have a proposal  
12 for a new gas plant in the heart of the Pinelands,  
13 in the Musconetcong. We cannot meet our goal for  
14 a one hundred percent clean renewable energy future  
15 if we continue to invest in fossil fuels.

16 And, I wanted to reference, also, just  
17 the reality that we are in a place of beyond  
18 climate inaction, or climate denialism. Roll backs  
19 at the federal level. This governor has committed  
20 to meeting goals of the Paris Climate Accord, and  
21 as a part of that the EPA clean power plant --  
22 which is under attack and being rolled back as we  
23 speak -- talked about New Jersey having an  
24 aggressive goal of -- the initial goal was more  
25 than forty percent reduction from our power sector.

1 Those are goals that we certainly should not be  
2 ignoring.

3 I wanted to make three final points.  
4 One is just the importance of off-shore wind. And,  
5 obviously, I wanted to reference the important  
6 collaboration of New Jersey Renews Climate Clean  
7 Energy Coalition. It's more than sixty  
8 organizations of labor fee, environmental, and  
9 community organizations. And most important for  
10 this it includes the business for off-shore wind as  
11 well as for United Steelworkers. Off-shore wind  
12 can be our future for meeting our renewable  
13 portfolio standard goal, that are now in law. And,  
14 also, it can be our future for building a true  
15 clean renewable energy economy.

16 Second, I also just wanted to  
17 reference the importance of the Regional Greenhouse  
18 Gas Initiative, and having a process on the  
19 re-entry on the Regional Greenhouse Gas Initiative,  
20 that it reflects those initial goals from clean  
21 power plant, and reflects a modeling to ensure that  
22 we have the strongest possible caps to generate  
23 more investment in clean renewable technologies.  
24 And, specifically, a cap that reflects those  
25 initial clean power plant goals. And, at a minimum



1 a cap of 12 million metric tons a year. We should  
2 not certainly have a cap that merely reflects our  
3 current emission goals.

4 And then, finally, I just wanted to  
5 reference the ongoing process around the nuclear  
6 subsidy bill, which was signed into law at the end  
7 of May; and, after a massive campaign urging the  
8 legislature to not move forward with that -- and  
9 the governor, as well. And, one of the aspects of  
10 the review process through the Board of Public  
11 Utilities, that it's critical -- is not only to  
12 ensure that the ratepayer counsel is part of that  
13 process, but receives full access to any  
14 confidential documents. We need to ensure that we  
15 are not going to unnecessarily subsidize currently  
16 profitable nuclear facilities, both in state and  
17 out of state. Those are investments that we need  
18 to be making a clean renewable energy technologies,  
19 and should not be going to currently profitable  
20 nuclear facilities.

21 And, with that, I'll conclude my  
22 testimony. Thank you. Thank you very much.

23 MR. SHEEHAN: Thank you. Next up we  
24 have Ed Kelly.

25 MR. KELLY: Good afternoon. My name

1 Edward Kelly. I'm the Executive Director of the  
2 Maritime Association of the Port of New York and  
3 New Jersey. We are here today to talk about the  
4 impact of clean renewable energy potentially on  
5 maritime domain awareness and safety. The Maritime  
6 Association represents over 580 corporate and  
7 individual members with the commercial maritime  
8 industries, specifically those which operate within  
9 the port of New York and New Jersey. The maritime  
10 industry is an important economic engine in the  
11 State of New Jersey. A 2016 economic study has  
12 revealed that our industry is responsible for  
13 229,000 direct jobs, 25.7 billion dollars in  
14 personal income, 64.8 billion dollars in business  
15 income, and the payments of a little over 8.5  
16 billion dollars in federal, state, and local tax  
17 revenues. This is important. And, we have to be  
18 very careful to protect that.

19           Clearly, the need to protect the safe  
20 and economic operation of the commercial maritime  
21 industry must be carefully considered whenever and  
22 wherever off-shore development projects are  
23 considered. It should be obvious to all parties  
24 that the introduction of in-water structures that  
25 are in or near an active navigation area will

1 dramatically increase both the potential for vessel  
2 collision and vessel or vessel collisions. We  
3 have to ensure that the development of energy is  
4 done in a safe, responsible, and secure manner.

5 Most notably, we would require that  
6 the EMP mandate and ensure that any in-water  
7 production capacity construction does not result in  
8 the degradation of navigational safety, national  
9 security, or the protection of the marine and  
10 coastal environment. Should such provisions not be  
11 taken, we must remind all concerned parties that  
12 the potential impact of a significant marine  
13 casualty in the New York by area would extreme and  
14 generational adverse impact on lives, property, the  
15 marine environment, and the multi-billion dollar  
16 tourism industry of the bordering states; as well  
17 as the degradation of the economic engine benefits  
18 which are derived from the maritime industry.

19 We have submitted written comments to  
20 point out specific points that we look at to ensure  
21 safety, security, and the protection of the  
22 environment as, we hope, collaboratively move  
23 toward creating clean, renewable, off-shore energy.  
24 We look forward to continuing to work together to  
25 ensure the safety of navigation, the security of

1 the marine domain, and the protection of the marine  
2 environment; as well as preserve the immense  
3 economic benefits provided by the commercial  
4 maritime industry through the port of New York and  
5 New Jersey. The coastal ocean is a very big place.  
6 We can and will work cooperatively to assist in the  
7 production of clean, renewable energy; but, we have  
8 to have a mandate that degradation of safety and  
9 the actual potential for severe damage to the  
10 tourism and marine environment in the coastal areas  
11 is not the result. Thank you.

12 MR. SHEEHAN: Up next, JoAnne  
13 Milliken.

14 MS. MILLIKEN: Good afternoon. I'm  
15 JoAnne Milliken with the New Jersey Fuel Cell  
16 Coalition. Prior to this position, I served for  
17 more than twenty years in the U.S. Department of  
18 Energy's Office of Energy Efficiency and Renewable  
19 Energy, where I directed programs covering hydrogen  
20 and fuel cell systems, energy efficient buildings,  
21 and solar wind and geo-thermal energy.

22 As a New Jersey native and a current  
23 part-time resident, I would like to thank the State  
24 of New Jersey for establishing this process for  
25 public input into the Energy Master Plan. My

1 comments were developed in collaboration with the  
2 National Fuel Cell Research Center at University of  
3 California Irvine. And, they will focus on  
4 hydrogen and fuel cell systems and their ability to  
5 help New Jersey achieve the goal of a hundred  
6 percent clean energy usage by 2050.

7 I want to thank Derek Phelps of Fuel  
8 Cell Energy who covered many of the comments that I  
9 was planning to make. And, I will modify my  
10 comments on the fly. I will try to not repeat his  
11 comments, as the committee requested.

12 MR. SHEEHAN: Thank you.

13 MS. MILLIKEN: We recommend that New  
14 Jersey's definition of clean energy be technology  
15 neutral, an focus of attributes required to achieve  
16 state energy requirements and economic and  
17 environmental objectives. Clean energy should be  
18 defined as heat power sources that reduce  
19 greenhouse gas emissions, criterion air pollutes,  
20 short-lived climate pollutant, and air toxic  
21 emissions, and water usage. All while improving  
22 power and transportation system efficiency,  
23 resiliency, and air quality at both the local and  
24 regional level.

25 As Derek pointed out, fuel cell

1 systems possess all of these attributes. They're  
2 highly efficient by-products electricity heat and  
3 water. And, the importance of resiliency as an  
4 attribute that should be highly valued and included  
5 in the definition.

6           Derek alluded to the full flexibility  
7 of fuel cell systems. We all know that hydrogen  
8 is the ideal fuel, but they also operate on  
9 hydrogen-rich fuels, natural gas, bio-gas, propane.  
10 While New Jersey should aspire to fuel cells  
11 operating on renewable hydrogen in the longer term,  
12 hydrogen from natural gas is a viable approach now  
13 and for the transition, given it's relatively low  
14 cost and the high efficiency and reduced emissions  
15 of fuel cells. This is another example of not  
16 letting the enemy of the good, especially since we  
17 need to get to the economies of scale necessary to  
18 reduce the cost of these systems.

19           All emerging clean energy technology  
20 shares some common obstacles. We are all familiar  
21 with them. Economies of scales I just alluded  
22 to. Overcoming consumer resistance to change, and  
23 establishing consistent and stable policies that  
24 reduce the risk to companies, investors, and  
25 consumers. Factor-specific to the transportation

1 sectors have limited the market growth of battery  
2 electric vehicles -- gasoline prices have remained  
3 relatively low, and there's limited charging  
4 infrastructure in many locations. The limited  
5 driving range and long recharging times compared to  
6 conventional vehicles also discourages some  
7 consumers from purchasing battery electric  
8 vehicles. Fuel cell electric vehicles face  
9 similar infrastructure challenges in the  
10 marketplace, but they offer consumers a choice of  
11 different vehicle attributes. In addition to  
12 charging infrastructure, New Jersey should support  
13 development of a hydrogen refueling infrastructure.  
14 It is the key enabler to greater market adoption of  
15 fuel cell vehicles, and realizing their substantial  
16 advantages that include greater driving ranges,  
17 fast refueling, and the ability to co-locate with  
18 existing fueling infrastructure during the  
19 transition.

20           Some states have developed programs to  
21 address fuel cell market challenges, like the  
22 alternative and renewable and fuel and vehicle  
23 technology program which has supported the  
24 installation of almost sixty hydrogen fueling  
25 stations in California -- thirty-five which are

1 operating today. And, the state's self-generation  
2 incentive program and fuel cell energy metering  
3 tariff that has supported around 250 megawatts of  
4 stationary fuel cell simulations. Through a  
5 reverse auction, that metering and utility  
6 procurement, Connecticut has over 150 megawatts of  
7 systems operating and in development today --  
8 stationary systems. By contrast, there are less  
9 than ten megawatts of stationary fuel cell systems  
10 installed in New Jersey. To ensure transition to a  
11 sustainable energy system, New Jersey should invest  
12 in technologies that provide resilient power,  
13 decreased emissions, and improved air quality.

14 A lot of these comments that follow  
15 were mentioned by Derek. I will just reiterate  
16 that tri-generation fuel cell systems produce  
17 electricity heat and hydrogen for refueling fuel  
18 cell electric vehicles that span the range of  
19 light-duty vehicles to heavy-duty vehicles, and  
20 cargo and material-handling equipment. I will also  
21 add to some of Derek's comments, that New Jersey  
22 should look to states like California where a large  
23 magnitude of intermittent renewables has caused  
24 some gaps in generation and demand response issues.  
25 And, I think there's a lot to learn there from



1 California's relatively rapid pace of installing  
2 renewable energy.

3           Regarding state policy, New Jersey has  
4 taken great initial steps to develop a clean energy  
5 program. The next generation of this program  
6 should incorporate market mechanisms such as a  
7 reverse auction to allow clean energy projects to  
8 compete based on desired attributes and  
9 cost-effectiveness in the short term. Future  
10 incentives should be paid based on the technologies  
11 rather than an up-front incentive.

12           California, Connecticut, and New York  
13 have all implemented pay-for-performance clean  
14 energy incentives to assure continued operation and  
15 pay back from their investments. On the  
16 transportation side, Governor Murphy has taken the  
17 important step to signing the state zero emission  
18 vehicles program's memorandum of understanding  
19 committing to coordinated action with eight other  
20 states to ensure the successful implementation of  
21 ZEV programs. New Jersey should follow up by  
22 setting ZEV targets, expanding policy to include  
23 hydrogen refueling stations, hydrogen refueling  
24 infrastructure, and encouraging state and municipal  
25 ZEV fleet purchases.

1           The New Jersey Fuel Cell Coalition has  
2 partnered with organizations in other northeast  
3 states. For example, the Connecticut Center for  
4 Advanced Technology, to identify the near-term  
5 opportunities in New Jersey for hydrogen and fuel  
6 cell systems. And, we will include these in our  
7 more detailed comments.

8           Finally, environmental justice to  
9 ensure direct deposited impact on overburdened  
10 communities. We recommend bonus incentives be  
11 provided for projects installed in those identified  
12 communities. New York has established such a  
13 bonus incentive of program in their clean energy  
14 fund to encourage project development in local  
15 communities.

16           In conclusion, I would like to thank  
17 you for this opportunity to present  
18 recommendations. And, the New Jersey Fuel Cell  
19 Coalition and our collaborators look forward to  
20 engaging further in the public input activities,  
21 and submitting detailed written comments as part of  
22 this public stakeholder engagement.

23           MR. SHEEHAN: Thank you very much.  
24 Our next speaker is Shihab Kuran.

25           MR. KURAN: Thank you, Ken. My name

1 is Shihab Kuran. I'm a local entrepreneur. I  
2 submitted written answers to the questions. But,  
3 I'd like to focus on one topic today through my  
4 verbal comments. And, that specifically, economic  
5 development.

6           As a local entrepreneur, I had the  
7 honor of working with many of you in the public and  
8 the private sector of who are gathered here. And,  
9 the point I would like to raise is that we might be  
10 able to walk away at the end of the Energy Master  
11 Plan with a set of goals of how to meet the clean  
12 energy goals; but, the danger might be that we  
13 achieve those at a severe cost of economic leakage  
14 and significant economic loss to the taxpayers. As  
15 we know, there's a strong overlap between  
16 ratepayers and taxpayers. So, while I agree  
17 generally with the rate advocate, I think  
18 decoupling jobs from the goals of the Energy Master  
19 Plan, given the strong overlap between ratepayers  
20 and taxpayers, we might look right in the short  
21 term. But, in the terms of the long-term view,  
22 that might be the wrong decision. The Energy  
23 Master Plan is a twenty to thirty-year outlook.  
24 We're looking at clean energy by 2050, that's over  
25 thirty years from today.

1           So, if you would allow me, I'd like to  
2 be share some comments on how we can spur economic  
3 development, create jobs, and effectively --  
4 instead of only focusing on cost reduction of  
5 solutions -- we can focus on enhancing the benefit.

6           So, the benefit cost ratio rather than  
7 just the cost important itself. If we look at the  
8 main sectors that matter, frankly, in the Energy  
9 Master Plan as we go forward, obviously solar comes  
10 to the front. And, so, what can we do as a state  
11 when it comes to economic development for solar?  
12 How do we localize that sector in New Jersey?

13 Unfortunately that is, I think, a sector where the  
14 train has left the station. I think we know that  
15 Asia, and specifically China, is a major  
16 international manufacturing location for solar  
17 energy. Low cost wages and low cost labor is not  
18 what we are known for in the state of New Jersey,  
19 and I think that's something we can't compete with  
20 China on.

21           The next sector is wind. So, it's  
22 great we tap into our off-shore resources in terms  
23 of wind. And, luckily there are regional  
24 industries when it comes to manufacturing. If we  
25 think broadly about renewables, we actually find

1 that intermittent renewables today mostly are  
2 cheaper than fossil fuels. So, if they are, why do  
3 we have a committee when we have the Energy Master  
4 Plan? The market should take care of that. The  
5 fact is, intermittent renewables are cheaper than  
6 fossil fuels. I mean, you see PPA's and otherwise,  
7 a few cents a kilowatt hour -- three, four --  
8 that's actually cost-effective and highly  
9 competitive. However, the market needs firm  
10 energy. And firm energy is significantly more  
11 expensive than fossil fuels today. And, that's a  
12 challenge. So, how do we perk up renewables?  
13 Obviously, the first solution that comes to mind is  
14 through energy storage. And energy storage remains  
15 the holy grail of the power sector today. If  
16 energy storage is cost-effective, the Energy Master  
17 Plan goals would be met without the need of public  
18 and private -- just the sector would take care of  
19 itself.

20 Energy storage is complex,  
21 technologically complex. It includes disciplines  
22 like chemistry, electronics, steady conductors,  
23 software, nano-technology. And, remains an  
24 obstacle. And, if we look at those challenges, we  
25 see that innovation is still required to solve the

1 cost and the solution of energy storage. But, I  
2 argue that the good news is that New Jersey has  
3 many of the differentiated advantages that allow  
4 us, in the short term and the long term, to  
5 possible create a sector, localize a sector when it  
6 comes to energy storage right here in New Jersey.  
7 We have a strong chemical engineering base. We  
8 have a strong electronics and semi-conductor base.  
9 We have a strong nano-technology industry. We have  
10 a strong software industry. And, so, I consider  
11 that to be a worthy cause. A sector that we can  
12 go after and plant our flag and become  
13 differentiated internationally, not just locally.

14 As a matter of fact, Thomas Edison  
15 back in 1903 started battery manufacturing in West  
16 Orange, so we have a long heritage when it comes to  
17 energy storage. Batteries are one form. I'm not  
18 picking a particular chemistry or technology, I'm  
19 just talking about a sector when it comes to energy  
20 storage.

21 So, my recommendation here is that we  
22 pick a sector -- and I argue that energy storage  
23 might be that one, given the fact that it hasn't  
24 been addressed and solved yet, and we have some  
25 strategic advantages. But, my recommendation is

1 form a committee or a group that focuses within the  
2 Energy Master Plan on how we localize a sector in  
3 energy storage, and come up with recommendations.  
4 A committee that has public and private  
5 stakeholders. I don't know what the specific  
6 answer is. We have many of the best practices and  
7 learning experiences being active in having an  
8 energy storage in solar and wind and smart grid and  
9 in fossil fuels. We have, I believe, valuable  
10 advice and contribution that we can bring forward.  
11 But, there are many in the room that have amazing  
12 experiences that they can come together and have  
13 recommendations for the Energy Master Plan for  
14 localized in the sector, both in energy storage,  
15 that allows us to lower the cost, but, I would  
16 argue, enhancing the benefits for both the  
17 ratepayers and taxpayers. Thank you.

18 MR. SHEEHAN: Thank you very much.  
19 Our next speaker is Bill Wolfe. Okay. Gaylord  
20 Olson.

21 If I may, before we get started, on  
22 deck is James Pfeiffer, Gearoid Foley, William  
23 O'Hearn. And, that represents the last of the  
24 speakers I have who have indicated that they have  
25 submitted comments prior to the process. Sir?

1 MR. BURCAT: I submitted comments and  
2 signed in.

3 MR. SHEEHAN: Okay. You're name, sir?

4 MR. BURCAT: Bruce Burcat.

5 MR. SHEEHAN: Bruce Burcat. You're  
6 fourth on deck.

7 Go ahead, sir.

8 MR. OLSON: My name is Gaylord Olson.  
9 I'm not here representing any commercial interest.  
10 I'm a semi-retired electrical engineer. I happen  
11 to be on the advisory committee for engineering at  
12 Temple University in Philadelphia. I have an  
13 active interest in alternative energy in general,  
14 and energy storage.

15 I'd like to leave you with one number  
16 today. And, I hope you remember this number.  
17 It's 2.8. And, I want to tell you what this number  
18 represents. I'll try to be clear.

19 Last year there was a report published  
20 by the National Renewable Energy Laboratory, part  
21 of the Department of Energy -- that we all paid for  
22 through our income tax. The title of the report  
23 was the U.S. Solar Portable Take System Cost  
24 Benchmark for part of last year. There were five  
25 authors of this report. And, here are some of the



1 numbers. Actually, they wrote the numbers down  
2 into four major categories, the smallest being  
3 residential, the next size up was commercial, the  
4 next size up from that is utility scale, and then  
5 the utility scale fixed-tilt systems, and then  
6 another category, utility scale one-axis tracking  
7 systems.

8           Now, this gets a little bit into the  
9 weeds, maybe. But, when I say one-axis tracking,  
10 is that a term familiar to anybody here? I see  
11 some people nodding "yes". At any rate, it means  
12 that the solar panels can rotate to face the sun at  
13 all hours of the day, so you gather more energy  
14 that way when the panels can always approximately  
15 face where the sun line is. So, that's the very  
16 best possibility to get the most energy from a  
17 large scale system. And, fortunately, with our  
18 new governor, and we have the opportunity with  
19 community solar now, to have -- as far as I know --  
20 very large size arrays put out on open fields away  
21 from any city.

22           So, hear are some of the numbers that  
23 were in this report. For the residential,  
24 smallest scale, the cost for energy -- this is not  
25 power, this is energy -- and, you can assume it's

1 energy per year -- between 12.9 and 16.7 cents per  
2 kilowatt hour is the levelized cost of electricity  
3 for rooftop arrays. On the other end of the scale,  
4 the largest arrays, one-axis tracking utility scale  
5 cost, is a range of 4.4 to 6.1 cents per kilowatt  
6 hour. Now, if you take the mid points of those  
7 two ranges -- let's say fourteen cents per kilowatt  
8 hour for rooftop solar, and about five cents per  
9 kilowatt hour for one-axis tracking system, open  
10 field arrays, the ratio of those two numbers is  
11 2.8. I'd like you to remember that number and  
12 think about it. If you can buy ten kilowatts and  
13 have them on your rooftop, you can take the same  
14 investment -- according to these numbers -- and buy  
15 twenty-eight kilowatts, when you're a part owner of  
16 a large community array out in a big open field.

17 And, so, I hope that makes sense to  
18 everybody. And think about that as the best  
19 possible investment to give the most cost-effective  
20 solar electricity for New Jersey.

21 Two other factors that are related to  
22 this. If you happen to have a home that has  
23 enough space around it for large trees, then plant  
24 some trees around your home rather than put solar  
25 panels on your roof. If anybody's been out in the

1 open sun around here in the past few weeks, you'll  
2 know that it's pretty uncomfortable as compared to  
3 being in the shade of a large tree. It's the same  
4 for your home. Your home will have a lower air  
5 conditioning bill if it happens to have trees  
6 surrounding it to give it some shade. So, another  
7 cost benefit to being part owner of a community  
8 large array, rather than on your roof, is you'll  
9 have lower air conditioning bills for your home.

10 A third benefit is, if you look at the  
11 resale value of homes, you'll find that there's a  
12 very significant higher resale value for homes that  
13 happen to be surrounded by large trees. And, it's  
14 probably in the range of five to ten percent. I've  
15 collected some numbers on that. So, that  
16 represents another reason why everybody should be  
17 encouraged to be a part owner of a large community  
18 array, rather than rooftop. I know this goes  
19 against the grain of some people who have spoken  
20 here earlier, but, basically, I think it's going to  
21 be proven. Now, other states, of course, are way  
22 ahead of us in terms of community scale and large  
23 scale solar arrays.

24 Another point that I wanted to get to  
25 refers to Item 9, the discussion point. Which is

1 how should the state address the base load needs  
2 versus intermittent elements of clean energy  
3 generation? Now, we've heard a little bit about  
4 energy storage. But, with a large enough scale of  
5 energy storage, we really don't need anymore base  
6 load generation. And, let me explain that a little  
7 bit further.

8           By far, the largest form of energy  
9 storage in the world today were utility scale  
10 electricity happens to be what's called pump  
11 hydro-electricity. I'm sure some of you in the  
12 audience are familiar with that. Does that ring a  
13 bell with anybody here? Okay. All right. If  
14 not, look it up in Wikipedia. That is between 95  
15 and 99 percent of large-scale energy storage today  
16 in the world. Now, people will respond typically  
17 that the experts have studied this already and they  
18 cannot find anymore reasonable places to put dams  
19 to utilize pumped hydro-electricity. It so happens  
20 that in Germany there are at least three locations  
21 where they have large-scale utility pumped  
22 hydro-storage without a dam. And, the way that is  
23 done is with a naturally flowing river as a source  
24 of water at the bottom. And, and artificial  
25 reservoir with storage of the water at the top of a

1 nearby hill. No dam. No disruption of fish or  
2 anything of that sort.

3 Now, if any of you have ever hiked  
4 along the Appalachia trail up in the northeast  
5 corner of our state, you will see that there a  
6 thousand foot-high hills right next to the Delaware  
7 River. So, we can provide a massive energy storage  
8 of that form along the Delaware River. And, this  
9 can also be done along the Hudson River. Perhaps  
10 more in New York than New Jersey. But, basically,  
11 anywhere there's a river that has a high enough  
12 flow rate, and hills that are high enough, you can  
13 provide energy storage on a massive scale, which  
14 will enable a lot more solar and wind being  
15 intermittent to provide the power needed. So,  
16 that's why I say, we don't absolutely have to have  
17 base load continuous power as something to make up  
18 for the intermittency of solar and wind.

19 Also, a lot of the points that I'm  
20 making here are currently on the internet. If you  
21 want to see them, go to the website for the New  
22 Jersey Sierra Club. Look at their latest  
23 newsletter, and there's an article on Page 13 of  
24 the Sierra Club current newsletter. A few more  
25 details will be found there.

1                   So, that's about it. Except for one  
2 final point. I would recommend that you all keep  
3 an open mind with respect to the future for nuclear  
4 power. Don't just judge it on what we have today.  
5 There are lots of people researching smaller and  
6 more economical and safer forms of nuclear power  
7 that we should at least consider, rather than  
8 excluding nuclear forever more. Thank you for  
9 listening.

10                   MR. SHEEHAN: Thank you. James  
11 Pfeiffer is next.

12                   MR. PFEIFFER: Good afternoon. My  
13 name is James Pfeiffer. I do represent a company,  
14 Green Waste Energy. Chairman Sheehan, Ms. Corbit,  
15 Commissioner Chivukula, and panel members, thank  
16 you.

17                   So, the Energy Master Plan talks about  
18 innovation. And, that's what I'm here to talk  
19 about. The best way to get someplace is to open  
20 your minds, and to take a look at other  
21 technologies, other things that are out there that  
22 can move you in the direction that you want to go.  
23 And, along with innovation goes new jobs. They go  
24 hand-in-hand. So, as opposed to some of the  
25 earlier opening statements, I am recommending a

1 change, an update, to the code that defines  
2 renewable energy. And, I would like people to  
3 consider the addition of a new Point 8 that states,  
4 electricity generated by using the gas produced  
5 from the processing of any carbonaceous matter into  
6 fuel.

7 Now, most of you guys are not familiar  
8 with this part of code. And I wouldn't be if it  
9 wasn't part of my business. But, the code talks  
10 about anaerobic digestion. That's okay. It talks  
11 about waste gas from landfills as being okay. So,  
12 how about another process? How about a process  
13 like pyrolysis to take this wastewater treatment  
14 sludge and make it into a synthetic gas, then to  
15 create electricity from that gas. And, it's at  
16 that point, technology independent. It doesn't  
17 matter whether it's a turbine, a reciprocating  
18 engine, or a fuel cell to take that gas. So, the  
19 benefit is it's something that's easy to  
20 understand, like wastewater treatment sludge. If  
21 you go in with dry sludge, you have a hundred  
22 parts, you do anaerobic digestion, you still have  
23 eighty parts of the material left that you have to  
24 dispose of. And, you've created two parts of  
25 electricity -- some random number. If you do

1 something like pyrolysis, then you're going to have  
2 only fifteen parts left over, and you're going to  
3 have two or three times as much electricity. But  
4 it's any carbonaceous material. Which is why I'm  
5 suggesting it like this. It doesn't necessarily  
6 reflect pyrolysis. It could be gasification, or  
7 anything else. It's innovative. It's different.  
8 It is not incineration.

9           So, what we've got then is you're  
10 supporting a lot of the other fundamental -- first  
11 of all, this is Point 2 on your list of discussion  
12 points. What it does, though, it supports a lot  
13 of the other things in these other points. It  
14 supports job. Jobs to build these plants, jobs to  
15 run these plans. It supports environmental  
16 justice. These things are clean. These we're  
17 talking about the generation is going to be at  
18 least as clean as the emission standards for a  
19 combined heat and power system, possibly as clean  
20 as fuel cell, which means once you have the gas you  
21 can put them very close to populated areas. I  
22 would never recommend, really, putting them in  
23 downtown. But, you can certainly put them very  
24 close. It supports electric vehicle industry,  
25 because now you have a constant source of power.



1 It's not just daytime or windy power, it's  
2 constant. So, you can make electricity at night  
3 and rejuvenate all those electric vehicles. The  
4 life cycle costs of this are very reasonable, if  
5 you compare them to the other technologies of  
6 taking something and running it for a while and  
7 then having to dispose of it. So, I'm relatively  
8 sure.

9 That's all I have to say. Add a new  
10 Point 8, and I'll be glad to give you the verbiage  
11 again any time you want it. Thank you.

12 MR. SHEEHAN: Thank you. Next speaker  
13 is Gearoid Foley.

14 MR. FOLEY: Director Sheehan, members  
15 of the committee, thank you very much for giving me  
16 this opportunity. I'm here representing the  
17 Department of Energy's Combined Power and Technical  
18 Assistance Partnership. We did submit written  
19 comments, so I'm just going to cite a few of those  
20 comments, just brief, and a couple of reference to  
21 the points in the question list.

22 The DOE's CHP Technical Assistance  
23 Partnerships work with end users and policy makers  
24 to assist in transforming the market for combined  
25 heat and power, waste heat to power, and district

1 energy technologies throughout the United States.

2 Combining power technologies holds  
3 enormous potential to improve the nation's energy  
4 security and resiliency, and reduce greenhouse gas  
5 emissions. CHP supports our move to a clean energy  
6 economy, and the creation of green jobs. The  
7 Department of Energy has long championed CHP  
8 technologies to harness the flow of power of CHP to  
9 help the nation meet its energy goals.

10 CHP can be a dispatchable power  
11 resource that can work in conjunction with  
12 renewables, including wind and solar, to provide  
13 cost-effective power in hybrid applications. Such  
14 applications either at grid level or at micro-grid  
15 level, allow for a transition to afford renewable  
16 base grid in a cost-effective manner, that is  
17 compatible with the existing grid infrastructure.

18 CHP, as part of a community-based  
19 hybrid micro-grid including renewables and battery  
20 storage, represents a cost-effective means of  
21 providing resilient base load power and thermal  
22 energy for local community, including critical  
23 infrastructure in an accessible way for all.

24 CHP can play a key role in addressing  
25 24-hour base load, and can be configured to be

1 dispatchable as necessary when renewables are not  
2 available. CHP provides a cost-effective and  
3 clear near-term technology option as other  
4 technologies are being developed. CHP can be  
5 designed to meet local thermal needs, and export  
6 power to the grids when grid supplies are deficient  
7 to meet demands.

8           The advancement of CHP is part of the  
9 U.S. Department of Energy's Office of Energy  
10 Efficiency and Renewable Energy -- EERE -- mission  
11 to create sustained to American leadership and to  
12 transition to a strong prosperous America powered  
13 by domestic, affordable, and secure energy for  
14 industrial, manufacturing, federal, institution,  
15 commercial, and multi-family sector.

16           I want to just address a couple of the  
17 aspects in the -- particularly addressing the  
18 question list. On issue Number 2, question of  
19 flexibility in the definition of clean energy.  
20 Allowing for combined heat and power, which is a  
21 fossil fuel, typically can be bio-fuel but  
22 typically fossil fuel technology, does provide the  
23 option to provide a very cost-effective means of  
24 obtaining base load power.

25           In question Number 3, in terms of

1 obstacles. Certainly this morning, earlier, we  
2 heard from ratepayer -- rate counsel. Cost, and I  
3 think we recognize cost being one of the issues  
4 that need to be overcome. As CHP is  
5 cost-effective, that is really what spurs the use  
6 of CHP currently. So, it is a cost-effective  
7 method as we move forward with the transition, and  
8 gives us an option in that tool box as we move  
9 forward with this transition.

10                   Number 4. Just the issue of stranded  
11 cost. It's not necessarily defined very well, but  
12 I think just one issue relating, again, to combined  
13 heat and power. These are typically twenty-year  
14 length investments. Twenty-year life cycle  
15 investments. They're not infrastructural  
16 fifty-year life cycle investments, so they fit into  
17 that transition timeline. And, they are typically  
18 shared in large part by the whole site for that  
19 system.

20                   Reference just specifically to Number  
21 9. As I mentioned before, I think CHP is probably  
22 the go-to technology for base load power through  
23 this transition process. Most energy efficiency  
24 fossil fuel combined in a combined heat and power  
25 configuration available today, always better than

1 the best of the fossil fuel grid technologies.

2 And, finally, on Question Number 12,  
3 on the transition portfolio mixture. Again, I'd  
4 encourage maintaining CHP in the mix just adds to  
5 the tool box as a cost-effective method to  
6 assisting that transition towards a hundred percent  
7 renewable future. Thank you very much.

8 MR. SHEEHAN: Thank you. Agnes  
9 Marsala, could you step up?

10 MS. MARSALA: I applaud the state's  
11 efforts to transition to clean renewable energy. I  
12 feel we have more of an imperative to do so. We  
13 are at a common crisis, and need a ten-year phase  
14 out of fossil fuels. And, the best way to start is  
15 a moratorium on all fossil fuel infrastructure.

16 Further, all approved methane  
17 infrastructure should be halted until a full review  
18 of the permitting process under the Christie  
19 administration is conducted. There is no clear  
20 example, in my opinion, of regulatory capture than  
21 what we have witnessed in last eight years. Well  
22 past time we rethink that kind of policy, and  
23 reject the last twenty-five years of deregulation  
24 and market tools, which are proven to be a  
25 disaster. And, I applaud the Governor for taking

1 these steps.

2           We need to repeal the New Jersey  
3 energy deregulation law and replace it with truly  
4 public utility regulation, and public ownership.  
5 It's time for real energy democracy. It's time  
6 for bold ideas, such as cooperatives. Municipal  
7 control of certain functions and operations and  
8 reform efforts directed at utilities. Even a  
9 public works approach to energy transition that  
10 worked so successfully during the middle decades of  
11 the last century.

12           It's clear that the profits-based  
13 approach has failed, and in fact is a profound  
14 threat to all living things. Publicly-owned and  
15 operated energy may be the most equitable,  
16 efficient, and effective way to address the climate  
17 crisis, to protect workers, strengthen unions, and  
18 create an energy system responsive to community  
19 needs. Given the unions significant  
20 representation and existing energy utilities, and  
21 their ability to better protect workers in most  
22 publicly-owned and operated systems, the trade  
23 union movement has a much greater role to play in  
24 developing publicly renewable power. Creating  
25 energy systems that are both ecologically

1 sustainable and equitable depends largely on the  
2 ability to shift power from the fossil fuel  
3 industry to workers and communities. Utilities  
4 under public ownership and control, either through  
5 re-municipalization or by reform of existing public  
6 utilities, would be able to rapidly scale-up  
7 renewable energy, protect workers' rights, and  
8 generate decent and stable jobs. Create an energy  
9 system based on ecologically sustainable methods of  
10 energy extraction, transport, and use, be  
11 responsive to the needs of the community, address  
12 energy poverty, and aggressively promote energy  
13 conservation.

14           These ideas are not beyond the  
15 imagining. Back in 1990, the Florio administration  
16 combined some of the BPU energy programs with the  
17 DEP, forming the DEPE -- the Department of  
18 Environmental Protection and Energy, for example.  
19 Further, there are examples of municipally-owned  
20 utilities across the U.S., in places like  
21 Sacramento, Austin, Chattanooga, Aspen, and Winter  
22 Park, Florida.

23           Now, I've literally quoted from the  
24 Trade Unions for Energy Democracy's working papers  
25 here. Specifically, Power to the People Toward

1 Democratic Control of Electrical Power Generation.  
2 This, and eleven other really great titles, can be  
3 found at UnionsforEnergyDemocracy.org. And, I  
4 highly recommend everyone give them a read. And, I  
5 thank you very much for giving me this opportunity  
6 to speak.

7 MR. SHEEHAN: Thank you very much.  
8 Our next speaker is William O'Hearn.

9 MR. O'HEARN: Good afternoon. And  
10 thanks everybody for sticking around. My name is  
11 Bill O'Hearn. I'm the Corporate Communications and  
12 Outreach Manager for a non-profit group called  
13 Business Network for Off-Shore Wind. And we are a  
14 non-profit, but we take a business approach to the  
15 off-shore wind industry. We basically try to  
16 bring a lot of the wisdom from Europe over here  
17 into the east coast of the United States.

18 I want to thank Mr. Sheehan and the  
19 rest of the BPU for the great job that you've done  
20 on off-shore wind. We appreciate it. And, for  
21 having me here today.

22 So, here's the bad news for this  
23 group. People who know me, know that once I get  
24 talking about off-shore wind, I can go on for  
25 hours. Right? And here's the good news; the good



1 news is I have a dinner appointment with my wife  
2 and daughter in Boston at seven o'clock tonight.  
3 And, perhaps, even better news, is that in terms of  
4 full disclosure, my organization is proud to be  
5 part of what we call the RanBall team that is  
6 developing the strategic plan for off-shore wind  
7 for the state. So, I'm going to keep my remarks  
8 general, because, of course, we are working on the  
9 actual off-shore wind plan for New Jersey. And,  
10 we're proud to be doing that.

11 So, I also want to recognize Jersey  
12 Renews, members of Jersey Renews, and my colleague,  
13 Doug O'Malley, that has been great to work with,  
14 and helping us explain our point of view to the  
15 environmental community. And we had some great  
16 support there, and we appreciate that.

17 So, just a couple of bullets, a couple  
18 of points. I was here, by the way, I testified in  
19 the 2011 Energy Master Plan. And, I was here for  
20 the 2015 update. And I can assure you, this is a  
21 much happier occasion than those were. So, enjoy  
22 this. This is actually good, what we have here  
23 today. We appreciate it.

24 One of the points I would make is that  
25 -- and this is from the 2011 EMP and from 2015 EMP

1 update -- in those documents there was a real  
2 reliance on natural gas and new gas pipelines as  
3 the best way to meet electricity demand. Not  
4 surprisingly, considering that was the Christie  
5 administration back then. And, that was the flavor  
6 that we got. What I recommend, and what I'm  
7 hearing today, is that we change the whole flavor.  
8 Completely redo the plan. So that it has much more  
9 of the language of the climate change, global  
10 warming in it, and reliance, on stuff like new  
11 technology, and, of course, clean energy, as a way  
12 of driving economic development.

13           One of the things we cite in the work  
14 that we do, is we talk about the City of Riverhaven  
15 in Germany, which was completely revitalized by the  
16 off-shore wind industry. Same thing for some very  
17 sad fishing villages in England, one of which is  
18 called Gull. And, basically, has completely  
19 transformed itself into a high-tech assembly and  
20 off-shore wind manufacturing. So, that kind of  
21 economic development is possible with clean energy  
22 and driving the fighting against climate change.  
23 That's what really pushes us to do the work that we  
24 do.

25           So, one of the things that we'd like

1 to see, is we want to make sure that there's a  
2 description in some detail of how the clean energy  
3 elements of solar -- as you've heard a lot about  
4 today -- and wind conservation and storage will  
5 work together to achieve a hundred percent clean  
6 energy by 2050 goal. For example, I think it's  
7 important that we explain how the equitable and the  
8 daily cycles of solar and off-shore wind compliment  
9 each other. Quick example, is that off-shore wind  
10 is extremely strong in the winter, when solar is  
11 relatively light. Also, in terms of the -- if you  
12 think about the daytime hour-by-hour production of  
13 solar, of course it goes like this, with midday  
14 being strongest. And the way the off-shore wind  
15 goes is more like this. And we crank out the most  
16 power late afternoon, early evening, when those air  
17 conditioners are coming on in the summer time. So,  
18 it's a good match. I mean, these technologies can  
19 work together.

20 Of course, we recognize that it's a  
21 new technology. It's going to take some  
22 investment. And, so, we're certainly conscious --  
23 we heard from the advocate, and we completely agree  
24 that things should be done year by year in a  
25 planned transparent basis to minimize impact on

1 ratepayers. One of my jobs working with the Board  
2 will be to continually explain the relationship and  
3 the development between the Energy Master Plan and  
4 the Off-Shore Wind Strategic Plan, which again,  
5 we're part of that team.

6 And then, I guess, lastly, just to  
7 keep my remarks short -- and again, I appreciate  
8 your patience -- is I want us to make sure that we  
9 acknowledge New Jersey's role, and as a national  
10 clean energy leader and the spirit of the old  
11 Energy Master Plan that was done in 2008. Let's  
12 get back to that, that spirit, that desire to be  
13 the best. And we recognize the governor for  
14 pursuing that. And, we want to keep that as an  
15 ongoing goal for 2050. Thanks very much.

16 MR. SHEEHAN: Thank you very much.  
17 Bruce Burcat. And then Joe Accardo next.

18 MR. BURCAT: Good afternoon. I am  
19 Bruce Burcat. I'm the Executive Director of the  
20 Mid-Atlantic Renewable Energy Coalition. We're  
21 called MAREC. MAREC is a 501c(3) corporation that  
22 was founded to help advance the opportunities for  
23 renewable energy in this region, particularly in  
24 New Jersey and other states in the mid-atlantic, as  
25 part of the PJM region in the grid operator.

1                   Our members consist of utility scale  
2 wind, including off-shore wind; and, solar  
3 developers, wind turbine manufacturers, and some  
4 non-profit organizations. MAREC supports  
5 Governor's Murphy's goal of moving away from the  
6 reliance upon fossil fuels as New Jersey's primary  
7 source of energy. A commitment to clean energy is  
8 the cornerstone of the policy to remove impacts of  
9 global warming, and other harmful emissions. MAREC  
10 believes that a future of renewable energy, coupled  
11 with energy storage by 2050, is achievable. And,  
12 will not only help protect New Jersey citizens from  
13 global warming, but continue to lead New Jersey  
14 forward as a state investing in its economy, thus  
15 bringing jobs, manufacturing, and new off-shore  
16 wind industry into the state.

17                   Conversion to clean energy from fossil  
18 fuels will also require reliance. And I think this  
19 is very important -- a significant purchases of  
20 utility scale solar and on-shore wind from the PJM  
21 region to meet the goals of fifty percent, and a  
22 hundred percent clean energy. And that would also  
23 include, obviously, energy efficiency, as well.  
24 Clean energy, in our opinion, should be defined as  
25 renewable energy, a hundred percent carbon-free,

1 non-emitting, environmentally sound resources that  
2 are truly renewable in the sense that they do not  
3 deplete over time. These are sources like solar,  
4 wind, hydro-electric facilities -- three megawatts  
5 or less -- geo-thermal energy, and energy  
6 efficiency -- which is not renewable but obviously  
7 an important component in all of this. The state  
8 has already begun its transition to clean energy  
9 production. Obviously the enactment of the fifty  
10 percent RPS bill, 3500 megawatts of off-shore wind  
11 by 2030, a storage study and targets for storage,  
12 and other aspects of that bill we entirely support  
13 with a couple of minor exceptions.

14 Right now we've heard some comments  
15 earlier that on-shore wind coming from out of state  
16 is something that some folks, especially the  
17 distributor solar folks that had businesses here in  
18 New Jersey are concerned about. But, I think what  
19 the state has to really recognize is that there's  
20 limited land mass and area to put all this solar.  
21 There's extreme difference in cost between what  
22 might happen if you're overloaded with solar in the  
23 state because of a hundred percent requirement when  
24 the cost -- and we've heard some really low numbers  
25 today -- with the cost of off-shore wind coming

1 from other states is significantly cheaper. Part  
2 of this whole idea is to get to a hundred percent  
3 renewable energy or clean energy at a reasonable  
4 cost. And, I think that has to be a big component  
5 of this. And, it's abundant. And I think one of  
6 the major points of this is that in New Jersey,  
7 which has done a lot already to limit coal and  
8 other fossil fuel generation in the state -- if  
9 it's getting some of its renewable energy from out  
10 of state, that renewable energy is going to be  
11 replacing coal, other fossil fuel energy in those  
12 states. And that pollution coming from those other  
13 states are affecting New Jersey. So, there's a big  
14 advantage for New Jersey to continue to rely on  
15 that. Especially if we're going to fifty percent  
16 and even further going to a hundred percent goals  
17 for clean energy.

18 One other thing. I represent, of  
19 course, solar -- utility scale solar developers,  
20 and there's sort of -- and this works somewhat  
21 against my wind utility members, but they  
22 understand this, that there shouldn't be  
23 competition between utility scale solar, utility  
24 scale wind. And, so, right now there's a  
25 limitation that out of state solar cannot

1 participate in the -- it's an order,  
2 interpretation, from the Board of Public Utilities,  
3 but it does not allow out-of-state solar to compete  
4 within the direct market in the Class I REC market.  
5 Not the solar REC market, but the Tier 1 REC  
6 market. Our members believe that that should be  
7 something that's opened up. Maybe we have to do  
8 through legislation. But, it's something very  
9 important to your competition. And, to also open  
10 up additional resources that are in surrounding  
11 states to, as I said, help meet the goals as a  
12 requirement. So, I think that's very important.

13 I think the state should use the RPS  
14 model -- it's worked very well in the state --  
15 moving forward. So when we look to from fifty  
16 percent to a hundred percent, I think the RPS model  
17 at that point should be looked at very closely, and  
18 that should be a way to getting to a hundred  
19 percent. And I will tell you, that in the  
20 mid-atlantic region when the Lawrence Berkeley  
21 National Labs looked at this, what's driving  
22 renewable energy development -- because that's what  
23 we want -- the mid-atlantic region is primarily  
24 almost a hundred percent being driven by RPS goals  
25 in particular states. So, that's really important.



1                   And, some things very important to my  
2 members but also has a tremendous benefit to New  
3 Jersey ratepayers, is that a portion -- we think a  
4 portion of the basic generation service, BGS,  
5 should be obtained through competitively procured  
6 bundled long-term contracts of renewable energy and  
7 renewable energy credits. It reduces prices for  
8 customers. We have a study specific to New Jersey  
9 that actually shows that, for hundreds of millions  
10 of dollars. That's a way of keeping costs down  
11 again. We're not saying do it all, but do a  
12 portion. Just like you would have an investment  
13 portfolio, you're not going to want to put it all  
14 in short-term investments the way it is being done  
15 now. Some of it should be long-term investments,  
16 as well. I think that's really important.

17                   The other thing is that a long-term  
18 contract for solar or wind, because there's no fuel  
19 costs, is going to be consistent throughout the  
20 whole term -- whether it's ten, fifteen or twenty  
21 years. It's consistent, and it's going to provide  
22 an edge against prices that involve the stock  
23 market that's not there.

24                   And, finally, energy storage and  
25 increasing transmission build-out to support

1 renewable energy integration are important policies  
2 to ensure a reliable grid in the future to achieve  
3 a hundred percent clean energy target.

4 In sum, we believe that New Jersey is  
5 on the right track, and support the Governor's  
6 vision of moving New Jersey away from reliance on  
7 fossil fuels, and to generate a portfolio -- by  
8 generating a portfolio of a hundred percent clean  
9 energy. So, thank you very much.

10 MR. SHEEHAN: Thank you very much.  
11 Joe Accardo.

12 MR. ACCARDO: Thank you. Good  
13 afternoon. My name is Joe Accardo, I'm head of  
14 regulatory for PSE&G. And, wanted to spend just a  
15 little time today provide some additional thoughts  
16 and comments with respect to the Energy Master  
17 Plan. And, specifically, with respect to today's  
18 Clean and Renewable Power stakeholder meeting.

19 PSE&G has a long history, well over a  
20 hundred years, of partnership with New Jersey, and  
21 aligning its interests with those of the state.  
22 This partnership has been critical to development  
23 of clean and renewable power in the state, making  
24 New Jersey one of the recognized leaders in the  
25 installation and operation of clean, carbon-free

1 energy technologies. Governor Murphy's 2019  
2 Energy Master Plan gives PSE&G a unique opportunity  
3 to build on that prior success, as we implement his  
4 vision of a hundred percent clean energy future.

5 My comments today will focus really on  
6 six core areas coming out of the list of nineteen,  
7 of whatever it was, that each of the parties  
8 received. Focus on six things; what is clean  
9 energy, what's the definition of it; how we  
10 transition to a hundred percent clean energy by  
11 2050; evaluating existing state policies as they  
12 relate to clean energy programs; planning and  
13 zoning issues that impact clean energy,  
14 transportation and energy; and, economic growth and  
15 workforce development. And then finally we're  
16 going to talk about environmental justice. So,  
17 those will be the six areas that we focus on here  
18 in my brief statement.

19 So, what is clean energy? Climate  
20 change is arguably the single biggest environmental  
21 threat to the planet. The State of New Jersey and  
22 Governor Murphy have made reducing greenhouse gas  
23 emissions in top priority, including most recently  
24 the Governor's action to rejoin the Regional  
25 Greenhouse Gas Initiative. To support these

1 efforts, clean energy should be defined as any  
2 energy source that emits zero greenhouse gas or  
3 other air emissions. This definition should be  
4 broad enough to encompass the multi-year range of  
5 the implementation process. Thus clean energy  
6 would essential include solar, off-shore wind,  
7 energy storage -- so long as energy stored is  
8 derived from clean energy sources -- and nuclear  
9 power, the number one clean energy resource in the  
10 state. The inclusion of clean, central station  
11 nuclear power generation into the clean energy  
12 sector will be essential if we were to realize the  
13 one hundred percent clean energy goal set by  
14 Governor Murphy, while maintaining a safe and  
15 reliable electric grid.

16 Reaching the Governor's goal will not  
17 be easy, as there are many obstacles to overcome  
18 along the way. The one hundred percent clean  
19 energy goal will likely have customer rate  
20 implications that cannot be ignored. Consistent  
21 with the Governor's goals, every effort should be  
22 made to minimize those rate impacts. In addition,  
23 the intermittent nature of many clean energy  
24 sources -- off-shore wind, solar -- will require  
25 both a continued reliance on nuclear base load

1 units, and a significant investment in transmission  
2 and distribution assets and technologies designed  
3 to mitigate the intermittent nature of wind and  
4 solar. Governor Murphy's goal of achieving 2000  
5 megawatts of energy storage by 2030 will certainly  
6 be a step in the right direction, further  
7 integrating renewable energy sources into the daily  
8 mix of energy consumed in the state.

9           Transition to a hundred percent clean  
10 energy by 2050. Consistent with the Clean Energy  
11 Act of 2018, the state should adopt policies which  
12 encourage competitive markets with the goal of  
13 encouraging and ensuring the emergence of new  
14 interests that can foster innovations and price  
15 competition in the clean energy sector. When new  
16 market participants do not invest in certain aspects  
17 of the clean energy sector, however, the state  
18 should continue to expand current policies and  
19 programs that encourage New Jersey utilities to  
20 develop renewable projects on under-utilized and  
21 underdeveloped landfills and brown fields. The  
22 state should encourage innovative technologies by  
23 establishing a New Jersey research and development  
24 group that would allow utilities and other market  
25 participants to promptly approve pilots to test new

1 technologies, and establish best practices based on  
2 successful programs in other states and countries.

3           Lastly, New Jersey should construct  
4 new natural gas infrastructure, such as expansion  
5 of high-pressure distribution systems and  
6 construction of new liquefied natural gas plants,  
7 to ensure the reliability and resiliency of the gas  
8 and electric supply.

9           With respect to state policy, the  
10 state's become a clean energy leader in many  
11 respects. It's now one of the more aggressive  
12 renewable portfolio standards in the nation, and  
13 it's opened up the solar market with its community  
14 solar program. And, it has established aggressive  
15 targets for energy efficiency. To achieve this  
16 long-term one hundred percent clean energy goal,  
17 the state should look to utility partnership  
18 policies adopted by other states with similar  
19 long-term goals. In many instances, states have  
20 adopted policies that align utility incentives and  
21 business models with clean energy goals. For  
22 example, to achieve carbon emission reductions from  
23 the transportation sector, California recently  
24 adopted policies that will reward its electric  
25 utilities for accelerating the build-out of the

1 electric charging infrastructure. State's with  
2 aggressive energy efficiency targets, such as  
3 Massachusetts, New York and California have adopted  
4 revenue decoupling mechanisms for their  
5 gas/electric utilities, so utilities can  
6 aggressively pursue energy efficiency goals without  
7 harming their bottom line.

8 PSE&G believes that the electric and  
9 gas utilities are central partners in the pursuit  
10 of this goal. We welcome this partnership in  
11 transitioning the utility business model to one in  
12 which its business success is fully aligned with  
13 all of the state's clean energy goals.

14 With respect to planning and zoning.  
15 The Energy Master Plan should acknowledge the  
16 economic and environmental benefits of electric  
17 transportation, and identify specific policies to  
18 advance and accelerate their adoption across the  
19 state. Indeed, PSE&G believes that clean  
20 transportation will be crucial if the state is to  
21 achieve Governor Murphy's one hundred percent clean  
22 energy goal. Electric vehicles will be critical  
23 because every electrically fueled mile by an  
24 automobile or truck produces seventy percent less  
25 emissions than a gas fuel model. Utilities should

1 be encouraged to build a robust electric vehicle  
2 charging infrastructure to support the growing  
3 clean transportation sector. PSE&G looks forward  
4 to discussing clean transportation options at the  
5 September 20th stakeholder meeting.

6 With respect to economic growth and  
7 workforce development. It's well understood that  
8 investments in clean and renewable energy yield  
9 good, high-paying jobs. PSE&G is committed to  
10 working with the BPU and New Jersey Department of  
11 Labor and Workforce Development, to ensure that  
12 it's workforce development is an integral part of  
13 it's clean energy efforts. Establishing New Jersey  
14 as a national leader in clean energy through the  
15 Governor's commitments to energy efficiency,  
16 electric vehicles, and off-shore wind provide a  
17 significant opportunity to reduce greenhouse gas  
18 emissions, while also creating jobs and benefiting  
19 customers.

20 And, lastly, with respect to  
21 environmental justice. The state should set  
22 policies and programs that encourage investments  
23 into clean energy into overburdened communities.  
24 PSE&G's upcoming clean energy future filing is one  
25 such program that specifically focuses on these



1 overburdened communities to ensure that they have  
2 access to energy efficiency programs, LED street  
3 lights, energy storage, and the benefits of vehicle  
4 electrification. Other policies the state should  
5 consider include establishing utility rate  
6 structures to ensure that everyone that is  
7 connected to the grid and taking advantage of the  
8 attributes of the grid is paying for the  
9 investments made by the utility in the grid.

10 PSE&G is willing to participate in  
11 other discussions with state to bring other clean  
12 energy solutions, including solar energy  
13 technologies, to these under-deserved markets.  
14 PSE&G should continue to be an important vehicle to  
15 ensuring universal access to clean energy  
16 advancements. Thank you.

17 MR. SHEEHAN: Thank you very much. Is  
18 there anyone else who had pre-submitted comments?  
19 Lyle. And Lyle is all that stands between us and  
20 lunch.

21 MR. RAWLINGS: I pre-submitted these  
22 comments, Director Sheehan, and also made  
23 printouts.

24 MR. SHEEHAN: Appreciate that. Thank  
25 you. Thank you.

1                   MR. RAWLINGS: Thank you, Director  
2 Sheehan. I'm Lyle Rawlings, president and  
3 co-founder of the Mid-Atlantic Solar Energy  
4 Industries Association, or MSEIA. MSEIA for  
5 twenty-one years has been advocating for solar  
6 energy and solar energy businesses in the  
7 mid-atlantic region. And, we started when solar  
8 energy was really a scientific curiosity, right  
9 through now when it's the fastest growing source of  
10 new electric generation capacity in the world.

11                   Throughout that time we've advocated  
12 on three simple principles for policy. One; grow  
13 solar energy as quickly as possible. Two; do so at  
14 the least possible cost do ratepayers. And, third;  
15 create a diverse market, especially with  
16 opportunity for local New Jersey businesses to  
17 thrive and create local New Jersey jobs. And,  
18 it's gratifying to see such a great array of staff  
19 talent here today. And we know that you guys have  
20 a little bit of work on your plate right now, and  
21 you have a lot of other things to do. So, we  
22 appreciate your showing up and staying all day to  
23 hear this testimony. And we understand that more  
24 help is on the way. You got new talent coming in,  
25 and that's gratifying.

1           Because, the magnitude of the job is  
2   incredibly impressive. Before you couldn't get to  
3   the details of the clean energy law and what it  
4   requires the BPU to do, and what it requires  
5   society and industry to do. Just the nature of the  
6   goal itself, a hundred percent renewable energy,  
7   when you're talking about a full transition of the  
8   way the society uses and generates something as  
9   fundamental to our economy as energy is, you know  
10  that the scale and complexity of that task has to  
11  be daunting. And it is. It's matched only by the  
12  urgency of dealing with climate change and  
13  pollution, which has been another issue of  
14  unprecedented worldwide scale and complexity. And  
15  this change, this transition, it's going to have  
16  cost attached to it, significant cost. That means  
17  the technical complexity, the economic complexity  
18  and the policy complexity, are going to require a  
19  great deal of effort and hard work, a lot of  
20  creative thinking, and advanced expertise is going  
21  to be required to get to this goal at the least  
22  possible cost. MSEIA has substantial internal  
23  expertise, and also relationships with some of the  
24  top creative thinkers and researchers in the world  
25  at our beckon call. And, we pledge those assets

1 and our energy and determination to the BPU and to  
2 the Governor's office to help realize these goals.

3 Now, our initial testimony at this  
4 time is going to answer many of the questions for  
5 their session. Not in order. We'll be giving more  
6 detailed testimony on certain aspects of this  
7 challenge in the last two stakeholder hearings  
8 later on this month.

9 First, on solar energy and  
10 cost-effectiveness -- and there's a slide in your  
11 packet there, and this will be on the web for those  
12 of you who don't have this in front of you. On  
13 slide number three, MSEIA commissioned a study in  
14 2012 by Clean Power Research. They are the go-to  
15 guys for doing study of the cost effectiveness of  
16 the solar, and the value thereof. They're the ones  
17 who did it for Maine and for Vermont, they were  
18 mentioned previously in testimony. They did it  
19 for Austin. They did it for the State of Minnesota  
20 most recently. And they did it for us for New  
21 Jersey and Pennsylvania. The result was they  
22 showed a value delivered by solar energy. And this  
23 is the premium value over and above the actual  
24 market value of the energy. That premium value  
25 averaged seventeen cents, that's \$170.00 per

1 megawatt hour. Now, if we move to a more  
2 efficient incentive system for evaluating that  
3 delivered value, that \$170.00 is much much higher  
4 than the cost it will actually be. We expect that  
5 cost in the nearer term to be more like \$90.00.  
6 So, in other words, we're delivering substantially  
7 greater value than the cost of incentives necessary  
8 to drive that solar development. That's if we can  
9 get to a highly cost-effective system of  
10 incentives.

11 Which brings us to a couple of the  
12 short-term challenges we have. The first is  
13 closing the SREC market in an orderly fashion.  
14 More than a year ago, MSEIA, as well as some other  
15 industry folks, recognized that the SREC system  
16 would have to change to something else that's much  
17 more cost-effective. That its cost was a multiple  
18 of what it is in neighboring states. We believe at  
19 MSEIA that the SREC market needs to be closed in an  
20 orderly fashion so as to attack the existing  
21 investment, ten billion by that time, that  
22 investors have entrusted in the state. But, it  
23 needs to happen ASAP so that we can begin those  
24 savings as soon as possible.

25 Now, we also, based on our analysis,

1 we believe that there will be a necessity for  
2 establishing an interim program. Because if it is  
3 to be closed truly at the 5.1 percent per the law,  
4 we believe that will happen around the end of the  
5 year or January. And, that's not enough time to  
6 put a permanent lower cost program in place. We  
7 will need an interim program. And, we hope that  
8 the BPU will consider and work on the potential to  
9 do an interim program using a fixed SREC. Because  
10 we've analyzed the cost of doing a fixed SREC as  
11 and interim program, versus doing a tradable  
12 commodity SREC for an interim program. And we find  
13 that the commodity model will be approximately  
14 sixty percent higher in cost than the fixed SREC  
15 would be for the first four years, and then fifty  
16 percent higher for the next five years. And,  
17 obviously, with the caps that are in place, we  
18 can't afford to pay fifty or sixty percent more if  
19 there's a lower cost way to do it. And, we  
20 realize that will take some exploration, but it  
21 will also take some fast action if an interim  
22 program is to be in place in time.

23           The solar industry could probably take  
24 a few months of hiatus in between starting an  
25 interim program and closing down applications under

1 the old, but not much longer than that. We don't  
2 want businesses closing their doors or losing jobs.

3 Another short-term problem that would  
4 need to be addressed soon can be seen on slides  
5 five and six in your packet. And, that is the  
6 closure of circuits in New Jersey, this is  
7 accelerating where the utilities are saying that  
8 certain circuits will be closed to further solar  
9 development, or severely restricted to further  
10 solar development. Those slides show a map of the  
11 overall territory of Atlantic City Electric, where  
12 a large number of circuits are already closed or  
13 severely restricted. And, there's also a blow up  
14 of a single town where you can see in a particular  
15 town, in this case Sommers Point, virtually all of  
16 circuits in the entire town are closed to further  
17 solar development. Now, this can be addressed.  
18 It's based on antiquated and obsolete standards.  
19 And, it does not take advantage of capabilities  
20 that are already built in to solar invertors that  
21 can help overcome any voltage control problems that  
22 might exist. As we move forward into a renewable  
23 future, we're going to have a massive need to  
24 address these circuit closure problems.

25 Now, long-term challenges. This

1 hundred percent goal, as I said, is very daunting.  
2 There's a great deal of study that's needed to  
3 determine what is the most efficient and lowest  
4 cost way to get to that hundred percent. We're  
5 making policy decisions now. Those need to be  
6 informed by what will get us to the destination in  
7 the least possible way. And there are surprises  
8 when this is studied and researched carefully. We  
9 have to adopt the most appropriate drivers for  
10 solar and wind and storage. You need to aim those  
11 drivers at opportunities to create additional  
12 public good. Examples of that would be locating  
13 solar landfills and brown fields, that's a very  
14 valuable thing to do. We do want to minimize the  
15 extent to which we take green fields and make them  
16 into solar. It involves aiming solar at congested  
17 areas. It involves aiming it at low-income and  
18 environmental justice communities, and creating  
19 jobs in those communities. We also want to aim  
20 policies at the projects and locations that can do  
21 double duty. For instance, aiming battery  
22 incentives at locations that cannot only stabilize  
23 the grid with those batteries, but also provide  
24 resilient power for critical facilities. So, we  
25 can get a lot of extra value out of our incentive



1 dollar.

2           We want to address infrastructure  
3 issues for incorporating large amounts of  
4 intermittent renewables into the electric system.  
5 You can see on slide seven and eight a list of  
6 infrastructure needs that we need. That's a list  
7 of nine areas of infrastructure development that  
8 are needed. We're going to give more detailed  
9 testimony on that part at the next to last meeting  
10 which is on that topic.

11           We also need to change the utility  
12 business model to make sure that utilities are  
13 better able to be partners in development of  
14 renewable energy, while at the same time keeping  
15 utilities healthy. Because those nine  
16 infrastructure issues that I just talked about,  
17 many of them are utility-specific infrastructure  
18 issues. And, if the utilities are unable to invest  
19 in those because they're -- because the development  
20 of renewables is making them less healthy, we won't  
21 be able to get to where we're going.

22           That brings me to MSEIA pathway study,  
23 and slide nine shows that. This is another clean  
24 power research study. And, it's the most  
25 sophisticated and the most comprehensive one yet.

1 It was commissioned by the U.S. Department of  
2 Energy and the Minnesota Department of Commerce.  
3 The study is not yet published. It's finished, but  
4 not published yet. That will happen some time in  
5 October. But, we have a very close relationship  
6 with the lead authors, Dr. Mark Perez and Dr.  
7 Richard Perez, who have given us some of the  
8 advanced results of that. And some of those  
9 results are surprising. Less reliance on  
10 batteries, for instance, and more reliance on  
11 curtailment of solar. Turns out to be a cheaper  
12 way to get there. A key finding is that they have  
13 said the Minnesota can achieve one hundred percent  
14 solar and wind 24/7, including base load, at a cost  
15 of about five cents per kilowatt hour premium over  
16 the cost of wholesale energy. Now, that's a  
17 surprisingly low cost to get to one hundred  
18 percent. They also found that an even lower cost  
19 would be achievable if you just mix in five percent  
20 natural gas, and 95 percent solar and wind. That  
21 brought the cost down to 3.6 cents per kilowatt  
22 hours. It's a great indicator of where we can go  
23 in New Jersey. That we can get to this goal and we  
24 can get to it at a reasonable cost.

25 Another recent study by Lawrence

1 Berkeley Laboratories, part of the U.S. Department  
2 of Energy, indicated that getting to 44 to 50  
3 percent solar and wind by the year 2030 -- similar  
4 to your goals -- in New York ISO -- one of four  
5 regional transmission organizations that they  
6 studied -- but, in New York ISO, they said that  
7 getting to fifty percent solar and wind would lower  
8 the cost of wholesale energy by 39 percent. So,  
9 this is goods news in terms of our getting to that  
10 future.

11 And, that concludes my comments for  
12 today. And, we'll see you on the 24th.

13 MR. SHEEHAN: Thank you very much. At  
14 this point, ladies and gentlemen, we still have  
15 about thirty speakers registered to move forward.  
16 So, I think it's probably appropriate at this Point  
17 for us to take about a 45-minute break, give the  
18 court reporter a chance to feel her fingers.

19 So, we'd request that everyone be back  
20 at 2:30. Thank you.

21 (Whereupon the luncheon recess was  
22 held.)

23

24

25

1                   A F T E R N O O N   S E S S I O N

2                   MR. SHEEHAN:   Okay.   Ladies and  
3 gentlemen, thank you for coming back.   So, we're  
4 going to go ahead and get started again.   We have  
5 the court reporter is back.   Thank you.

6                   So, we'll go ahead and pick up where  
7 we left off.   We have a fair number of speakers  
8 left on the list, although it looks as though a few  
9 of them are not in the room.   As we move forward,  
10 we have the room until -- I don't want to say until  
11 the end, but we have the room until the end.   So,  
12 I'm going to go ahead and get started and call the  
13 first person.   David Gahl.

14                  MR. GAHL:   Thank you, Director  
15 Sheehan, members of the committee.   My name is  
16 David Gahl.   I'm the Director for State of Affairs  
17 for the NorthEast Solar Energy Industries  
18 Association.   SEIA is the national trade  
19 association of U.S. solar industry.   We have more  
20 than a thousand members across the country.   Many  
21 of our members are doing business in New Jersey.  
22 And, we have nearly forty firms that have an  
23 operating address in New Jersey, as well.   And, I  
24 SEIA represents all different market segments of  
25 the solar industry, from the utility scale segment

1 to distributed generation to community solar. We  
2 have represent all the different solar industry.

3 So, I'm going to keep these comments  
4 fairly brief. I've submitted written comments for  
5 the record. And, I'm just going to hit the  
6 highlights here today. First of all, SEIA  
7 strongly supports the hundred percent by 2050 clean  
8 energy goal. And, while we think that that  
9 long-term goal is laudable, we want to focus the  
10 Board's attention specifically on some of the  
11 near-term issues that are facing the solar  
12 industry. Some of my other solar industry  
13 colleagues talked about these issues already today,  
14 so I'll try not to repeat where I can.

15 But, first of all, first and probably  
16 foremost, one of the most pressing issues on the  
17 minds of my members is the closure of the current  
18 SREC program. We believe that more clarity should  
19 be provided in the final regulations and in  
20 potential guidance documents about how key  
21 decisions will be made about the market closure.  
22 In particular, how the Department will determine  
23 that the overall 5.1 percent goal has been reached.  
24 That is a critical decision. And, from our view,  
25 we believe that the attainment should be based on

1 the actual installations of solar, which actually  
2 raises some questions about what happens to that  
3 pool of projects that potentially have submitted  
4 applications. And there are a number of different  
5 ways, probably, to address that issue. But, we  
6 believe that the 5.1 percent the definition should  
7 be based on attainment.

8           And probably one of the most simple  
9 solutions would be that in the event that the 5.1  
10 percent -- when the 5.1 percent goal is reached,  
11 and there's an additional pool of projects that  
12 submitted applications, there could be a minor  
13 adjustment that's made administratively to the RPS  
14 to account for those additional projects, to give  
15 those applications ultimately a compliance home.

16           So, the next major issue involves the  
17 creation of a new incentive program to the  
18 following the existing program. So when the  
19 current program closes we'd ideally like to see a  
20 new program open, almost simultaneously. I believe  
21 this will promote an orderly transition from the  
22 old regime to the new regime.

23           And my comments now are largely going  
24 to be consistent with, I think, some of the  
25 comments that were made by Fred and the various

1 DeSanti's. So, essentially, what we're suggesting  
2 is that there's a need for the next version of the  
3 program to be modelled off the existing SREC  
4 program -- I'd like to call it an SREC II program.  
5 This is consistent with the way -- Massachusetts  
6 actually moved from their initial version of an  
7 SREC program to a modified version. And their  
8 program included a series of cost containment  
9 measures that employed factory that helped steer  
10 projects in certain directions. And I think all  
11 those tools can be employed in a New Jersey  
12 program, as well. And, in addition to that, we  
13 support making sure that the program, the next  
14 generation incentive, supports the development of  
15 all market segments, residential development,  
16 commercial projects, and community solar moving  
17 forward.

18 One issue I did want to raise, as  
19 well, was about Class I1 REC eligibility for solar  
20 projects. We heard a little bit about this from  
21 the gentlemen from MAREC earlier today. SEIA has  
22 many utility scale members that would like access  
23 to the New Jersey market. And, just to be crystal  
24 clear, we're not talking about access to the SREC  
25 market. We're talking about access to Class I

1 RECs. So, in our view, that eligibility should be  
2 revisited to allow all solar projects to be  
3 eligible for the RPS. And, we believe this puts  
4 large scale solar projects on equal footing with  
5 wind projects going forward.

6 And, lastly, I just want to point out  
7 this is already a proceeding that the Board has  
8 underway. But, community solar. Community solar  
9 is an important component in the market going  
10 forward. We are clearly interested in seeing the  
11 community solar pilot program move forward without  
12 any delays. Appreciate the governor's leadership  
13 on this issue, and the Board's leadership here, and  
14 we look forward to seeing the details of the  
15 proposal. But, clearly, community solar will have  
16 an important role to play in the solar market in  
17 the future. And, would like to see that move along  
18 as quickly as possible.

19 And, that concludes my thoughts.  
20 Thank you.

21 MR. SHEEHAN: Thank you very much.  
22 Next up Jeff Tittel.

23 MR. TITTEL: Thank up. Jeff Tittel,  
24 Director, New Jersey Sierra Club. And, I just want  
25 to say that the interest of so many people showing



1 up, I think really shows you should have another  
2 hearing just on this topic. Because I think  
3 there's a lot more people who left that probably  
4 like to testify. And, also having it in other  
5 areas of the state, like Newark or Camden, or both,  
6 I think that would bring out more people, as well,  
7 and get more information on the record.

8 I don't want to reiterate a couple of  
9 points, but I don't want to repeat too much of what  
10 was said before. The definition of clean energy is  
11 very simple. It's renewable energy. It's energy  
12 that is sustainable and renewable. It is not  
13 nuclear. It is not bio-mass. It is wind, solar,  
14 and so forth, like some of the newer technology. I  
15 think that's what we need to do as far as the  
16 definition is concerned. But, Class I should not  
17 be emitting anything. Secondly -- and I think this  
18 is critical -- we're at a very important stage in  
19 the state when it comes to this battle between  
20 clean energy and fossil fuels. There are  
21 currently major proposals out there before gas  
22 fired power plants. If they all come on line we're  
23 talking about five million metric tons of CO2.  
24 We'll never get to our goals if they happen. There  
25 are seven power plant -- there are seven pipeline

1 applications out there, and there's potentially  
2 more power plants. We believe the first thing  
3 that has to be done in order to move to a hundred  
4 percent clean energy future, is there has to be a  
5 moratorium on fossil fuel infrastructure and on  
6 fossil fuel power plants. If we put ten billion  
7 dollars into natural gas and natural gas fired  
8 power plants, we will not have the money or  
9 resources to do off-shore wind and do the amount of  
10 solar that we need. And on top of it, if wind and  
11 other things are successful, we'll end up paying  
12 for it anyway with stranded assets. So, I think  
13 it's critical that we need to put a freeze in  
14 place. We're involved with many of those --  
15 actually, every one of those battles. And, I think  
16 it's critical.

17           Next. That the Energy Master Plan  
18 should require all new generation capacity to be  
19 carbon-free. We should not -- that's where we  
20 need to go, that's where we need to invest, that's  
21 where we need to put our efforts in resources to  
22 get those rules in place.

23           Two. DEP must promulgate rules that  
24 they haven't had the power since 2005 to regulate  
25 CO2 and other greenhouse gases. And they have to

1 put that into classified permitting on existing  
2 plants so it can start ratcheting down the carbon  
3 dioxide and greenhouse gases coming from our  
4 existing plants. The two most expensive power  
5 plants in New Jersey are two coal plants down in  
6 South Jersey. They need to get closed. It's bad  
7 for the ratepayers and bad for the environment.  
8 So, we believe that that process has to be part of  
9 this, that we have to go after coal, oil, and frack  
10 gas. And we must start ratcheting down our  
11 greenhouse gases, and methane, as well. And DEP  
12 needs to step up and regulate them. And, they have  
13 that power.

14           Also, and very clearly, in order to  
15 get there we should not allow for the extension of  
16 any nuclear licenses in New Jersey. Especially if  
17 they're getting subsidized. We need either not to  
18 subsidize them -- when you go through your numbers  
19 and hopefully you'll find that they don't really  
20 need it -- but, our concern is that as long as  
21 those plants keep operating, it's going to block  
22 us. And they may want to get extended, their  
23 licenses, because of the subsidy. And, one of the  
24 concerns that we have -- and again, you know, this  
25 is a plan, but a plan needs to also call for

1 regulatory and legislative action. Right now  
2 forty percent of our energy has to come from  
3 nuclear. There's no sunset on that. That will  
4 block us in 2050. So, we need to make sure that we  
5 not only have those plants when they close be  
6 replaced by renewable energy, but we also need to  
7 make sure that we end up ending the subsidies so  
8 that we can move to a clean economy. Just like  
9 when we do the Title 5 ratcheting down, we should  
10 ratchet down the carbon emissions from what they  
11 are now to zero by 2050, so they can be replaced  
12 with clean energy.

13 Other important point that I want to  
14 make is that when you look at the studies of off  
15 our coast, there is so much energy potential for  
16 off-shore wind. Especially as the price of wind  
17 is going down, wind turbines is going up and the  
18 size of turbines are going up. And when we first  
19 came out and suggested during the Corzine  
20 admiration the 3000 megawatts and two years ago  
21 suggested it to candidate for governor, Governor  
22 Murphy, the 3500 that's now in front of you. It's  
23 a great first step. When we look at the potential  
24 out there, we can go to ten gigawatts to 10,000  
25 megawatts in the second phase after we get to the

1 3500. But, the wind power is there. And that's  
2 only ten percent of the wind potential that we have  
3 off our coast. So, we really need to start  
4 looking to go not only to the 3500, but go beyond  
5 that. It's the same thing when we look at solar.  
6 And when you look at other methodologies for  
7 getting there, as well, paying for it in long-term  
8 contracts.

9           We need to also -- and this is  
10 critical -- fix the solar program. A year from now  
11 it's going to crash. And, even if we come up with  
12 another program there, with the cost cap with --  
13 office legislative services, the cost cap will come  
14 into affect in 2020, causing another problem. We  
15 need to in the next year, as we're doing this  
16 Energy Master Plan, come up with a sustainable  
17 lower cost solar program. And I actually think we  
18 should remove the cap. Because I don't believe  
19 that -- we don't cap nuclear, we don't cap coal, we  
20 don't cap oil, we don't cap natural gas. But we  
21 need to fix the solar program and fix it quickly.

22           For us, looking at the communities in  
23 the state that have had a disproportionate of  
24 burden of pollution, we need to focus our efforts  
25 there. Not only to reduce -- because that's where

1 most of the fossil fuel plants are. We need to  
2 reduce pollution in those communities. We also  
3 need to sustain those communities with more  
4 renewable energies, with community solar, rooftop  
5 solar. We believe there should be a set aside of  
6 twenty percent into urban, or communities, for a  
7 solar program. Twenty percent of the community  
8 solar, and twenty percent over, we should target  
9 those communities and target them with special  
10 incentives so that we can create not only jobs, but  
11 help reduce the air pollution that is choking those  
12 communities.

13                   So, to us, New Jersey is a state that  
14 has serious environmental problems. From ground  
15 level ozone, to seeing climate impacts on a daily  
16 basis. This weekend people down the shore won't  
17 be able to park on any of their streets because a  
18 high tide is coming and there's a storm off the  
19 coast. So, it's imperative and it's critical, and  
20 it's an existential threat. But, we have the  
21 ability in this state, as we have since the light  
22 bulb was invented here, and so many other things.  
23 Put the innovation forward, to put our  
24 technological knowledge forward. Put our minds as  
25 well as our financial resources forward so we can

1 solve the climate and clean energy, and the energy  
2 problems we have in the state.

3           And I just want to end with that we  
4 believe with this Governor's leadership we can get  
5 there. But to you and to the legislature, no  
6 matter how great this plan is, without  
7 implementation, without the legislation and the  
8 regulations and the financial mechanisms, we won't  
9 get there. And a plan without implementation is an  
10 hallucination. Thank you.

11           MR. SHEEHAN: Thank you. Bob  
12 Blumenthal. Barbara. Sorry.

13           MS. BLUMENTHAL: Good afternoon. My  
14 name is Barb Blumenthal. I serve as the research  
15 director for New Jersey Conservation Foundation.  
16 First, we'd like to applaud Governor Murphy for  
17 setting an ambitious goal to achieve a hundred  
18 percent clean energy by 2050. And, thanks to  
19 Mr. Sheehan and the panel for letting us take your  
20 time today to offer comments.

21           I want to start today with an informed  
22 insight. The same insight that Lyle got to a few  
23 minutes ago. New Jersey's clean energy future can  
24 be lower cost than a future that relies on natural  
25 gas. I'd like to share some details about how we

1 can get to a hundred percent clean energy by 2050,  
2 and stay on a low cost path. It involves a smart  
3 portfolio of clean energy resources. Smart  
4 portfolios can now offer the lowest cost pathway to  
5 provide reliable electricity by 2050. This means  
6 New Jersey no longer has to choose between policies  
7 that protect community health, natural resources  
8 and the climate, and those that protect our  
9 pocketbooks. We can have both. If the state's  
10 Energy Master Plan focuses on an optimized  
11 portfolio of renewable energy, flexible load,  
12 storage, transmission, and electrification of some  
13 -- three of our important sectors.

14 So, the reason is simple. The  
15 underlying economics of optimized portfolios are  
16 increasingly being found to be more favorable than  
17 the current gas heavy portfolios, even assuming a  
18 low gas cost future. So, how do we know this?  
19 The elements of a low cost pathway to 2050 have  
20 become clear in the past year. Lyle referred to a  
21 study in Minnesota. I'm referring to a different  
22 study that was released July 31st of this year, so  
23 this is a really new analysis. Policy makers and  
24 advisors around the U.S. have been using new  
25 modelling tools to identify these pathways to 2050.



1 This is something new. The models simulate the  
2 energy production needed to balance load on the  
3 grid, and provide reliable service over very long  
4 time frames using combinations of renewable and  
5 other resources that get you to your goal. A  
6 hundred percent goal or a ninety percent goal or an  
7 eighty percent goal. So, those are inputs to the  
8 model. These models have been used this year in  
9 Hawaii to develop pathways to a hundred percent  
10 clean energy. They've been used in California and  
11 in Minnesota. They're evaluating pathways to  
12 achieve an economy-wide eighty percent reduction in  
13 Minnesota. And for them it means a 91 percent  
14 reduction of emissions in the electric generation  
15 sector. So, that's the modeling exercise. I'm  
16 talking about that Minnesota is finished.

17 So, their study is really geared to  
18 reduce emissions over all of the economy. But  
19 then they look at different pathways to achieve  
20 de-carbonization. I just want to touch on a few  
21 key points. I'm submitting a longer comment.  
22 But all of the pathways, obviously, high levels of  
23 renewables because that's how you reduce emissions.  
24 But, what's interesting is that they rely heavily  
25 on flexible load. Because they electrified a good

1 portion of transportation and building heating and  
2 cooling systems. So, those are enormous sources of  
3 new electric load, and they're inherently -- they  
4 can have a high degree of flexibility. So, it  
5 becomes an important part of the puzzle. And, I'm  
6 not sure if it was obvious to policy makers until  
7 these studies pointed out how important that would  
8 be. So, electrified implementation alone may not  
9 do it, but these other sectors combined provide  
10 that balance that you need for ninety or even a  
11 hundred percent renewables. That's how you  
12 achieve it.

13           What's fascinating is that scenarios  
14 that both electrify and de-carbonize are estimated  
15 to produce savings of between 600 and \$1200.00 for  
16 each Minnesota household per year by 2050. And the  
17 cost savings start immediately and go up over time.  
18 Cost savings for your energy systems. But that  
19 includes the cost of transportation. You save a  
20 lot of money when you electrify transportation.  
21 You save money when you electrify heating system.  
22 So, they're not just looking at the cost of the  
23 electric generation sector -- which actually stays  
24 pretty flat despite all of this, and there's almost  
25 an imperceptible difference in the cost of electric

1 generation going forward.

2           This is new. We didn't know this two  
3 years ago. So, it's very exciting. Obviously, one  
4 of the conclusions is by 2050 we can high levels of  
5 variable generation with little to no natural gas.  
6 So that, mantra that we heard for many years now --  
7 which had some truth to it -- how are we going to  
8 balance flexible load, we need gas. Well, that's  
9 no longer true, when you actually treat resources  
10 as a combined package of resources. So,  
11 renewables, storage, flexible load,  
12 electrification, all of those things together  
13 provide a lower cost pathway. And these studies  
14 looked at can you provide a reliable electric  
15 system. And they did the modelings every five  
16 minutes, so these models looked at load and  
17 generation just as a dispatched model would every  
18 five minutes through all cycles of weather during  
19 the year, out to 2050. So they found you can  
20 provide reliable electric service with this  
21 renewable resources.

22           I want to just simplify a few key  
23 points that might be very relevant. These models  
24 don't answer the question for New Jersey. What it  
25 does tell me is that New Jersey needs to use

1 similar -- the same or similar integration and  
2 optimization models to calibrate and design new  
3 policies. So that you can both achieve emissions  
4 without chancing cost savings.

5 But, a few key points. Low cost  
6 benefit from having a big electric grid. We're  
7 fortunate that we're part of PJM. And the bigger  
8 the footprint, the better. The more variability of  
9 renewable resources across the geographic  
10 footprint, the costs come down. And that's an  
11 important point for New Jersey. Lower costs  
12 depend on the electrification of these other  
13 sectors. It's part of a package deal. The more  
14 flexible load the better. Low costs depend on  
15 location, that's why the modeling is so important.  
16 It isn't just saying we need solar or we need  
17 storage. It matters where and when. So, the  
18 models begin to answer those questions so that you  
19 can really craft policies that give you value for  
20 the money invested. So, big take away is that I  
21 think this means the demise of natural gas. And,  
22 the models actually showed that not only do you not  
23 have much natural gas by 2050, that it backs up to  
24 2030 that things begin to get stranded in  
25 Minnesota. So, gas looks like it's a

1 cost-effective or a comparable pathway, but it  
2 becomes an enormous cost going past that. So,  
3 that's why it's really important to look ahead  
4 before you're making those near-term decisions.

5           And then I want to say a couple of  
6 things just about -- we heard somebody talk earlier  
7 today about solar issues. And, I want to remind us  
8 of what happened in the clean energy bill that was  
9 passed. It dealt with some pretty important solar  
10 challenges that we have in New Jersey with the  
11 current SREC program. And the bill said we're  
12 going to end SRECs at 5.1 percent, we're going to  
13 transition to a new solar program that's more  
14 competitive and will bring down costs. And the  
15 combination of the existing solar and new solar,  
16 all of those Class I resources, have to remain  
17 under a cost cap. So, we know, we've been involved  
18 with many different people over the last few months  
19 talking about strategies and proposals that would  
20 accomplish those objectives. And we think that we  
21 can transition quickly to an interim program. We  
22 can keep the solar industry active. We can keep  
23 costs under the cost cap.

24           But I heard somebody today -- I guess  
25 it was Fred, Mr. DeSanti, who had a different idea

1 that doesn't accomplish any of those objectives.  
2 He wants to increase the percentage of the RPS for  
3 solar. Not end it quickly, keep it going for  
4 awhile. And I did a little math, and his idea  
5 would add 120 million dollars in the near term to  
6 the cost of the current SREC program. So, it's  
7 kind of going in the wrong direction. And if you  
8 believe there's no possible way of doing it  
9 otherwise, then I understand why they come up with  
10 a Plan B. But we feel strongly that we can find  
11 solutions that do work under the provisions of the  
12 new clean energy bill, and get it done, and get it  
13 done quickly. Thank you.

14 MR. SHEEHAN: Thank you very much.  
15 Next up Duncan Cambell. Ashley Lynn Chrzaszcz.

16 MS. CHRZASZCA: Hello everyone. My  
17 name is Ashley Lynn Chrzaszca. That's the American  
18 way of saying it. If you want to say the Polish  
19 version it's Chrzaszcz. It doesn't look like that,  
20 I don't think.

21 I represent ChargeEVC. We're a  
22 501c(6) non-profit based here in New Jersey. We  
23 have responded to other states in the northeast.  
24 Just a little bit about who we are. We represent  
25 interests that are the equivalent to a variety of

1 stakeholders -- a rainbow coalition, if you will --  
2 that includes the utilities, labor organization,  
3 local and national non-profit organizations,  
4 environmental coalitions, and other groups, as  
5 well. So, we kind of have a lot of individuals  
6 that all have the same message, that the  
7 electrification of transportation is one of the  
8 most transformative things we can do for the State  
9 of New Jersey.

10 I'm going to keep my comments brief.  
11 If New Jersey enacted both Global Warming Response  
12 Act and the Clean Car Act 2006, as such, these  
13 topics with clean and reliable power and clean  
14 transportation --

15 A MEMBER: Can you slow down? You're  
16 speaking too fast.

17 MS. CHRZASZCZ: Sorry. I'm responding  
18 to specifically to Question Number 10, which is how  
19 new clean and reliable power support the expansion  
20 of transportation. So, as I said, New Jersey  
21 enacted both a Global Warming Response Act and the  
22 Clean Car Act of 2006 -- and they're intrinsically  
23 connected. One hand can essentially wash the  
24 other. So there are many benefits of electricity  
25 into transportation sector, and even documented the

1 following, which is going to be submitted for  
2 written comments, which will be for September 20th.  
3 And, we understand that. So, we wanted to make our  
4 comments today.

5 To summarize the highlights. Based on  
6 the generation sources in place today, each two-car  
7 household saves an average \$1,900.00 per year  
8 through 2035, adding up to sixteen billion dollars  
9 through 2035, just by driving an electric vehicle.  
10 And ratepayers save 4.3 billion dollars through  
11 2035 due to a range of benefits. And, some of  
12 these benefits are air quality. And by extension,  
13 health. And, these are benefits that relate to  
14 everybody. Especially those who are in really  
15 sensitive groups and areas, like urban  
16 environments. It's been mentioned that it's  
17 seventy percent cleaner driving an electric vehicle  
18 than to drive a traditional internal combustion  
19 vehicle. In air quality it related emission  
20 reduction is only improved as we de-carbonized the  
21 grand transition to a clean and reliable energy  
22 future. So, think of electric vehicles as mobile  
23 distributed energy resources, or batteries on  
24 wheels, and you kind of start to see the way that  
25 it will interact with the grid.



1           So, this is vehicle to grid  
2 technology. And using electric vehicles is demand  
3 response assets, resiliency assets, energy assets.  
4 And the provider of other grid services, like  
5 frequency regulation. It's not a question of "if",  
6 but "when". And putting out extra storage -- we'll  
7 eventually be able to -- to behave more like base  
8 load, eliminate the fact that the sun does not  
9 always shine, and wind does not always blow. Thank  
10 you.

11           MR. SHEEHAN: Thank you very much.  
12 Jonathan Cloud.

13           MR. CLOUD: I'm Jonathan Cloud,  
14 Executive Director of New Jersey PACE. And --

15           MS. ZELLEN: I am Victor Zellen,  
16 Director of Development for New Jersey PACE, which  
17 is an initiative of Possible Planet, which is a  
18 501c(3). And, this will be new for some of you.

19           So, Property Assessed Clean Energy,  
20 commonly called PACE, is an innovative way to  
21 finance clean energy and resiliency improvements in  
22 buildings. PACE has been adopted by a majority of  
23 U.S. states since its invention in California in  
24 2008. And since then, 35 states -- including the  
25 newest I think was just this week, Delaware -- as

1 well as recently Pennsylvania, have adopted PACE  
2 laws. And many of our neighbors, or most of our  
3 neighbors, already have successful PACE programs.  
4 And, that would include New York, Connecticut,  
5 Maryland, Virginia, the District of Columbia, and  
6 Rhode Island.

7 Now, New Jersey enacted PACE  
8 legislation in 2011, but the existing statute is  
9 missing key elements needed for it to work. And  
10 we've been championing PACE throughout much of the  
11 prior administration. And under our new clean  
12 energy Governor, we hope to see mending legislation  
13 for commercial PACE passed and signed into law  
14 later this year. Governor Murphy has said several  
15 times to us personally that he supports PACE as a  
16 clean energy financing tool. So look forward to  
17 this new development.

18 So, PACE allows property owners to  
19 make clean energy improvements with no up-front  
20 costs, and a hundred percent financing. Where do  
21 you get a hundred percent financing these days?  
22 So, PACE makes it possible for property owners to  
23 save money immediately on energy costs. Because  
24 the improvements more than pay for themselves over  
25 time. Projects are designed to be cash flow

1 positive right from the start, which provides a  
2 natural incentive to do PACE. PACE uses a  
3 voluntary special assessment paid through property  
4 taxes to secure private sector financing that runs  
5 with the property for up to thirty years. This  
6 financing is treated as off balance sheet, which  
7 mean that energy projects do not have to compete  
8 with other capital expenditures in those businesses  
9 removing a key barrier that has stopped property  
10 owners from upgrading their buildings up to now.  
11 The benefits of PACE to the public include carbon  
12 reduction -- real important to all of us --  
13 improving the building stone of the community, and  
14 economic development. For every million dollars  
15 of investment in PACE improvements, fifteen jobs  
16 are created.

17 Now, it's important to note that PACE  
18 is voluntary, both for the municipality and the  
19 property owner. There is no expense to the public  
20 for PACE, as property owners pay for all of the  
21 costs of a PACE program. Now, we believe that  
22 PACE legislation should initially be implemented  
23 for the commercial sector, and subsequently  
24 residential.

25 PACE has the potential to transform

1 the build environment. Major energy efficiency  
2 retrofits a new construction that employs  
3 state-of-the-art energy technologies, all to be  
4 paid for through pays. They can make our  
5 buildings more efficient and more comfortable year  
6 'round. Onsite renewable energy generation  
7 produces a triple value add, and paid for through  
8 PACE; the savings of the actually energy produced,  
9 the displacement of carbon-emitting generation, and  
10 the ability to provide off-grid energy, especially  
11 during our season.

12           There are very strong market  
13 incentives for PACE. And they use private capital.  
14 It's all enabled by the state legislation. PACE  
15 allows municipalities to exercise the governmental  
16 power at literally no cost to the public to secure  
17 these improvement loans. Based on an informal  
18 market assessment by New Jersey PACE, the estimated  
19 potential for investing in New Jersey's existing  
20 commercial buildings alone exceeds a hundred  
21 billion dollars. Consequently, PACE may prove to  
22 have as great, if not a greater impact, on building  
23 performance as clean energy subsidies and financial  
24 incentives have ever produced, and at no cost to  
25 the public.

1           PACE compliments current subsidies and  
2 incentives providing attractive financing for the  
3 hard and softs costs that a property owner would  
4 otherwise have to pay. PACE financing removes a  
5 key barrier to property owners upgrading their  
6 buildings to clean energy standards.

7           Therefore, we urge the Board and this  
8 committee to conduct its own thorough analysis of  
9 commercial and residential PACE, and include them  
10 in its recommendations. We're happy to respond to  
11 any questions, and will be submitting our official  
12 report through the web.

13           So, again, I'm Victoria Zellen,  
14 Jonathan Cloud, with New Jersey PACE, an initiative  
15 of Possible Planet, which is a 501c(3) non-profit.  
16 Thank you very much.

17           MR. SHEEHAN: Thank you very much.  
18 Next up we have Brandon Smithwood.

19           MR. SMITHWOOD: Hi. I am Brandon  
20 Smithwood, and I am the Policy Director for the  
21 Coalition for Community Solar Access. We are a  
22 national trade association, over fifty companies,  
23 predominantly community solar project developers,  
24 and owner/operators. So, those that actually  
25 subscribe customers and product.

1           So, for my comments today, and in the  
2 spirit of the forum, the fact that we're here at a  
3 university, I'd like to kind of start from the big  
4 picture 2050, and work my way down to 2030, and  
5 right now. And, at the risk of getting academic, I  
6 do think starting at 2050 kind of illuminates some  
7 things that we need to be working on now.

8           So, the representative for the  
9 conservation foundation, she discussed a number of  
10 studies that have come out recently showing the  
11 feasibility of full renewables portfolio in 2050.  
12 I just went and pulled some studies that Mark  
13 Jacobson, professor at Stanford, did about three  
14 years ago. He did a fifty state state-by-state  
15 analysis, and I felt that could be a good place to  
16 just kind of start to get a high-level big picture  
17 that we can put community solar into, and kind of  
18 illuminate how community solar helps with some of  
19 the challenges.

20           So, Jacobson's study found that over  
21 thirty percent of the generation within New Jersey  
22 would be solar. And that's assuming a really  
23 robust off-shore and on-shore wind portfolio, kind  
24 of pulling out all the stops. About three-quarters  
25 of that thirty percent is non-rooftop, non-carport

1 systems. And, that's assuming that you're using  
2 two-thirds of the rooftop potential. So, we're  
3 maximizing our rooftops, the technical potential of  
4 our rooftops. And, that only gets you about a  
5 quarter of the way where you need to be to have the  
6 solar contribution to a hundred percent portfolio.  
7 So, to me that says you got to go get busters on  
8 rooftop solar. But, you're still going to have a  
9 lot of need for generation, and you're going to  
10 have non-technical challenges. And, one of the  
11 biggest non-technical challenges is if you don't  
12 own the building that you live under or that you  
13 operate your business under, it's exceedingly  
14 difficult to put that system up there even if your  
15 roof is technically sound. And, looking at just  
16 the population of Jersey today, there's about 3.19  
17 million households -- that doesn't include  
18 businesses and organizations or other tenants. Of  
19 them, 1.62 million, so 51 percent are either  
20 renters or they live in multi-family buildings.  
21 So, we've got about half of the population. We  
22 take that technical potential, and we cut it in  
23 half because of ownership issues.

24                   Even beyond the rooftop challenges,  
25 though, you can see that there's some implications

1 for land use. This state is one of the most  
2 densely populated in the country. It has a lot of  
3 beautiful, agricultural and other open space, and a  
4 strong interest in seeing them preserved. And, the  
5 big picture studies show we're going to have to  
6 find a way to marry ground-mount development with  
7 those objectives to preserve this open space.

8           Stepping down to 2030 -- and this is  
9 actually some research that we, two non-profits,  
10 both solar and grid alternatives that we  
11 commissioned from GreenTech Media Research now  
12 partnered with Mackenzie, The Global Energy  
13 Research Firm, we commissioned a study looking  
14 nationally out to 2030 at the market potential for  
15 community solar, and then looking at four states  
16 including New Jersey. And, so, just to give you a  
17 sense of the New Jersey potential. We believe that  
18 the addressable market is about 3.5 million  
19 customers, based on this research, in New Jersey.  
20 By 2030 we think it's economically feasible that  
21 the market could support 200 to 400,000 community  
22 solar customers -- 100 to 250,000 of which would be  
23 low and moderate income. And, I want to touch on  
24 that separately. There's a big impact on all the  
25 master meter buildings in particular.



1                   So, stepping back, so we start 2050.  
2   2030 today we have this pilot program at the BPU.  
3   And we're really excited to see draft regulations  
4   coming out in the next couple of weeks.   Assuming  
5   we have a robust program size and economics, and  
6   there are flexible siting rules, we're off towards  
7   this vision of achieving these 2030 goals and  
8   contributing to that portfolio in 2050.

9                   There was a study that we and both  
10   solar released yesterday, to kind of look at that  
11   year term pilot program.   We found that a 450  
12   megawatt pilot program over three years -- which  
13   based on the sketch of the pilot program we heard  
14   is within the bounds of what's likely to be  
15   proposed.   That if we do 450 megawatts over three  
16   years, that's 800 million dollars in economic  
17   benefit.   And the cost to the average residential  
18   ratepayer would be less than a postage stamp, about  
19   19 to 42 cents per month.   And, that doesn't  
20   include avoiding transmission, avoiding  
21   distribution, a number of benefits that are hard to  
22   immediately quantify -- what we know from our  
23   neighboring solar markets, our material.

24                   So, just -- and I'll turn the podium  
25   over in a moment here -- but I wanted to quickly

1 take some of these high-level points and drill down  
2 just on a few relevant year term items. So, land  
3 use. We've been working with some other parties.  
4 We think it's really important to bring some best  
5 practices from other states, pilot some of the  
6 cutting edge practices, that can actually improve  
7 the land, help preserve land. But we need  
8 flexibility on projects today. And actually been  
9 experimenting with that flexibility so that we're  
10 ready as we get to these higher goals.

11 On brown fields, historic fill and  
12 landfill, those are more expensive sites, and  
13 there's not enough of it. But the state should be  
14 taking action to get more of those projects beyond  
15 Subsection T of the RPS. And, some of these things  
16 are costless, so DEP could provide comfort letters  
17 and amend some technical requirements. We had  
18 details in our pilot filings and we have them in  
19 our release filings. But, there's some costless  
20 options. But beyond those costless options, we  
21 know that there are real costs, incremental costs,  
22 to building on some of these already developed or  
23 blinded sites. So, we've seen in other states as  
24 part of SREC successor programs, or separate  
25 incentives, differentiated incentives to get to

1 developing projects on these more difficult and  
2 expensive sites. And, so, in line with what Mr.  
3 Gahl said earlier, you know, factorizing SRECs  
4 could be a way to give an extra boost to on line  
5 projects and to development on already disturbed  
6 sites.

7           One last point. I already referred  
8 this, but on LMI. In addition to the kind of the  
9 potential in New Jersey -- and, again, we looked  
10 that vision study I referenced -- looked at the  
11 master metered buildings, and we think we can get  
12 to twenty percent to a third, and up to about  
13 200,000 customers. But, the community solar  
14 tariff that the utility creates, or the utility has  
15 to enable these solar projects, you need to  
16 scaffold policy supports on top of that to get to  
17 those low-income customers. And then the biggest  
18 thing is de-risking them. A typical financier who  
19 is going to look at a low-income customer -- and  
20 there's a lot of innovation to kind of get around  
21 FICO scores and kind of form proxies for credit  
22 worthiness of customers -- but, the practical  
23 matter is a financier typically looks at a low to  
24 moderate-income customer, and the revenue of that  
25 project, puts a zero. So new banks, clean energy

1 program funds, we and both solar and grid  
2 alternatives have identified a number of current  
3 funding sources that are available, or could be in  
4 the near future. And, it's really important to  
5 make sure that we're not only creating the vehicle  
6 to serve those low-income customers, but we're also  
7 scaffolding on top of that to make sure that  
8 projects are financeable and customers get the  
9 value proposition they need. So, thank you.

10 MR. SHEEHAN: Thank you very much. We  
11 have Ed Potosnak for New Jersey League.

12 MR. POTOSNAK: I'm going to stand over  
13 here. I'm from the New Jersey League of  
14 Conservation Voters. And, we represent voters.  
15 And generally, as I see voters, they're usually at  
16 the microphone not at the dais, I find better  
17 representation.

18 I'm really pleased to be here. Clean  
19 renewable power is a key to realizing our clean  
20 energy future and economy. As you've heard  
21 throughout the day today. An Energy Master Plan is  
22 well on it's way to -- put New Jersey on a path to  
23 realize this renewable economy of the future, and  
24 ensure that there's responsible development in our  
25 renewable energy resources. In fact, according to

1 the market trends that we're seeing, investing in  
2 renewable energy is both a prudent economic choice  
3 that protects our wallets, but it's also a prudent  
4 choice to protect our climate, our communities, and  
5 our families. An Energy Master Plan will serve as  
6 a foundation for this transformation. In fact, I  
7 want to pinch myself today at the atmosphere and  
8 the fact that we're here. I was very proud to  
9 stand behind Governor Murphy when he signed  
10 Executive Order 28 to put New Jersey on a path to a  
11 hundred percent energy by 2050. In that vein, I  
12 wanted to share some thoughts around the questions  
13 that you put out. There's just about six of them.

14 First, I want to start out by saying  
15 the only acceptable definition -- which is your  
16 Question 1 about what clean energy is -- is that  
17 it's renewable energy, like solar and wind. And,  
18 as you're aware, with the legislature's recently  
19 passed legislation, the legislature has sent a  
20 clear message that renewable energy is clean  
21 energy, and that clean energy is Class I  
22 renewables, putting us on a pathway for fifty  
23 percent by 2030.

24 It's also important to note that  
25 Governor Murphy's vision has catapulted New Jersey

1 back to the leader board of states that are taking  
2 climate change seriously, and making climate  
3 progress. We're going toe-to-toe with California  
4 in attacking the climate crisis, and enacting  
5 concrete policies to reduce our greenhouse gases.  
6 And, as you're aware, roughly about forty percent  
7 of our energy is produced in New Jersey coming from  
8 nuclear plants. And those nuclear plants are set  
9 to expire before 2050. So the idea of clean energy  
10 coming as part of nuclear with the expiration of  
11 those plants, it does not comport. The goal for  
12 New Jersey clearly is clean renewable energy.

13           Currently this technology, as you  
14 know, nuclear requires subsidies to operate. And,  
15 we're seeing that the cost of solar is competing  
16 directly with fossil fuels in other places. And  
17 some folks have indicated there needs to be some  
18 adjustment here in New Jersey, as well.

19           Second. The plan should set some  
20 interim targets. I know it's laid out, but vision  
21 for specifics over the next ten years, and going  
22 out forward in to 2050. But looking at five-year  
23 intervals to help put together plans for folks to  
24 look at around electrical generation on  
25 transportation, residential, and the commercial

1 sectors, to provide achievable goals and a clear  
2 pathway. In addition, it should align with the  
3 Global Warming Response Act. Which hasn't been  
4 talked a lot today. But the Global Warming  
5 Response Act, it sets a goal of statewide  
6 reductions of greenhouse gas emissions by 80  
7 percent of 2006 levels. So, that's a really  
8 component as you're looking at it from our  
9 perspective.

10 As you develop the comprehensive  
11 blueprint to achieve these interim targets, we  
12 think it's important to have some bi-annual  
13 reporting and monitoring, so that we can see how  
14 we're doing. We know that data will be a little  
15 bit behind as it tends to be. But, it will help us  
16 to look in the shorter term at what progress has  
17 been making, and then help with long-term  
18 projections and adjustments that might need to be  
19 made to ensure that we're constantly taking steps  
20 to move as closer to achieving Global Warming  
21 Response Act goals, the RPS goal, and the  
22 Governor's vision of a hundred percent clean energy  
23 by 2050.

24 Those interim targets statewide by  
25 sector would help policy makers be clear about the

1 goals and the transition from fossil fuels. And it  
2 will also help because I think it's important that  
3 the state is not picking winners and losers in the  
4 production of energy. It should rely on market  
5 forces to sort out which fuels decline at lower  
6 rates. That's important.

7 Thirdly. In our discussions of a just  
8 transition to clean energy, New Jersey is facing a  
9 multitude of proposed fossil fuel projects -- which  
10 have been talked about a hundred times today --  
11 including gas fired plants and pipelines, that  
12 aren't consistent with this collective shared  
13 vision to a hundred percent clean renewable energy  
14 future. So, we think it's important that the  
15 Energy Master Plan identifies regulatory changes  
16 that are needed for regulators to deny approval of  
17 new fossil fuel oil and gas projects that threaten  
18 statewide emissions reductions required under the  
19 Global Warming Response Act.

20 You asked some pretty insightful  
21 questions to gather input from stakeholders. And I  
22 wanted to address one of them, which was the  
23 stranded costs. As you're aware, New Jersey is  
24 deregulated as it relates to energy supply, leaving  
25 no risk for ratepayers from a stranded fossil fuel



1 electric generation assets, like a natural gas  
2 power plant. The state can reduce the risk of  
3 losses to investors -- I think many of which have  
4 left already in industry -- by providing clear and  
5 consistent signals to developers of fossil fuel  
6 assets. But where ratepayers are really on the  
7 hook are with pipelines. It's expected that by  
8 2030 there could be significant reductions in New  
9 Jersey of natural gas consumption, which could  
10 affect an under-utilization rate, and several  
11 interstate gas pipelines and distribution lines  
12 wouldn't have customers. Assuming that the costs  
13 to maintain these lines does not change, those  
14 costs will be spread over fewer customers, creating  
15 much higher rates for natural gas. That's  
16 something we really need to be concerned with.  
17 And, so, protect New Jersey customers, it's  
18 absolutely essential to utilize future projections  
19 of the natural gas consumptions and refraining from  
20 building these additional infrastructures, and that  
21 they're under-utilized and shifting, and as that  
22 goes through time to clean renewable energy  
23 resources. And, we shouldn't be putting  
24 ratepayers on the hook for the cost of these unwise  
25 project investments.

1                   So, I'm going to tell a little  
2 personal story. So, I had the pleasure of living  
3 on the D&R canal, which is a beautiful, beautiful  
4 place. Loved it. I think my dog Zena, she loves  
5 it more. She loves to go swimming in there. We  
6 have canoes, people go running on there, they go  
7 biking. Not so much swimming. But, the reason I  
8 bring that up is, history is a good predictor of  
9 the future. So, when we look at the canal, the  
10 reason we have it now as a wonderful state park --  
11 the largest reservoir in the state -- is because  
12 way back in the day there was a competition to get  
13 goods from Philadelphia to New York. And the canal  
14 was the tried and true method. And the train was  
15 this new fangled thing that people didn't really  
16 know if it would work. So they were really smart,  
17 and they said, well, we're not going to put  
18 everything in this new fangled train. We're going  
19 to build both. And which ever one -- we're  
20 prepared, which every one goes forward. And, as we  
21 know, the story goes the train is still moving lots  
22 of goods and services.

23                   I tell that story because the canal is  
24 now an asset that we use and enjoy both for  
25 recreation and for our water supply. But what kind

1 of assets are left behind from fossil fuel  
2 infrastructure like oil and gas pipelines? Future  
3 children are not going to make a little sled and go  
4 for a ride in an unused pipeline. It's something  
5 that really has a big degradation to our  
6 environment, to our communities. They're cutting  
7 down trees. It's great environmental degradation.  
8 Private properties being crossed. Preserved lands  
9 are being undone for this infrastructure. So, with  
10 that in mind, that history -- I'm trying to make an  
11 analogy -- we are on the cusp of sort of the  
12 future. And we have proven track records of  
13 renewable resources, like solar and wind. We don't  
14 have to build both simultaneously. So, that's my  
15 sort of personal example.

16 I'm on four. The Energy Master Plan  
17 should develop policies to guarantee pollution  
18 reductions in our environmental justice communities  
19 as soon as possible. So, if there's a choice to  
20 close a plant, they should be closed down in a  
21 low-income community. Communities of color are on  
22 the front lines. They're already overburdened with  
23 cumulative impacts that are disproportionately  
24 affecting the environmental justice communities.  
25 Expanding access to renewables and energy

1 efficiency environmental justice communities is  
2 also critical. There's community solar, which we  
3 just heard about. Through weatherization  
4 initiatives, energy efficiency. And, to ensure  
5 affordability for low and moderate-income  
6 households. And, we're also happy to work with you  
7 on the definition for that as you go forward.

8           The fifth point. While we strongly  
9 support swiftly transitioning to clean renewable  
10 energy, we also need to go through so  
11 responsibility and equitably. The plan should  
12 consider siting mechanisms to ensure maximum  
13 support from the community for renewable projects.  
14 Particularly with off-shore wind. There are better  
15 places than others to put windmills, and minimize  
16 the impact to the environment while we produce  
17 renewable energy. With solar, there is no need to  
18 cut down trees to put up solar panels when there  
19 are under-utilized locations like retail rooftops  
20 and roads and parking lots. Certainly farms should  
21 not be not providing food like we had for lunch,  
22 and having solar on them. We need farms. It's  
23 important for food. And, we have other places for  
24 solar. And, especially with our preserved lands  
25 that were preserved in the public trust for a

1 certain purpose. That's really important.

2 And, number six. To reduce the  
3 uncertainty in the market and of utility costs.  
4 The state should determine pathways to reach the  
5 2050 goals using state-of-the-art modelings. A few  
6 people talked about things that are happening out  
7 to 2050. We heard about Minnesota and Hawaii.  
8 They're doing all kinds of good work. And, I know  
9 you guys have that on the radar, as well. It's  
10 going to really important.

11 And, lastly -- and lucky number  
12 seven -- jobs. The EMP really should focus on  
13 these pathways to achieve the hundred percent  
14 renewable energy future while capitalizing on the  
15 tremendous opportunities there are to generate  
16 good, family-sustaining jobs right here in New  
17 Jersey, and to spur that economic development  
18 through the clean renewable energy projects and  
19 investments. And, the energy efficiency pieces  
20 that we've been talking about through  
21 electrification.

22 So, we're really looking forward to  
23 working with the BPU and all the members, with my  
24 former mayor and assemblymen, and now Commissioner  
25 Chivukula, and helping to really take advantage of

1 this unique opportunity that we have. And I want  
2 to thank you very much for your time.

3 MR. SHEEHAN: Thank you very much.  
4 We're going to take a five-minute break.

5 (Whereupon a short recess was held.)

6 MR. SHEEHAN: We are back on track.  
7 Our next speaker is Ray Albrecht with the National  
8 Biodiesel Board. Is Ray still here?

9 Debra Coyle. Henry Gajda. George  
10 Hay. Ibrahima Kalle. Nora Langweiler. Richard  
11 Lawton. Agnes Marsala. Veer Patel. Rezwan  
12 Razani.

13 MR. RAZANI: Hi. I'm Rezwan Razani,  
14 and I'm the founder of Footprint to Wings. We're  
15 turning the race to zero carbon into a national  
16 past time, and coaching each state to win. So, one  
17 of the things we're doing is we're writing a zero  
18 carbon playbook. And, the way I see the Energy  
19 Master Plan is essentially the playbook for New  
20 Jersey. So, your plan would be much more the  
21 detailed intellectual version for numeric stuff.  
22 But what we want to do is make sure these numbers  
23 are legible to everybody, so anybody can pretty  
24 much understand what's going on.

25 So, the first thing I notice with all

1 of your things, is maybe there could be a section  
2 for how do we make sure everybody understands the  
3 plan, so the public outreach section, general  
4 public outreach not just the stakeholders. So, the  
5 Governor, bless him -- this is so cool, it's like  
6 so historic. That we're actually having this  
7 meeting is very exciting. So, he wants a  
8 blueprint for conversion to a hundred percent clean  
9 energy. So, our first question, as zero carbon  
10 coaches is, a hundred percent of what? How big is  
11 the playing field? And, so, that's what I kind of  
12 want, like an Energy Master Plan. The quickest way  
13 to get legible for everybody is kind of put that  
14 right up there -- a hundred percent of what?

15 So, the EIA has this lovely  
16 information. And, it's kind of in, like, lines  
17 like this. But I put it together like this so it  
18 would look like a football field. Because, you  
19 want to see, well, where are we? How far are we to  
20 zero? And, how far do we have to go? And, this  
21 one has, like, motor gasoline is twenty percent  
22 natural gas, it's dirty. When you see it like  
23 this, it's a little bit more legible. That way,  
24 when you're writing the Energy Master Plan you can  
25 connect it, like well the motor gas play would

1 affect this field. Squish it, you can make it  
2 bigger, more whatever. The natural gas, well this  
3 is part electricity, this is part heating, so you  
4 know where the play fits, and you can quickly get  
5 people to grasp it, its in perspective. That's one  
6 thing we're going to do with out thing.

7           So, then the next thing is, oh,  
8 there's a big controversy of, I notice, running  
9 through this meeting of nuclear. If you don't like  
10 nuclear. But, that's kind of what's getting us to  
11 the twenty yard line. So, a lot of people want to  
12 get rid of it. That would take us back to the  
13 three-yard line, so we have to push forward again.  
14 The other thing that helps with this it to help  
15 quantify things. This is like about 3.6 gigawatt  
16 equipment for four nuclear power plants. A lot of  
17 people are saying, well, there's going to be 3,500  
18 gigawatts of wind power coming on line. But that's  
19 the play capacity, so you'd be like yeah, but  
20 that's this much. So, you can just start to realty  
21 get the quantifications down.

22           So, the next thing is how long is this  
23 field? I want that question answered. That  
24 question is going to vary, there's a lot of  
25 variables that go into it. Just get an initial,



1 like, if you were to electrify everything and  
2 supply the power for it, what would you do. And  
3 the number that I like best is what Mark Jacobson  
4 uses, the gigawatt equipment. Like the energy that  
5 you would supply with one plant running a year  
6 nonstop, 24/7. So, like a nuclear power plant has  
7 like 1.1 gigawatts at ninety percent capacity,  
8 whatever, it's about one gigawatt.

9 Now, off the top of your head, do you  
10 guys have a number, like how long if you were to  
11 electrify, like if you were to waive a magic wand  
12 and electrify everything? Out of curiosity.

13 MS. STROM-POWER: We are looking at  
14 those numbers. We do have some projections. Yes.

15 MS. RAZANI: So there is a field  
16 number? Okay. Because I would love as soon as you  
17 can get that. Because, the other thing, Mark  
18 Jacobson -- who was referred to by Brandon -- he  
19 has a number, and that's about 32.9, so roughly 33  
20 gigawatt equipment.

21 MR. HORNSBY: For electric cars  
22 itself?

23 MS. RAZANI: Everything. He even  
24 calculated the efficiency of electric cars, he  
25 squashed it and everything. So, that's including

1 that, the electric car advantage. Yeah. So, and  
2 his number was 33. So, I'm like wow, that's big.

3 MS. STROM-POWER: I don't think we  
4 have set numbers on any of these yet. Right now  
5 it's a --

6 MS. RAZANI: Fair enough. And, I just  
7 did an extrapolation with nuclear, I'm like, well,  
8 if this 3.6 gigawatts, then this should actually be  
9 22. So we need to know that number. That's a big  
10 difference. So, I want to know that number.

11 And then the next thing is, our  
12 colleague Brandon did talk about the renewable.  
13 So, the Governor wants a blueprint. So, Mark  
14 Jacobson did do us the favor of putting a blueprint  
15 down. So, you can go on his website  
16 solutionsprojects.org, you get the numbers. So,  
17 then the shocker for me was that rooftop, if you  
18 max it out for both buildings and commercial and  
19 residential, is 6.3 percent of the total, in his  
20 estimation. So, that's not even a first down. So,  
21 I was like whoa, that's not much. And then the 27  
22 percent solar, and then ten percent on-shore wind,  
23 and fifty percent off-shore word. Great.

24 So, the next thing that's important is  
25 to map this out. Give people an overlay. Like,

1 how much does this take? Most people don't look  
2 past the percents. How many wind turbines? How  
3 many things? So, what we have, and the off-shore  
4 wind, 55 percent. Just guess guys, guess how many  
5 wind turbines that is, if it's like five megawatt  
6 wind turbine? Anybody want to take a guess? Okay.  
7 It's 9,400 off-shore wind turbines -- according to  
8 Mark Jacobson. And the shore line is 130 miles  
9 long. So, that comes to 72 wind turbines per mile.  
10 And you put them in array, because you can't put  
11 them quite that way. So, at 72 wind turbines per  
12 mile is a lot.

13                   And then I'm looking at the -- your  
14 Euro of Energy Management Plan, their plan calls  
15 for -- they've set aside a certain amount of area,  
16 looks like 418 square miles. But, that would fit  
17 about a quarter of those turbines. So, then, the  
18 next question is, we want to begin with the end  
19 game in mind. We want all the players to see,  
20 well, how far can we go with this play, how far can  
21 it theoretically go, technically; and, how far do  
22 we kind of want it to go, and then what's the gap?  
23 Because now, you know, it will be like, well, it's  
24 supposed to be this, but we're only this far, so  
25 how we going to take a shortfall. That will show

1 you how much more efficient you need to be,  
2 etcetera.

3           Anyway, so, it helps you anchor the  
4 main plays, the big set pieces, the fantastic ones.  
5 And then the shortfall. And then, of course,  
6 on-shore wind was like 3,185 wind turbines. And it  
7 would take up an area the size of Atlantic County,  
8 which is 500 square miles, or whatever. So, these  
9 were large numbers. And I think when citizens --  
10 like I feel the big problem that we're facing isn't  
11 money, because after all cost does not determine  
12 value. Value is in the eye of the beholder. So, I  
13 feel is going to be a bigger problem than anything.

14           And, the final things I want to  
15 mention which is Six Flags, and the fabulous fiasco  
16 that occurred when Six Flags decided to go solar.  
17 And then they said, okay, great, we're going to cut  
18 down this forest here. And that created three  
19 years of lawsuits and acrimony, and a lot of people  
20 were upset about that. And, at the end they did a  
21 settlement. The judge decided in their favor, so  
22 that's the other thing. You say green is good and  
23 the judge is going to decide for the solar. So,  
24 instead of doing 90 acres, they went up to forty  
25 acres and they did some of the parking lot. But

1 still, 40 acres is like 7,000 trees cut down. And  
2 it ended up being for 23 megawatts of power. And  
3 that's 23 name plate, 23 megawatts of name plate,  
4 which is about four megawatts delivered. And,  
5 again, what is our end game? It's 33 gigawatts.  
6 So, if you're going to have three years of lawsuits  
7 over four megawatts, that's a lot of work. So,  
8 what we want to do at Footprint to Wings is get  
9 everything on the table up front as quickly as  
10 possible, to get through all of those arguments in  
11 a way that everyone can see. As quickly as  
12 possible, and come up with a solution that everyone  
13 will get behind and not regret. We feel a lot of  
14 people don't understand the full implication of  
15 each of their decisions. But, like, innovations  
16 can come up. Like Barb Blumenthal was interesting  
17 to me because it sounded like, well, that's the way  
18 to really shrink this and get it much more  
19 efficient. So, once you start with it, you tinker  
20 at it and you can show the improved play in each of  
21 the areas. Like, it really helps improve things.  
22 And if it's in a big, you know, if it's up there  
23 where everybody can see, okay, this is what we're  
24 working on, this is how it fits, we can work better  
25 as a team. Because everybody's got expertise in

1 this room. Everybody that's involved in this has a  
2 lot to offer. And, also, a lot of blind spots.  
3 So, we want to get through. We want to bring out  
4 the best in everybody, bring out the best solution  
5 that everybody can get behind. We want to make  
6 everybody out there, all the citizens, are aware of  
7 them. And, approve of them, ultimately. And the  
8 sooner we can get that all to happen, the better.

9 That's my --

10 MR. SHEEHAN: Thank you very much.

11 Julia Bobie.

12 MS. BOBIE: Hi. I'm Julia Bobie, I'm  
13 from Equinor, the Norwegian energy company that's  
14 been building off-shore wind in Norway for about  
15 twelve years. And, now we are the lease holder  
16 for a large off-shore wind area about twenty miles  
17 east of Sandy Hook. So, we've been following New  
18 Jersey's work very carefully. And, if all goes to  
19 plan, we hope to be one of the first bidders for  
20 New Jersey OREC. So, my primary purpose is to  
21 thank this working group for its service, and  
22 really, all of the public servants in New Jersey  
23 for the last year have been working very, very  
24 hard. And, we certainly appreciate it.

25 The nineteen questions are insightful.

1 And there are certainly experts on many different  
2 parts of renewable energy that I'm not here to talk  
3 about specifically. Although, energy efficiency,  
4 distributed energy resources, electrification, are  
5 all going to be hugely important for New Jersey.  
6 I'm here to talk about off-shore wind.

7 Off-shore wind can really replace a  
8 significant amount of fossil energy. And, what  
9 we're seeing -- as you all well no -- is most of  
10 the fossil generation in the northeast is going to  
11 go off line any way. It's old, it's inefficient.  
12 And, we plan to be there to replace that generation  
13 ideally using the infrastructure, the grid, that  
14 you already have that ratepayers already paid for.

15 I'm here to say that the goal that New  
16 Jersey has and whether there's goals for the energy  
17 or how to make sure that sort of justice and other  
18 issues are addressed is really a matter of market  
19 design. And if you get the market right, it will  
20 create competent that will drive down costs. We'll  
21 be there to bid. The other types of renewables  
22 will be there to bid. And New Jersey will be  
23 really well poised -- thanks to the good work of  
24 the public servants -- to run the market and really  
25 show other states how this can be done. So,

1 thanks again for your service.

2 MR. SHEEHAN: Thank you very much.  
3 Amy Goldsmith.

4 MS. GOLDSMITH: Hello. My name is Amy  
5 Goldsmith. I'm the New Jersey State Director for  
6 Clean Water Action. We have 150,000 members  
7 throughout the state. Maybe somebody came and  
8 knocked on your door and asked you to write a  
9 letter or give a donation, or be in support of our  
10 work. We work on a wide range of issues, including  
11 energy issues. We have extensive work that we do  
12 on climate in the City of Newark, in the community,  
13 primarily in the south ward but throughout the  
14 city. We have two climate organizers who come from  
15 the neighborhood, who work in the neighborhood.  
16 So, we know firsthand. And we've been doing it for  
17 almost over twenty years, a variety of different  
18 work.

19 We've trained people around heat  
20 precautions. We have lamp post banners hanging off  
21 of lamp posts in the Clinton Avenue neighborhood in  
22 the south ward around heat. We know what climate  
23 is. We know communities are getting flooded. And  
24 we know that people die in Newark because of  
25 respiratory distress. A very high number of women



1 who lose their lives in childbirth because they get  
2 into an asthma situation and do not recover and  
3 lose their life. And, it's a high price to pay to  
4 have climate-related greenhouse gases and other  
5 co-pollutants that impact this neighborhood to the  
6 extent that it does. And, so, we should both be  
7 reducing our carbon footprint, but also looking to  
8 reduce, obviously, the emissions that are in these  
9 neighborhoods. And, we can do that through changes  
10 in our energy practices.

11 I want to speak to a couple of issues  
12 around environmental justice. Others have spoken  
13 to this issue -- hearings should be in the  
14 communities where people typically don't have  
15 access to cars, and sometimes mass transit isn't so  
16 great even for them. So, there are cities like  
17 Camden and Newark and Paterson. But, there's also  
18 other communities throughout the state that are  
19 environmental justice and low-income communities,  
20 communities of color, where people don't have ready  
21 access to a forum such as this. And in some cases  
22 translations are needed. And, some of those  
23 locations they use sort of like UN translation  
24 systems where you don't have to translate  
25 everything over and over, but you have translators

1 so they can hear them in head phones and be part of  
2 the process. And, I think given the importance of  
3 energy in our lives it's important for us to think  
4 about better and creative ways to engage the  
5 community. We've always found that community  
6 people have incredibly thoughtful ideas and things  
7 that we don't even think about because we're not  
8 living in their neighborhoods.

9           The other is that this place is very  
10 far away from parking lots. If you're disabled,  
11 you know, there's a person here with a walker, she  
12 had to walk all the way from the other side, had to  
13 walk all the way over here. I think that would be  
14 quite challenging. There's not really much mass  
15 transit here. And, there clearly wasn't enough  
16 seating. I don't care about the Wi-Fi, we can  
17 figure that out.

18           So, the other point I want to make is  
19 that in the work that we do in Newark, we have  
20 trained people to be solar installers. And, they  
21 got certification from N.J.I.T, so it's a credible  
22 certification. They wanted to do the work, but the  
23 problem was that they couldn't get to the work.  
24 Because there was enough work in the City of Newark  
25 to do the work. They did a small project at

1 Wilson Avenue garage. But after that they couldn't  
2 really use their talent because most of the jobs  
3 were in the suburbs. So, if we're going to be  
4 doing renewable energy, we need to be doing  
5 renewable energy in the places where we're training  
6 people to do the work so they can actually get to  
7 the work. And, have a family-supporting wage so  
8 that they can add to the community, as well as add  
9 to their own family's well-being. So, I want to  
10 make that point.

11           The other is that HUD has, you know,  
12 oversees a lot of public housing in a lot of  
13 places, not just in Newark. And, they are required  
14 to hire people within HUD in their residences to do  
15 the work. And, if we actually had a program where  
16 we were looking at public housing -- the people who  
17 have the least ability to pay for their utilities  
18 and everything else -- and, if we actually had a  
19 program where we were training people who are in  
20 public housing to do renewable energy, energy  
21 efficiency, conservation, those kinds of things so  
22 that it would benefit the neighborhoods that they  
23 live in, that would be a good thing. So, we could  
24 use the pressure point that HUD should be hiring  
25 from within and training from within to do their

1 maintenance and other things. I know that Newark  
2 has been replacing their boilers and doing other  
3 things -- which is probably a topic for another one  
4 of your stakeholder meetings. But, I just wanted  
5 to raise that.

6           The other is that -- and this also  
7 might be partly something for the next topic, but I  
8 can't be at the next meeting -- is that a lot of  
9 the conversation is really focused on energy as  
10 electricity. And not everything is electricity.  
11 Obviously there's heating that needs to be done,  
12 and cooling. And, if we were doing a better  
13 building codes, appliance standards, some of the  
14 appliance energy efficiency, but also there's  
15 conservation. Right? Not using the power in the  
16 first place. That would be very important. And  
17 one thing that I always -- a place that I was in a  
18 long time ago, probably thirty years ago, in  
19 Wisconsin, a little tiny town in Wisconsin, they  
20 were forced to move their whole community because  
21 it kept getting flooded. And, they weren't going  
22 to get anymore federal money unless they moved  
23 their community. So, they moved their community,  
24 and they decided to make it a solar community.  
25 And, the way they did it wasn't actually with solar

1 panels on their roofs, they did it mostly doing  
2 passive solar to do heating. They did, you know,  
3 solar walls, solar attic. And, I don't think  
4 there's very much conversation about how can we  
5 reduce some of our heating by using some other more  
6 passive, you know, not such a high tech -- we don't  
7 need solar panels for heating our homes, we need  
8 other ways to do it. And, we have a lot of  
9 seniors, and a lot of them are in these electric  
10 complexes, even their heating, and they can't  
11 afford to pay for their heat. So, it's important  
12 for us to think about seniors and other places  
13 where we might be able to do some new kinds of  
14 building design, innovation, around integrating the  
15 kinds of renewable energy offerings that we want to  
16 have in the urban revitalization, or a lot of the  
17 suburbs, their towns are becoming new main streets.  
18 Right? So, how do we do that in a better way. And  
19 the healthy homes initiatives that are being done  
20 around lead in drinking water and paint, and how  
21 can we integrate from the energy elements into that  
22 without intensifying the neighborhood so much that  
23 the people who live there now can no longer afford  
24 to live in the communities that they're in.

25 There's mention has been made about

1 benchmarks, annual benchmarks, interim benchmarks  
2 to get to fifty percent renewable by 2030 for  
3 electricity, and a hundred percent at 2050. I'm  
4 not going to go into more detail on that. But, I  
5 do also want to emphasize that the BPU and the DEP  
6 must have clear regulations to deny these gas  
7 plants and lines -- as has been mentioned by  
8 others. We have been actively working against  
9 these facilities. It's not consistent with the  
10 goals of the Governor and of the Executive Order.  
11 We should be misclassifying power producers ways to  
12 energy, it should not be a part of the equation.  
13 Natural gas is not a renewable energy. We should  
14 not be doing that at all. And, also, why would we  
15 want to invest time and money -- I think the  
16 previous speaker spoke to why would we want to  
17 spend all these years in a permit and a ratepayer  
18 situation where you have to use all the agency  
19 resources to build the plant that actually we don't  
20 really want in the first place because it doesn't  
21 get us to where we want to go. And, so we're  
22 wasting public resources, private resources,  
23 non-profit resources, community resources. People  
24 would rather stay home with their families than  
25 fighting natural gas plants and power lines. And,

1 they're only going to be around for twenty years,  
2 well, actually they don't end up around for twenty  
3 years. We have nuclear power plants that have been  
4 around for forty and sixty years. So, you're not  
5 going to build something, invest all that money,  
6 and then suddenly shut it down.

7           And, there has been mention of the  
8 Stanford University numbers and data. This will  
9 be my last point. That using existing  
10 technologies, and the Stanford University and  
11 solutions project work. You know, we started  
12 several years ago, so the technology is even  
13 advanced since that work was done. But even just  
14 looking at the existing technology at the time they  
15 issued their report for wind, solar, and water,  
16 you'd produce 140,000 jobs here in New Jersey.  
17 These are forty year or lifetime jobs. And, that's  
18 really important that you're not jumping from job  
19 to job. Most electricians, when they become an  
20 electrician they stay an electrician for quite a  
21 long time. It's a good paying job, why would you  
22 want to change your job if you're an electrician.  
23 And, also, it's cheaper if you factor in -- 25  
24 percent cheaper if you factor in the cost savings  
25 of avoided healthcare costs over 12 billion dollars

1 of healthcare cost per year. 1500 deaths avoided  
2 due to pollution and climate. And, those numbers  
3 are higher in a community like Newark, where I do a  
4 lot of work. The average in the state, just using  
5 asthma as a number -- my final point -- using  
6 asthmas as a number, it's about twelve percent  
7 nationally and in New Jersey, but in Newark it's  
8 one in four kids have asthma. Why do they have  
9 asthma? Because of the gas plants. Because of the  
10 port. Because a lots of cumulative impacts. So,  
11 when we can look at the energy sector and figure  
12 out ways to reduce the cumulative impacts, the  
13 co-pollutants associated with energy production --  
14 especially in places that are highly concentrated,  
15 densely populate, highly vulnerable people -- we  
16 should do everything that we can, and we should  
17 make it a priority. Thank you.

18 MR. SHEEHAN: Thank you very much.  
19 Sorry about that, Ms. Smith. You can come on up.

20 MS. SMITH: Good afternoon. Thank  
21 you. I want to say thank you to Governor Murphy  
22 and Mr. Sheehan for convening this hearing. And  
23 members of the committee for spending your day here  
24 listening to comments.

25 My name is Laina Smith. I am a senior



1 organizer and policy advocate of Food and Water  
2 Watch. We are a national advocacy organization.  
3 We champion healthy food, clean water, and a  
4 livable planet. And we advocate for a democracy  
5 that improves peoples lives and protects the  
6 environment. We are also a founding organization  
7 of the New Jersey All Fossil Fuels Coalition which  
8 includes over fifty faith, labor, environmental,  
9 community, business, and political organizations,  
10 committed to addressing the urgency of climate  
11 change by moving all fossil fuels and on to a one  
12 hundred percent clean renewable energy future.

13 I'm going to keep my comments to one  
14 general -- a general comment on climate change, and  
15 then in three of the topic areas that you laid out  
16 for us. So, first, general comments on the  
17 urgency of climate change. We need a rapid  
18 development of clean renewable power to avert the  
19 worse impacts of climate change. And, while we  
20 applaud Governor Murphy's goal of achieving one  
21 hundred percent renewable energy, the goal of  
22 achieving that by the year 2050 is far short of  
23 what is needed to stop irreversible climate change.  
24 In 2014 the intergovernmental panel on climate  
25 change reported that recent climate changes have

1 had widespread impacts on human health and natural  
2 systems. This includes violent storms, floods,  
3 acidifying and rapidly warming oceans. And we have  
4 seen this in events like Superstorm Sandy.

5 As the Paris climate talks in 2015,  
6 the nations of the world agreed that preventing the  
7 planet from warming one and half degree celsius of  
8 the pre-industrial levels would significantly  
9 reduce the risks and impacts of climate change.

10 In order to have a two out of three chance of  
11 avoiding a catastrophe one and a half degree  
12 celsius rise in temperature, the IPCC found we can  
13 only emit 400 gigatons of carbon dioxide after  
14 2011. And between 2011 and 2017, the global  
15 economy released 295 gigatons of carbon dioxide  
16 into the atmosphere from burning fossil fuels. We  
17 only have about ten years to cut our emissions.  
18 Reductions of burning of fossil fuels are critical  
19 to avoiding the worse impacts of climate change,  
20 and we encourage the BPU to develop an Energy  
21 Master Plan that front loads most of the energy  
22 development in this first decade, charting a  
23 pathway for eighty percent clean renewable energy  
24 by year 2028, and one hundred percent clean  
25 renewable energy by the year 2035.

1           Someone mentioned earlier today, one  
2 of the hurdles is the lack of a federal renewable  
3 energy plan. There is a bill introduced by Bruce  
4 Gavern from Hawaii that lays out this timeline  
5 towards a hundred percent renewable energy by 2035.  
6 The state could support that bill and advocate in  
7 Congress for that.

8           Second, for the definitions of clean  
9 energy sources, we support a clean energy economy  
10 that is built solely on solar, wind, and titled  
11 sources. Solar can be used in utility, and  
12 distributed solar to meet our energy needs. A  
13 renewable portfolio standard is an effective tool  
14 for requiring utilities to build utility scaled  
15 solar projects. Additional sources can come from  
16 distributed rooftop solar projects. This requires  
17 policies and public investment. These policies can  
18 focus on maximizing developments and access to  
19 community solar projects, which we are moving  
20 forward on -- and could move faster, frankly.  
21 Removing caps on net metering, and changing  
22 building code to require the new construction is  
23 fitted with on-site and/or rooftop solar panels.

24           Wind energy. We can see the  
25 potential from unrealized energy potential from

1 off-shore wind, and the technical potential to  
2 provide double the energy demand for current  
3 electricity needs exist in off-shore wind, plus  
4 estimated demand for electrified vehicles and  
5 heating. New Jersey shows significant  
6 opportunities for wind, but we should not rely  
7 solely on off-shore wind, and must also consider  
8 on-shore wind energy. Because even with proper  
9 off-shore siting of off-shore wind resources,  
10 typically the fishing shipping lanes and ecological  
11 impacts, this may result in lower levels of wind  
12 energy being harnessed. It will take time to study  
13 and build out the infrastructure to fully utilize  
14 off-shore wind, so we must act immediately to  
15 replace fossil fuel energy sources with clean  
16 energy sources.

17                   And with title technology, the  
18 technology is improving. And, it could provide a  
19 steady flow of energy to meet demand when  
20 intermittent electricity sources like wind and  
21 solar are not producing electricity. Stock  
22 renewable of titled power recently released report  
23 that a two megawatt loading titles turbine produced  
24 over three gigawatt hours of renewable electricity  
25 in its first year of testing.

1           To the point of sources of dirty  
2 energy standards. The state's current renewable  
3 portfolio standard actually allows many sources of  
4 dirty energy to be counted as renewable. And this  
5 RPS should be addressed. These include sources of  
6 greenhouse gases and other harmful pollutants that  
7 adversely affect public health, including bio-gas  
8 and garbage incineration. We also call on New  
9 Jersey to address the expansion of fracked gas  
10 infrastructure. And we agree with the comments  
11 that nuclear is not clean energy.

12           Continuing to reliable fracked gas.  
13 This is one of greatest threats to our planet.  
14 While it may burn cleaner at an end point, methane  
15 is 85 times more potent at trapping heat than  
16 carbon dioxide. Methane leaks from every stage of  
17 the natural gas system, from well sites to  
18 processing plants, and compressor stations to  
19 beneath city streets. With over twelve proposed  
20 pipelines, several compressor stations and gas  
21 fired power plants being proposed in places like  
22 the Meadowlands, New Jersey must put a moratorium  
23 on all new fossil fuel infrastructure, while it  
24 continues to develop its Energy Master Plan and  
25 build out a clean renewable energy system.

1                   Bio-gases has been included in New  
2 Jersey's RPS before. And this includes bringing  
3 waste methane from landfills through its treatment  
4 plants, and animal waste such as factory farming  
5 manure. This methane often referred to as bio-gas  
6 is essentially indistinguishable from fracked  
7 natural gas, with many of the same problems.  
8 Burning bio-gas or methane releases greenhouse  
9 gases and pollutants including nitrogen oxides,  
10 ammonia, and hydrogen sulfite. New Jersey  
11 currently allows garbage incineration. This  
12 produces toxic air emissions like mercury, and  
13 contributes to climate change. New Jersey is home  
14 to five municipal waste incinerators that combined  
15 burn about 4.8 billion pounds of municipal waste  
16 annually. And overburdened predominantly lower  
17 income communities of color of Newark and Camden  
18 for decades.

19                   Besides the adverse impacts to the  
20 public health and climate, allowing these fuels to  
21 masquerade as renewable, undermines the importance  
22 of the state's RPS and efforts to achieve truly  
23 renewable clean electricity. Even by including  
24 these sources of dirty energy in the transition  
25 allows for the creation of markets that don't

1 currently exist, and thereby facilitates the demand  
2 for dirty energy. The market incentivizes  
3 polluters to continue to expand operations. We  
4 must acknowledge that we cannot consider fracked  
5 gas as a bridge fuel, and not consider sources of  
6 dirty energy like bio-gas and garbage incineration  
7 as a bridge fuel, like has happened for so many  
8 years with fracked gas. And, will result in  
9 stranded assets if we don't put a moratorium on  
10 fracked gas.

11 Finally, to the point of clean energy  
12 definitions. New Jerseys REC program, Renewable  
13 Energy Credit Program, while it's in the process of  
14 being overhauled, it has been meeting its RPS goals  
15 with almost as much renewable energy from garbage  
16 incineration RECs as from solar power. In  
17 addition, to only allowing utilities to purchase  
18 RECs from clean energy sources, the state must  
19 ensure that the RECs are bundled with the  
20 electricity that they represent, versus unbundled  
21 where they're able to be tied to sources of dirty  
22 energy. And, thereby that energy is will send  
23 dirty energy into the grid and offset vastly the  
24 purchase of meaningless credit. Worse yet,  
25 ratepayers then must subsidize these unsustainable

1 industry dirty energy sources through their  
2 electricity bill.

3           Some of the technology -- so, the  
4 third point to the technology that the state can  
5 build, it can be addressed through redundancy,  
6 storage, demand and response, and energy  
7 efficiency, calls for consumer in the transition to  
8 renewable energy and reduce the ecological impacts.  
9 Electricity storage is improving significantly and  
10 becoming cost-effective, and will reduce the need  
11 for redundancy. The California Public Utility  
12 Commission has already taken action to force  
13 utilities to installing utility scale batteries to  
14 replace gas to meet peak energy demand.

15           Demand response programs can help  
16 reduce peak electricity demand by reducing the cost  
17 associated with storage for redundancy to meet  
18 energy demands on high days. The BPU should  
19 explore various incentives and penalties that could  
20 be incorporated to ensure large energy users are  
21 implementing demand response programs. Energy  
22 efficiency. We've heard about a lot about it  
23 today. So, it helps reduce peak demand by reducing  
24 our overall energy footprint. And the state could  
25 institute an energy efficiency portfolio standard.



1                   Finally, environmental justice and a  
2 just transition. We need to address the workers  
3 from jobs in the fossil fuel industry, and  
4 transition them to living wage union jobs to  
5 support energy efficiency and the development of  
6 renewable energy. Low-income communities and  
7 communities of color have long experienced the  
8 overburden of relying on fossil fuels. And  
9 environmental justice communities must be  
10 productive in our state energy plan. We are  
11 proposing that to achieve a just transition the  
12 state establish a state renewable energy revolving  
13 fund to provide grants and low-interest loans that  
14 support the generation of renewable energy and job  
15 training programs in the renewable energy sector.  
16 Priority should be given to low-income communities,  
17 communities of color, immigrant communities, and  
18 communities disproportionately impacted by fossil  
19 fuel development. The program should include job  
20 training programs, relocation assistance that  
21 prioritizes workers in displaced industries, and  
22 those living in environmental justice communities.  
23 These funds shall always support community solar  
24 projects, and provide technical assistance where at  
25 least fifty percent of the customers are either of

1 minority, immigrants, low-income, people of color.  
2 And any projects that utilize these funds must rely  
3 on union labor and a work force that is at least  
4 fifty percent minority.

5           To move forward on environmental  
6 justice, we recommend a creation of a statewide  
7 appointed climate justice working group be  
8 established as one of the principles of  
9 environmental justice and meaningful community  
10 input. They will advise the DEP and BPU on plans  
11 and progress made by state agencies and utilities  
12 that are developing and implementing the plan to  
13 achieve one hundred percent renewable energy. The  
14 working group shall be comprised of members who are  
15 residents of low-income communities or  
16 environmental justice communities. And, similarly,  
17 for county or municipalities with at least 50,000  
18 residents, they have to create local climate  
19 justice working groups.

20           Finally, to the point of environmental  
21 justice, these stakeholder meetings are completely  
22 inaccessible to the communities that have been  
23 overburdened by our reliance on dirty fossil fuels,  
24 and those most directly impacted catastrophe. So,  
25 we encourage the scheduling of additional meetings,

1 and evening meetings in environmental justice  
2 communities like Newark and Camden, along with  
3 others, to create a more inclusive process. Thank  
4 you.

5 MR. SHEEHAN: Christopher Grablutz.  
6 Come on up.

7 MR. GRABLUTZ: Hi. My name is Chris  
8 Grablutz. I work for a company called PV Pros out  
9 of Hoboken, New Jersey. We're an independent  
10 engineering and maintenance firm in the commercial  
11 utility solar industry. And, there's been a common  
12 message I've heard today, but I'd like to give it  
13 from a little bit different perspective.

14 Seeing a lot of solar systems that  
15 have been deployed over the last ten or so years,  
16 we quite often are out there on the front line  
17 fixing a lot of these systems, and keeping them up  
18 and running. So, what I would like to strongly  
19 suggest during your consideration is that when you  
20 look to incentivize and motivate folks to deploy  
21 the renewable energies to meet this mandate, is  
22 that you consider it from a performance-based  
23 directive rather than a capital deployment or  
24 capacity base. Too often the folks that are not  
25 in it for the long term make short-term decisions

1 that leave somebody else holding the bag with these  
2 renewable energy systems. And, I can only speak  
3 for solar energy, but I know that this tends to  
4 happen in other industries as well. So, that  
5 there's a very long life span on these systems, and  
6 that it's not just about the total capacity of  
7 install of solar, it's about the generation year  
8 over year. We want to deploy a lot of money for a  
9 fantastic cause, but we want to make sure that that  
10 money is not just deployed to satisfy, but deploy  
11 it meaningfully and to produce clean energy over a  
12 very, very long period of time. Thank you.

13 MR. SHEEHAN: Thank you very much.  
14 With that, is there anyone else would like to come  
15 up and make a comment? Well, thank you ladies and  
16 gentlemen. Thank you. Thank you those of you  
17 that stuck it out with us towards the end. We  
18 appreciate this.

19 As we said, these comments -- both the  
20 oral comments and anything submitted -- will be  
21 part of the record, will be used as part and parcel  
22 in developing the draft. And I think as Grace  
23 indicated, there will be continued opportunities  
24 for stakeholder involvement as we move forward.  
25 This was only the first, certainly not the last. I

1 think we've probably taken into consideration a  
2 fair number of the comments about locations and  
3 process. I'm hoping that we can work forward on  
4 that as we move forward. And beyond that, we look  
5 forward to seeing you at the next meeting. Thank  
6 you very much.

7 (Whereupon the proceedings were  
8 concluded at 4:30 p.m.)

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C E R T I F I C A T E

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3 I, CHRISTINA RESTUCCIA, a Court Reporter  
4 of the State of New Jersey, authorized to  
5 administer oaths pursuant to R.S.41:2-2, do hereby  
6 CERTIFY that the foregoing is a true and accurate  
7 transcript of the testimony that was taken  
8 stenographically by and before me at the time,  
9 place and on the date herein before set forth.

10 I DO FURTHER CERTIFY that I am neither a  
11 relative nor employee nor attorney nor counsel of  
12 any of the parties to this action, and that I am  
13 not financially interested in the action.

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Notary Public of the State of New Jersey  
My Commission expires November 14, 2021  
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STATE OF NEW JERSEY  
BOARD OF PUBLIC UTILITIES  
FRIDAY, SEPTEMBER 7, 2018

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ENERGY MASTER PLAN  
STAKEHOLDER MEETING  
  
CLEAN AND RENEWABLE POWER  
-----\*

HELD AT:  
THE COLLEGE OF NEW JERSEY  
GITENSTEIN LIBRARY  
2000 PENNINGTON ROAD  
EWING TOWNSHIP, NEW JERSEY  
11:47 A.M.

BEFORE:  
  
KENNETH SHEEHAN  
Director  
Division of Clean Energy

PANEL MEMBERS:  
  
ALANA BURMAN  
STEPHEN MYERS  
KARL HARTKOPF  
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1                   (Whereupon a short recess was  
2 held.)

3                   MS. GRIFFETH: Hello. I'm Nancy  
4 Griffeth of Unitarian Universalist Faith Action.  
5 And, I'd like to thank the EMP Committee for  
6 letting me speak today. My group is partners with  
7 Jersey Removes, and we support almost all of the  
8 revisions, so we would like to move faster than  
9 they want to to a hundred percent renewable energy.  
10 We do support Governor Murphy's one hundred percent  
11 by 2050, and we would like it to go faster.

12                   Now, we focus on environmental justice  
13 and we've been working closely Reverend Ronald  
14 Tuff, the energy director of GreenPlay. And when I  
15 finish my comments he's going to make some  
16 comments, additional comments, about environmental  
17 justice.

18                   So, thirty years ago we could have  
19 fixed our climate change problem much more easily.  
20 And, ten years ago New Jersey was actually on a  
21 great track to take care of stuff, but that was  
22 unpassable. So, now we're going to have to move a  
23 lot faster, and it's going to be much more  
24 difficult.

25                   Here are the four essential things

1 that Unitarian Universalist Faith Action supports:

2 First, don't allow anymore fossil fuel  
3 infrastructure. There was a discussion on stranded  
4 assets, so from the financial point of view those  
5 assets are going to be stranded ultimately. Let's  
6 just not invest anymore.

7 Secondly, the cleanest energy is no  
8 energy. So, let's focus on energy efficiency and  
9 reducing our use.

10 Third, the transportation sector is  
11 the biggest user of energy, so we have to focus on  
12 that. We need to encourage the use of electric  
13 vehicles while converting the electrical grid to  
14 clean energy. We need to convert fleets in New  
15 Jersey Transit to electric. We need to require  
16 trucks to reduce their emissions and convert to  
17 electric as fast as possible.

18 Fourth, last point, poorer communities  
19 are overburdened by emissions from vehicles and  
20 power plants, and by the consequences of climate  
21 change including flooding. We need to take action  
22 to lift this burden. And, as we convert to new  
23 industries, we should provide jobs and job training  
24 in these communities.

25 The cost in dollars may be high, but

1 the cost in human suffering will be much higher if  
2 we do too little. Thank you for listening to me.  
3 And, let me introduce Reverend Ronald Tuff or  
4 GreenPlay.

5 REVEREND TUFF: Good afternoon,  
6 everyone. I'm going to address the economic  
7 justice, and I'm going to address Question Number  
8 17; how will the state consider and integrate  
9 overburdened communities into the clean energy  
10 advancement?

11 The state must first address both the  
12 public health and economic aspects of the problem  
13 in low-income communities. First, for public  
14 health, the issues are primarily air quality and  
15 increase flooding due to global warming. For air  
16 quality, the state must put its priority on  
17 overburdened communities for reducing the number of  
18 fossil fuels and on vehicles. This can begin with  
19 what the state controls. First of all, New Jersey  
20 Transit. We ought to be talking about electric  
21 buses and electric vehicles. And as the vehicles  
22 are replaced, they must be replaced with electric  
23 vehicles. And, this should happen first in the  
24 overburdened communities.

25 Economics. The state must support the

1 development of jobs and job training in  
2 overburdened communities. Incentives to develop  
3 its need only to be for the need now to be  
4 financial, but could include moving the developers  
5 up in their queues for approval of projects. And  
6 if they provide jobs and job training in  
7 overburdened communities, it would be a great help  
8 and a major part in working with the low and  
9 moderate-income people.

10           Finally, the benefits of clean energy  
11 can be provided in overburdened communities in two  
12 ways. One is to provide clean energy alternatives  
13 and the generation of electricity. And, this is  
14 available but not widely known, and confusing to  
15 understand. Educational programs should be  
16 developed to help consumers in all communities, but  
17 especially overburdened communities, to understand  
18 the possibilities of using clean energy. The  
19 community solar pilot offers an opportunity for  
20 renters and people in houses not suitable for  
21 solar, but to obtain the benefits of using solar,  
22 ultimately including lower electricity prices. It  
23 is important that we bring this industry to our  
24 community. And, it's also important that we  
25 develop jobs. Another industry is the electric



1 vehicle industry. We're not involved in the  
2 beginning of the industry, in the distribution of  
3 the industry. So, we're talking about developing  
4 jobs in the low-income communities.

5 And, finally, I'd like to close with  
6 -- if we're going to talk about low and  
7 moderate-income folks, we ought to have these  
8 hearings in low and moderate-income community. And  
9 we ought to be sitting at this table and become  
10 part of what the solution are. Because whatever we  
11 come up with is going to affect our community.

12 So, today I'm going to invite you to  
13 the clergy meetings, about 75 churches meets every  
14 Monday in Newark. So, I'd like to invite one of  
15 your hearings to be centered in Newark. We'll get  
16 the clergy there, we'll get the community there, so  
17 we can be part of the process in the master energy  
18 plan, in order to help get jobs into our community.  
19 And, also, to educate our community so they can  
20 understand and be part of the solution. Thank  
21 you.

22 MR. SHEEHAN: Our next speaker is Pat  
23 Sonti. And, in the meantime I just want to  
24 recognize the Commissioner Chivukula has joined us.  
25 Thank you, Commissioner. Appreciate you being

1 here.

2 MR. Sonti: Thank you very much. I'm  
3 Pat Sonti for Maxim. Our global headquarters is in  
4 San Francisco, California.

5 First of all, we applaud the state  
6 government and the Board of Public Utilities for  
7 undertaking the energy master plan. As a company  
8 we have worked in with international governments,  
9 also in the United States on the federal and state  
10 level, especially in developing energy master  
11 plans. And, we have submitted written comments,  
12 but I will summarize a very few key bullet points.

13 Number one. We believe the EMP  
14 should provide guidelines for comprehensive  
15 framework and legislative policy, clearly defining  
16 renewable power, clean power, and solar wind  
17 bio-mass, bio-fuels, et cetera. The other aspect  
18 is it also has to provide guidelines for base load  
19 transition from the current energy mix to an  
20 optimal energy mix, which does have to include  
21 carbon capture, sequestration, energy storage,  
22 thermal energy storage. Also, it should provide  
23 guidelines for fiscal financial incentives, credits  
24 and tax provisions. Guidelines for grid  
25 integration of renewal energy, analysis and access

1 which is very critical. And, moreover, guidelines  
2 for mail order dispatch, demand response, and  
3 demand side management which are very critical for  
4 market integration of renewable and clean energy.

5           Second. Detailed market assessment  
6 trends and forecasts up to 2050 of energy supply,  
7 demand, and pricing in terms of levelized cost of  
8 energy, levelized cost of storage, based on an  
9 optimal energy mix.

10           Number three. The EMP should provide  
11 guidelines for key market-ready technologies. We  
12 recommend technology readiness greater than nine,  
13 which can be deployed, including energy storage and  
14 thermal energy storage by project developers and  
15 project sponsors. Key emphasis is on  
16 techno-economics and viability.

17           Number four. For proper economic  
18 growth and jobs creation there should be succinct  
19 and clear guidelines for potential investors in  
20 terms of equity, project developers, sponsors, and  
21 lenders because at the end of the day debt capital  
22 is critical for achieving financial closure and  
23 commercial operation.

24           Number 5. It's important for the EMP  
25 to provide guidelines advocating proper technical

1 and commercial due diligence process with a list of  
2 mandatory studies, assessments, and reports, which  
3 are required for cleaner renewable power for  
4 receiving proper approval, and permitting a project  
5 at the BPU level and other stakeholders in the  
6 approval process.

7           And, lastly. End of the day, New  
8 Jersey does require a fingerprint pneumatic capital  
9 for a base project to reach commercial operations.  
10 So, it's important to elaborate on smoother project  
11 financing guidelines, with some clarity on  
12 long-term PBA's, which is the traditional, versus  
13 the SRECs, ORECs, for offshore wind. But there's  
14 got to be more clarity on the focus for bankable  
15 funding mechanisms, and financing mechanisms, along  
16 with payment structures and plans. And at this  
17 point, the financial community is embarking on a  
18 corporate blocktin technology as a way through the  
19 distributed electric process, which could be  
20 leveraged for New Jersey's benefit across all  
21 stakeholders, all demographics, on a non-exclusive  
22 basis.

23           We look forward and the honor to work  
24 with the BPU and the state governor on empowering  
25 the Energy Master Plan. And, we look forward to

1 being part of the stakeholder process throughout.  
2 And thank you for this great opportunity to be here  
3 today. Appreciate it very much.

4 MR. SHEEHAN: Thank you very much.  
5 Our next speaker Lawrence Furman. Lawrence Furman.  
6 Did we lose you?

7 Going to move on to Derek Phelps.

8 MR. PHELPS: Good afternoon, Director  
9 Sheehan, distinguished members of the BPU, governor  
10 staff, and committee members of the EMP.

11 My name is Derek Phelps, and I'm the  
12 Director of Market and Project Development at Fuel  
13 Cell Energy. We're in our 50th year of operation,  
14 headquartered in Danbury, Connecticut, with a  
15 manufacturing facility in Torrington, Connecticut.  
16 We employ over 450 people. And, the fuel cell  
17 products we manufacture in the northeast are  
18 exported all over the world.

19 We currently have over 250 megawatts  
20 of stationary fuel cells installed and backlogged  
21 on three continents. Our clean, efficient fuel  
22 cells generated over seven billion kilowatt hours  
23 of power. Our stationary carbon and fuel cells  
24 are well-suited to many application as a  
25 distributed energy in generation resource. Our

1 carbon shore source fuel cells come in three size;  
2 1.4 megawatts, 2.8 megawatts, and 3.7 megawatts,  
3 and are scalable for any project size.

4           We have previously provided testimony  
5 in comments to the Board of Public Utilities  
6 concerning our products, value, proposition, and  
7 contributions to a group resiliency and reduction  
8 of greenhouse gases. I will not repeat those  
9 comments here, but instead offer a brief synopsis  
10 and more wholesome testimony that we will file in  
11 writing prior to the October 12th deadline.

12           We are pleased to participate in the  
13 development of New Jersey's Energy Master Plan to  
14 achieve Governor Murphy's goal of one hundred  
15 percent clean energy usage in New Jersey by 2050.  
16 And, respectfully submit that fuel cells can make  
17 an important contribution to New Jersey's clean  
18 energy goals.

19           It is important to note that there is  
20 no silver bullet or perfect solution when it comes  
21 to clean energy. And, that clean energy is not  
22 necessarily synonymous with zero carbon. The  
23 smartest most secure clean energy strategy is in  
24 all of the above strategy, where a diverse  
25 portfolio of clean energy resources with their

1 intended strengths and benefits are employed, can  
2 ensure the lowest possible emissions at the lowest  
3 possible cost, while advancing grid reliability and  
4 resiliency and smart land use policy.

5           With respect to the various questions  
6 posed in your recently circulated discussion points  
7 memo, FCE respectfully suggests that New Jersey  
8 policy makers should look and ensure that clean  
9 energy power resources are defined to include  
10 resources in a position to meet the diverse and  
11 immediate energy needs of New Jersey's residents,  
12 by obtaining the lowest possible emissions from the  
13 most resilient, reliable, and cost-effective  
14 electrical grid possible. In practical terms,  
15 that means around-the-clock reliable, easily-sited  
16 resources such as stationary fuel cells should be  
17 in the equation.

18           Fuel cells are a form of clean energy  
19 that provide reliable consistent around-the-clock  
20 power where the power is needed most. Fuel cells  
21 emit negligible NOx and SOx and particulate  
22 pollutants. That is because in a fuel cell there  
23 is no combustion. Power is efficiently produced  
24 from fuel through a chemical reaction. As a  
25 result, all fuel cells do emit some carbon dioxide,

1 it is only a fraction of the carbon dioxide emitted  
2 by traditional grid generators because of the  
3 inherent efficiency of direct power conversion  
4 without combustion. As compared to the best  
5 available natural gas combined cycle power plant,  
6 our fuel cells emit 99 percent less particulate  
7 pollution, 99 percent less SOx, 80 percent less  
8 NOx. And, depending on configuration, 20 percent  
9 less carbon dioxide. Unlike renewable zero carbon  
10 resources, fuel cells provide steady continuous  
11 power, avoiding the need for backup or peaking  
12 generation to solve intermittency issues.

13 Over emphasis on zero carbon power  
14 generation will have the unintended consequence of  
15 masking the direction that carbon-reducing policy  
16 efforts should be headed towards; that is the  
17 reduction in transportation-based carbon.  
18 According to the US Energy Information  
19 Administration, power generation is no longer the  
20 greatest source of greenhouse gas emissions in the  
21 United States. Transportation is, as several  
22 speakers have pointed out so far today. Global  
23 fuel cell power can be utilized to advance hydrogen  
24 production and electricity for vehicle charging,  
25 thus producing not only grid emissions, but



1 transportation emissions, as well. Thus, the  
2 definition of clean energy will need to remain  
3 flexible in order to account for new and emerging  
4 technologies, as well as to ensure that the grid is  
5 progressively getting cleaner and greener.

6 State policies should also take into  
7 account land use impacts of clean energy  
8 installations. Our sure source fuel cells are  
9 easy to site, occupying less than an acre of land  
10 for ten megawatts installed. This compared to  
11 approximately seventy acres per ten megawatts  
12 installed of solar. Fuel cells are often sited in  
13 dense urban areas, providing power directly where  
14 the load is, thus avoiding transmission. In any  
15 evaluation process, large scale solar projects that  
16 displace core forest or farmland should be assigned  
17 with the carbon footprint that would have otherwise  
18 been absorbed by the forest removed to accommodate  
19 such an installation.

20 Our capacity and available factors  
21 exceed 90 percent as compared to an average of  
22 between 15 to 25 percent for solar and wind.  
23 Providing steady, reliable power irrespective of  
24 weather, creating resiliency where the grid goes  
25 down, and on site where it is needed. Fuel cells

1 in urban areas also contribute to the remediation  
2 and restoration to the tax rolls of brown fields.  
3 Fuel cell energy has constructed numerous projects  
4 in dense urban areas, such as the fifteen megawatt  
5 project in downtown Bridgeport, Connecticut where  
6 the fuel cell project was placed in the heart of a  
7 distressed urban community, remediating a  
8 long-vacant and polluted property, and restoring it  
9 to the city's tax rolls. At completion, the  
10 project became the largest property tax payer on  
11 the first square footage basis in the city.

12 Frankly, fuel cells are the perfect  
13 clean energy solution for dense urban communities  
14 where large tracts of open space are simply not  
15 available. Where smaller tracts of brown fields  
16 are right for project development. Where  
17 emissions are highest. And where local property  
18 taxes are sorely needed. As noted, fuel cell  
19 installations in urban areas can also provide  
20 hydrogen fueling and clean power for electrical  
21 vehicle charging. It also bears noting that more  
22 than 93 percent of the content of our fuel cells  
23 are recycled at end of life. Unlike most battery  
24 and solar technologies, our fuel cells do not end  
25 up in landfills, leaking lead or cadmium as they

1 degrade. Recent news reports have noted the  
2 difficulties in disposal of renewable energy  
3 technologies at end of life. Germany, for  
4 instance, reportedly had to manage 54,000 tons of  
5 waste from rotor blades from decommissioned wind  
6 turbines in 2014 alone. Fuel cell energy has also  
7 put in place measures to deal with end of life  
8 recycling of our product, further contributing to  
9 the environmental goals of New Jersey. We  
10 respectfully submit that any clean energy plan  
11 developed addressed end of life disposal and  
12 recycling.

13 To its credit, New Jersey has taken  
14 several steps to develop a thoughtful clean energy  
15 program and a Clean Energy Master Plan, encouraging  
16 the use of a wide array of new generation  
17 technologies. To help ensure the success of this  
18 program, Fuel Cell Energy suggests that it is now  
19 important to implement the program tools necessary  
20 to meet these important goals.

21 Thank you for your time. Fuel Cell  
22 Energy looks forward to contributing to New  
23 Jersey's pathway to clean energy, and being a part  
24 of New Jersey's Clean Energy Master Plan.

25 MR. SHEEHAN: Thank you very much.

1 Our next speaker is Doug O'Malley. And then the  
2 five up on deck are Ed Kelly, Joanne Milliken,  
3 Shihab Kuran, Bill Wolfe, and Gaylord Olson.

4 MR. O'Malley: Hi. My name is Doug  
5 O'Malley, I'm the Director of Environment New  
6 Jersey. And, I wanted to start off by thanking  
7 Commissioner Chivukula for his attendance at this  
8 hearing, as well as the leadership of the chair of  
9 the Energy Master Plan process, Grace Strom-Power,  
10 as well as the work of Ken Sheehan. And, really,  
11 just a thank you to all of you. I think this is  
12 on some ways a very painful process for us to be  
13 disconnected from Wi-Fi for a long time, and forces  
14 us to listen to what all of us are saying. And, I  
15 think there's value in that. A painful value, but  
16 there's value there.

17 That being said. I do just want to  
18 talk about the logistics of these meetings. I  
19 wanted to emphasize that, you know, I think we can  
20 think not only holding these hearings at this site,  
21 but to consider the State House for some of the  
22 future meetings. And then, most importantly, to be  
23 thinking of people that don't live or breathe  
24 energy and that can't be here at ten o'clock on a  
25 Friday morning. So, look at communities all around

1 the state, specifically environmental justice  
2 communities. You know. The E023 process and  
3 environmental justice has hearings in Newark and  
4 Camden in the evening hours. That's a process that  
5 we'd recommend that you replicated here.

6 That being said. I do think it's  
7 important to note that the BPU and the  
8 collaboration here on the Energy Master Plan  
9 process, is the first step. And unlike the  
10 Christie administration where you see a draft and  
11 have another set of hearings in the spring. And  
12 that does not go unnoticed. So, I also wanted to  
13 thank the BPU on that process. We obviously want  
14 to move full speed ahead.

15 I want to just talk about some global  
16 comments, and then talk specifically about Question  
17 1 and Question 5. Because I think that's really  
18 the heart, from at least our concern, with the  
19 clean renewable power hearing that we're holding  
20 today. I think the global comments -- and this  
21 cannot be reiterated enough -- is that we are in a  
22 climate crisis on global warming. The northeast  
23 just had its warmest climates on record. New  
24 Jersey just had its second warmest in August in  
25 record. For those of you that are familiar with

1 California, the climate crisis is not so an  
2 esoteric issue anymore. And then when we thing  
3 about what this impact is on New Jersey, all we  
4 need to do is look at the groundbreaking research  
5 of Professor Bob Cobb from Rutgers to look at the  
6 impacts of sea level rise on the state. And,  
7 again, these are not academic issues. We already  
8 are seeing property value loss on the Jersey shore  
9 from the impacts of climate change. Talk to anyone  
10 who lives in Norfolk, Virginia, and suddenly  
11 coastal flooding does not seem like a far away  
12 issue. And, so, that needs to be a guiding  
13 principal of this process.

14 One of the other aspects that have  
15 been mentioned, but there needs to be a larger  
16 emphasis, is the economic cost and the public  
17 health cost of our continued inability to have air  
18 quality that's healthy to breathe in this state.  
19 A vast majority of Jersey's counties, including  
20 Mercer, fail -- according to the American Lung  
21 Association -- for ground level ozone. And, I  
22 think it's ironic because we're kicking off the  
23 school year here in New Jersey, we are seeing not  
24 closures and early dismissal dates on snow days,  
25 but on heat days. That process will only move

1 forward.

2           In that vein, I think it is critical  
3 to note that the process in 2015 during the  
4 Christie administration wasn't just flawed in  
5 process, but also was flawed in the sense that  
6 climate change was a four-letter word. And, we  
7 obviously are very thankful that the administration  
8 is moving forward on a process that acknowledges  
9 that climate change is a real crisis. Especially  
10 in light of the Trump administration's climate  
11 denialism.

12           And, I wanted to obviously reference  
13 the importance of Governor Murphy's commitment for  
14 this process to have one hundred percent clean  
15 energy by 2050. And, the fact that, as the  
16 governor said, New Jersey should work to be the  
17 California of the east coast. As some of you  
18 probably saw, California just passed groundbreaking  
19 legislation to get one hundred percent clean  
20 renewable energy by 2045 through its legislature,  
21 and is awaiting signature by Governor Brown.  
22 That's where this state needs to go.

23           And then when we're speaking  
24 specifically about Question 1 -- because this  
25 question ultimately is -- you know, all of the

1 questions flow from Question 1. Which is, what is  
2 our definition of clean power. And, specifically,  
3 the definition and the title here is clean and  
4 renewable power. And, I think it's critical as the  
5 ratepayer counsel, those comments represented the  
6 clean renewable power does not include fossil fuel  
7 generation. We've lived through generations of  
8 treating our open skies like sewers for carbon.  
9 That needs to end. And then we also need to ensure  
10 the waste of energy, as the euphemism is, i.e.  
11 incinerators, are not considered to be clean  
12 renewable power. And, I think it's also critical  
13 to note that our nuclear fleet is not a renewable  
14 source of energy. And nuclear energy should not be  
15 considered a clean renewable source of energy. And  
16 I think it's important to note as we talk about  
17 2050, the Salem 1, Salem 2, and Hook Creek have  
18 retirement dates of 2036, 2040 and 2044. So, I  
19 certainly think that the planning process we should  
20 be respecting the current NRC licensing, and not  
21 planning for the extension of those facilities.  
22 And, really, we should be planning for the early  
23 retirement of those facilities in order the whole  
24 scale changes in our electricity grid over the  
25 course of the next three decades.



1           I wanted, also, to reference the  
2 importance of Question Number 5, because this  
3 ultimately gets at the challenge that is at the  
4 heart of a transition to one hundred percent clean  
5 renewable energy future. And, that is, we cannot  
6 continue to invest in fossil fuel infrastructure.  
7 And, we would urge this administration to implement  
8 a full moratorium on new planned fossil fuel  
9 infrastructure projects until the Energy Master  
10 Plan process is finalized next June. And,  
11 specifically, as part of this process the state  
12 needs to incorporate a full carbon life cycle of  
13 all proposed fossil fuel infrastructure projects.  
14 And, these incorporate an independent analysis  
15 relying on the office of ratepayer counsel and the  
16 actual stated need, which is removed as a part of a  
17 lobbying effort through EDECA, a generation ago in  
18 the late 90s. And, also, to incorporate a social  
19 cost carbon methodology that actually looks at the  
20 full impacts of any new proposed fossil fuel  
21 infrastructure. This is detailed in comments that  
22 Environment New Jersey submitted regarding the BPU  
23 OREC proposal.

24           And then, finally, we need to  
25 incorporate global warming emission analysis into a

1 new proposed air permits. That being said. We  
2 have multiple proposed fossil fuel projects around  
3 this state. Whether they be the Penny's Pipeline,  
4 whether they be the South Jersey Gas or New Jersey  
5 Natural Gas pipeline through the Pinelands -- which  
6 New Jersey Sierra Club Pinelands Preservation  
7 Alliance and Environment New Jersey are actually  
8 engaged in litigation. We have a new proposal to  
9 have a power plant in the heart of the Meadowlands  
10 for 1200 megawatts to go through New York, that  
11 would exist for generations. We have a proposal  
12 for a new gas plant in the heart of the Pinelands,  
13 in the Musconetcong. We cannot meet our goal for  
14 a one hundred percent clean renewable energy future  
15 if we continue to invest in fossil fuels.

16 And, I wanted to reference, also, just  
17 the reality that we are in a place of beyond  
18 climate inaction, or climate denialism. Roll backs  
19 at the federal level. This governor has committed  
20 to meeting goals of the Paris Climate Accord, and  
21 as a part of that the EPA clean power plant --  
22 which is under attack and being rolled back as we  
23 speak -- talked about New Jersey having an  
24 aggressive goal of -- the initial goal was more  
25 than forty percent reduction from our power sector.

1 Those are goals that we certainly should not be  
2 ignoring.

3 I wanted to make three final points.  
4 One is just the importance of off-shore wind. And,  
5 obviously, I wanted to reference the important  
6 collaboration of New Jersey Renews Climate Clean  
7 Energy Coalition. It's more than sixty  
8 organizations of labor fee, environmental, and  
9 community organizations. And most important for  
10 this it includes the business for off-shore wind as  
11 well as for United Steelworkers. Off-shore wind  
12 can be our future for meeting our renewable  
13 portfolio standard goal, that are now in law. And,  
14 also, it can be our future for building a true  
15 clean renewable energy economy.

16 Second, I also just wanted to  
17 reference the importance of the Regional Greenhouse  
18 Gas Initiative, and having a process on the  
19 re-entry on the Regional Greenhouse Gas Initiative,  
20 that it reflects those initial goals from clean  
21 power plant, and reflects a modeling to ensure that  
22 we have the strongest possible caps to generate  
23 more investment in clean renewable technologies.  
24 And, specifically, a cap that reflects those  
25 initial clean power plant goals. And, at a minimum

1 a cap of 12 million metric tons a year. We should  
2 not certainly have a cap that merely reflects our  
3 current emission goals.

4           And then, finally, I just wanted to  
5 reference the ongoing process around the nuclear  
6 subsidy bill, which was signed into law at the end  
7 of May; and, after a massive campaign urging the  
8 legislature to not move forward with that -- and  
9 the governor, as well. And, one of the aspects of  
10 the review process through the Board of Public  
11 Utilities, that it's critical -- is not only to  
12 ensure that the ratepayer counsel is part of that  
13 process, but receives full access to any  
14 confidential documents. We need to ensure that we  
15 are not going to unnecessarily subsidize currently  
16 profitable nuclear facilities, both in state and  
17 out of state. Those are investments that we need  
18 to be making a clean renewable energy technologies,  
19 and should not be going to currently profitable  
20 nuclear facilities.

21           And, with that, I'll conclude my  
22 testimony. Thank you. Thank you very much.

23           MR. SHEEHAN: Thank you. Next up we  
24 have Ed Kelly.

25           MR. KELLY: Good afternoon. My name

1 Edward Kelly. I'm the Executive Director of the  
2 Maritime Association of the Port of New York and  
3 New Jersey. We are here today to talk about the  
4 impact of clean renewable energy potentially on  
5 maritime domain awareness and safety. The Maritime  
6 Association represents over 580 corporate and  
7 individual members with the commercial maritime  
8 industries, specifically those which operate within  
9 the port of New York and New Jersey. The maritime  
10 industry is an important economic engine in the  
11 State of New Jersey. A 2016 economic study has  
12 revealed that our industry is responsible for  
13 229,000 direct jobs, 25.7 billion dollars in  
14 personal income, 64.8 billion dollars in business  
15 income, and the payments of a little over 8.5  
16 billion dollars in federal, state, and local tax  
17 revenues. This is important. And, we have to be  
18 very careful to protect that.

19           Clearly, the need to protect the safe  
20 and economic operation of the commercial maritime  
21 industry must be carefully considered whenever and  
22 wherever off-shore development projects are  
23 considered. It should be obvious to all parties  
24 that the introduction of in-water structures that  
25 are in or near an active navigation area will

1 dramatically increase both the potential for vessel  
2 collision and vessel or vessel collisions. We  
3 have to ensure that the development of energy is  
4 done in a safe, responsible, and secure manner.

5 Most notably, we would require that  
6 the EMP mandate and ensure that any in-water  
7 production capacity construction does not result in  
8 the degradation of navigational safety, national  
9 security, or the protection of the marine and  
10 coastal environment. Should such provisions not be  
11 taken, we must remind all concerned parties that  
12 the potential impact of a significant marine  
13 casualty in the New York by area would extreme and  
14 generational adverse impact on lives, property, the  
15 marine environment, and the multi-billion dollar  
16 tourism industry of the bordering states; as well  
17 as the degradation of the economic engine benefits  
18 which are derived from the maritime industry.

19 We have submitted written comments to  
20 point out specific points that we look at to ensure  
21 safety, security, and the protection of the  
22 environment as, we hope, collaboratively move  
23 toward creating clean, renewable, off-shore energy.  
24 We look forward to continuing to work together to  
25 ensure the safety of navigation, the security of

1 the marine domain, and the protection of the marine  
2 environment; as well as preserve the immense  
3 economic benefits provided by the commercial  
4 maritime industry through the port of New York and  
5 New Jersey. The coastal ocean is a very big place.  
6 We can and will work cooperatively to assist in the  
7 production of clean, renewable energy; but, we have  
8 to have a mandate that degradation of safety and  
9 the actual potential for severe damage to the  
10 tourism and marine environment in the coastal areas  
11 is not the result. Thank you.

12 MR. SHEEHAN: Up next, JoAnne  
13 Milliken.

14 MS. MILLIKEN: Good afternoon. I'm  
15 JoAnne Milliken with the New Jersey Fuel Cell  
16 Coalition. Prior to this position, I served for  
17 more than twenty years in the U.S. Department of  
18 Energy's Office of Energy Efficiency and Renewable  
19 Energy, where I directed programs covering hydrogen  
20 and fuel cell systems, energy efficient buildings,  
21 and solar wind and geo-thermal energy.

22 As a New Jersey native and a current  
23 part-time resident, I would like to thank the State  
24 of New Jersey for establishing this process for  
25 public input into the Energy Master Plan. My

1 comments were developed in collaboration with the  
2 National Fuel Cell Research Center at University of  
3 California Irvine. And, they will focus on  
4 hydrogen and fuel cell systems and their ability to  
5 help New Jersey achieve the goal of a hundred  
6 percent clean energy usage by 2050.

7 I want to thank Derek Phelps of Fuel  
8 Cell Energy who covered many of the comments that I  
9 was planning to make. And, I will modify my  
10 comments on the fly. I will try to not repeat his  
11 comments, as the committee requested.

12 MR. SHEEHAN: Thank you.

13 MS. MILLIKEN: We recommend that New  
14 Jersey's definition of clean energy be technology  
15 neutral, an focus of attributes required to achieve  
16 state energy requirements and economic and  
17 environmental objectives. Clean energy should be  
18 defined as heat power sources that reduce  
19 greenhouse gas emissions, criterion air pollutes,  
20 short-lived climate pollutant, and air toxic  
21 emissions, and water usage. All while improving  
22 power and transportation system efficiency,  
23 resiliency, and air quality at both the local and  
24 regional level.

25 As Derek pointed out, fuel cell



1 systems possess all of these attributes. They're  
2 highly efficient by-products electricity heat and  
3 water. And, the importance of resiliency as an  
4 attribute that should be highly valued and included  
5 in the definition.

6           Derek alluded to the full flexibility  
7 of fuel cell systems. We all know that hydrogen  
8 is the ideal fuel, but they also operate on  
9 hydrogen-rich fuels, natural gas, bio-gas, propane.  
10 While New Jersey should aspire to fuel cells  
11 operating on renewable hydrogen in the longer term,  
12 hydrogen from natural gas is a viable approach now  
13 and for the transition, given it's relatively low  
14 cost and the high efficiency and reduced emissions  
15 of fuel cells. This is another example of not  
16 letting the enemy of the good, especially since we  
17 need to get to the economies of scale necessary to  
18 reduce the cost of these systems.

19           All emerging clean energy technology  
20 shares some common obstacles. We are all familiar  
21 with them. Economies of scales I just alluded  
22 to. Overcoming consumer resistance to change, and  
23 establishing consistent and stable policies that  
24 reduce the risk to companies, investors, and  
25 consumers. Factor-specific to the transportation

1 sectors have limited the market growth of battery  
2 electric vehicles -- gasoline prices have remained  
3 relatively low, and there's limited charging  
4 infrastructure in many locations. The limited  
5 driving range and long recharging times compared to  
6 conventional vehicles also discourages some  
7 consumers from purchasing battery electric  
8 vehicles. Fuel cell electric vehicles face  
9 similar infrastructure challenges in the  
10 marketplace, but they offer consumers a choice of  
11 different vehicle attributes. In addition to  
12 charging infrastructure, New Jersey should support  
13 development of a hydrogen refueling infrastructure.  
14 It is the key enabler to greater market adoption of  
15 fuel cell vehicles, and realizing their substantial  
16 advantages that include greater driving ranges,  
17 fast refueling, and the ability to co-locate with  
18 existing fueling infrastructure during the  
19 transition.

20           Some states have developed programs to  
21 address fuel cell market challenges, like the  
22 alternative and renewable and fuel and vehicle  
23 technology program which has supported the  
24 installation of almost sixty hydrogen fueling  
25 stations in California -- thirty-five which are

1 operating today. And, the state's self-generation  
2 incentive program and fuel cell energy metering  
3 tariff that has supported around 250 megawatts of  
4 stationary fuel cell simulations. Through a  
5 reverse auction, that metering and utility  
6 procurement, Connecticut has over 150 megawatts of  
7 systems operating and in development today --  
8 stationary systems. By contrast, there are less  
9 than ten megawatts of stationary fuel cell systems  
10 installed in New Jersey. To ensure transition to a  
11 sustainable energy system, New Jersey should invest  
12 in technologies that provide resilient power,  
13 decreased emissions, and improved air quality.

14 A lot of these comments that follow  
15 were mentioned by Derek. I will just reiterate  
16 that tri-generation fuel cell systems produce  
17 electricity heat and hydrogen for refueling fuel  
18 cell electric vehicles that span the range of  
19 light-duty vehicles to heavy-duty vehicles, and  
20 cargo and material-handling equipment. I will also  
21 add to some of Derek's comments, that New Jersey  
22 should look to states like California where a large  
23 magnitude of intermittent renewables has caused  
24 some gaps in generation and demand response issues.  
25 And, I think there's a lot to learn there from

1 California's relatively rapid pace of installing  
2 renewable energy.

3           Regarding state policy, New Jersey has  
4 taken great initial steps to develop a clean energy  
5 program. The next generation of this program  
6 should incorporate market mechanisms such as a  
7 reverse auction to allow clean energy projects to  
8 compete based on desired attributes and  
9 cost-effectiveness in the short term. Future  
10 incentives should be paid based on the technologies  
11 rather than an up-front incentive.

12           California, Connecticut, and New York  
13 have all implemented pay-for-performance clean  
14 energy incentives to assure continued operation and  
15 pay back from their investments. On the  
16 transportation side, Governor Murphy has taken the  
17 important step to signing the state zero emission  
18 vehicles program's memorandum of understanding  
19 committing to coordinated action with eight other  
20 states to ensure the successful implementation of  
21 ZEV programs. New Jersey should follow up by  
22 setting ZEV targets, expanding policy to include  
23 hydrogen refueling stations, hydrogen refueling  
24 infrastructure, and encouraging state and municipal  
25 ZEV fleet purchases.

1           The New Jersey Fuel Cell Coalition has  
2 partnered with organizations in other northeast  
3 states. For example, the Connecticut Center for  
4 Advanced Technology, to identify the near-term  
5 opportunities in New Jersey for hydrogen and fuel  
6 cell systems. And, we will include these in our  
7 more detailed comments.

8           Finally, environmental justice to  
9 ensure direct deposited impact on overburdened  
10 communities. We recommend bonus incentives be  
11 provided for projects installed in those identified  
12 communities. New York has established such a  
13 bonus incentive of program in their clean energy  
14 fund to encourage project development in local  
15 communities.

16           In conclusion, I would like to thank  
17 you for this opportunity to present  
18 recommendations. And, the New Jersey Fuel Cell  
19 Coalition and our collaborators look forward to  
20 engaging further in the public input activities,  
21 and submitting detailed written comments as part of  
22 this public stakeholder engagement.

23           MR. SHEEHAN: Thank you very much.  
24 Our next speaker is Shihab Kuran.

25           MR. KURAN: Thank you, Ken. My name

1 is Shihab Kuran. I'm a local entrepreneur. I  
2 submitted written answers to the questions. But,  
3 I'd like to focus on one topic today through my  
4 verbal comments. And, that specifically, economic  
5 development.

6           As a local entrepreneur, I had the  
7 honor of working with many of you in the public and  
8 the private sector of who are gathered here. And,  
9 the point I would like to raise is that we might be  
10 able to walk away at the end of the Energy Master  
11 Plan with a set of goals of how to meet the clean  
12 energy goals; but, the danger might be that we  
13 achieve those at a severe cost of economic leakage  
14 and significant economic loss to the taxpayers. As  
15 we know, there's a strong overlap between  
16 ratepayers and taxpayers. So, while I agree  
17 generally with the rate advocate, I think  
18 decoupling jobs from the goals of the Energy Master  
19 Plan, given the strong overlap between ratepayers  
20 and taxpayers, we might look right in the short  
21 term. But, in the terms of the long-term view,  
22 that might be the wrong decision. The Energy  
23 Master Plan is a twenty to thirty-year outlook.  
24 We're looking at clean energy by 2050, that's over  
25 thirty years from today.

1           So, if you would allow me, I'd like to  
2 be share some comments on how we can spur economic  
3 development, create jobs, and effectively --  
4 instead of only focusing on cost reduction of  
5 solutions -- we can focus on enhancing the benefit.

6           So, the benefit cost ratio rather than  
7 just the cost important itself. If we look at the  
8 main sectors that matter, frankly, in the Energy  
9 Master Plan as we go forward, obviously solar comes  
10 to the front. And, so, what can we do as a state  
11 when it comes to economic development for solar?  
12 How do we localize that sector in New Jersey?

13 Unfortunately that is, I think, a sector where the  
14 train has left the station. I think we know that  
15 Asia, and specifically China, is a major  
16 international manufacturing location for solar  
17 energy. Low cost wages and low cost labor is not  
18 what we are known for in the state of New Jersey,  
19 and I think that's something we can't compete with  
20 China on.

21           The next sector is wind. So, it's  
22 great we tap into our off-shore resources in terms  
23 of wind. And, luckily there are regional  
24 industries when it comes to manufacturing. If we  
25 think broadly about renewables, we actually find

1 that intermittent renewables today mostly are  
2 cheaper than fossil fuels. So, if they are, why do  
3 we have a committee when we have the Energy Master  
4 Plan? The market should take care of that. The  
5 fact is, intermittent renewables are cheaper than  
6 fossil fuels. I mean, you see PPA's and otherwise,  
7 a few cents a kilowatt hour -- three, four --  
8 that's actually cost-effective and highly  
9 competitive. However, the market needs firm  
10 energy. And firm energy is significantly more  
11 expensive than fossil fuels today. And, that's a  
12 challenge. So, how do we perk up renewables?  
13 Obviously, the first solution that comes to mind is  
14 through energy storage. And energy storage remains  
15 the holy grail of the power sector today. If  
16 energy storage is cost-effective, the Energy Master  
17 Plan goals would be met without the need of public  
18 and private -- just the sector would take care of  
19 itself.

20 Energy storage is complex,  
21 technologically complex. It includes disciplines  
22 like chemistry, electronics, steady conductors,  
23 software, nano-technology. And, remains an  
24 obstacle. And, if we look at those challenges, we  
25 see that innovation is still required to solve the



1 cost and the solution of energy storage. But, I  
2 argue that the good news is that New Jersey has  
3 many of the differentiated advantages that allow  
4 us, in the short term and the long term, to  
5 possible create a sector, localize a sector when it  
6 comes to energy storage right here in New Jersey.  
7 We have a strong chemical engineering base. We  
8 have a strong electronics and semi-conductor base.  
9 We have a strong nano-technology industry. We have  
10 a strong software industry. And, so, I consider  
11 that to be a worthy cause. A sector that we can  
12 go after and plant our flag and become  
13 differentiated internationally, not just locally.

14 As a matter of fact, Thomas Edison  
15 back in 1903 started battery manufacturing in West  
16 Orange, so we have a long heritage when it comes to  
17 energy storage. Batteries are one form. I'm not  
18 picking a particular chemistry or technology, I'm  
19 just talking about a sector when it comes to energy  
20 storage.

21 So, my recommendation here is that we  
22 pick a sector -- and I argue that energy storage  
23 might be that one, given the fact that it hasn't  
24 been addressed and solved yet, and we have some  
25 strategic advantages. But, my recommendation is

1 form a committee or a group that focuses within the  
2 Energy Master Plan on how we localize a sector in  
3 energy storage, and come up with recommendations.  
4 A committee that has public and private  
5 stakeholders. I don't know what the specific  
6 answer is. We have many of the best practices and  
7 learning experiences being active in having an  
8 energy storage in solar and wind and smart grid and  
9 in fossil fuels. We have, I believe, valuable  
10 advice and contribution that we can bring forward.  
11 But, there are many in the room that have amazing  
12 experiences that they can come together and have  
13 recommendations for the Energy Master Plan for  
14 localized in the sector, both in energy storage,  
15 that allows us to lower the cost, but, I would  
16 argue, enhancing the benefits for both the  
17 ratepayers and taxpayers. Thank you.

18 MR. SHEEHAN: Thank you very much.  
19 Our next speaker is Bill Wolfe. Okay. Gaylord  
20 Olson.

21 If I may, before we get started, on  
22 deck is James Pfeiffer, Gearoid Foley, William  
23 O'Hearn. And, that represents the last of the  
24 speakers I have who have indicated that they have  
25 submitted comments prior to the process. Sir?

1                   MR. BURCAT: I submitted comments and  
2 signed in.

3                   MR. SHEEHAN: Okay. You're name, sir?

4                   MR. BURCAT: Bruce Burcat.

5                   MR. SHEEHAN: Bruce Burcat. You're  
6 fourth on deck.

7                   Go ahead, sir.

8                   MR. OLSON: My name is Gaylord Olson.  
9 I'm not here representing any commercial interest.  
10 I'm a semi-retired electrical engineer. I happen  
11 to be on the advisory committee for engineering at  
12 Temple University in Philadelphia. I have an  
13 active interest in alternative energy in general,  
14 and energy storage.

15                   I'd like to leave you with one number  
16 today. And, I hope you remember this number.  
17 It's 2.8. And, I want to tell you what this number  
18 represents. I'll try to be clear.

19                   Last year there was a report published  
20 by the National Renewable Energy Laboratory, part  
21 of the Department of Energy -- that we all paid for  
22 through our income tax. The title of the report  
23 was the U.S. Solar Portable Take System Cost  
24 Benchmark for part of last year. There were five  
25 authors of this report. And, here are some of the

1 numbers. Actually, they wrote the numbers down  
2 into four major categories, the smallest being  
3 residential, the next size up was commercial, the  
4 next size up from that is utility scale, and then  
5 the utility scale fixed-tilt systems, and then  
6 another category, utility scale one-axis tracking  
7 systems.

8           Now, this gets a little bit into the  
9 weeds, maybe. But, when I say one-axis tracking,  
10 is that a term familiar to anybody here? I see  
11 some people nodding "yes". At any rate, it means  
12 that the solar panels can rotate to face the sun at  
13 all hours of the day, so you gather more energy  
14 that way when the panels can always approximately  
15 face where the sun line is. So, that's the very  
16 best possibility to get the most energy from a  
17 large scale system. And, fortunately, with our  
18 new governor, and we have the opportunity with  
19 community solar now, to have -- as far as I know --  
20 very large size arrays put out on open fields away  
21 from any city.

22           So, hear are some of the numbers that  
23 were in this report. For the residential,  
24 smallest scale, the cost for energy -- this is not  
25 power, this is energy -- and, you can assume it's

1 energy per year -- between 12.9 and 16.7 cents per  
2 kilowatt hour is the levelized cost of electricity  
3 for rooftop arrays. On the other end of the scale,  
4 the largest arrays, one-axis tracking utility scale  
5 cost, is a range of 4.4 to 6.1 cents per kilowatt  
6 hour. Now, if you take the mid points of those  
7 two ranges -- let's say fourteen cents per kilowatt  
8 hour for rooftop solar, and about five cents per  
9 kilowatt hour for one-axis tracking system, open  
10 field arrays, the ratio of those two numbers is  
11 2.8. I'd like you to remember that number and  
12 think about it. If you can buy ten kilowatts and  
13 have them on your rooftop, you can take the same  
14 investment -- according to these numbers -- and buy  
15 twenty-eight kilowatts, when you're a part owner of  
16 a large community array out in a big open field.

17 And, so, I hope that makes sense to  
18 everybody. And think about that as the best  
19 possible investment to give the most cost-effective  
20 solar electricity for New Jersey.

21 Two other factors that are related to  
22 this. If you happen to have a home that has  
23 enough space around it for large trees, then plant  
24 some trees around your home rather than put solar  
25 panels on your roof. If anybody's been out in the

1 open sun around here in the past few weeks, you'll  
2 know that it's pretty uncomfortable as compared to  
3 being in the shade of a large tree. It's the same  
4 for your home. Your home will have a lower air  
5 conditioning bill if it happens to have trees  
6 surrounding it to give it some shade. So, another  
7 cost benefit to being part owner of a community  
8 large array, rather than on your roof, is you'll  
9 have lower air conditioning bills for your home.

10 A third benefit is, if you look at the  
11 resale value of homes, you'll find that there's a  
12 very significant higher resale value for homes that  
13 happen to be surrounded by large trees. And, it's  
14 probably in the range of five to ten percent. I've  
15 collected some numbers on that. So, that  
16 represents another reason why everybody should be  
17 encouraged to be a part owner of a large community  
18 array, rather than rooftop. I know this goes  
19 against the grain of some people who have spoken  
20 here earlier, but, basically, I think it's going to  
21 be proven. Now, other states, of course, are way  
22 ahead of us in terms of community scale and large  
23 scale solar arrays.

24 Another point that I wanted to get to  
25 refers to Item 9, the discussion point. Which is

1 how should the state address the base load needs  
2 versus intermittent elements of clean energy  
3 generation? Now, we've heard a little bit about  
4 energy storage. But, with a large enough scale of  
5 energy storage, we really don't need anymore base  
6 load generation. And, let me explain that a little  
7 bit further.

8           By far, the largest form of energy  
9 storage in the world today were utility scale  
10 electricity happens to be what's called pump  
11 hydro-electricity. I'm sure some of you in the  
12 audience are familiar with that. Does that ring a  
13 bell with anybody here? Okay. All right. If  
14 not, look it up in Wikipedia. That is between 95  
15 and 99 percent of large-scale energy storage today  
16 in the world. Now, people will respond typically  
17 that the experts have studied this already and they  
18 cannot find anymore reasonable places to put dams  
19 to utilize pumped hydro-electricity. It so happens  
20 that in Germany there are at least three locations  
21 where they have large-scale utility pumped  
22 hydro-storage without a dam. And, the way that is  
23 done is with a naturally flowing river as a source  
24 of water at the bottom. And, and artificial  
25 reservoir with storage of the water at the top of a

1 nearby hill. No dam. No disruption of fish or  
2 anything of that sort.

3 Now, if any of you have ever hiked  
4 along the Appalachia trail up in the northeast  
5 corner of our state, you will see that there a  
6 thousand foot-high hills right next to the Delaware  
7 River. So, we can provide a massive energy storage  
8 of that form along the Delaware River. And, this  
9 can also be done along the Hudson River. Perhaps  
10 more in New York than New Jersey. But, basically,  
11 anywhere there's a river that has a high enough  
12 flow rate, and hills that are high enough, you can  
13 provide energy storage on a massive scale, which  
14 will enable a lot more solar and wind being  
15 intermittent to provide the power needed. So,  
16 that's why I say, we don't absolutely have to have  
17 base load continuous power as something to make up  
18 for the intermittency of solar and wind.

19 Also, a lot of the points that I'm  
20 making here are currently on the internet. If you  
21 want to see them, go to the website for the New  
22 Jersey Sierra Club. Look at their latest  
23 newsletter, and there's an article on Page 13 of  
24 the Sierra Club current newsletter. A few more  
25 details will be found there.



1                   So, that's about it. Except for one  
2 final point. I would recommend that you all keep  
3 an open mind with respect to the future for nuclear  
4 power. Don't just judge it on what we have today.  
5 There are lots of people researching smaller and  
6 more economical and safer forms of nuclear power  
7 that we should at least consider, rather than  
8 excluding nuclear forever more. Thank you for  
9 listening.

10                   MR. SHEEHAN: Thank you. James  
11 Pfeiffer is next.

12                   MR. PFEIFFER: Good afternoon. My  
13 name is James Pfeiffer. I do represent a company,  
14 Green Waste Energy. Chairman Sheehan, Ms. Corbit,  
15 Commissioner Chivukula, and panel members, thank  
16 you.

17                   So, the Energy Master Plan talks about  
18 innovation. And, that's what I'm here to talk  
19 about. The best way to get someplace is to open  
20 your minds, and to take a look at other  
21 technologies, other things that are out there that  
22 can move you in the direction that you want to go.  
23 And, along with innovation goes new jobs. They go  
24 hand-in-hand. So, as opposed to some of the  
25 earlier opening statements, I am recommending a

1 change, an update, to the code that defines  
2 renewable energy. And, I would like people to  
3 consider the addition of a new Point 8 that states,  
4 electricity generated by using the gas produced  
5 from the processing of any carbonaceous matter into  
6 fuel.

7 Now, most of you guys are not familiar  
8 with this part of code. And I wouldn't be if it  
9 wasn't part of my business. But, the code talks  
10 about anaerobic digestion. That's okay. It talks  
11 about waste gas from landfills as being okay. So,  
12 how about another process? How about a process  
13 like pyrolysis to take this wastewater treatment  
14 sludge and make it into a synthetic gas, then to  
15 create electricity from that gas. And, it's at  
16 that point, technology independent. It doesn't  
17 matter whether it's a turbine, a reciprocating  
18 engine, or a fuel cell to take that gas. So, the  
19 benefit is it's something that's easy to  
20 understand, like wastewater treatment sludge. If  
21 you go in with dry sludge, you have a hundred  
22 parts, you do anaerobic digestion, you still have  
23 eighty parts of the material left that you have to  
24 dispose of. And, you've created two parts of  
25 electricity -- some random number. If you do

1 something like pyrolysis, then you're going to have  
2 only fifteen parts left over, and you're going to  
3 have two or three times as much electricity. But  
4 it's any carbonaceous material. Which is why I'm  
5 suggesting it like this. It doesn't necessarily  
6 reflect pyrolysis. It could be gasification, or  
7 anything else. It's innovative. It's different.  
8 It is not incineration.

9           So, what we've got then is you're  
10 supporting a lot of the other fundamental -- first  
11 of all, this is Point 2 on your list of discussion  
12 points. What it does, though, it supports a lot  
13 of the other things in these other points. It  
14 supports job. Jobs to build these plants, jobs to  
15 run these plans. It supports environmental  
16 justice. These things are clean. These we're  
17 talking about the generation is going to be at  
18 least as clean as the emission standards for a  
19 combined heat and power system, possibly as clean  
20 as fuel cell, which means once you have the gas you  
21 can put them very close to populated areas. I  
22 would never recommend, really, putting them in  
23 downtown. But, you can certainly put them very  
24 close. It supports electric vehicle industry,  
25 because now you have a constant source of power.

1 It's not just daytime or windy power, it's  
2 constant. So, you can make electricity at night  
3 and rejuvenate all those electric vehicles. The  
4 life cycle costs of this are very reasonable, if  
5 you compare them to the other technologies of  
6 taking something and running it for a while and  
7 then having to dispose of it. So, I'm relatively  
8 sure.

9 That's all I have to say. Add a new  
10 Point 8, and I'll be glad to give you the verbiage  
11 again any time you want it. Thank you.

12 MR. SHEEHAN: Thank you. Next speaker  
13 is Gearoid Foley.

14 MR. FOLEY: Director Sheehan, members  
15 of the committee, thank you very much for giving me  
16 this opportunity. I'm here representing the  
17 Department of Energy's Combined Power and Technical  
18 Assistance Partnership. We did submit written  
19 comments, so I'm just going to cite a few of those  
20 comments, just brief, and a couple of reference to  
21 the points in the question list.

22 The DOE's CHP Technical Assistance  
23 Partnerships work with end users and policy makers  
24 to assist in transforming the market for combined  
25 heat and power, waste heat to power, and district

1 energy technologies throughout the United States.

2 Combining power technologies holds  
3 enormous potential to improve the nation's energy  
4 security and resiliency, and reduce greenhouse gas  
5 emissions. CHP supports our move to a clean energy  
6 economy, and the creation of green jobs. The  
7 Department of Energy has long championed CHP  
8 technologies to harness the flow of power of CHP to  
9 help the nation meet its energy goals.

10 CHP can be a dispatchable power  
11 resource that can work in conjunction with  
12 renewables, including wind and solar, to provide  
13 cost-effective power in hybrid applications. Such  
14 applications either at grid level or at micro-grid  
15 level, allow for a transition to afford renewable  
16 base grid in a cost-effective manner, that is  
17 compatible with the existing grid infrastructure.

18 CHP, as part of a community-based  
19 hybrid micro-grid including renewables and battery  
20 storage, represents a cost-effective means of  
21 providing resilient base load power and thermal  
22 energy for local community, including critical  
23 infrastructure in an accessible way for all.

24 CHP can play a key role in addressing  
25 24-hour base load, and can be configured to be

1 dispatchable as necessary when renewables are not  
2 available. CHP provides a cost-effective and  
3 clear near-term technology option as other  
4 technologies are being developed. CHP can be  
5 designed to meet local thermal needs, and export  
6 power to the grids when grid supplies are deficient  
7 to meet demands.

8           The advancement of CHP is part of the  
9 U.S. Department of Energy's Office of Energy  
10 Efficiency and Renewable Energy -- EERE -- mission  
11 to create sustained to American leadership and to  
12 transition to a strong prosperous America powered  
13 by domestic, affordable, and secure energy for  
14 industrial, manufacturing, federal, institution,  
15 commercial, and multi-family sector.

16           I want to just address a couple of the  
17 aspects in the -- particularly addressing the  
18 question list. On issue Number 2, question of  
19 flexibility in the definition of clean energy.  
20 Allowing for combined heat and power, which is a  
21 fossil fuel, typically can be bio-fuel but  
22 typically fossil fuel technology, does provide the  
23 option to provide a very cost-effective means of  
24 obtaining base load power.

25           In question Number 3, in terms of

1 obstacles. Certainly this morning, earlier, we  
2 heard from ratepayer -- rate counsel. Cost, and I  
3 think we recognize cost being one of the issues  
4 that need to be overcome. As CHP is  
5 cost-effective, that is really what spurs the use  
6 of CHP currently. So, it is a cost-effective  
7 method as we move forward with the transition, and  
8 gives us an option in that tool box as we move  
9 forward with this transition.

10                   Number 4. Just the issue of stranded  
11 cost. It's not necessarily defined very well, but  
12 I think just one issue relating, again, to combined  
13 heat and power. These are typically twenty-year  
14 length investments. Twenty-year life cycle  
15 investments. They're not infrastructural  
16 fifty-year life cycle investments, so they fit into  
17 that transition timeline. And, they are typically  
18 shared in large part by the whole site for that  
19 system.

20                   Reference just specifically to Number  
21 9. As I mentioned before, I think CHP is probably  
22 the go-to technology for base load power through  
23 this transition process. Most energy efficiency  
24 fossil fuel combined in a combined heat and power  
25 configuration available today, always better than

1 the best of the fossil fuel grid technologies.

2 And, finally, on Question Number 12,  
3 on the transition portfolio mixture. Again, I'd  
4 encourage maintaining CHP in the mix just adds to  
5 the tool box as a cost-effective method to  
6 assisting that transition towards a hundred percent  
7 renewable future. Thank you very much.

8 MR. SHEEHAN: Thank you. Agnes  
9 Marsala, could you step up?

10 MS. MARSALA: I applaud the state's  
11 efforts to transition to clean renewable energy. I  
12 feel we have more of an imperative to do so. We  
13 are at a common crisis, and need a ten-year phase  
14 out of fossil fuels. And, the best way to start is  
15 a moratorium on all fossil fuel infrastructure.

16 Further, all approved methane  
17 infrastructure should be halted until a full review  
18 of the permitting process under the Christie  
19 administration is conducted. There is no clear  
20 example, in my opinion, of regulatory capture than  
21 what we have witnessed in last eight years. Well  
22 past time we rethink that kind of policy, and  
23 reject the last twenty-five years of deregulation  
24 and market tools, which are proven to be a  
25 disaster. And, I applaud the Governor for taking



1 these steps.

2           We need to repeal the New Jersey  
3 energy deregulation law and replace it with truly  
4 public utility regulation, and public ownership.  
5 It's time for real energy democracy. It's time  
6 for bold ideas, such as cooperatives. Municipal  
7 control of certain functions and operations and  
8 reform efforts directed at utilities. Even a  
9 public works approach to energy transition that  
10 worked so successfully during the middle decades of  
11 the last century.

12           It's clear that the profits-based  
13 approach has failed, and in fact is a profound  
14 threat to all living things. Publicly-owned and  
15 operated energy may be the most equitable,  
16 efficient, and effective way to address the climate  
17 crisis, to protect workers, strengthen unions, and  
18 create an energy system responsive to community  
19 needs. Given the unions significant  
20 representation and existing energy utilities, and  
21 their ability to better protect workers in most  
22 publicly-owned and operated systems, the trade  
23 union movement has a much greater role to play in  
24 developing publicly renewable power. Creating  
25 energy systems that are both ecologically

1 sustainable and equitable depends largely on the  
2 ability to shift power from the fossil fuel  
3 industry to workers and communities. Utilities  
4 under public ownership and control, either through  
5 re-municipalization or by reform of existing public  
6 utilities, would be able to rapidly scale-up  
7 renewable energy, protect workers' rights, and  
8 generate decent and stable jobs. Create an energy  
9 system based on ecologically sustainable methods of  
10 energy extraction, transport, and use, be  
11 responsive to the needs of the community, address  
12 energy poverty, and aggressively promote energy  
13 conservation.

14           These ideas are not beyond the  
15 imagining. Back in 1990, the Florio administration  
16 combined some of the BPU energy programs with the  
17 DEP, forming the DEPE -- the Department of  
18 Environmental Protection and Energy, for example.  
19 Further, there are examples of municipally-owned  
20 utilities across the U.S., in places like  
21 Sacramento, Austin, Chattanooga, Aspen, and Winter  
22 Park, Florida.

23           Now, I've literally quoted from the  
24 Trade Unions for Energy Democracy's working papers  
25 here. Specifically, Power to the People Toward

1 Democratic Control of Electrical Power Generation.  
2 This, and eleven other really great titles, can be  
3 found at UnionsforEnergyDemocracy.org. And, I  
4 highly recommend everyone give them a read. And, I  
5 thank you very much for giving me this opportunity  
6 to speak.

7 MR. SHEEHAN: Thank you very much.  
8 Our next speaker is William O'Hearn.

9 MR. O'HEARN: Good afternoon. And  
10 thanks everybody for sticking around. My name is  
11 Bill O'Hearn. I'm the Corporate Communications and  
12 Outreach Manager for a non-profit group called  
13 Business Network for Off-Shore Wind. And we are a  
14 non-profit, but we take a business approach to the  
15 off-shore wind industry. We basically try to  
16 bring a lot of the wisdom from Europe over here  
17 into the east coast of the United States.

18 I want to thank Mr. Sheehan and the  
19 rest of the BPU for the great job that you've done  
20 on off-shore wind. We appreciate it. And, for  
21 having me here today.

22 So, here's the bad news for this  
23 group. People who know me, know that once I get  
24 talking about off-shore wind, I can go on for  
25 hours. Right? And here's the good news; the good

1 news is I have a dinner appointment with my wife  
2 and daughter in Boston at seven o'clock tonight.  
3 And, perhaps, even better news, is that in terms of  
4 full disclosure, my organization is proud to be  
5 part of what we call the RanBall team that is  
6 developing the strategic plan for off-shore wind  
7 for the state. So, I'm going to keep my remarks  
8 general, because, of course, we are working on the  
9 actual off-shore wind plan for New Jersey. And,  
10 we're proud to be doing that.

11           So, I also want to recognize Jersey  
12 Renews, members of Jersey Renews, and my colleague,  
13 Doug O'Malley, that has been great to work with,  
14 and helping us explain our point of view to the  
15 environmental community. And we had some great  
16 support there, and we appreciate that.

17           So, just a couple of bullets, a couple  
18 of points. I was here, by the way, I testified in  
19 the 2011 Energy Master Plan. And, I was here for  
20 the 2015 update. And I can assure you, this is a  
21 much happier occasion than those were. So, enjoy  
22 this. This is actually good, what we have here  
23 today. We appreciate it.

24           One of the points I would make is that  
25 -- and this is from the 2011 EMP and from 2015 EMP

1 update -- in those documents there was a real  
2 reliance on natural gas and new gas pipelines as  
3 the best way to meet electricity demand. Not  
4 surprisingly, considering that was the Christie  
5 administration back then. And, that was the flavor  
6 that we got. What I recommend, and what I'm  
7 hearing today, is that we change the whole flavor.  
8 Completely redo the plan. So that it has much more  
9 of the language of the climate change, global  
10 warming in it, and reliance, on stuff like new  
11 technology, and, of course, clean energy, as a way  
12 of driving economic development.

13           One of the things we cite in the work  
14 that we do, is we talk about the City of Riverhaven  
15 in Germany, which was completely revitalized by the  
16 off-shore wind industry. Same thing for some very  
17 sad fishing villages in England, one of which is  
18 called Gull. And, basically, has completely  
19 transformed itself into a high-tech assembly and  
20 off-shore wind manufacturing. So, that kind of  
21 economic development is possible with clean energy  
22 and driving the fighting against climate change.  
23 That's what really pushes us to do the work that we  
24 do.

25           So, one of the things that we'd like

1 to see, is we want to make sure that there's a  
2 description in some detail of how the clean energy  
3 elements of solar -- as you've heard a lot about  
4 today -- and wind conservation and storage will  
5 work together to achieve a hundred percent clean  
6 energy by 2050 goal. For example, I think it's  
7 important that we explain how the equitable and the  
8 daily cycles of solar and off-shore wind compliment  
9 each other. Quick example, is that off-shore wind  
10 is extremely strong in the winter, when solar is  
11 relatively light. Also, in terms of the -- if you  
12 think about the daytime hour-by-hour production of  
13 solar, of course it goes like this, with midday  
14 being strongest. And the way the off-shore wind  
15 goes is more like this. And we crank out the most  
16 power late afternoon, early evening, when those air  
17 conditioners are coming on in the summer time. So,  
18 it's a good match. I mean, these technologies can  
19 work together.

20 Of course, we recognize that it's a  
21 new technology. It's going to take some  
22 investment. And, so, we're certainly conscious --  
23 we heard from the advocate, and we completely agree  
24 that things should be done year by year in a  
25 planned transparent basis to minimize impact on

1 ratepayers. One of my jobs working with the Board  
2 will be to continually explain the relationship and  
3 the development between the Energy Master Plan and  
4 the Off-Shore Wind Strategic Plan, which again,  
5 we're part of that team.

6 And then, I guess, lastly, just to  
7 keep my remarks short -- and again, I appreciate  
8 your patience -- is I want us to make sure that we  
9 acknowledge New Jersey's role, and as a national  
10 clean energy leader and the spirit of the old  
11 Energy Master Plan that was done in 2008. Let's  
12 get back to that, that spirit, that desire to be  
13 the best. And we recognize the governor for  
14 pursuing that. And, we want to keep that as an  
15 ongoing goal for 2050. Thanks very much.

16 MR. SHEEHAN: Thank you very much.  
17 Bruce Burcat. And then Joe Accardo next.

18 MR. BURCAT: Good afternoon. I am  
19 Bruce Burcat. I'm the Executive Director of the  
20 Mid-Atlantic Renewable Energy Coalition. We're  
21 called MAREC. MAREC is a 501c(3) corporation that  
22 was founded to help advance the opportunities for  
23 renewable energy in this region, particularly in  
24 New Jersey and other states in the mid-atlantic, as  
25 part of the PJM region in the grid operator.

1           Our members consist of utility scale  
2 wind, including off-shore wind; and, solar  
3 developers, wind turbine manufacturers, and some  
4 non-profit organizations. MAREC supports  
5 Governor's Murphy's goal of moving away from the  
6 reliance upon fossil fuels as New Jersey's primary  
7 source of energy. A commitment to clean energy is  
8 the cornerstone of the policy to remove impacts of  
9 global warming, and other harmful emissions. MAREC  
10 believes that a future of renewable energy, coupled  
11 with energy storage by 2050, is achievable. And,  
12 will not only help protect New Jersey citizens from  
13 global warming, but continue to lead New Jersey  
14 forward as a state investing in its economy, thus  
15 bringing jobs, manufacturing, and new off-shore  
16 wind industry into the state.

17           Conversion to clean energy from fossil  
18 fuels will also require reliance. And I think this  
19 is very important -- a significant purchases of  
20 utility scale solar and on-shore wind from the PJM  
21 region to meet the goals of fifty percent, and a  
22 hundred percent clean energy. And that would also  
23 include, obviously, energy efficiency, as well.  
24 Clean energy, in our opinion, should be defined as  
25 renewable energy, a hundred percent carbon-free,



1 non-emitting, environmentally sound resources that  
2 are truly renewable in the sense that they do not  
3 deplete over time. These are sources like solar,  
4 wind, hydro-electric facilities -- three megawatts  
5 or less -- geo-thermal energy, and energy  
6 efficiency -- which is not renewable but obviously  
7 an important component in all of this. The state  
8 has already begun its transition to clean energy  
9 production. Obviously the enactment of the fifty  
10 percent RPS bill, 3500 megawatts of off-shore wind  
11 by 2030, a storage study and targets for storage,  
12 and other aspects of that bill we entirely support  
13 with a couple of minor exceptions.

14 Right now we've heard some comments  
15 earlier that on-shore wind coming from out of state  
16 is something that some folks, especially the  
17 distributor solar folks that had businesses here in  
18 New Jersey are concerned about. But, I think what  
19 the state has to really recognize is that there's  
20 limited land mass and area to put all this solar.  
21 There's extreme difference in cost between what  
22 might happen if you're overloaded with solar in the  
23 state because of a hundred percent requirement when  
24 the cost -- and we've heard some really low numbers  
25 today -- with the cost of off-shore wind coming

1 from other states is significantly cheaper. Part  
2 of this whole idea is to get to a hundred percent  
3 renewable energy or clean energy at a reasonable  
4 cost. And, I think that has to be a big component  
5 of this. And, it's abundant. And I think one of  
6 the major points of this is that in New Jersey,  
7 which has done a lot already to limit coal and  
8 other fossil fuel generation in the state -- if  
9 it's getting some of its renewable energy from out  
10 of state, that renewable energy is going to be  
11 replacing coal, other fossil fuel energy in those  
12 states. And that pollution coming from those other  
13 states are affecting New Jersey. So, there's a big  
14 advantage for New Jersey to continue to rely on  
15 that. Especially if we're going to fifty percent  
16 and even further going to a hundred percent goals  
17 for clean energy.

18 One other thing. I represent, of  
19 course, solar -- utility scale solar developers,  
20 and there's sort of -- and this works somewhat  
21 against my wind utility members, but they  
22 understand this, that there shouldn't be  
23 competition between utility scale solar, utility  
24 scale wind. And, so, right now there's a  
25 limitation that out of state solar cannot

1 participate in the -- it's an order,  
2 interpretation, from the Board of Public Utilities,  
3 but it does not allow out-of-state solar to compete  
4 within the direct market in the Class I REC market.  
5 Not the solar REC market, but the Tier 1 REC  
6 market. Our members believe that that should be  
7 something that's opened up. Maybe we have to do  
8 through legislation. But, it's something very  
9 important to your competition. And, to also open  
10 up additional resources that are in surrounding  
11 states to, as I said, help meet the goals as a  
12 requirement. So, I think that's very important.

13 I think the state should use the RPS  
14 model -- it's worked very well in the state --  
15 moving forward. So when we look to from fifty  
16 percent to a hundred percent, I think the RPS model  
17 at that point should be looked at very closely, and  
18 that should be a way to getting to a hundred  
19 percent. And I will tell you, that in the  
20 mid-atlantic region when the Lawrence Berkeley  
21 National Labs looked at this, what's driving  
22 renewable energy development -- because that's what  
23 we want -- the mid-atlantic region is primarily  
24 almost a hundred percent being driven by RPS goals  
25 in particular states. So, that's really important.

1                   And, some things very important to my  
2 members but also has a tremendous benefit to New  
3 Jersey ratepayers, is that a portion -- we think a  
4 portion of the basic generation service, BGS,  
5 should be obtained through competitively procured  
6 bundled long-term contracts of renewable energy and  
7 renewable energy credits. It reduces prices for  
8 customers. We have a study specific to New Jersey  
9 that actually shows that, for hundreds of millions  
10 of dollars. That's a way of keeping costs down  
11 again. We're not saying do it all, but do a  
12 portion. Just like you would have an investment  
13 portfolio, you're not going to want to put it all  
14 in short-term investments the way it is being done  
15 now. Some of it should be long-term investments,  
16 as well. I think that's really important.

17                   The other thing is that a long-term  
18 contract for solar or wind, because there's no fuel  
19 costs, is going to be consistent throughout the  
20 whole term -- whether it's ten, fifteen or twenty  
21 years. It's consistent, and it's going to provide  
22 an edge against prices that involve the stock  
23 market that's not there.

24                   And, finally, energy storage and  
25 increasing transmission build-out to support

1 renewable energy integration are important policies  
2 to ensure a reliable grid in the future to achieve  
3 a hundred percent clean energy target.

4 In sum, we believe that New Jersey is  
5 on the right track, and support the Governor's  
6 vision of moving New Jersey away from reliance on  
7 fossil fuels, and to generate a portfolio -- by  
8 generating a portfolio of a hundred percent clean  
9 energy. So, thank you very much.

10 MR. SHEEHAN: Thank you very much.  
11 Joe Accardo.

12 MR. ACCARDO: Thank you. Good  
13 afternoon. My name is Joe Accardo, I'm head of  
14 regulatory for PSE&G. And, wanted to spend just a  
15 little time today provide some additional thoughts  
16 and comments with respect to the Energy Master  
17 Plan. And, specifically, with respect to today's  
18 Clean and Renewable Power stakeholder meeting.

19 PSE&G has a long history, well over a  
20 hundred years, of partnership with New Jersey, and  
21 aligning its interests with those of the state.  
22 This partnership has been critical to development  
23 of clean and renewable power in the state, making  
24 New Jersey one of the recognized leaders in the  
25 installation and operation of clean, carbon-free

1 energy technologies. Governor Murphy's 2019  
2 Energy Master Plan gives PSE&G a unique opportunity  
3 to build on that prior success, as we implement his  
4 vision of a hundred percent clean energy future.

5 My comments today will focus really on  
6 six core areas coming out of the list of nineteen,  
7 of whatever it was, that each of the parties  
8 received. Focus on six things; what is clean  
9 energy, what's the definition of it; how we  
10 transition to a hundred percent clean energy by  
11 2050; evaluating existing state policies as they  
12 relate to clean energy programs; planning and  
13 zoning issues that impact clean energy,  
14 transportation and energy; and, economic growth and  
15 workforce development. And then finally we're  
16 going to talk about environmental justice. So,  
17 those will be the six areas that we focus on here  
18 in my brief statement.

19 So, what is clean energy? Climate  
20 change is arguably the single biggest environmental  
21 threat to the planet. The State of New Jersey and  
22 Governor Murphy have made reducing greenhouse gas  
23 emissions in top priority, including most recently  
24 the Governor's action to rejoin the Regional  
25 Greenhouse Gas Initiative. To support these

1 efforts, clean energy should be defined as any  
2 energy source that emits zero greenhouse gas or  
3 other air emissions. This definition should be  
4 broad enough to encompass the multi-year range of  
5 the implementation process. Thus clean energy  
6 would essential include solar, off-shore wind,  
7 energy storage -- so long as energy stored is  
8 derived from clean energy sources -- and nuclear  
9 power, the number one clean energy resource in the  
10 state. The inclusion of clean, central station  
11 nuclear power generation into the clean energy  
12 sector will be essential if we were to realize the  
13 one hundred percent clean energy goal set by  
14 Governor Murphy, while maintaining a safe and  
15 reliable electric grid.

16 Reaching the Governor's goal will not  
17 be easy, as there are many obstacles to overcome  
18 along the way. The one hundred percent clean  
19 energy goal will likely have customer rate  
20 implications that cannot be ignored. Consistent  
21 with the Governor's goals, every effort should be  
22 made to minimize those rate impacts. In addition,  
23 the intermittent nature of many clean energy  
24 sources -- off-shore wind, solar -- will require  
25 both a continued reliance on nuclear base load

1 units, and a significant investment in transmission  
2 and distribution assets and technologies designed  
3 to mitigate the intermittent nature of wind and  
4 solar. Governor Murphy's goal of achieving 2000  
5 megawatts of energy storage by 2030 will certainly  
6 be a step in the right direction, further  
7 integrating renewable energy sources into the daily  
8 mix of energy consumed in the state.

9           Transition to a hundred percent clean  
10 energy by 2050. Consistent with the Clean Energy  
11 Act of 2018, the state should adopt policies which  
12 encourage competitive markets with the goal of  
13 encouraging and ensuring the emergence of new  
14 interests that can foster innovations and price  
15 competition in the clean energy sector. When new  
16 market participants do not invest in certain aspects  
17 of the clean energy sector, however, the state  
18 should continue to expand current policies and  
19 programs that encourage New Jersey utilities to  
20 develop renewable projects on under-utilized and  
21 underdeveloped landfills and brown fields. The  
22 state should encourage innovative technologies by  
23 establishing a New Jersey research and development  
24 group that would allow utilities and other market  
25 participants to promptly approve pilots to test new



1 technologies, and establish best practices based on  
2 successful programs in other states and countries.

3           Lastly, New Jersey should construct  
4 new natural gas infrastructure, such as expansion  
5 of high-pressure distribution systems and  
6 construction of new liquefied natural gas plants,  
7 to ensure the reliability and resiliency of the gas  
8 and electric supply.

9           With respect to state policy, the  
10 state's become a clean energy leader in many  
11 respects. It's now one of the more aggressive  
12 renewable portfolio standards in the nation, and  
13 it's opened up the solar market with its community  
14 solar program. And, it has established aggressive  
15 targets for energy efficiency. To achieve this  
16 long-term one hundred percent clean energy goal,  
17 the state should look to utility partnership  
18 policies adopted by other states with similar  
19 long-term goals. In many instances, states have  
20 adopted policies that align utility incentives and  
21 business models with clean energy goals. For  
22 example, to achieve carbon emission reductions from  
23 the transportation sector, California recently  
24 adopted policies that will reward its electric  
25 utilities for accelerating the build-out of the

1 electric charging infrastructure. State's with  
2 aggressive energy efficiency targets, such as  
3 Massachusetts, New York and California have adopted  
4 revenue decoupling mechanisms for their  
5 gas/electric utilities, so utilities can  
6 aggressively pursue energy efficiency goals without  
7 harming their bottom line.

8 PSE&G believes that the electric and  
9 gas utilities are central partners in the pursuit  
10 of this goal. We welcome this partnership in  
11 transitioning the utility business model to one in  
12 which its business success is fully aligned with  
13 all of the state's clean energy goals.

14 With respect to planning and zoning.  
15 The Energy Master Plan should acknowledge the  
16 economic and environmental benefits of electric  
17 transportation, and identify specific policies to  
18 advance and accelerate their adoption across the  
19 state. Indeed, PSE&G believes that clean  
20 transportation will be crucial if the state is to  
21 achieve Governor Murphy's one hundred percent clean  
22 energy goal. Electric vehicles will be critical  
23 because every electrically fueled mile by an  
24 automobile or truck produces seventy percent less  
25 emissions than a gas fuel model. Utilities should

1 be encouraged to build a robust electric vehicle  
2 charging infrastructure to support the growing  
3 clean transportation sector. PSE&G looks forward  
4 to discussing clean transportation options at the  
5 September 20th stakeholder meeting.

6           With respect to economic growth and  
7 workforce development. It's well understood that  
8 investments in clean and renewable energy yield  
9 good, high-paying jobs. PSE&G is committed to  
10 working with the BPU and New Jersey Department of  
11 Labor and Workforce Development, to ensure that  
12 it's workforce development is an integral part of  
13 it's clean energy efforts. Establishing New Jersey  
14 as a national leader in clean energy through the  
15 Governor's commitments to energy efficiency,  
16 electric vehicles, and off-shore wind provide a  
17 significant opportunity to reduce greenhouse gas  
18 emissions, while also creating jobs and benefiting  
19 customers.

20           And, lastly, with respect to  
21 environmental justice. The state should set  
22 policies and programs that encourage investments  
23 into clean energy into overburdened communities.  
24 PSE&G's upcoming clean energy future filing is one  
25 such program that specifically focuses on these

1 overburdened communities to ensure that they have  
2 access to energy efficiency programs, LED street  
3 lights, energy storage, and the benefits of vehicle  
4 electrification. Other policies the state should  
5 consider include establishing utility rate  
6 structures to ensure that everyone that is  
7 connected to the grid and taking advantage of the  
8 attributes of the grid is paying for the  
9 investments made by the utility in the grid.

10 PSE&G is willing to participate in  
11 other discussions with state to bring other clean  
12 energy solutions, including solar energy  
13 technologies, to these under-deserved markets.  
14 PSE&G should continue to be an important vehicle to  
15 ensuring universal access to clean energy  
16 advancements. Thank you.

17 MR. SHEEHAN: Thank you very much. Is  
18 there anyone else who had pre-submitted comments?  
19 Lyle. And Lyle is all that stands between us and  
20 lunch.

21 MR. RAWLINGS: I pre-submitted these  
22 comments, Director Sheehan, and also made  
23 printouts.

24 MR. SHEEHAN: Appreciate that. Thank  
25 you. Thank you.

1                   MR. RAWLINGS: Thank you, Director  
2 Sheehan. I'm Lyle Rawlings, president and  
3 co-founder of the Mid-Atlantic Solar Energy  
4 Industries Association, or MSEIA. MSEIA for  
5 twenty-one years has been advocating for solar  
6 energy and solar energy businesses in the  
7 mid-atlantic region. And, we started when solar  
8 energy was really a scientific curiosity, right  
9 through now when it's the fastest growing source of  
10 new electric generation capacity in the world.

11                   Throughout that time we've advocated  
12 on three simple principles for policy. One; grow  
13 solar energy as quickly as possible. Two; do so at  
14 the least possible cost do ratepayers. And, third;  
15 create a diverse market, especially with  
16 opportunity for local New Jersey businesses to  
17 thrive and create local New Jersey jobs. And,  
18 it's gratifying to see such a great array of staff  
19 talent here today. And we know that you guys have  
20 a little bit of work on your plate right now, and  
21 you have a lot of other things to do. So, we  
22 appreciate your showing up and staying all day to  
23 hear this testimony. And we understand that more  
24 help is on the way. You got new talent coming in,  
25 and that's gratifying.

1           Because, the magnitude of the job is  
2   incredibly impressive. Before you couldn't get to  
3   the details of the clean energy law and what it  
4   requires the BPU to do, and what it requires  
5   society and industry to do. Just the nature of the  
6   goal itself, a hundred percent renewable energy,  
7   when you're talking about a full transition of the  
8   way the society uses and generates something as  
9   fundamental to our economy as energy is, you know  
10  that the scale and complexity of that task has to  
11  be daunting. And it is. It's matched only by the  
12  urgency of dealing with climate change and  
13  pollution, which has been another issue of  
14  unprecedented worldwide scale and complexity. And  
15  this change, this transition, it's going to have  
16  cost attached to it, significant cost. That means  
17  the technical complexity, the economic complexity  
18  and the policy complexity, are going to require a  
19  great deal of effort and hard work, a lot of  
20  creative thinking, and advanced expertise is going  
21  to be required to get to this goal at the least  
22  possible cost. MSEIA has substantial internal  
23  expertise, and also relationships with some of the  
24  top creative thinkers and researchers in the world  
25  at our beckon call. And, we pledge those assets

1 and our energy and determination to the BPU and to  
2 the Governor's office to help realize these goals.

3 Now, our initial testimony at this  
4 time is going to answer many of the questions for  
5 their session. Not in order. We'll be giving more  
6 detailed testimony on certain aspects of this  
7 challenge in the last two stakeholder hearings  
8 later on this month.

9 First, on solar energy and  
10 cost-effectiveness -- and there's a slide in your  
11 packet there, and this will be on the web for those  
12 of you who don't have this in front of you. On  
13 slide number three, MSEIA commissioned a study in  
14 2012 by Clean Power Research. They are the go-to  
15 guys for doing study of the cost effectiveness of  
16 the solar, and the value thereof. They're the ones  
17 who did it for Maine and for Vermont, they were  
18 mentioned previously in testimony. They did it  
19 for Austin. They did it for the State of Minnesota  
20 most recently. And they did it for us for New  
21 Jersey and Pennsylvania. The result was they  
22 showed a value delivered by solar energy. And this  
23 is the premium value over and above the actual  
24 market value of the energy. That premium value  
25 averaged seventeen cents, that's \$170.00 per

1 megawatt hour. Now, if we move to a more  
2 efficient incentive system for evaluating that  
3 delivered value, that \$170.00 is much much higher  
4 than the cost it will actually be. We expect that  
5 cost in the nearer term to be more like \$90.00.  
6 So, in other words, we're delivering substantially  
7 greater value than the cost of incentives necessary  
8 to drive that solar development. That's if we can  
9 get to a highly cost-effective system of  
10 incentives.

11 Which brings us to a couple of the  
12 short-term challenges we have. The first is  
13 closing the SREC market in an orderly fashion.  
14 More than a year ago, MSEIA, as well as some other  
15 industry folks, recognized that the SREC system  
16 would have to change to something else that's much  
17 more cost-effective. That its cost was a multiple  
18 of what it is in neighboring states. We believe at  
19 MSEIA that the SREC market needs to be closed in an  
20 orderly fashion so as to attack the existing  
21 investment, ten billion by that time, that  
22 investors have entrusted in the state. But, it  
23 needs to happen ASAP so that we can begin those  
24 savings as soon as possible.

25 Now, we also, based on our analysis,



1 we believe that there will be a necessity for  
2 establishing an interim program. Because if it is  
3 to be closed truly at the 5.1 percent per the law,  
4 we believe that will happen around the end of the  
5 year or January. And, that's not enough time to  
6 put a permanent lower cost program in place. We  
7 will need an interim program. And, we hope that  
8 the BPU will consider and work on the potential to  
9 do an interim program using a fixed SREC. Because  
10 we've analyzed the cost of doing a fixed SREC as  
11 and interim program, versus doing a tradable  
12 commodity SREC for an interim program. And we find  
13 that the commodity model will be approximately  
14 sixty percent higher in cost than the fixed SREC  
15 would be for the first four years, and then fifty  
16 percent higher for the next five years. And,  
17 obviously, with the caps that are in place, we  
18 can't afford to pay fifty or sixty percent more if  
19 there's a lower cost way to do it. And, we  
20 realize that will take some exploration, but it  
21 will also take some fast action if an interim  
22 program is to be in place in time.

23           The solar industry could probably take  
24 a few months of hiatus in between starting an  
25 interim program and closing down applications under

1 the old, but not much longer than that. We don't  
2 want businesses closing their doors or losing jobs.

3 Another short-term problem that would  
4 need to be addressed soon can be seen on slides  
5 five and six in your packet. And, that is the  
6 closure of circuits in New Jersey, this is  
7 accelerating where the utilities are saying that  
8 certain circuits will be closed to further solar  
9 development, or severely restricted to further  
10 solar development. Those slides show a map of the  
11 overall territory of Atlantic City Electric, where  
12 a large number of circuits are already closed or  
13 severely restricted. And, there's also a blow up  
14 of a single town where you can see in a particular  
15 town, in this case Sommers Point, virtually all of  
16 circuits in the entire town are closed to further  
17 solar development. Now, this can be addressed.  
18 It's based on antiquated and obsolete standards.  
19 And, it does not take advantage of capabilities  
20 that are already built in to solar invertors that  
21 can help overcome any voltage control problems that  
22 might exist. As we move forward into a renewable  
23 future, we're going to have a massive need to  
24 address these circuit closure problems.

25 Now, long-term challenges. This

1 hundred percent goal, as I said, is very daunting.  
2 There's a great deal of study that's needed to  
3 determine what is the most efficient and lowest  
4 cost way to get to that hundred percent. We're  
5 making policy decisions now. Those need to be  
6 informed by what will get us to the destination in  
7 the least possible way. And there are surprises  
8 when this is studied and researched carefully. We  
9 have to adopt the most appropriate drivers for  
10 solar and wind and storage. You need to aim those  
11 drivers at opportunities to create additional  
12 public good. Examples of that would be locating  
13 solar landfills and brown fields, that's a very  
14 valuable thing to do. We do want to minimize the  
15 extent to which we take green fields and make them  
16 into solar. It involves aiming solar at congested  
17 areas. It involves aiming it at low-income and  
18 environmental justice communities, and creating  
19 jobs in those communities. We also want to aim  
20 policies at the projects and locations that can do  
21 double duty. For instance, aiming battery  
22 incentives at locations that cannot only stabilize  
23 the grid with those batteries, but also provide  
24 resilient power for critical facilities. So, we  
25 can get a lot of extra value out of our incentive

1 dollar.

2           We want to address infrastructure  
3 issues for incorporating large amounts of  
4 intermittent renewables into the electric system.  
5 You can see on slide seven and eight a list of  
6 infrastructure needs that we need. That's a list  
7 of nine areas of infrastructure development that  
8 are needed. We're going to give more detailed  
9 testimony on that part at the next to last meeting  
10 which is on that topic.

11           We also need to change the utility  
12 business model to make sure that utilities are  
13 better able to be partners in development of  
14 renewable energy, while at the same time keeping  
15 utilities healthy. Because those nine  
16 infrastructure issues that I just talked about,  
17 many of them are utility-specific infrastructure  
18 issues. And, if the utilities are unable to invest  
19 in those because they're -- because the development  
20 of renewables is making them less healthy, we won't  
21 be able to get to where we're going.

22           That brings me to MSEIA pathway study,  
23 and slide nine shows that. This is another clean  
24 power research study. And, it's the most  
25 sophisticated and the most comprehensive one yet.

1 It was commissioned by the U.S. Department of  
2 Energy and the Minnesota Department of Commerce.  
3 The study is not yet published. It's finished, but  
4 not published yet. That will happen some time in  
5 October. But, we have a very close relationship  
6 with the lead authors, Dr. Mark Perez and Dr.  
7 Richard Perez, who have given us some of the  
8 advanced results of that. And some of those  
9 results are surprising. Less reliance on  
10 batteries, for instance, and more reliance on  
11 curtailment of solar. Turns out to be a cheaper  
12 way to get there. A key finding is that they have  
13 said the Minnesota can achieve one hundred percent  
14 solar and wind 24/7, including base load, at a cost  
15 of about five cents per kilowatt hour premium over  
16 the cost of wholesale energy. Now, that's a  
17 surprisingly low cost to get to one hundred  
18 percent. They also found that an even lower cost  
19 would be achievable if you just mix in five percent  
20 natural gas, and 95 percent solar and wind. That  
21 brought the cost down to 3.6 cents per kilowatt  
22 hours. It's a great indicator of where we can go  
23 in New Jersey. That we can get to this goal and we  
24 can get to it at a reasonable cost.

25 Another recent study by Lawrence

1 Berkeley Laboratories, part of the U.S. Department  
2 of Energy, indicated that getting to 44 to 50  
3 percent solar and wind by the year 2030 -- similar  
4 to your goals -- in New York ISO -- one of four  
5 regional transmission organizations that they  
6 studied -- but, in New York ISO, they said that  
7 getting to fifty percent solar and wind would lower  
8 the cost of wholesale energy by 39 percent. So,  
9 this is goods news in terms of our getting to that  
10 future.

11 And, that concludes my comments for  
12 today. And, we'll see you on the 24th.

13 MR. SHEEHAN: Thank you very much. At  
14 this point, ladies and gentlemen, we still have  
15 about thirty speakers registered to move forward.  
16 So, I think it's probably appropriate at this Point  
17 for us to take about a 45-minute break, give the  
18 court reporter a chance to feel her fingers.

19 So, we'd request that everyone be back  
20 at 2:30. Thank you.

21 (Whereupon the luncheon recess was  
22 held.)

23

24

25

1                   A F T E R N O O N   S E S S I O N

2                   MR. SHEEHAN:   Okay.   Ladies and  
3 gentlemen, thank you for coming back.   So, we're  
4 going to go ahead and get started again.   We have  
5 the court reporter is back.   Thank you.

6                   So, we'll go ahead and pick up where  
7 we left off.   We have a fair number of speakers  
8 left on the list, although it looks as though a few  
9 of them are not in the room.   As we move forward,  
10 we have the room until -- I don't want to say until  
11 the end, but we have the room until the end.   So,  
12 I'm going to go ahead and get started and call the  
13 first person.   David Gahl.

14                  MR. GAHL:   Thank you, Director  
15 Sheehan, members of the committee.   My name is  
16 David Gahl.   I'm the Director for State of Affairs  
17 for the NorthEast Solar Energy Industries  
18 Association.   SEIA is the national trade  
19 association of U.S. solar industry.   We have more  
20 than a thousand members across the country.   Many  
21 of our members are doing business in New Jersey.  
22 And, we have nearly forty firms that have an  
23 operating address in New Jersey, as well.   And, I  
24 SEIA represents all different market segments of  
25 the solar industry, from the utility scale segment

1 to distributed generation to community solar. We  
2 have represent all the different solar industry.

3 So, I'm going to keep these comments  
4 fairly brief. I've submitted written comments for  
5 the record. And, I'm just going to hit the  
6 highlights here today. First of all, SEIA  
7 strongly supports the hundred percent by 2050 clean  
8 energy goal. And, while we think that that  
9 long-term goal is laudable, we want to focus the  
10 Board's attention specifically on some of the  
11 near-term issues that are facing the solar  
12 industry. Some of my other solar industry  
13 colleagues talked about these issues already today,  
14 so I'll try not to repeat where I can.

15 But, first of all, first and probably  
16 foremost, one of the most pressing issues on the  
17 minds of my members is the closure of the current  
18 SREC program. We believe that more clarity should  
19 be provided in the final regulations and in  
20 potential guidance documents about how key  
21 decisions will be made about the market closure.  
22 In particular, how the Department will determine  
23 that the overall 5.1 percent goal has been reached.  
24 That is a critical decision. And, from our view,  
25 we believe that the attainment should be based on



1 the actual installations of solar, which actually  
2 raises some questions about what happens to that  
3 pool of projects that potentially have submitted  
4 applications. And there are a number of different  
5 ways, probably, to address that issue. But, we  
6 believe that the 5.1 percent the definition should  
7 be based on attainment.

8           And probably one of the most simple  
9 solutions would be that in the event that the 5.1  
10 percent -- when the 5.1 percent goal is reached,  
11 and there's an additional pool of projects that  
12 submitted applications, there could be a minor  
13 adjustment that's made administratively to the RPS  
14 to account for those additional projects, to give  
15 those applications ultimately a compliance home.

16           So, the next major issue involves the  
17 creation of a new incentive program to the  
18 following the existing program. So when the  
19 current program closes we'd ideally like to see a  
20 new program open, almost simultaneously. I believe  
21 this will promote an orderly transition from the  
22 old regime to the new regime.

23           And my comments now are largely going  
24 to be consistent with, I think, some of the  
25 comments that were made by Fred and the various

1 DeSanti's. So, essentially, what we're suggesting  
2 is that there's a need for the next version of the  
3 program to be modelled off the existing SREC  
4 program -- I'd like to call it an SREC II program.  
5 This is consistent with the way -- Massachusetts  
6 actually moved from their initial version of an  
7 SREC program to a modified version. And their  
8 program included a series of cost containment  
9 measures that employed factory that helped steer  
10 projects in certain directions. And I think all  
11 those tools can be employed in a New Jersey  
12 program, as well. And, in addition to that, we  
13 support making sure that the program, the next  
14 generation incentive, supports the development of  
15 all market segments, residential development,  
16 commercial projects, and community solar moving  
17 forward.

18 One issue I did want to raise, as  
19 well, was about Class I1 REC eligibility for solar  
20 projects. We heard a little bit about this from  
21 the gentlemen from MAREC earlier today. SEIA has  
22 many utility scale members that would like access  
23 to the New Jersey market. And, just to be crystal  
24 clear, we're not talking about access to the SREC  
25 market. We're talking about access to Class I

1 RECs. So, in our view, that eligibility should be  
2 revisited to allow all solar projects to be  
3 eligible for the RPS. And, we believe this puts  
4 large scale solar projects on equal footing with  
5 wind projects going forward.

6 And, lastly, I just want to point out  
7 this is already a proceeding that the Board has  
8 underway. But, community solar. Community solar  
9 is an important component in the market going  
10 forward. We are clearly interested in seeing the  
11 community solar pilot program move forward without  
12 any delays. Appreciate the governor's leadership  
13 on this issue, and the Board's leadership here, and  
14 we look forward to seeing the details of the  
15 proposal. But, clearly, community solar will have  
16 an important role to play in the solar market in  
17 the future. And, would like to see that move along  
18 as quickly as possible.

19 And, that concludes my thoughts.  
20 Thank you.

21 MR. SHEEHAN: Thank you very much.  
22 Next up Jeff Tittel.

23 MR. TITTEL: Thank up. Jeff Tittel,  
24 Director, New Jersey Sierra Club. And, I just want  
25 to say that the interest of so many people showing

1 up, I think really shows you should have another  
2 hearing just on this topic. Because I think  
3 there's a lot more people who left that probably  
4 like to testify. And, also having it in other  
5 areas of the state, like Newark or Camden, or both,  
6 I think that would bring out more people, as well,  
7 and get more information on the record.

8 I don't want to reiterate a couple of  
9 points, but I don't want to repeat too much of what  
10 was said before. The definition of clean energy is  
11 very simple. It's renewable energy. It's energy  
12 that is sustainable and renewable. It is not  
13 nuclear. It is not bio-mass. It is wind, solar,  
14 and so forth, like some of the newer technology. I  
15 think that's what we need to do as far as the  
16 definition is concerned. But, Class I should not  
17 be emitting anything. Secondly -- and I think this  
18 is critical -- we're at a very important stage in  
19 the state when it comes to this battle between  
20 clean energy and fossil fuels. There are  
21 currently major proposals out there before gas  
22 fired power plants. If they all come on line we're  
23 talking about five million metric tons of CO2.  
24 We'll never get to our goals if they happen. There  
25 are seven power plant -- there are seven pipeline

1 applications out there, and there's potentially  
2 more power plants. We believe the first thing  
3 that has to be done in order to move to a hundred  
4 percent clean energy future, is there has to be a  
5 moratorium on fossil fuel infrastructure and on  
6 fossil fuel power plants. If we put ten billion  
7 dollars into natural gas and natural gas fired  
8 power plants, we will not have the money or  
9 resources to do off-shore wind and do the amount of  
10 solar that we need. And on top of it, if wind and  
11 other things are successful, we'll end up paying  
12 for it anyway with stranded assets. So, I think  
13 it's critical that we need to put a freeze in  
14 place. We're involved with many of those --  
15 actually, every one of those battles. And, I think  
16 it's critical.

17           Next. That the Energy Master Plan  
18 should require all new generation capacity to be  
19 carbon-free. We should not -- that's where we  
20 need to go, that's where we need to invest, that's  
21 where we need to put our efforts in resources to  
22 get those rules in place.

23           Two. DEP must promulgate rules that  
24 they haven't had the power since 2005 to regulate  
25 CO2 and other greenhouse gases. And they have to

1 put that into classified permitting on existing  
2 plants so it can start ratcheting down the carbon  
3 dioxide and greenhouse gases coming from our  
4 existing plants. The two most expensive power  
5 plants in New Jersey are two coal plants down in  
6 South Jersey. They need to get closed. It's bad  
7 for the ratepayers and bad for the environment.  
8 So, we believe that that process has to be part of  
9 this, that we have to go after coal, oil, and frack  
10 gas. And we must start ratcheting down our  
11 greenhouse gases, and methane, as well. And DEP  
12 needs to step up and regulate them. And, they have  
13 that power.

14           Also, and very clearly, in order to  
15 get there we should not allow for the extension of  
16 any nuclear licenses in New Jersey. Especially if  
17 they're getting subsidized. We need either not to  
18 subsidize them -- when you go through your numbers  
19 and hopefully you'll find that they don't really  
20 need it -- but, our concern is that as long as  
21 those plants keep operating, it's going to block  
22 us. And they may want to get extended, their  
23 licenses, because of the subsidy. And, one of the  
24 concerns that we have -- and again, you know, this  
25 is a plan, but a plan needs to also call for

1 regulatory and legislative action. Right now  
2 forty percent of our energy has to come from  
3 nuclear. There's no sunset on that. That will  
4 block us in 2050. So, we need to make sure that we  
5 not only have those plants when they close be  
6 replaced by renewable energy, but we also need to  
7 make sure that we end up ending the subsidies so  
8 that we can move to a clean economy. Just like  
9 when we do the Title 5 ratcheting down, we should  
10 ratchet down the carbon emissions from what they  
11 are now to zero by 2050, so they can be replaced  
12 with clean energy.

13 Other important point that I want to  
14 make is that when you look at the studies of off  
15 our coast, there is so much energy potential for  
16 off-shore wind. Especially as the price of wind  
17 is going down, wind turbines is going up and the  
18 size of turbines are going up. And when we first  
19 came out and suggested during the Corzine  
20 admiration the 3000 megawatts and two years ago  
21 suggested it to candidate for governor, Governor  
22 Murphy, the 3500 that's now in front of you. It's  
23 a great first step. When we look at the potential  
24 out there, we can go to ten gigawatts to 10,000  
25 megawatts in the second phase after we get to the

1 3500. But, the wind power is there. And that's  
2 only ten percent of the wind potential that we have  
3 off our coast. So, we really need to start  
4 looking to go not only to the 3500, but go beyond  
5 that. It's the same thing when we look at solar.  
6 And when you look at other methodologies for  
7 getting there, as well, paying for it in long-term  
8 contracts.

9           We need to also -- and this is  
10 critical -- fix the solar program. A year from now  
11 it's going to crash. And, even if we come up with  
12 another program there, with the cost cap with --  
13 office legislative services, the cost cap will come  
14 into affect in 2020, causing another problem. We  
15 need to in the next year, as we're doing this  
16 Energy Master Plan, come up with a sustainable  
17 lower cost solar program. And I actually think we  
18 should remove the cap. Because I don't believe  
19 that -- we don't cap nuclear, we don't cap coal, we  
20 don't cap oil, we don't cap natural gas. But we  
21 need to fix the solar program and fix it quickly.

22           For us, looking at the communities in  
23 the state that have had a disproportionate of  
24 burden of pollution, we need to focus our efforts  
25 there. Not only to reduce -- because that's where



1 most of the fossil fuel plants are. We need to  
2 reduce pollution in those communities. We also  
3 need to sustain those communities with more  
4 renewable energies, with community solar, rooftop  
5 solar. We believe there should be a set aside of  
6 twenty percent into urban, or communities, for a  
7 solar program. Twenty percent of the community  
8 solar, and twenty percent over, we should target  
9 those communities and target them with special  
10 incentives so that we can create not only jobs, but  
11 help reduce the air pollution that is choking those  
12 communities.

13                   So, to us, New Jersey is a state that  
14 has serious environmental problems. From ground  
15 level ozone, to seeing climate impacts on a daily  
16 basis. This weekend people down the shore won't  
17 be able to park on any of their streets because a  
18 high tide is coming and there's a storm off the  
19 coast. So, it's imperative and it's critical, and  
20 it's an existential threat. But, we have the  
21 ability in this state, as we have since the light  
22 bulb was invented here, and so many other things.  
23 Put the innovation forward, to put our  
24 technological knowledge forward. Put our minds as  
25 well as our financial resources forward so we can

1 solve the climate and clean energy, and the energy  
2 problems we have in the state.

3           And I just want to end with that we  
4 believe with this Governor's leadership we can get  
5 there. But to you and to the legislature, no  
6 matter how great this plan is, without  
7 implementation, without the legislation and the  
8 regulations and the financial mechanisms, we won't  
9 get there. And a plan without implementation is an  
10 hallucination. Thank you.

11           MR. SHEEHAN: Thank you. Bob  
12 Blumenthal. Barbara. Sorry.

13           MS. BLUMENTHAL: Good afternoon. My  
14 name is Barb Blumenthal. I serve as the research  
15 director for New Jersey Conservation Foundation.  
16 First, we'd like to applaud Governor Murphy for  
17 setting an ambitious goal to achieve a hundred  
18 percent clean energy by 2050. And, thanks to  
19 Mr. Sheehan and the panel for letting us take your  
20 time today to offer comments.

21           I want to start today with an informed  
22 insight. The same insight that Lyle got to a few  
23 minutes ago. New Jersey's clean energy future can  
24 be lower cost than a future that relies on natural  
25 gas. I'd like to share some details about how we

1 can get to a hundred percent clean energy by 2050,  
2 and stay on a low cost path. It involves a smart  
3 portfolio of clean energy resources. Smart  
4 portfolios can now offer the lowest cost pathway to  
5 provide reliable electricity by 2050. This means  
6 New Jersey no longer has to choose between policies  
7 that protect community health, natural resources  
8 and the climate, and those that protect our  
9 pocketbooks. We can have both. If the state's  
10 Energy Master Plan focuses on an optimized  
11 portfolio of renewable energy, flexible load,  
12 storage, transmission, and electrification of some  
13 -- three of our important sectors.

14 So, the reason is simple. The  
15 underlying economics of optimized portfolios are  
16 increasingly being found to be more favorable than  
17 the current gas heavy portfolios, even assuming a  
18 low gas cost future. So, how do we know this?  
19 The elements of a low cost pathway to 2050 have  
20 become clear in the past year. Lyle referred to a  
21 study in Minnesota. I'm referring to a different  
22 study that was released July 31st of this year, so  
23 this is a really new analysis. Policy makers and  
24 advisors around the U.S. have been using new  
25 modelling tools to identify these pathways to 2050.

1 This is something new. The models simulate the  
2 energy production needed to balance load on the  
3 grid, and provide reliable service over very long  
4 time frames using combinations of renewable and  
5 other resources that get you to your goal. A  
6 hundred percent goal or a ninety percent goal or an  
7 eighty percent goal. So, those are inputs to the  
8 model. These models have been used this year in  
9 Hawaii to develop pathways to a hundred percent  
10 clean energy. They've been used in California and  
11 in Minnesota. They're evaluating pathways to  
12 achieve an economy-wide eighty percent reduction in  
13 Minnesota. And for them it means a 91 percent  
14 reduction of emissions in the electric generation  
15 sector. So, that's the modeling exercise. I'm  
16 talking about that Minnesota is finished.

17 So, their study is really geared to  
18 reduce emissions over all of the economy. But  
19 then they look at different pathways to achieve  
20 de-carbonization. I just want to touch on a few  
21 key points. I'm submitting a longer comment.  
22 But all of the pathways, obviously, high levels of  
23 renewables because that's how you reduce emissions.  
24 But, what's interesting is that they rely heavily  
25 on flexible load. Because they electrified a good

1 portion of transportation and building heating and  
2 cooling systems. So, those are enormous sources of  
3 new electric load, and they're inherently -- they  
4 can have a high degree of flexibility. So, it  
5 becomes an important part of the puzzle. And, I'm  
6 not sure if it was obvious to policy makers until  
7 these studies pointed out how important that would  
8 be. So, electrified implementation alone may not  
9 do it, but these other sectors combined provide  
10 that balance that you need for ninety or even a  
11 hundred percent renewables. That's how you  
12 achieve it.

13           What's fascinating is that scenarios  
14 that both electrify and de-carbonize are estimated  
15 to produce savings of between 600 and \$1200.00 for  
16 each Minnesota household per year by 2050. And the  
17 cost savings start immediately and go up over time.  
18 Cost savings for your energy systems. But that  
19 includes the cost of transportation. You save a  
20 lot of money when you electrify transportation.  
21 You save money when you electrify heating system.  
22 So, they're not just looking at the cost of the  
23 electric generation sector -- which actually stays  
24 pretty flat despite all of this, and there's almost  
25 an imperceptible difference in the cost of electric

1 generation going forward.

2           This is new. We didn't know this two  
3 years ago. So, it's very exciting. Obviously, one  
4 of the conclusions is by 2050 we can high levels of  
5 variable generation with little to no natural gas.  
6 So that, mantra that we heard for many years now --  
7 which had some truth to it -- how are we going to  
8 balance flexible load, we need gas. Well, that's  
9 no longer true, when you actually treat resources  
10 as a combined package of resources. So,  
11 renewables, storage, flexible load,  
12 electrification, all of those things together  
13 provide a lower cost pathway. And these studies  
14 looked at can you provide a reliable electric  
15 system. And they did the modelings every five  
16 minutes, so these models looked at load and  
17 generation just as a dispatched model would every  
18 five minutes through all cycles of weather during  
19 the year, out to 2050. So they found you can  
20 provide reliable electric service with this  
21 renewable resources.

22           I want to just simplify a few key  
23 points that might be very relevant. These models  
24 don't answer the question for New Jersey. What it  
25 does tell me is that New Jersey needs to use

1 similar -- the same or similar integration and  
2 optimization models to calibrate and design new  
3 policies. So that you can both achieve emissions  
4 without chancing cost savings.

5 But, a few key points. Low cost  
6 benefit from having a big electric grid. We're  
7 fortunate that we're part of PJM. And the bigger  
8 the footprint, the better. The more variability of  
9 renewable resources across the geographic  
10 footprint, the costs come down. And that's an  
11 important point for New Jersey. Lower costs  
12 depend on the electrification of these other  
13 sectors. It's part of a package deal. The more  
14 flexible load the better. Low costs depend on  
15 location, that's why the modeling is so important.  
16 It isn't just saying we need solar or we need  
17 storage. It matters where and when. So, the  
18 models begin to answer those questions so that you  
19 can really craft policies that give you value for  
20 the money invested. So, big take away is that I  
21 think this means the demise of natural gas. And,  
22 the models actually showed that not only do you not  
23 have much natural gas by 2050, that it backs up to  
24 2030 that things begin to get stranded in  
25 Minnesota. So, gas looks like it's a

1 cost-effective or a comparable pathway, but it  
2 becomes an enormous cost going past that. So,  
3 that's why it's really important to look ahead  
4 before you're making those near-term decisions.

5           And then I want to say a couple of  
6 things just about -- we heard somebody talk earlier  
7 today about solar issues. And, I want to remind us  
8 of what happened in the clean energy bill that was  
9 passed. It dealt with some pretty important solar  
10 challenges that we have in New Jersey with the  
11 current SREC program. And the bill said we're  
12 going to end SRECs at 5.1 percent, we're going to  
13 transition to a new solar program that's more  
14 competitive and will bring down costs. And the  
15 combination of the existing solar and new solar,  
16 all of those Class I resources, have to remain  
17 under a cost cap. So, we know, we've been involved  
18 with many different people over the last few months  
19 talking about strategies and proposals that would  
20 accomplish those objectives. And we think that we  
21 can transition quickly to an interim program. We  
22 can keep the solar industry active. We can keep  
23 costs under the cost cap.

24           But I heard somebody today -- I guess  
25 it was Fred, Mr. DeSanti, who had a different idea



1 that doesn't accomplish any of those objectives.  
2 He wants to increase the percentage of the RPS for  
3 solar. Not end it quickly, keep it going for  
4 awhile. And I did a little math, and his idea  
5 would add 120 million dollars in the near term to  
6 the cost of the current SREC program. So, it's  
7 kind of going in the wrong direction. And if you  
8 believe there's no possible way of doing it  
9 otherwise, then I understand why they come up with  
10 a Plan B. But we feel strongly that we can find  
11 solutions that do work under the provisions of the  
12 new clean energy bill, and get it done, and get it  
13 done quickly. Thank you.

14 MR. SHEEHAN: Thank you very much.  
15 Next up Duncan Cambell. Ashley Lynn Chrzaszcz.

16 MS. CHRZASZCA: Hello everyone. My  
17 name is Ashley Lynn Chrzaszca. That's the American  
18 way of saying it. If you want to say the Polish  
19 version it's Chrzaszcz. It doesn't look like that,  
20 I don't think.

21 I represent ChargeEVC. We're a  
22 501c(6) non-profit based here in New Jersey. We  
23 have responded to other states in the northeast.  
24 Just a little bit about who we are. We represent  
25 interests that are the equivalent to a variety of

1 stakeholders -- a rainbow coalition, if you will --  
2 that includes the utilities, labor organization,  
3 local and national non-profit organizations,  
4 environmental coalitions, and other groups, as  
5 well. So, we kind of have a lot of individuals  
6 that all have the same message, that the  
7 electrification of transportation is one of the  
8 most transformative things we can do for the State  
9 of New Jersey.

10 I'm going to keep my comments brief.  
11 If New Jersey enacted both Global Warming Response  
12 Act and the Clean Car Act 2006, as such, these  
13 topics with clean and reliable power and clean  
14 transportation --

15 A MEMBER: Can you slow down? You're  
16 speaking too fast.

17 MS. CHRZASZCZ: Sorry. I'm responding  
18 to specifically to Question Number 10, which is how  
19 new clean and reliable power support the expansion  
20 of transportation. So, as I said, New Jersey  
21 enacted both a Global Warming Response Act and the  
22 Clean Car Act of 2006 -- and they're intrinsically  
23 connected. One hand can essentially wash the  
24 other. So there are many benefits of electricity  
25 into transportation sector, and even documented the

1 following, which is going to be submitted for  
2 written comments, which will be for September 20th.  
3 And, we understand that. So, we wanted to make our  
4 comments today.

5 To summarize the highlights. Based on  
6 the generation sources in place today, each two-car  
7 household saves an average \$1,900.00 per year  
8 through 2035, adding up to sixteen billion dollars  
9 through 2035, just by driving an electric vehicle.  
10 And ratepayers save 4.3 billion dollars through  
11 2035 due to a range of benefits. And, some of  
12 these benefits are air quality. And by extension,  
13 health. And, these are benefits that relate to  
14 everybody. Especially those who are in really  
15 sensitive groups and areas, like urban  
16 environments. It's been mentioned that it's  
17 seventy percent cleaner driving an electric vehicle  
18 than to drive a traditional internal combustion  
19 vehicle. In air quality it related emission  
20 reduction is only improved as we de-carbonized the  
21 grand transition to a clean and reliable energy  
22 future. So, think of electric vehicles as mobile  
23 distributed energy resources, or batteries on  
24 wheels, and you kind of start to see the way that  
25 it will interact with the grid.

1           So, this is vehicle to grid  
2 technology. And using electric vehicles is demand  
3 response assets, resiliency assets, energy assets.  
4 And the provider of other grid services, like  
5 frequency regulation. It's not a question of "if",  
6 but "when". And putting out extra storage -- we'll  
7 eventually be able to -- to behave more like base  
8 load, eliminate the fact that the sun does not  
9 always shine, and wind does not always blow. Thank  
10 you.

11           MR. SHEEHAN: Thank you very much.  
12 Jonathan Cloud.

13           MR. CLOUD: I'm Jonathan Cloud,  
14 Executive Director of New Jersey PACE. And --

15           MS. ZELLEN: I am Victor Zellen,  
16 Director of Development for New Jersey PACE, which  
17 is an initiative of Possible Planet, which is a  
18 501c(3). And, this will be new for some of you.

19           So, Property Assessed Clean Energy,  
20 commonly called PACE, is an innovative way to  
21 finance clean energy and resiliency improvements in  
22 buildings. PACE has been adopted by a majority of  
23 U.S. states since its invention in California in  
24 2008. And since then, 35 states -- including the  
25 newest I think was just this week, Delaware -- as

1 well as recently Pennsylvania, have adopted PACE  
2 laws. And many of our neighbors, or most of our  
3 neighbors, already have successful PACE programs.  
4 And, that would include New York, Connecticut,  
5 Maryland, Virginia, the District of Columbia, and  
6 Rhode Island.

7 Now, New Jersey enacted PACE  
8 legislation in 2011, but the existing statute is  
9 missing key elements needed for it to work. And  
10 we've been championing PACE throughout much of the  
11 prior administration. And under our new clean  
12 energy Governor, we hope to see mending legislation  
13 for commercial PACE passed and signed into law  
14 later this year. Governor Murphy has said several  
15 times to us personally that he supports PACE as a  
16 clean energy financing tool. So look forward to  
17 this new development.

18 So, PACE allows property owners to  
19 make clean energy improvements with no up-front  
20 costs, and a hundred percent financing. Where do  
21 you get a hundred percent financing these days?  
22 So, PACE makes it possible for property owners to  
23 save money immediately on energy costs. Because  
24 the improvements more than pay for themselves over  
25 time. Projects are designed to be cash flow

1 positive right from the start, which provides a  
2 natural incentive to do PACE. PACE uses a  
3 voluntary special assessment paid through property  
4 taxes to secure private sector financing that runs  
5 with the property for up to thirty years. This  
6 financing is treated as off balance sheet, which  
7 mean that energy projects do not have to compete  
8 with other capital expenditures in those businesses  
9 removing a key barrier that has stopped property  
10 owners from upgrading their buildings up to now.  
11 The benefits of PACE to the public include carbon  
12 reduction -- real important to all of us --  
13 improving the building stone of the community, and  
14 economic development. For every million dollars  
15 of investment in PACE improvements, fifteen jobs  
16 are created.

17 Now, it's important to note that PACE  
18 is voluntary, both for the municipality and the  
19 property owner. There is no expense to the public  
20 for PACE, as property owners pay for all of the  
21 costs of a PACE program. Now, we believe that  
22 PACE legislation should initially be implemented  
23 for the commercial sector, and subsequently  
24 residential.

25 PACE has the potential to transform

1 the build environment. Major energy efficiency  
2 retrofits a new construction that employs  
3 state-of-the-art energy technologies, all to be  
4 paid for through pays. They can make our  
5 buildings more efficient and more comfortable year  
6 'round. Onsite renewable energy generation  
7 produces a triple value add, and paid for through  
8 PACE; the savings of the actually energy produced,  
9 the displacement of carbon-emitting generation, and  
10 the ability to provide off-grid energy, especially  
11 during our season.

12           There are very strong market  
13 incentives for PACE. And they use private capital.  
14 It's all enabled by the state legislation. PACE  
15 allows municipalities to exercise the governmental  
16 power at literally no cost to the public to secure  
17 these improvement loans. Based on an informal  
18 market assessment by New Jersey PACE, the estimated  
19 potential for investing in New Jersey's existing  
20 commercial buildings alone exceeds a hundred  
21 billion dollars. Consequently, PACE may prove to  
22 have as great, if not a greater impact, on building  
23 performance as clean energy subsidies and financial  
24 incentives have ever produced, and at no cost to  
25 the public.

1           PACE compliments current subsidies and  
2 incentives providing attractive financing for the  
3 hard and soft costs that a property owner would  
4 otherwise have to pay. PACE financing removes a  
5 key barrier to property owners upgrading their  
6 buildings to clean energy standards.

7           Therefore, we urge the Board and this  
8 committee to conduct its own thorough analysis of  
9 commercial and residential PACE, and include them  
10 in its recommendations. We're happy to respond to  
11 any questions, and will be submitting our official  
12 report through the web.

13           So, again, I'm Victoria Zellen,  
14 Jonathan Cloud, with New Jersey PACE, an initiative  
15 of Possible Planet, which is a 501c(3) non-profit.  
16 Thank you very much.

17           MR. SHEEHAN: Thank you very much.  
18 Next up we have Brandon Smithwood.

19           MR. SMITHWOOD: Hi. I am Brandon  
20 Smithwood, and I am the Policy Director for the  
21 Coalition for Community Solar Access. We are a  
22 national trade association, over fifty companies,  
23 predominantly community solar project developers,  
24 and owner/operators. So, those that actually  
25 subscribe customers and product.



1           So, for my comments today, and in the  
2 spirit of the forum, the fact that we're here at a  
3 university, I'd like to kind of start from the big  
4 picture 2050, and work my way down to 2030, and  
5 right now. And, at the risk of getting academic, I  
6 do think starting at 2050 kind of illuminates some  
7 things that we need to be working on now.

8           So, the representative for the  
9 conservation foundation, she discussed a number of  
10 studies that have come out recently showing the  
11 feasibility of full renewables portfolio in 2050.  
12 I just went and pulled some studies that Mark  
13 Jacobson, professor at Stanford, did about three  
14 years ago. He did a fifty state state-by-state  
15 analysis, and I felt that could be a good place to  
16 just kind of start to get a high-level big picture  
17 that we can put community solar into, and kind of  
18 illuminate how community solar helps with some of  
19 the challenges.

20           So, Jacobson's study found that over  
21 thirty percent of the generation within New Jersey  
22 would be solar. And that's assuming a really  
23 robust off-shore and on-shore wind portfolio, kind  
24 of pulling out all the stops. About three-quarters  
25 of that thirty percent is non-rooftop, non-carport

1 systems. And, that's assuming that you're using  
2 two-thirds of the rooftop potential. So, we're  
3 maximizing our rooftops, the technical potential of  
4 our rooftops. And, that only gets you about a  
5 quarter of the way where you need to be to have the  
6 solar contribution to a hundred percent portfolio.  
7 So, to me that says you got to go get busters on  
8 rooftop solar. But, you're still going to have a  
9 lot of need for generation, and you're going to  
10 have non-technical challenges. And, one of the  
11 biggest non-technical challenges is if you don't  
12 own the building that you live under or that you  
13 operate your business under, it's exceedingly  
14 difficult to put that system up there even if your  
15 roof is technically sound. And, looking at just  
16 the population of Jersey today, there's about 3.19  
17 million households -- that doesn't include  
18 businesses and organizations or other tenants. Of  
19 them, 1.62 million, so 51 percent are either  
20 renters or they live in multi-family buildings.  
21 So, we've got about half of the population. We  
22 take that technical potential, and we cut it in  
23 half because of ownership issues.

24                   Even beyond the rooftop challenges,  
25 though, you can see that there's some implications

1 for land use. This state is one of the most  
2 densely populated in the country. It has a lot of  
3 beautiful, agricultural and other open space, and a  
4 strong interest in seeing them preserved. And, the  
5 big picture studies show we're going to have to  
6 find a way to marry ground-mount development with  
7 those objectives to preserve this open space.

8           Stepping down to 2030 -- and this is  
9 actually some research that we, two non-profits,  
10 both solar and grid alternatives that we  
11 commissioned from GreenTech Media Research now  
12 partnered with Mackenzie, The Global Energy  
13 Research Firm, we commissioned a study looking  
14 nationally out to 2030 at the market potential for  
15 community solar, and then looking at four states  
16 including New Jersey. And, so, just to give you a  
17 sense of the New Jersey potential. We believe that  
18 the addressable market is about 3.5 million  
19 customers, based on this research, in New Jersey.  
20 By 2030 we think it's economically feasible that  
21 the market could support 200 to 400,000 community  
22 solar customers -- 100 to 250,000 of which would be  
23 low and moderate income. And, I want to touch on  
24 that separately. There's a big impact on all the  
25 master meter buildings in particular.

1                   So, stepping back, so we start 2050.  
2   2030 today we have this pilot program at the BPU.  
3   And we're really excited to see draft regulations  
4   coming out in the next couple of weeks.   Assuming  
5   we have a robust program size and economics, and  
6   there are flexible siting rules, we're off towards  
7   this vision of achieving these 2030 goals and  
8   contributing to that portfolio in 2050.

9                   There was a study that we and both  
10   solar released yesterday, to kind of look at that  
11   year term pilot program.   We found that a 450  
12   megawatt pilot program over three years -- which  
13   based on the sketch of the pilot program we heard  
14   is within the bounds of what's likely to be  
15   proposed.   That if we do 450 megawatts over three  
16   years, that's 800 million dollars in economic  
17   benefit.   And the cost to the average residential  
18   ratepayer would be less than a postage stamp, about  
19   19 to 42 cents per month.   And, that doesn't  
20   include avoiding transmission, avoiding  
21   distribution, a number of benefits that are hard to  
22   immediately quantify -- what we know from our  
23   neighboring solar markets, our material.

24                   So, just -- and I'll turn the podium  
25   over in a moment here -- but I wanted to quickly

1 take some of these high-level points and drill down  
2 just on a few relevant year term items. So, land  
3 use. We've been working with some other parties.  
4 We think it's really important to bring some best  
5 practices from other states, pilot some of the  
6 cutting edge practices, that can actually improve  
7 the land, help preserve land. But we need  
8 flexibility on projects today. And actually been  
9 experimenting with that flexibility so that we're  
10 ready as we get to these higher goals.

11 On brown fields, historic fill and  
12 landfill, those are more expensive sites, and  
13 there's not enough of it. But the state should be  
14 taking action to get more of those projects beyond  
15 Subsection T of the RPS. And, some of these things  
16 are costless, so DEP could provide comfort letters  
17 and amend some technical requirements. We had  
18 details in our pilot filings and we have them in  
19 our release filings. But, there's some costless  
20 options. But beyond those costless options, we  
21 know that there are real costs, incremental costs,  
22 to building on some of these already developed or  
23 blinded sites. So, we've seen in other states as  
24 part of SREC successor programs, or separate  
25 incentives, differentiated incentives to get to

1 developing projects on these more difficult and  
2 expensive sites. And, so, in line with what Mr.  
3 Gahl said earlier, you know, factorizing SRECs  
4 could be a way to give an extra boost to on line  
5 projects and to development on already disturbed  
6 sites.

7           One last point. I already referred  
8 this, but on LMI. In addition to the kind of the  
9 potential in New Jersey -- and, again, we looked  
10 that vision study I referenced -- looked at the  
11 master metered buildings, and we think we can get  
12 to twenty percent to a third, and up to about  
13 200,000 customers. But, the community solar  
14 tariff that the utility creates, or the utility has  
15 to enable these solar projects, you need to  
16 scaffold policy supports on top of that to get to  
17 those low-income customers. And then the biggest  
18 thing is de-risking them. A typical financier who  
19 is going to look at a low-income customer -- and  
20 there's a lot of innovation to kind of get around  
21 FICO scores and kind of form proxies for credit  
22 worthiness of customers -- but, the practical  
23 matter is a financier typically looks at a low to  
24 moderate-income customer, and the revenue of that  
25 project, puts a zero. So new banks, clean energy

1 program funds, we and both solar and grid  
2 alternatives have identified a number of current  
3 funding sources that are available, or could be in  
4 the near future. And, it's really important to  
5 make sure that we're not only creating the vehicle  
6 to serve those low-income customers, but we're also  
7 scaffolding on top of that to make sure that  
8 projects are financeable and customers get the  
9 value proposition they need. So, thank you.

10 MR. SHEEHAN: Thank you very much. We  
11 have Ed Potosnak for New Jersey League.

12 MR. POTOSNAK: I'm going to stand over  
13 here. I'm from the New Jersey League of  
14 Conservation Voters. And, we represent voters.  
15 And generally, as I see voters, they're usually at  
16 the microphone not at the dais, I find better  
17 representation.

18 I'm really pleased to be here. Clean  
19 renewable power is a key to realizing our clean  
20 energy future and economy. As you've heard  
21 throughout the day today. An Energy Master Plan is  
22 well on it's way to -- put New Jersey on a path to  
23 realize this renewable economy of the future, and  
24 ensure that there's responsible development in our  
25 renewable energy resources. In fact, according to

1 the market trends that we're seeing, investing in  
2 renewable energy is both a prudent economic choice  
3 that protects our wallets, but it's also a prudent  
4 choice to protect our climate, our communities, and  
5 our families. An Energy Master Plan will serve as  
6 a foundation for this transformation. In fact, I  
7 want to pinch myself today at the atmosphere and  
8 the fact that we're here. I was very proud to  
9 stand behind Governor Murphy when he signed  
10 Executive Order 28 to put New Jersey on a path to a  
11 hundred percent energy by 2050. In that vein, I  
12 wanted to share some thoughts around the questions  
13 that you put out. There's just about six of them.

14 First, I want to start out by saying  
15 the only acceptable definition -- which is your  
16 Question 1 about what clean energy is -- is that  
17 it's renewable energy, like solar and wind. And,  
18 as you're aware, with the legislature's recently  
19 passed legislation, the legislature has sent a  
20 clear message that renewable energy is clean  
21 energy, and that clean energy is Class I  
22 renewables, putting us on a pathway for fifty  
23 percent by 2030.

24 It's also important to note that  
25 Governor Murphy's vision has catapulted New Jersey



1 back to the leader board of states that are taking  
2 climate change seriously, and making climate  
3 progress. We're going toe-to-toe with California  
4 in attacking the climate crisis, and enacting  
5 concrete policies to reduce our greenhouse gases.  
6 And, as you're aware, roughly about forty percent  
7 of our energy is produced in New Jersey coming from  
8 nuclear plants. And those nuclear plants are set  
9 to expire before 2050. So the idea of clean energy  
10 coming as part of nuclear with the expiration of  
11 those plants, it does not comport. The goal for  
12 New Jersey clearly is clean renewable energy.

13           Currently this technology, as you  
14 know, nuclear requires subsidies to operate. And,  
15 we're seeing that the cost of solar is competing  
16 directly with fossil fuels in other places. And  
17 some folks have indicated there needs to be some  
18 adjustment here in New Jersey, as well.

19           Second. The plan should set some  
20 interim targets. I know it's laid out, but vision  
21 for specifics over the next ten years, and going  
22 out forward in to 2050. But looking at five-year  
23 intervals to help put together plans for folks to  
24 look at around electrical generation on  
25 transportation, residential, and the commercial

1 sectors, to provide achievable goals and a clear  
2 pathway. In addition, it should align with the  
3 Global Warming Response Act. Which hasn't been  
4 talked a lot today. But the Global Warming  
5 Response Act, it sets a goal of statewide  
6 reductions of greenhouse gas emissions by 80  
7 percent of 2006 levels. So, that's a really  
8 component as you're looking at it from our  
9 perspective.

10 As you develop the comprehensive  
11 blueprint to achieve these interim targets, we  
12 think it's important to have some bi-annual  
13 reporting and monitoring, so that we can see how  
14 we're doing. We know that data will be a little  
15 bit behind as it tends to be. But, it will help us  
16 to look in the shorter term at what progress has  
17 been making, and then help with long-term  
18 projections and adjustments that might need to be  
19 made to ensure that we're constantly taking steps  
20 to move as closer to achieving Global Warming  
21 Response Act goals, the RPS goal, and the  
22 Governor's vision of a hundred percent clean energy  
23 by 2050.

24 Those interim targets statewide by  
25 sector would help policy makers be clear about the

1 goals and the transition from fossil fuels. And it  
2 will also help because I think it's important that  
3 the state is not picking winners and losers in the  
4 production of energy. It should rely on market  
5 forces to sort out which fuels decline at lower  
6 rates. That's important.

7 Thirdly. In our discussions of a just  
8 transition to clean energy, New Jersey is facing a  
9 multitude of proposed fossil fuel projects -- which  
10 have been talked about a hundred times today --  
11 including gas fired plants and pipelines, that  
12 aren't consistent with this collective shared  
13 vision to a hundred percent clean renewable energy  
14 future. So, we think it's important that the  
15 Energy Master Plan identifies regulatory changes  
16 that are needed for regulators to deny approval of  
17 new fossil fuel oil and gas projects that threaten  
18 statewide emissions reductions required under the  
19 Global Warming Response Act.

20 You asked some pretty insightful  
21 questions to gather input from stakeholders. And I  
22 wanted to address one of them, which was the  
23 stranded costs. As you're aware, New Jersey is  
24 deregulated as it relates to energy supply, leaving  
25 no risk for ratepayers from a stranded fossil fuel

1 electric generation assets, like a natural gas  
2 power plant. The state can reduce the risk of  
3 losses to investors -- I think many of which have  
4 left already in industry -- by providing clear and  
5 consistent signals to developers of fossil fuel  
6 assets. But where ratepayers are really on the  
7 hook are with pipelines. It's expected that by  
8 2030 there could be significant reductions in New  
9 Jersey of natural gas consumption, which could  
10 affect an under-utilization rate, and several  
11 interstate gas pipelines and distribution lines  
12 wouldn't have customers. Assuming that the costs  
13 to maintain these lines does not change, those  
14 costs will be spread over fewer customers, creating  
15 much higher rates for natural gas. That's  
16 something we really need to be concerned with.  
17 And, so, protect New Jersey customers, it's  
18 absolutely essential to utilize future projections  
19 of the natural gas consumptions and refraining from  
20 building these additional infrastructures, and that  
21 they're under-utilized and shifting, and as that  
22 goes through time to clean renewable energy  
23 resources. And, we shouldn't be putting  
24 ratepayers on the hook for the cost of these unwise  
25 project investments.

1                   So, I'm going to tell a little  
2 personal story. So, I had the pleasure of living  
3 on the D&R canal, which is a beautiful, beautiful  
4 place. Loved it. I think my dog Zena, she loves  
5 it more. She loves to go swimming in there. We  
6 have canoes, people go running on there, they go  
7 biking. Not so much swimming. But, the reason I  
8 bring that up is, history is a good predictor of  
9 the future. So, when we look at the canal, the  
10 reason we have it now as a wonderful state park --  
11 the largest reservoir in the state -- is because  
12 way back in the day there was a competition to get  
13 goods from Philadelphia to New York. And the canal  
14 was the tried and true method. And the train was  
15 this new fangled thing that people didn't really  
16 know if it would work. So they were really smart,  
17 and they said, well, we're not going to put  
18 everything in this new fangled train. We're going  
19 to build both. And which ever one -- we're  
20 prepared, which every one goes forward. And, as we  
21 know, the story goes the train is still moving lots  
22 of goods and services.

23                   I tell that story because the canal is  
24 now an asset that we use and enjoy both for  
25 recreation and for our water supply. But what kind

1 of assets are left behind from fossil fuel  
2 infrastructure like oil and gas pipelines? Future  
3 children are not going to make a little sled and go  
4 for a ride in an unused pipeline. It's something  
5 that really has a big degradation to our  
6 environment, to our communities. They're cutting  
7 down trees. It's great environmental degradation.  
8 Private properties being crossed. Preserved lands  
9 are being undone for this infrastructure. So, with  
10 that in mind, that history -- I'm trying to make an  
11 analogy -- we are on the cusp of sort of the  
12 future. And we have proven track records of  
13 renewable resources, like solar and wind. We don't  
14 have to build both simultaneously. So, that's my  
15 sort of personal example.

16 I'm on four. The Energy Master Plan  
17 should develop policies to guarantee pollution  
18 reductions in our environmental justice communities  
19 as soon as possible. So, if there's a choice to  
20 close a plant, they should be closed down in a  
21 low-income community. Communities of color are on  
22 the front lines. They're already overburdened with  
23 cumulative impacts that are disproportionately  
24 affecting the environmental justice communities.  
25 Expanding access to renewables and energy

1 efficiency environmental justice communities is  
2 also critical. There's community solar, which we  
3 just heard about. Through weatherization  
4 initiatives, energy efficiency. And, to ensure  
5 affordability for low and moderate-income  
6 households. And, we're also happy to work with you  
7 on the definition for that as you go forward.

8           The fifth point. While we strongly  
9 support swiftly transitioning to clean renewable  
10 energy, we also need to go through so  
11 responsibility and equitably. The plan should  
12 consider siting mechanisms to ensure maximum  
13 support from the community for renewable projects.  
14 Particularly with off-shore wind. There are better  
15 places than others to put windmills, and minimize  
16 the impact to the environment while we produce  
17 renewable energy. With solar, there is no need to  
18 cut down trees to put up solar panels when there  
19 are under-utilized locations like retail rooftops  
20 and roads and parking lots. Certainly farms should  
21 not be not providing food like we had for lunch,  
22 and having solar on them. We need farms. It's  
23 important for food. And, we have other places for  
24 solar. And, especially with our preserved lands  
25 that were preserved in the public trust for a

1 certain purpose. That's really important.

2           And, number six. To reduce the  
3 uncertainty in the market and of utility costs.  
4 The state should determine pathways to reach the  
5 2050 goals using state-of-the-art modelings. A few  
6 people talked about things that are happening out  
7 to 2050. We heard about Minnesota and Hawaii.  
8 They're doing all kinds of good work. And, I know  
9 you guys have that on the radar, as well. It's  
10 going to really important.

11           And, lastly -- and lucky number  
12 seven -- jobs. The EMP really should focus on  
13 these pathways to achieve the hundred percent  
14 renewable energy future while capitalizing on the  
15 tremendous opportunities there are to generate  
16 good, family-sustaining jobs right here in New  
17 Jersey, and to spur that economic development  
18 through the clean renewable energy projects and  
19 investments. And, the energy efficiency pieces  
20 that we've been talking about through  
21 electrification.

22           So, we're really looking forward to  
23 working with the BPU and all the members, with my  
24 former mayor and assemblymen, and now Commissioner  
25 Chivukula, and helping to really take advantage of



1 this unique opportunity that we have. And I want  
2 to thank you very much for your time.

3 MR. SHEEHAN: Thank you very much.  
4 We're going to take a five-minute break.

5 (Whereupon a short recess was held.)

6 MR. SHEEHAN: We are back on track.  
7 Our next speaker is Ray Albrecht with the National  
8 Biodiesel Board. Is Ray still here?

9 Debra Coyle. Henry Gajda. George  
10 Hay. Ibrahima Kalle. Nora Langweiler. Richard  
11 Lawton. Agnes Marsala. Veer Patel. Rezwan  
12 Razani.

13 MR. RAZANI: Hi. I'm Rezwan Razani,  
14 and I'm the founder of Footprint to Wings. We're  
15 turning the race to zero carbon into a national  
16 past time, and coaching each state to win. So, one  
17 of the things we're doing is we're writing a zero  
18 carbon playbook. And, the way I see the Energy  
19 Master Plan is essentially the playbook for New  
20 Jersey. So, your plan would be much more the  
21 detailed intellectual version for numeric stuff.  
22 But what we want to do is make sure these numbers  
23 are legible to everybody, so anybody can pretty  
24 much understand what's going on.

25 So, the first thing I notice with all

1 of your things, is maybe there could be a section  
2 for how do we make sure everybody understands the  
3 plan, so the public outreach section, general  
4 public outreach not just the stakeholders. So, the  
5 Governor, bless him -- this is so cool, it's like  
6 so historic. That we're actually having this  
7 meeting is very exciting. So, he wants a  
8 blueprint for conversion to a hundred percent clean  
9 energy. So, our first question, as zero carbon  
10 coaches is, a hundred percent of what? How big is  
11 the playing field? And, so, that's what I kind of  
12 want, like an Energy Master Plan. The quickest way  
13 to get legible for everybody is kind of put that  
14 right up there -- a hundred percent of what?

15                   So, the EIA has this lovely  
16 information. And, it's kind of in, like, lines  
17 like this. But I put it together like this so it  
18 would look like a football field. Because, you  
19 want to see, well, where are we? How far are we to  
20 zero? And, how far do we have to go? And, this  
21 one has, like, motor gasoline is twenty percent  
22 natural gas, it's dirty. When you see it like  
23 this, it's a little bit more legible. That way,  
24 when you're writing the Energy Master Plan you can  
25 connect it, like well the motor gas play would

1 affect this field. Squish it, you can make it  
2 bigger, more whatever. The natural gas, well this  
3 is part electricity, this is part heating, so you  
4 know where the play fits, and you can quickly get  
5 people to grasp it, its in perspective. That's one  
6 thing we're going to do with out thing.

7           So, then the next thing is, oh,  
8 there's a big controversy of, I notice, running  
9 through this meeting of nuclear. If you don't like  
10 nuclear. But, that's kind of what's getting us to  
11 the twenty yard line. So, a lot of people want to  
12 get rid of it. That would take us back to the  
13 three-yard line, so we have to push forward again.  
14 The other thing that helps with this it to help  
15 quantify things. This is like about 3.6 gigawatt  
16 equipment for four nuclear power plants. A lot of  
17 people are saying, well, there's going to be 3,500  
18 gigawatts of wind power coming on line. But that's  
19 the play capacity, so you'd be like yeah, but  
20 that's this much. So, you can just start to realty  
21 get the quantifications down.

22           So, the next thing is how long is this  
23 field? I want that question answered. That  
24 question is going to vary, there's a lot of  
25 variables that go into it. Just get an initial,

1 like, if you were to electrify everything and  
2 supply the power for it, what would you do. And  
3 the number that I like best is what Mark Jacobson  
4 uses, the gigawatt equipment. Like the energy that  
5 you would supply with one plant running a year  
6 nonstop, 24/7. So, like a nuclear power plant has  
7 like 1.1 gigawatts at ninety percent capacity,  
8 whatever, it's about one gigawatt.

9 Now, off the top of your head, do you  
10 guys have a number, like how long if you were to  
11 electrify, like if you were to waive a magic wand  
12 and electrify everything? Out of curiosity.

13 MS. STROM-POWER: We are looking at  
14 those numbers. We do have some projections. Yes.

15 MS. RAZANI: So there is a field  
16 number? Okay. Because I would love as soon as you  
17 can get that. Because, the other thing, Mark  
18 Jacobson -- who was referred to by Brandon -- he  
19 has a number, and that's about 32.9, so roughly 33  
20 gigawatt equipment.

21 MR. HORNSBY: For electric cars  
22 itself?

23 MS. RAZANI: Everything. He even  
24 calculated the efficiency of electric cars, he  
25 squashed it and everything. So, that's including

1 that, the electric car advantage. Yeah. So, and  
2 his number was 33. So, I'm like wow, that's big.

3 MS. STROM-POWER: I don't think we  
4 have set numbers on any of these yet. Right now  
5 it's a --

6 MS. RAZANI: Fair enough. And, I just  
7 did an extrapolation with nuclear, I'm like, well,  
8 if this 3.6 gigawatts, then this should actually be  
9 22. So we need to know that number. That's a big  
10 difference. So, I want to know that number.

11 And then the next thing is, our  
12 colleague Brandon did talk about the renewable.  
13 So, the Governor wants a blueprint. So, Mark  
14 Jacobson did do us the favor of putting a blueprint  
15 down. So, you can go on his website  
16 solutionsprojects.org, you get the numbers. So,  
17 then the shocker for me was that rooftop, if you  
18 max it out for both buildings and commercial and  
19 residential, is 6.3 percent of the total, in his  
20 estimation. So, that's not even a first down. So,  
21 I was like whoa, that's not much. And then the 27  
22 percent solar, and then ten percent on-shore wind,  
23 and fifty percent off-shore word. Great.

24 So, the next thing that's important is  
25 to map this out. Give people an overlay. Like,

1 how much does this take? Most people don't look  
2 past the percents. How many wind turbines? How  
3 many things? So, what we have, and the off-shore  
4 wind, 55 percent. Just guess guys, guess how many  
5 wind turbines that is, if it's like five megawatt  
6 wind turbine? Anybody want to take a guess? Okay.  
7 It's 9,400 off-shore wind turbines -- according to  
8 Mark Jacobson. And the shore line is 130 miles  
9 long. So, that comes to 72 wind turbines per mile.  
10 And you put them in array, because you can't put  
11 them quite that way. So, at 72 wind turbines per  
12 mile is a lot.

13                   And then I'm looking at the -- your  
14 Euro of Energy Management Plan, their plan calls  
15 for -- they've set aside a certain amount of area,  
16 looks like 418 square miles. But, that would fit  
17 about a quarter of those turbines. So, then, the  
18 next question is, we want to begin with the end  
19 game in mind. We want all the players to see,  
20 well, how far can we go with this play, how far can  
21 it theoretically go, technically; and, how far do  
22 we kind of want it to go, and then what's the gap?  
23 Because now, you know, it will be like, well, it's  
24 supposed to be this, but we're only this far, so  
25 how we going to take a shortfall. That will show

1 you how much more efficient you need to be,  
2 etcetera.

3           Anyway, so, it helps you anchor the  
4 main plays, the big set pieces, the fantastic ones.  
5 And then the shortfall. And then, of course,  
6 on-shore wind was like 3,185 wind turbines. And it  
7 would take up an area the size of Atlantic County,  
8 which is 500 square miles, or whatever. So, these  
9 were large numbers. And I think when citizens --  
10 like I feel the big problem that we're facing isn't  
11 money, because after all cost does not determine  
12 value. Value is in the eye of the beholder. So, I  
13 feel is going to be a bigger problem than anything.

14           And, the final things I want to  
15 mention which is Six Flags, and the fabulous fiasco  
16 that occurred when Six Flags decided to go solar.  
17 And then they said, okay, great, we're going to cut  
18 down this forest here. And that created three  
19 years of lawsuits and acrimony, and a lot of people  
20 were upset about that. And, at the end they did a  
21 settlement. The judge decided in their favor, so  
22 that's the other thing. You say green is good and  
23 the judge is going to decide for the solar. So,  
24 instead of doing 90 acres, they went up to forty  
25 acres and they did some of the parking lot. But

1 still, 40 acres is like 7,000 trees cut down. And  
2 it ended up being for 23 megawatts of power. And  
3 that's 23 name plate, 23 megawatts of name plate,  
4 which is about four megawatts delivered. And,  
5 again, what is our end game? It's 33 gigawatts.  
6 So, if you're going to have three years of lawsuits  
7 over four megawatts, that's a lot of work. So,  
8 what we want to do at Footprint to Wings is get  
9 everything on the table up front as quickly as  
10 possible, to get through all of those arguments in  
11 a way that everyone can see. As quickly as  
12 possible, and come up with a solution that everyone  
13 will get behind and not regret. We feel a lot of  
14 people don't understand the full implication of  
15 each of their decisions. But, like, innovations  
16 can come up. Like Barb Blumenthal was interesting  
17 to me because it sounded like, well, that's the way  
18 to really shrink this and get it much more  
19 efficient. So, once you start with it, you tinker  
20 at it and you can show the improved play in each of  
21 the areas. Like, it really helps improve things.  
22 And if it's in a big, you know, if it's up there  
23 where everybody can see, okay, this is what we're  
24 working on, this is how it fits, we can work better  
25 as a team. Because everybody's got expertise in



1 this room. Everybody that's involved in this has a  
2 lot to offer. And, also, a lot of blind spots.  
3 So, we want to get through. We want to bring out  
4 the best in everybody, bring out the best solution  
5 that everybody can get behind. We want to make  
6 everybody out there, all the citizens, are aware of  
7 them. And, approve of them, ultimately. And the  
8 sooner we can get that all to happen, the better.

9 That's my --

10 MR. SHEEHAN: Thank you very much.

11 Julia Bobie.

12 MS. BOBIE: Hi. I'm Julia Bobie, I'm  
13 from Equinor, the Norwegian energy company that's  
14 been building off-shore wind in Norway for about  
15 twelve years. And, now we are the lease holder  
16 for a large off-shore wind area about twenty miles  
17 east of Sandy Hook. So, we've been following New  
18 Jersey's work very carefully. And, if all goes to  
19 plan, we hope to be one of the first bidders for  
20 New Jersey OREC. So, my primary purpose is to  
21 thank this working group for its service, and  
22 really, all of the public servants in New Jersey  
23 for the last year have been working very, very  
24 hard. And, we certainly appreciate it.

25 The nineteen questions are insightful.

1 And there are certainly experts on many different  
2 parts of renewable energy that I'm not here to talk  
3 about specifically. Although, energy efficiency,  
4 distributed energy resources, electrification, are  
5 all going to be hugely important for New Jersey.  
6 I'm here to talk about off-shore wind.

7 Off-shore wind can really replace a  
8 significant amount of fossil energy. And, what  
9 we're seeing -- as you all well no -- is most of  
10 the fossil generation in the northeast is going to  
11 go off line any way. It's old, it's inefficient.  
12 And, we plan to be there to replace that generation  
13 ideally using the infrastructure, the grid, that  
14 you already have that ratepayers already paid for.

15 I'm here to say that the goal that New  
16 Jersey has and whether there's goals for the energy  
17 or how to make sure that sort of justice and other  
18 issues are addressed is really a matter of market  
19 design. And if you get the market right, it will  
20 create competent that will drive down costs. We'll  
21 be there to bid. The other types of renewables  
22 will be there to bid. And New Jersey will be  
23 really well poised -- thanks to the good work of  
24 the public servants -- to run the market and really  
25 show other states how this can be done. So,

1 thanks again for your service.

2 MR. SHEEHAN: Thank you very much.  
3 Amy Goldsmith.

4 MS. GOLDSMITH: Hello. My name is Amy  
5 Goldsmith. I'm the New Jersey State Director for  
6 Clean Water Action. We have 150,000 members  
7 throughout the state. Maybe somebody came and  
8 knocked on your door and asked you to write a  
9 letter or give a donation, or be in support of our  
10 work. We work on a wide range of issues, including  
11 energy issues. We have extensive work that we do  
12 on climate in the City of Newark, in the community,  
13 primarily in the south ward but throughout the  
14 city. We have two climate organizers who come from  
15 the neighborhood, who work in the neighborhood.  
16 So, we know firsthand. And we've been doing it for  
17 almost over twenty years, a variety of different  
18 work.

19 We've trained people around heat  
20 precautions. We have lamp post banners hanging off  
21 of lamp posts in the Clinton Avenue neighborhood in  
22 the south ward around heat. We know what climate  
23 is. We know communities are getting flooded. And  
24 we know that people die in Newark because of  
25 respiratory distress. A very high number of women

1 who lose their lives in childbirth because they get  
2 into an asthma situation and do not recover and  
3 lose their life. And, it's a high price to pay to  
4 have climate-related greenhouse gases and other  
5 co-pollutants that impact this neighborhood to the  
6 extent that it does. And, so, we should both be  
7 reducing our carbon footprint, but also looking to  
8 reduce, obviously, the emissions that are in these  
9 neighborhoods. And, we can do that through changes  
10 in our energy practices.

11 I want to speak to a couple of issues  
12 around environmental justice. Others have spoken  
13 to this issue -- hearings should be in the  
14 communities where people typically don't have  
15 access to cars, and sometimes mass transit isn't so  
16 great even for them. So, there are cities like  
17 Camden and Newark and Paterson. But, there's also  
18 other communities throughout the state that are  
19 environmental justice and low-income communities,  
20 communities of color, where people don't have ready  
21 access to a forum such as this. And in some cases  
22 translations are needed. And, some of those  
23 locations they use sort of like UN translation  
24 systems where you don't have to translate  
25 everything over and over, but you have translators

1 so they can hear them in head phones and be part of  
2 the process. And, I think given the importance of  
3 energy in our lives it's important for us to think  
4 about better and creative ways to engage the  
5 community. We've always found that community  
6 people have incredibly thoughtful ideas and things  
7 that we don't even think about because we're not  
8 living in their neighborhoods.

9           The other is that this place is very  
10 far away from parking lots. If you're disabled,  
11 you know, there's a person here with a walker, she  
12 had to walk all the way from the other side, had to  
13 walk all the way over here. I think that would be  
14 quite challenging. There's not really much mass  
15 transit here. And, there clearly wasn't enough  
16 seating. I don't care about the Wi-Fi, we can  
17 figure that out.

18           So, the other point I want to make is  
19 that in the work that we do in Newark, we have  
20 trained people to be solar installers. And, they  
21 got certification from N.J.I.T, so it's a credible  
22 certification. They wanted to do the work, but the  
23 problem was that they couldn't get to the work.  
24 Because there was enough work in the City of Newark  
25 to do the work. They did a small project at

1 Wilson Avenue garage. But after that they couldn't  
2 really use their talent because most of the jobs  
3 were in the suburbs. So, if we're going to be  
4 doing renewable energy, we need to be doing  
5 renewable energy in the places where we're training  
6 people to do the work so they can actually get to  
7 the work. And, have a family-supporting wage so  
8 that they can add to the community, as well as add  
9 to their own family's well-being. So, I want to  
10 make that point.

11           The other is that HUD has, you know,  
12 oversees a lot of public housing in a lot of  
13 places, not just in Newark. And, they are required  
14 to hire people within HUD in their residences to do  
15 the work. And, if we actually had a program where  
16 we were looking at public housing -- the people who  
17 have the least ability to pay for their utilities  
18 and everything else -- and, if we actually had a  
19 program where we were training people who are in  
20 public housing to do renewable energy, energy  
21 efficiency, conservation, those kinds of things so  
22 that it would benefit the neighborhoods that they  
23 live in, that would be a good thing. So, we could  
24 use the pressure point that HUD should be hiring  
25 from within and training from within to do their

1 maintenance and other things. I know that Newark  
2 has been replacing their boilers and doing other  
3 things -- which is probably a topic for another one  
4 of your stakeholder meetings. But, I just wanted  
5 to raise that.

6           The other is that -- and this also  
7 might be partly something for the next topic, but I  
8 can't be at the next meeting -- is that a lot of  
9 the conversation is really focused on energy as  
10 electricity. And not everything is electricity.  
11 Obviously there's heating that needs to be done,  
12 and cooling. And, if we were doing a better  
13 building codes, appliance standards, some of the  
14 appliance energy efficiency, but also there's  
15 conservation. Right? Not using the power in the  
16 first place. That would be very important. And  
17 one thing that I always -- a place that I was in a  
18 long time ago, probably thirty years ago, in  
19 Wisconsin, a little tiny town in Wisconsin, they  
20 were forced to move their whole community because  
21 it kept getting flooded. And, they weren't going  
22 to get anymore federal money unless they moved  
23 their community. So, they moved their community,  
24 and they decided to make it a solar community.  
25 And, the way they did it wasn't actually with solar

1 panels on their roofs, they did it mostly doing  
2 passive solar to do heating. They did, you know,  
3 solar walls, solar attic. And, I don't think  
4 there's very much conversation about how can we  
5 reduce some of our heating by using some other more  
6 passive, you know, not such a high tech -- we don't  
7 need solar panels for heating our homes, we need  
8 other ways to do it. And, we have a lot of  
9 seniors, and a lot of them are in these electric  
10 complexes, even their heating, and they can't  
11 afford to pay for their heat. So, it's important  
12 for us to think about seniors and other places  
13 where we might be able to do some new kinds of  
14 building design, innovation, around integrating the  
15 kinds of renewable energy offerings that we want to  
16 have in the urban revitalization, or a lot of the  
17 suburbs, their towns are becoming new main streets.  
18 Right? So, how do we do that in a better way. And  
19 the healthy homes initiatives that are being done  
20 around lead in drinking water and paint, and how  
21 can we integrate from the energy elements into that  
22 without intensifying the neighborhood so much that  
23 the people who live there now can no longer afford  
24 to live in the communities that they're in.

25 There's mention has been made about



1 benchmarks, annual benchmarks, interim benchmarks  
2 to get to fifty percent renewable by 2030 for  
3 electricity, and a hundred percent at 2050. I'm  
4 not going to go into more detail on that. But, I  
5 do also want to emphasize that the BPU and the DEP  
6 must have clear regulations to deny these gas  
7 plants and lines -- as has been mentioned by  
8 others. We have been actively working against  
9 these facilities. It's not consistent with the  
10 goals of the Governor and of the Executive Order.  
11 We should be misclassifying power producers ways to  
12 energy, it should not be a part of the equation.  
13 Natural gas is not a renewable energy. We should  
14 not be doing that at all. And, also, why would we  
15 want to invest time and money -- I think the  
16 previous speaker spoke to why would we want to  
17 spend all these years in a permit and a ratepayer  
18 situation where you have to use all the agency  
19 resources to build the plant that actually we don't  
20 really want in the first place because it doesn't  
21 get us to where we want to go. And, so we're  
22 wasting public resources, private resources,  
23 non-profit resources, community resources. People  
24 would rather stay home with their families than  
25 fighting natural gas plants and power lines. And,

1 they're only going to be around for twenty years,  
2 well, actually they don't end up around for twenty  
3 years. We have nuclear power plants that have been  
4 around for forty and sixty years. So, you're not  
5 going to build something, invest all that money,  
6 and then suddenly shut it down.

7           And, there has been mention of the  
8 Stanford University numbers and data. This will  
9 be my last point. That using existing  
10 technologies, and the Stanford University and  
11 solutions project work. You know, we started  
12 several years ago, so the technology is even  
13 advanced since that work was done. But even just  
14 looking at the existing technology at the time they  
15 issued their report for wind, solar, and water,  
16 you'd produce 140,000 jobs here in New Jersey.  
17 These are forty year or lifetime jobs. And, that's  
18 really important that you're not jumping from job  
19 to job. Most electricians, when they become an  
20 electrician they stay an electrician for quite a  
21 long time. It's a good paying job, why would you  
22 want to change your job if you're an electrician.  
23 And, also, it's cheaper if you factor in -- 25  
24 percent cheaper if you factor in the cost savings  
25 of avoided healthcare costs over 12 billion dollars

1 of healthcare cost per year. 1500 deaths avoided  
2 due to pollution and climate. And, those numbers  
3 are higher in a community like Newark, where I do a  
4 lot of work. The average in the state, just using  
5 asthma as a number -- my final point -- using  
6 asthmas as a number, it's about twelve percent  
7 nationally and in New Jersey, but in Newark it's  
8 one in four kids have asthma. Why do they have  
9 asthma? Because of the gas plants. Because of the  
10 port. Because a lots of cumulative impacts. So,  
11 when we can look at the energy sector and figure  
12 out ways to reduce the cumulative impacts, the  
13 co-pollutants associated with energy production --  
14 especially in places that are highly concentrated,  
15 densely populate, highly vulnerable people -- we  
16 should do everything that we can, and we should  
17 make it a priority. Thank you.

18 MR. SHEEHAN: Thank you very much.  
19 Sorry about that, Ms. Smith. You can come on up.

20 MS. SMITH: Good afternoon. Thank  
21 you. I want to say thank you to Governor Murphy  
22 and Mr. Sheehan for convening this hearing. And  
23 members of the committee for spending your day here  
24 listening to comments.

25 My name is Laina Smith. I am a senior

1 organizer and policy advocate of Food and Water  
2 Watch. We are a national advocacy organization.  
3 We champion healthy food, clean water, and a  
4 livable planet. And we advocate for a democracy  
5 that improves peoples lives and protects the  
6 environment. We are also a founding organization  
7 of the New Jersey All Fossil Fuels Coalition which  
8 includes over fifty faith, labor, environmental,  
9 community, business, and political organizations,  
10 committed to addressing the urgency of climate  
11 change by moving all fossil fuels and on to a one  
12 hundred percent clean renewable energy future.

13 I'm going to keep my comments to one  
14 general -- a general comment on climate change, and  
15 then in three of the topic areas that you laid out  
16 for us. So, first, general comments on the  
17 urgency of climate change. We need a rapid  
18 development of clean renewable power to avert the  
19 worse impacts of climate change. And, while we  
20 applaud Governor Murphy's goal of achieving one  
21 hundred percent renewable energy, the goal of  
22 achieving that by the year 2050 is far short of  
23 what is needed to stop irreversible climate change.  
24 In 2014 the intergovernmental panel on climate  
25 change reported that recent climate changes have

1 had widespread impacts on human health and natural  
2 systems. This includes violent storms, floods,  
3 acidifying and rapidly warming oceans. And we have  
4 seen this in events like Superstorm Sandy.

5 As the Paris climate talks in 2015,  
6 the nations of the world agreed that preventing the  
7 planet from warming one and half degree celsius of  
8 the pre-industrial levels would significantly  
9 reduce the risks and impacts of climate change.

10 In order to have a two out of three chance of  
11 avoiding a catastrophe one and a half degree  
12 celsius rise in temperature, the IPCC found we can  
13 only emit 400 gigatons of carbon dioxide after  
14 2011. And between 2011 and 2017, the global  
15 economy released 295 gigatons of carbon dioxide  
16 into the atmosphere from burning fossil fuels. We  
17 only have about ten years to cut our emissions.  
18 Reductions of burning of fossil fuels are critical  
19 to avoiding the worse impacts of climate change,  
20 and we encourage the BPU to develop an Energy  
21 Master Plan that front loads most of the energy  
22 development in this first decade, charting a  
23 pathway for eighty percent clean renewable energy  
24 by year 2028, and one hundred percent clean  
25 renewable energy by the year 2035.

1           Someone mentioned earlier today, one  
2 of the hurdles is the lack of a federal renewable  
3 energy plan. There is a bill introduced by Bruce  
4 Gavern from Hawaii that lays out this timeline  
5 towards a hundred percent renewable energy by 2035.  
6 The state could support that bill and advocate in  
7 Congress for that.

8           Second, for the definitions of clean  
9 energy sources, we support a clean energy economy  
10 that is built solely on solar, wind, and titled  
11 sources. Solar can be used in utility, and  
12 distributed solar to meet our energy needs. A  
13 renewable portfolio standard is an effective tool  
14 for requiring utilities to build utility scaled  
15 solar projects. Additional sources can come from  
16 distributed rooftop solar projects. This requires  
17 policies and public investment. These policies can  
18 focus on maximizing developments and access to  
19 community solar projects, which we are moving  
20 forward on -- and could move faster, frankly.  
21 Removing caps on net metering, and changing  
22 building code to require the new construction is  
23 fitted with on-site and/or rooftop solar panels.

24           Wind energy. We can see the  
25 potential from unrealized energy potential from

1 off-shore wind, and the technical potential to  
2 provide double the energy demand for current  
3 electricity needs exist in off-shore wind, plus  
4 estimated demand for electrified vehicles and  
5 heating. New Jersey shows significant  
6 opportunities for wind, but we should not rely  
7 solely on off-shore wind, and must also consider  
8 on-shore wind energy. Because even with proper  
9 off-shore siting of off-shore wind resources,  
10 typically the fishing shipping lanes and ecological  
11 impacts, this may result in lower levels of wind  
12 energy being harnessed. It will take time to study  
13 and build out the infrastructure to fully utilize  
14 off-shore wind, so we must act immediately to  
15 replace fossil fuel energy sources with clean  
16 energy sources.

17                   And with title technology, the  
18 technology is improving. And, it could provide a  
19 steady flow of energy to meet demand when  
20 intermittent electricity sources like wind and  
21 solar are not producing electricity. Stock  
22 renewable of titled power recently released report  
23 that a two megawatt loading titles turbine produced  
24 over three gigawatt hours of renewable electricity  
25 in its first year of testing.

1           To the point of sources of dirty  
2 energy standards. The state's current renewable  
3 portfolio standard actually allows many sources of  
4 dirty energy to be counted as renewable. And this  
5 RPS should be addressed. These include sources of  
6 greenhouse gases and other harmful pollutants that  
7 adversely affect public health, including bio-gas  
8 and garbage incineration. We also call on New  
9 Jersey to address the expansion of fracked gas  
10 infrastructure. And we agree with the comments  
11 that nuclear is not clean energy.

12           Continuing to reliable fracked gas.  
13 This is one of greatest threats to our planet.  
14 While it may burn cleaner at an end point, methane  
15 is 85 times more potent at trapping heat than  
16 carbon dioxide. Methane leaks from every stage of  
17 the natural gas system, from well sites to  
18 processing plants, and compressor stations to  
19 beneath city streets. With over twelve proposed  
20 pipelines, several compressor stations and gas  
21 fired power plants being proposed in places like  
22 the Meadowlands, New Jersey must put a moratorium  
23 on all new fossil fuel infrastructure, while it  
24 continues to develop its Energy Master Plan and  
25 build out a clean renewable energy system.



1                   Bio-gases has been included in New  
2 Jersey's RPS before. And this includes bringing  
3 waste methane from landfills through its treatment  
4 plants, and animal waste such as factory farming  
5 manure. This methane often referred to as bio-gas  
6 is essentially indistinguishable from fracked  
7 natural gas, with many of the same problems.  
8 Burning bio-gas or methane releases greenhouse  
9 gases and pollutants including nitrogen oxides,  
10 ammonia, and hydrogen sulfite. New Jersey  
11 currently allows garbage incineration. This  
12 produces toxic air emissions like mercury, and  
13 contributes to climate change. New Jersey is home  
14 to five municipal waste incinerators that combined  
15 burn about 4.8 billion pounds of municipal waste  
16 annually. And overburdened predominantly lower  
17 income communities of color of Newark and Camden  
18 for decades.

19                   Besides the adverse impacts to the  
20 public health and climate, allowing these fuels to  
21 masquerade as renewable, undermines the importance  
22 of the state's RPS and efforts to achieve truly  
23 renewable clean electricity. Even by including  
24 these sources of dirty energy in the transition  
25 allows for the creation of markets that don't

1 currently exist, and thereby facilitates the demand  
2 for dirty energy. The market incentivizes  
3 polluters to continue to expand operations. We  
4 must acknowledge that we cannot consider fracked  
5 gas as a bridge fuel, and not consider sources of  
6 dirty energy like bio-gas and garbage incineration  
7 as a bridge fuel, like has happened for so many  
8 years with fracked gas. And, will result in  
9 stranded assets if we don't put a moratorium on  
10 fracked gas.

11 Finally, to the point of clean energy  
12 definitions. New Jersey's REC program, Renewable  
13 Energy Credit Program, while it's in the process of  
14 being overhauled, it has been meeting its RPS goals  
15 with almost as much renewable energy from garbage  
16 incineration RECs as from solar power. In  
17 addition, to only allowing utilities to purchase  
18 RECs from clean energy sources, the state must  
19 ensure that the RECs are bundled with the  
20 electricity that they represent, versus unbundled  
21 where they're able to be tied to sources of dirty  
22 energy. And, thereby that energy is will send  
23 dirty energy into the grid and offset vastly the  
24 purchase of meaningless credit. Worse yet,  
25 ratepayers then must subsidize these unsustainable

1 industry dirty energy sources through their  
2 electricity bill.

3           Some of the technology -- so, the  
4 third point to the technology that the state can  
5 build, it can be addressed through redundancy,  
6 storage, demand and response, and energy  
7 efficiency, calls for consumer in the transition to  
8 renewable energy and reduce the ecological impacts.  
9 Electricity storage is improving significantly and  
10 becoming cost-effective, and will reduce the need  
11 for redundancy. The California Public Utility  
12 Commission has already taken action to force  
13 utilities to installing utility scale batteries to  
14 replace gas to meet peak energy demand.

15           Demand response programs can help  
16 reduce peak electricity demand by reducing the cost  
17 associated with storage for redundancy to meet  
18 energy demands on high days. The BPU should  
19 explore various incentives and penalties that could  
20 be incorporated to ensure large energy users are  
21 implementing demand response programs. Energy  
22 efficiency. We've heard about a lot about it  
23 today. So, it helps reduce peak demand by reducing  
24 our overall energy footprint. And the state could  
25 institute an energy efficiency portfolio standard.

1                   Finally, environmental justice and a  
2 just transition. We need to address the workers  
3 from jobs in the fossil fuel industry, and  
4 transition them to living wage union jobs to  
5 support energy efficiency and the development of  
6 renewable energy. Low-income communities and  
7 communities of color have long experienced the  
8 overburden of relying on fossil fuels. And  
9 environmental justice communities must be  
10 productive in our state energy plan. We are  
11 proposing that to achieve a just transition the  
12 state establish a state renewable energy revolving  
13 fund to provide grants and low-interest loans that  
14 support the generation of renewable energy and job  
15 training programs in the renewable energy sector.  
16 Priority should be given to low-income communities,  
17 communities of color, immigrant communities, and  
18 communities disproportionately impacted by fossil  
19 fuel development. The program should include job  
20 training programs, relocation assistance that  
21 prioritizes workers in displaced industries, and  
22 those living in environmental justice communities.  
23 These funds shall always support community solar  
24 projects, and provide technical assistance where at  
25 least fifty percent of the customers are either of

1 minority, immigrants, low-income, people of color.  
2 And any projects that utilize these funds must rely  
3 on union labor and a work force that is at least  
4 fifty percent minority.

5           To move forward on environmental  
6 justice, we recommend a creation of a statewide  
7 appointed climate justice working group be  
8 established as one of the principles of  
9 environmental justice and meaningful community  
10 input. They will advise the DEP and BPU on plans  
11 and progress made by state agencies and utilities  
12 that are developing and implementing the plan to  
13 achieve one hundred percent renewable energy. The  
14 working group shall be comprised of members who are  
15 residents of low-income communities or  
16 environmental justice communities. And, similarly,  
17 for county or municipalities with at least 50,000  
18 residents, they have to create local climate  
19 justice working groups.

20           Finally, to the point of environmental  
21 justice, these stakeholder meetings are completely  
22 inaccessible to the communities that have been  
23 overburdened by our reliance on dirty fossil fuels,  
24 and those most directly impacted catastrophe. So,  
25 we encourage the scheduling of additional meetings,

1 and evening meetings in environmental justice  
2 communities like Newark and Camden, along with  
3 others, to create a more inclusive process. Thank  
4 you.

5 MR. SHEEHAN: Christopher Grablutz.  
6 Come on up.

7 MR. GRABLUTZ: Hi. My name is Chris  
8 Grablutz. I work for a company called PV Pros out  
9 of Hoboken, New Jersey. We're an independent  
10 engineering and maintenance firm in the commercial  
11 utility solar industry. And, there's been a common  
12 message I've heard today, but I'd like to give it  
13 from a little bit different perspective.

14 Seeing a lot of solar systems that  
15 have been deployed over the last ten or so years,  
16 we quite often are out there on the front line  
17 fixing a lot of these systems, and keeping them up  
18 and running. So, what I would like to strongly  
19 suggest during your consideration is that when you  
20 look to incentivize and motivate folks to deploy  
21 the renewable energies to meet this mandate, is  
22 that you consider it from a performance-based  
23 directive rather than a capital deployment or  
24 capacity base. Too often the folks that are not  
25 in it for the long term make short-term decisions

1 that leave somebody else holding the bag with these  
2 renewable energy systems. And, I can only speak  
3 for solar energy, but I know that this tends to  
4 happen in other industries as well. So, that  
5 there's a very long life span on these systems, and  
6 that it's not just about the total capacity of  
7 install of solar, it's about the generation year  
8 over year. We want to deploy a lot of money for a  
9 fantastic cause, but we want to make sure that that  
10 money is not just deployed to satisfy, but deploy  
11 it meaningfully and to produce clean energy over a  
12 very, very long period of time. Thank you.

13 MR. SHEEHAN: Thank you very much.  
14 With that, is there anyone else would like to come  
15 up and make a comment? Well, thank you ladies and  
16 gentlemen. Thank you. Thank you those of you  
17 that stuck it out with us towards the end. We  
18 appreciate this.

19 As we said, these comments -- both the  
20 oral comments and anything submitted -- will be  
21 part of the record, will be used as part and parcel  
22 in developing the draft. And I think as Grace  
23 indicated, there will be continued opportunities  
24 for stakeholder involvement as we move forward.  
25 This was only the first, certainly not the last. I

1 think we've probably taken into consideration a  
2 fair number of the comments about locations and  
3 process. I'm hoping that we can work forward on  
4 that as we move forward. And beyond that, we look  
5 forward to seeing you at the next meeting. Thank  
6 you very much.

7 (Whereupon the proceedings were  
8 concluded at 4:30 p.m.)

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C E R T I F I C A T E

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3 I, CHRISTINA RESTUCCIA, a Court Reporter  
4 of the State of New Jersey, authorized to  
5 administer oaths pursuant to R.S.41:2-2, do hereby  
6 CERTIFY that the foregoing is a true and accurate  
7 transcript of the testimony that was taken  
8 stenographically by and before me at the time,  
9 place and on the date herein before set forth.

10 I DO FURTHER CERTIFY that I am neither a  
11 relative nor employee nor attorney nor counsel of  
12 any of the parties to this action, and that I am  
13 not financially interested in the action.

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Notary Public of the State of New Jersey  
My Commission expires November 14, 2021  
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STATE OF NEW JERSEY  
BOARD OF PUBLIC UTILITIES  
FRIDAY, SEPTEMBER 7, 2018

-----\*  
ENERGY MASTER PLAN  
STAKEHOLDER MEETING  
  
CLEAN AND RENEWABLE POWER  
-----\*

HELD AT:  
THE COLLEGE OF NEW JERSEY  
GITENSTEIN LIBRARY  
2000 PENNINGTON ROAD  
EWING TOWNSHIP, NEW JERSEY  
11:47 A.M.

BEFORE:  
  
KENNETH SHEEHAN  
Director  
Division of Clean Energy

PANEL MEMBERS:  
  
ALANA BURMAN  
STEPHEN MYERS  
KARL HARTKOPF  
MICHAEL L. HORNSBY  
GRACE STROM-POWER  
ARIANE BEUREY

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1 (Whereupon a short recess was  
2 held.)

3 MS. GRIFFETH: Hello. I'm Nancy  
4 Griffeth of Unitarian Universalist Faith Action.  
5 And, I'd like to thank the EMP Committee for  
6 letting me speak today. My group is partners with  
7 Jersey Removes, and we support almost all of the  
8 revisions, so we would like to move faster than  
9 they want to to a hundred percent renewable energy.  
10 We do support Governor Murphy's one hundred percent  
11 by 2050, and we would like it to go faster.

12 Now, we focus on environmental justice  
13 and we've been working closely Reverend Ronald  
14 Tuff, the energy director of GreenPlay. And when I  
15 finish my comments he's going to make some  
16 comments, additional comments, about environmental  
17 justice.

18 So, thirty years ago we could have  
19 fixed our climate change problem much more easily.  
20 And, ten years ago New Jersey was actually on a  
21 great track to take care of stuff, but that was  
22 unpassable. So, now we're going to have to move a  
23 lot faster, and it's going to be much more  
24 difficult.

25 Here are the four essential things



1 that Unitarian Universalist Faith Action supports:

2 First, don't allow anymore fossil fuel  
3 infrastructure. There was a discussion on stranded  
4 assets, so from the financial point of view those  
5 assets are going to be stranded ultimately. Let's  
6 just not invest anymore.

7 Secondly, the cleanest energy is no  
8 energy. So, let's focus on energy efficiency and  
9 reducing our use.

10 Third, the transportation sector is  
11 the biggest user of energy, so we have to focus on  
12 that. We need to encourage the use of electric  
13 vehicles while converting the electrical grid to  
14 clean energy. We need to convert fleets in New  
15 Jersey Transit to electric. We need to require  
16 trucks to reduce their emissions and convert to  
17 electric as fast as possible.

18 Fourth, last point, poorer communities  
19 are overburdened by emissions from vehicles and  
20 power plants, and by the consequences of climate  
21 change including flooding. We need to take action  
22 to lift this burden. And, as we convert to new  
23 industries, we should provide jobs and job training  
24 in these communities.

25 The cost in dollars may be high, but

1 the cost in human suffering will be much higher if  
2 we do too little. Thank you for listening to me.  
3 And, let me introduce Reverend Ronald Tuff or  
4 GreenPlay.

5 REVEREND TUFF: Good afternoon,  
6 everyone. I'm going to address the economic  
7 justice, and I'm going to address Question Number  
8 17; how will the state consider and integrate  
9 overburdened communities into the clean energy  
10 advancement?

11 The state must first address both the  
12 public health and economic aspects of the problem  
13 in low-income communities. First, for public  
14 health, the issues are primarily air quality and  
15 increase flooding due to global warming. For air  
16 quality, the state must put its priority on  
17 overburdened communities for reducing the number of  
18 fossil fuels and on vehicles. This can begin with  
19 what the state controls. First of all, New Jersey  
20 Transit. We ought to be talking about electric  
21 buses and electric vehicles. And as the vehicles  
22 are replaced, they must be replaced with electric  
23 vehicles. And, this should happen first in the  
24 overburdened communities.

25 Economics. The state must support the

1 development of jobs and job training in  
2 overburdened communities. Incentives to develop  
3 its need only to be for the need now to be  
4 financial, but could include moving the developers  
5 up in their queues for approval of projects. And  
6 if they provide jobs and job training in  
7 overburdened communities, it would be a great help  
8 and a major part in working with the low and  
9 moderate-income people.

10           Finally, the benefits of clean energy  
11 can be provided in overburdened communities in two  
12 ways. One is to provide clean energy alternatives  
13 and the generation of electricity. And, this is  
14 available but not widely known, and confusing to  
15 understand. Educational programs should be  
16 developed to help consumers in all communities, but  
17 especially overburdened communities, to understand  
18 the possibilities of using clean energy. The  
19 community solar pilot offers an opportunity for  
20 renters and people in houses not suitable for  
21 solar, but to obtain the benefits of using solar,  
22 ultimately including lower electricity prices. It  
23 is important that we bring this industry to our  
24 community. And, it's also important that we  
25 develop jobs. Another industry is the electric

1 vehicle industry. We're not involved in the  
2 beginning of the industry, in the distribution of  
3 the industry. So, we're talking about developing  
4 jobs in the low-income communities.

5 And, finally, I'd like to close with  
6 -- if we're going to talk about low and  
7 moderate-income folks, we ought to have these  
8 hearings in low and moderate-income community. And  
9 we ought to be sitting at this table and become  
10 part of what the solution are. Because whatever we  
11 come up with is going to affect our community.

12 So, today I'm going to invite you to  
13 the clergy meetings, about 75 churches meets every  
14 Monday in Newark. So, I'd like to invite one of  
15 your hearings to be centered in Newark. We'll get  
16 the clergy there, we'll get the community there, so  
17 we can be part of the process in the master energy  
18 plan, in order to help get jobs into our community.  
19 And, also, to educate our community so they can  
20 understand and be part of the solution. Thank  
21 you.

22 MR. SHEEHAN: Our next speaker is Pat  
23 Sonti. And, in the meantime I just want to  
24 recognize the Commissioner Chivukula has joined us.  
25 Thank you, Commissioner. Appreciate you being

1 here.

2 MR. Sonti: Thank you very much. I'm  
3 Pat Sonti for Maxim. Our global headquarters is in  
4 San Francisco, California.

5 First of all, we applaud the state  
6 government and the Board of Public Utilities for  
7 undertaking the energy master plan. As a company  
8 we have worked in with international governments,  
9 also in the United States on the federal and state  
10 level, especially in developing energy master  
11 plans. And, we have submitted written comments,  
12 but I will summarize a very few key bullet points.

13 Number one. We believe the EMP  
14 should provide guidelines for comprehensive  
15 framework and legislative policy, clearly defining  
16 renewable power, clean power, and solar wind  
17 bio-mass, bio-fuels, et cetera. The other aspect  
18 is it also has to provide guidelines for base load  
19 transition from the current energy mix to an  
20 optimal energy mix, which does have to include  
21 carbon capture, sequestration, energy storage,  
22 thermal energy storage. Also, it should provide  
23 guidelines for fiscal financial incentives, credits  
24 and tax provisions. Guidelines for grid  
25 integration of renewal energy, analysis and access

1 which is very critical. And, moreover, guidelines  
2 for mail order dispatch, demand response, and  
3 demand side management which are very critical for  
4 market integration of renewable and clean energy.

5           Second. Detailed market assessment  
6 trends and forecasts up to 2050 of energy supply,  
7 demand, and pricing in terms of levelized cost of  
8 energy, levelized cost of storage, based on an  
9 optimal energy mix.

10           Number three. The EMP should provide  
11 guidelines for key market-ready technologies. We  
12 recommend technology readiness greater than nine,  
13 which can be deployed, including energy storage and  
14 thermal energy storage by project developers and  
15 project sponsors. Key emphasis is on  
16 techno-economics and viability.

17           Number four. For proper economic  
18 growth and jobs creation there should be succinct  
19 and clear guidelines for potential investors in  
20 terms of equity, project developers, sponsors, and  
21 lenders because at the end of the day debt capital  
22 is critical for achieving financial closure and  
23 commercial operation.

24           Number 5. It's important for the EMP  
25 to provide guidelines advocating proper technical

1 and commercial due diligence process with a list of  
2 mandatory studies, assessments, and reports, which  
3 are required for cleaner renewable power for  
4 receiving proper approval, and permitting a project  
5 at the BPU level and other stakeholders in the  
6 approval process.

7           And, lastly. End of the day, New  
8 Jersey does require a fingerprint pneumatic capital  
9 for a base project to reach commercial operations.  
10 So, it's important to elaborate on smoother project  
11 financing guidelines, with some clarity on  
12 long-term PBA's, which is the traditional, versus  
13 the SRECs, ORECs, for offshore wind. But there's  
14 got to be more clarity on the focus for bankable  
15 funding mechanisms, and financing mechanisms, along  
16 with payment structures and plans. And at this  
17 point, the financial community is embarking on a  
18 corporate blocktin technology as a way through the  
19 distributed electric process, which could be  
20 leveraged for New Jersey's benefit across all  
21 stakeholders, all demographics, on a non-exclusive  
22 basis.

23           We look forward and the honor to work  
24 with the BPU and the state governor on empowering  
25 the Energy Master Plan. And, we look forward to

1 being part of the stakeholder process throughout.  
2 And thank you for this great opportunity to be here  
3 today. Appreciate it very much.

4 MR. SHEEHAN: Thank you very much.  
5 Our next speaker Lawrence Furman. Lawrence Furman.  
6 Did we lose you?

7 Going to move on to Derek Phelps.

8 MR. PHELPS: Good afternoon, Director  
9 Sheehan, distinguished members of the BPU, governor  
10 staff, and committee members of the EMP.

11 My name is Derek Phelps, and I'm the  
12 Director of Market and Project Development at Fuel  
13 Cell Energy. We're in our 50th year of operation,  
14 headquartered in Danbury, Connecticut, with a  
15 manufacturing facility in Torrington, Connecticut.  
16 We employ over 450 people. And, the fuel cell  
17 products we manufacture in the northeast are  
18 exported all over the world.

19 We currently have over 250 megawatts  
20 of stationary fuel cells installed and backlogged  
21 on three continents. Our clean, efficient fuel  
22 cells generated over seven billion kilowatt hours  
23 of power. Our stationary carbon and fuel cells  
24 are well-suited to many application as a  
25 distributed energy in generation resource. Our



1 carbon shore source fuel cells come in three size;  
2 1.4 megawatts, 2.8 megawatts, and 3.7 megawatts,  
3 and are scalable for any project size.

4 We have previously provided testimony  
5 in comments to the Board of Public Utilities  
6 concerning our products, value, proposition, and  
7 contributions to a group resiliency and reduction  
8 of greenhouse gases. I will not repeat those  
9 comments here, but instead offer a brief synopsis  
10 and more wholesome testimony that we will file in  
11 writing prior to the October 12th deadline.

12 We are pleased to participate in the  
13 development of New Jersey's Energy Master Plan to  
14 achieve Governor Murphy's goal of one hundred  
15 percent clean energy usage in New Jersey by 2050.  
16 And, respectfully submit that fuel cells can make  
17 an important contribution to New Jersey's clean  
18 energy goals.

19 It is important to note that there is  
20 no silver bullet or perfect solution when it comes  
21 to clean energy. And, that clean energy is not  
22 necessarily synonymous with zero carbon. The  
23 smartest most secure clean energy strategy is in  
24 all of the above strategy, where a diverse  
25 portfolio of clean energy resources with their

1 intended strengths and benefits are employed, can  
2 ensure the lowest possible emissions at the lowest  
3 possible cost, while advancing grid reliability and  
4 resiliency and smart land use policy.

5           With respect to the various questions  
6 posed in your recently circulated discussion points  
7 memo, FCE respectfully suggests that New Jersey  
8 policy makers should look and ensure that clean  
9 energy power resources are defined to include  
10 resources in a position to meet the diverse and  
11 immediate energy needs of New Jersey's residents,  
12 by obtaining the lowest possible emissions from the  
13 most resilient, reliable, and cost-effective  
14 electrical grid possible. In practical terms,  
15 that means around-the-clock reliable, easily-sited  
16 resources such as stationary fuel cells should be  
17 in the equation.

18           Fuel cells are a form of clean energy  
19 that provide reliable consistent around-the-clock  
20 power where the power is needed most. Fuel cells  
21 emit negligible NOx and SOx and particulate  
22 pollutants. That is because in a fuel cell there  
23 is no combustion. Power is efficiently produced  
24 from fuel through a chemical reaction. As a  
25 result, all fuel cells do emit some carbon dioxide,

1 it is only a fraction of the carbon dioxide emitted  
2 by traditional grid generators because of the  
3 inherent efficiency of direct power conversion  
4 without combustion. As compared to the best  
5 available natural gas combined cycle power plant,  
6 our fuel cells emit 99 percent less particulate  
7 pollution, 99 percent less SOx, 80 percent less  
8 NOx. And, depending on configuration, 20 percent  
9 less carbon dioxide. Unlike renewable zero carbon  
10 resources, fuel cells provide steady continuous  
11 power, avoiding the need for backup or peaking  
12 generation to solve intermittency issues.

13 Over emphasis on zero carbon power  
14 generation will have the unintended consequence of  
15 masking the direction that carbon-reducing policy  
16 efforts should be headed towards; that is the  
17 reduction in transportation-based carbon.  
18 According to the US Energy Information  
19 Administration, power generation is no longer the  
20 greatest source of greenhouse gas emissions in the  
21 United States. Transportation is, as several  
22 speakers have pointed out so far today. Global  
23 fuel cell power can be utilized to advance hydrogen  
24 production and electricity for vehicle charging,  
25 thus producing not only grid emissions, but

1 transportation emissions, as well. Thus, the  
2 definition of clean energy will need to remain  
3 flexible in order to account for new and emerging  
4 technologies, as well as to ensure that the grid is  
5 progressively getting cleaner and greener.

6 State policies should also take into  
7 account land use impacts of clean energy  
8 installations. Our sure source fuel cells are  
9 easy to site, occupying less than an acre of land  
10 for ten megawatts installed. This compared to  
11 approximately seventy acres per ten megawatts  
12 installed of solar. Fuel cells are often sited in  
13 dense urban areas, providing power directly where  
14 the load is, thus avoiding transmission. In any  
15 evaluation process, large scale solar projects that  
16 displace core forest or farmland should be assigned  
17 with the carbon footprint that would have otherwise  
18 been absorbed by the forest removed to accommodate  
19 such an installation.

20 Our capacity and available factors  
21 exceed 90 percent as compared to an average of  
22 between 15 to 25 percent for solar and wind.  
23 Providing steady, reliable power irrespective of  
24 weather, creating resiliency where the grid goes  
25 down, and on site where it is needed. Fuel cells

1 in urban areas also contribute to the remediation  
2 and restoration to the tax rolls of brown fields.  
3 Fuel cell energy has constructed numerous projects  
4 in dense urban areas, such as the fifteen megawatt  
5 project in downtown Bridgeport, Connecticut where  
6 the fuel cell project was placed in the heart of a  
7 distressed urban community, remediating a  
8 long-vacant and polluted property, and restoring it  
9 to the city's tax rolls. At completion, the  
10 project became the largest property tax payer on  
11 the first square footage basis in the city.

12 Frankly, fuel cells are the perfect  
13 clean energy solution for dense urban communities  
14 where large tracts of open space are simply not  
15 available. Where smaller tracts of brown fields  
16 are right for project development. Where  
17 emissions are highest. And where local property  
18 taxes are sorely needed. As noted, fuel cell  
19 installations in urban areas can also provide  
20 hydrogen fueling and clean power for electrical  
21 vehicle charging. It also bears noting that more  
22 than 93 percent of the content of our fuel cells  
23 are recycled at end of life. Unlike most battery  
24 and solar technologies, our fuel cells do not end  
25 up in landfills, leaking lead or cadmium as they

1 degrade. Recent news reports have noted the  
2 difficulties in disposal of renewable energy  
3 technologies at end of life. Germany, for  
4 instance, reportedly had to manage 54,000 tons of  
5 waste from rotor blades from decommissioned wind  
6 turbines in 2014 alone. Fuel cell energy has also  
7 put in place measures to deal with end of life  
8 recycling of our product, further contributing to  
9 the environmental goals of New Jersey. We  
10 respectfully submit that any clean energy plan  
11 developed addressed end of life disposal and  
12 recycling.

13 To its credit, New Jersey has taken  
14 several steps to develop a thoughtful clean energy  
15 program and a Clean Energy Master Plan, encouraging  
16 the use of a wide array of new generation  
17 technologies. To help ensure the success of this  
18 program, Fuel Cell Energy suggests that it is now  
19 important to implement the program tools necessary  
20 to meet these important goals.

21 Thank you for your time. Fuel Cell  
22 Energy looks forward to contributing to New  
23 Jersey's pathway to clean energy, and being a part  
24 of New Jersey's Clean Energy Master Plan.

25 MR. SHEEHAN: Thank you very much.

1 Our next speaker is Doug O'Malley. And then the  
2 five up on deck are Ed Kelly, Joanne Milliken,  
3 Shihab Kuran, Bill Wolfe, and Gaylord Olson.

4 MR. O'Malley: Hi. My name is Doug  
5 O'Malley, I'm the Director of Environment New  
6 Jersey. And, I wanted to start off by thanking  
7 Commissioner Chivukula for his attendance at this  
8 hearing, as well as the leadership of the chair of  
9 the Energy Master Plan process, Grace Strom-Power,  
10 as well as the work of Ken Sheehan. And, really,  
11 just a thank you to all of you. I think this is  
12 on some ways a very painful process for us to be  
13 disconnected from Wi-Fi for a long time, and forces  
14 us to listen to what all of us are saying. And, I  
15 think there's value in that. A painful value, but  
16 there's value there.

17 That being said. I do just want to  
18 talk about the logistics of these meetings. I  
19 wanted to emphasize that, you know, I think we can  
20 think not only holding these hearings at this site,  
21 but to consider the State House for some of the  
22 future meetings. And then, most importantly, to be  
23 thinking of people that don't live or breathe  
24 energy and that can't be here at ten o'clock on a  
25 Friday morning. So, look at communities all around

1 the state, specifically environmental justice  
2 communities. You know. The E023 process and  
3 environmental justice has hearings in Newark and  
4 Camden in the evening hours. That's a process that  
5 we'd recommend that you replicated here.

6 That being said. I do think it's  
7 important to note that the BPU and the  
8 collaboration here on the Energy Master Plan  
9 process, is the first step. And unlike the  
10 Christie administration where you see a draft and  
11 have another set of hearings in the spring. And  
12 that does not go unnoticed. So, I also wanted to  
13 thank the BPU on that process. We obviously want  
14 to move full speed ahead.

15 I want to just talk about some global  
16 comments, and then talk specifically about Question  
17 1 and Question 5. Because I think that's really  
18 the heart, from at least our concern, with the  
19 clean renewable power hearing that we're holding  
20 today. I think the global comments -- and this  
21 cannot be reiterated enough -- is that we are in a  
22 climate crisis on global warming. The northeast  
23 just had its warmest climates on record. New  
24 Jersey just had its second warmest in August in  
25 record. For those of you that are familiar with



1 California, the climate crisis is not so an  
2 esoteric issue anymore. And then when we thing  
3 about what this impact is on New Jersey, all we  
4 need to do is look at the groundbreaking research  
5 of Professor Bob Cobb from Rutgers to look at the  
6 impacts of sea level rise on the state. And,  
7 again, these are not academic issues. We already  
8 are seeing property value loss on the Jersey shore  
9 from the impacts of climate change. Talk to anyone  
10 who lives in Norfolk, Virginia, and suddenly  
11 coastal flooding does not seem like a far away  
12 issue. And, so, that needs to be a guiding  
13 principal of this process.

14 One of the other aspects that have  
15 been mentioned, but there needs to be a larger  
16 emphasis, is the economic cost and the public  
17 health cost of our continued inability to have air  
18 quality that's healthy to breathe in this state.  
19 A vast majority of Jersey's counties, including  
20 Mercer, fail -- according to the American Lung  
21 Association -- for ground level ozone. And, I  
22 think it's ironic because we're kicking off the  
23 school year here in New Jersey, we are seeing not  
24 closures and early dismissal dates on snow days,  
25 but on heat days. That process will only move

1 forward.

2           In that vein, I think it is critical  
3 to note that the process in 2015 during the  
4 Christie administration wasn't just flawed in  
5 process, but also was flawed in the sense that  
6 climate change was a four-letter word. And, we  
7 obviously are very thankful that the administration  
8 is moving forward on a process that acknowledges  
9 that climate change is a real crisis. Especially  
10 in light of the Trump administration's climate  
11 denialism.

12           And, I wanted to obviously reference  
13 the importance of Governor Murphy's commitment for  
14 this process to have one hundred percent clean  
15 energy by 2050. And, the fact that, as the  
16 governor said, New Jersey should work to be the  
17 California of the east coast. As some of you  
18 probably saw, California just passed groundbreaking  
19 legislation to get one hundred percent clean  
20 renewable energy by 2045 through its legislature,  
21 and is awaiting signature by Governor Brown.  
22 That's where this state needs to go.

23           And then when we're speaking  
24 specifically about Question 1 -- because this  
25 question ultimately is -- you know, all of the

1 questions flow from Question 1. Which is, what is  
2 our definition of clean power. And, specifically,  
3 the definition and the title here is clean and  
4 renewable power. And, I think it's critical as the  
5 ratepayer counsel, those comments represented the  
6 clean renewable power does not include fossil fuel  
7 generation. We've lived through generations of  
8 treating our open skies like sewers for carbon.  
9 That needs to end. And then we also need to ensure  
10 the waste of energy, as the euphemism is, i.e.  
11 incinerators, are not considered to be clean  
12 renewable power. And, I think it's also critical  
13 to note that our nuclear fleet is not a renewable  
14 source of energy. And nuclear energy should not be  
15 considered a clean renewable source of energy. And  
16 I think it's important to note as we talk about  
17 2050, the Salem 1, Salem 2, and Hook Creek have  
18 retirement dates of 2036, 2040 and 2044. So, I  
19 certainly think that the planning process we should  
20 be respecting the current NRC licensing, and not  
21 planning for the extension of those facilities.  
22 And, really, we should be planning for the early  
23 retirement of those facilities in order the whole  
24 scale changes in our electricity grid over the  
25 course of the next three decades.

1           I wanted, also, to reference the  
2 importance of Question Number 5, because this  
3 ultimately gets at the challenge that is at the  
4 heart of a transition to one hundred percent clean  
5 renewable energy future. And, that is, we cannot  
6 continue to invest in fossil fuel infrastructure.  
7 And, we would urge this administration to implement  
8 a full moratorium on new planned fossil fuel  
9 infrastructure projects until the Energy Master  
10 Plan process is finalized next June. And,  
11 specifically, as part of this process the state  
12 needs to incorporate a full carbon life cycle of  
13 all proposed fossil fuel infrastructure projects.  
14 And, these incorporate an independent analysis  
15 relying on the office of ratepayer counsel and the  
16 actual stated need, which is removed as a part of a  
17 lobbying effort through EDECA, a generation ago in  
18 the late 90s. And, also, to incorporate a social  
19 cost carbon methodology that actually looks at the  
20 full impacts of any new proposed fossil fuel  
21 infrastructure. This is detailed in comments that  
22 Environment New Jersey submitted regarding the BPU  
23 OREC proposal.

24           And then, finally, we need to  
25 incorporate global warming emission analysis into a

1 new proposed air permits. That being said. We  
2 have multiple proposed fossil fuel projects around  
3 this state. Whether they be the Penny's Pipeline,  
4 whether they be the South Jersey Gas or New Jersey  
5 Natural Gas pipeline through the Pinelands -- which  
6 New Jersey Sierra Club Pinelands Preservation  
7 Alliance and Environment New Jersey are actually  
8 engaged in litigation. We have a new proposal to  
9 have a power plant in the heart of the Meadowlands  
10 for 1200 megawatts to go through New York, that  
11 would exist for generations. We have a proposal  
12 for a new gas plant in the heart of the Pinelands,  
13 in the Musconetcong. We cannot meet our goal for  
14 a one hundred percent clean renewable energy future  
15 if we continue to invest in fossil fuels.

16 And, I wanted to reference, also, just  
17 the reality that we are in a place of beyond  
18 climate inaction, or climate denialism. Roll backs  
19 at the federal level. This governor has committed  
20 to meeting goals of the Paris Climate Accord, and  
21 as a part of that the EPA clean power plant --  
22 which is under attack and being rolled back as we  
23 speak -- talked about New Jersey having an  
24 aggressive goal of -- the initial goal was more  
25 than forty percent reduction from our power sector.

1 Those are goals that we certainly should not be  
2 ignoring.

3 I wanted to make three final points.  
4 One is just the importance of off-shore wind. And,  
5 obviously, I wanted to reference the important  
6 collaboration of New Jersey Renews Climate Clean  
7 Energy Coalition. It's more than sixty  
8 organizations of labor fee, environmental, and  
9 community organizations. And most important for  
10 this it includes the business for off-shore wind as  
11 well as for United Steelworkers. Off-shore wind  
12 can be our future for meeting our renewable  
13 portfolio standard goal, that are now in law. And,  
14 also, it can be our future for building a true  
15 clean renewable energy economy.

16 Second, I also just wanted to  
17 reference the importance of the Regional Greenhouse  
18 Gas Initiative, and having a process on the  
19 re-entry on the Regional Greenhouse Gas Initiative,  
20 that it reflects those initial goals from clean  
21 power plant, and reflects a modeling to ensure that  
22 we have the strongest possible caps to generate  
23 more investment in clean renewable technologies.  
24 And, specifically, a cap that reflects those  
25 initial clean power plant goals. And, at a minimum

1 a cap of 12 million metric tons a year. We should  
2 not certainly have a cap that merely reflects our  
3 current emission goals.

4 And then, finally, I just wanted to  
5 reference the ongoing process around the nuclear  
6 subsidy bill, which was signed into law at the end  
7 of May; and, after a massive campaign urging the  
8 legislature to not move forward with that -- and  
9 the governor, as well. And, one of the aspects of  
10 the review process through the Board of Public  
11 Utilities, that it's critical -- is not only to  
12 ensure that the ratepayer counsel is part of that  
13 process, but receives full access to any  
14 confidential documents. We need to ensure that we  
15 are not going to unnecessarily subsidize currently  
16 profitable nuclear facilities, both in state and  
17 out of state. Those are investments that we need  
18 to be making a clean renewable energy technologies,  
19 and should not be going to currently profitable  
20 nuclear facilities.

21 And, with that, I'll conclude my  
22 testimony. Thank you. Thank you very much.

23 MR. SHEEHAN: Thank you. Next up we  
24 have Ed Kelly.

25 MR. KELLY: Good afternoon. My name

1 Edward Kelly. I'm the Executive Director of the  
2 Maritime Association of the Port of New York and  
3 New Jersey. We are here today to talk about the  
4 impact of clean renewable energy potentially on  
5 maritime domain awareness and safety. The Maritime  
6 Association represents over 580 corporate and  
7 individual members with the commercial maritime  
8 industries, specifically those which operate within  
9 the port of New York and New Jersey. The maritime  
10 industry is an important economic engine in the  
11 State of New Jersey. A 2016 economic study has  
12 revealed that our industry is responsible for  
13 229,000 direct jobs, 25.7 billion dollars in  
14 personal income, 64.8 billion dollars in business  
15 income, and the payments of a little over 8.5  
16 billion dollars in federal, state, and local tax  
17 revenues. This is important. And, we have to be  
18 very careful to protect that.

19           Clearly, the need to protect the safe  
20 and economic operation of the commercial maritime  
21 industry must be carefully considered whenever and  
22 wherever off-shore development projects are  
23 considered. It should be obvious to all parties  
24 that the introduction of in-water structures that  
25 are in or near an active navigation area will



1 dramatically increase both the potential for vessel  
2 collision and vessel or vessel collisions. We  
3 have to ensure that the development of energy is  
4 done in a safe, responsible, and secure manner.

5           Most notably, we would require that  
6 the EMP mandate and ensure that any in-water  
7 production capacity construction does not result in  
8 the degradation of navigational safety, national  
9 security, or the protection of the marine and  
10 coastal environment. Should such provisions not be  
11 taken, we must remind all concerned parties that  
12 the potential impact of a significant marine  
13 casualty in the New York by area would extreme and  
14 generational adverse impact on lives, property, the  
15 marine environment, and the multi-billion dollar  
16 tourism industry of the bordering states; as well  
17 as the degradation of the economic engine benefits  
18 which are derived from the maritime industry.

19           We have submitted written comments to  
20 point out specific points that we look at to ensure  
21 safety, security, and the protection of the  
22 environment as, we hope, collaboratively move  
23 toward creating clean, renewable, off-shore energy.  
24 We look forward to continuing to work together to  
25 ensure the safety of navigation, the security of

1 the marine domain, and the protection of the marine  
2 environment; as well as preserve the immense  
3 economic benefits provided by the commercial  
4 maritime industry through the port of New York and  
5 New Jersey. The coastal ocean is a very big place.  
6 We can and will work cooperatively to assist in the  
7 production of clean, renewable energy; but, we have  
8 to have a mandate that degradation of safety and  
9 the actual potential for severe damage to the  
10 tourism and marine environment in the coastal areas  
11 is not the result. Thank you.

12 MR. SHEEHAN: Up next, JoAnne  
13 Milliken.

14 MS. MILLIKEN: Good afternoon. I'm  
15 JoAnne Milliken with the New Jersey Fuel Cell  
16 Coalition. Prior to this position, I served for  
17 more than twenty years in the U.S. Department of  
18 Energy's Office of Energy Efficiency and Renewable  
19 Energy, where I directed programs covering hydrogen  
20 and fuel cell systems, energy efficient buildings,  
21 and solar wind and geo-thermal energy.

22 As a New Jersey native and a current  
23 part-time resident, I would like to thank the State  
24 of New Jersey for establishing this process for  
25 public input into the Energy Master Plan. My

1 comments were developed in collaboration with the  
2 National Fuel Cell Research Center at University of  
3 California Irvine. And, they will focus on  
4 hydrogen and fuel cell systems and their ability to  
5 help New Jersey achieve the goal of a hundred  
6 percent clean energy usage by 2050.

7 I want to thank Derek Phelps of Fuel  
8 Cell Energy who covered many of the comments that I  
9 was planning to make. And, I will modify my  
10 comments on the fly. I will try to not repeat his  
11 comments, as the committee requested.

12 MR. SHEEHAN: Thank you.

13 MS. MILLIKEN: We recommend that New  
14 Jersey's definition of clean energy be technology  
15 neutral, an focus of attributes required to achieve  
16 state energy requirements and economic and  
17 environmental objectives. Clean energy should be  
18 defined as heat power sources that reduce  
19 greenhouse gas emissions, criterion air pollutes,  
20 short-lived climate pollutant, and air toxic  
21 emissions, and water usage. All while improving  
22 power and transportation system efficiency,  
23 resiliency, and air quality at both the local and  
24 regional level.

25 As Derek pointed out, fuel cell

1 systems possess all of these attributes. They're  
2 highly efficient by-products electricity heat and  
3 water. And, the importance of resiliency as an  
4 attribute that should be highly valued and included  
5 in the definition.

6           Derek alluded to the full flexibility  
7 of fuel cell systems. We all know that hydrogen  
8 is the ideal fuel, but they also operate on  
9 hydrogen-rich fuels, natural gas, bio-gas, propane.  
10 While New Jersey should aspire to fuel cells  
11 operating on renewable hydrogen in the longer term,  
12 hydrogen from natural gas is a viable approach now  
13 and for the transition, given it's relatively low  
14 cost and the high efficiency and reduced emissions  
15 of fuel cells. This is another example of not  
16 letting the enemy of the good, especially since we  
17 need to get to the economies of scale necessary to  
18 reduce the cost of these systems.

19           All emerging clean energy technology  
20 shares some common obstacles. We are all familiar  
21 with them. Economies of scales I just alluded  
22 to. Overcoming consumer resistance to change, and  
23 establishing consistent and stable policies that  
24 reduce the risk to companies, investors, and  
25 consumers. Factor-specific to the transportation

1 sectors have limited the market growth of battery  
2 electric vehicles -- gasoline prices have remained  
3 relatively low, and there's limited charging  
4 infrastructure in many locations. The limited  
5 driving range and long recharging times compared to  
6 conventional vehicles also discourages some  
7 consumers from purchasing battery electric  
8 vehicles. Fuel cell electric vehicles face  
9 similar infrastructure challenges in the  
10 marketplace, but they offer consumers a choice of  
11 different vehicle attributes. In addition to  
12 charging infrastructure, New Jersey should support  
13 development of a hydrogen refueling infrastructure.  
14 It is the key enabler to greater market adoption of  
15 fuel cell vehicles, and realizing their substantial  
16 advantages that include greater driving ranges,  
17 fast refueling, and the ability to co-locate with  
18 existing fueling infrastructure during the  
19 transition.

20           Some states have developed programs to  
21 address fuel cell market challenges, like the  
22 alternative and renewable and fuel and vehicle  
23 technology program which has supported the  
24 installation of almost sixty hydrogen fueling  
25 stations in California -- thirty-five which are

1 operating today. And, the state's self-generation  
2 incentive program and fuel cell energy metering  
3 tariff that has supported around 250 megawatts of  
4 stationary fuel cell simulations. Through a  
5 reverse auction, that metering and utility  
6 procurement, Connecticut has over 150 megawatts of  
7 systems operating and in development today --  
8 stationary systems. By contrast, there are less  
9 than ten megawatts of stationary fuel cell systems  
10 installed in New Jersey. To ensure transition to a  
11 sustainable energy system, New Jersey should invest  
12 in technologies that provide resilient power,  
13 decreased emissions, and improved air quality.

14 A lot of these comments that follow  
15 were mentioned by Derek. I will just reiterate  
16 that tri-generation fuel cell systems produce  
17 electricity heat and hydrogen for refueling fuel  
18 cell electric vehicles that span the range of  
19 light-duty vehicles to heavy-duty vehicles, and  
20 cargo and material-handling equipment. I will also  
21 add to some of Derek's comments, that New Jersey  
22 should look to states like California where a large  
23 magnitude of intermittent renewables has caused  
24 some gaps in generation and demand response issues.  
25 And, I think there's a lot to learn there from

1 California's relatively rapid pace of installing  
2 renewable energy.

3           Regarding state policy, New Jersey has  
4 taken great initial steps to develop a clean energy  
5 program. The next generation of this program  
6 should incorporate market mechanisms such as a  
7 reverse auction to allow clean energy projects to  
8 compete based on desired attributes and  
9 cost-effectiveness in the short term. Future  
10 incentives should be paid based on the technologies  
11 rather than an up-front incentive.

12           California, Connecticut, and New York  
13 have all implemented pay-for-performance clean  
14 energy incentives to assure continued operation and  
15 pay back from their investments. On the  
16 transportation side, Governor Murphy has taken the  
17 important step to signing the state zero emission  
18 vehicles program's memorandum of understanding  
19 committing to coordinated action with eight other  
20 states to ensure the successful implementation of  
21 ZEV programs. New Jersey should follow up by  
22 setting ZEV targets, expanding policy to include  
23 hydrogen refueling stations, hydrogen refueling  
24 infrastructure, and encouraging state and municipal  
25 ZEV fleet purchases.

1           The New Jersey Fuel Cell Coalition has  
2 partnered with organizations in other northeast  
3 states. For example, the Connecticut Center for  
4 Advanced Technology, to identify the near-term  
5 opportunities in New Jersey for hydrogen and fuel  
6 cell systems. And, we will include these in our  
7 more detailed comments.

8           Finally, environmental justice to  
9 ensure direct deposited impact on overburdened  
10 communities. We recommend bonus incentives be  
11 provided for projects installed in those identified  
12 communities. New York has established such a  
13 bonus incentive of program in their clean energy  
14 fund to encourage project development in local  
15 communities.

16           In conclusion, I would like to thank  
17 you for this opportunity to present  
18 recommendations. And, the New Jersey Fuel Cell  
19 Coalition and our collaborators look forward to  
20 engaging further in the public input activities,  
21 and submitting detailed written comments as part of  
22 this public stakeholder engagement.

23           MR. SHEEHAN: Thank you very much.  
24 Our next speaker is Shihab Kuran.

25           MR. KURAN: Thank you, Ken. My name



1 is Shihab Kuran. I'm a local entrepreneur. I  
2 submitted written answers to the questions. But,  
3 I'd like to focus on one topic today through my  
4 verbal comments. And, that specifically, economic  
5 development.

6 As a local entrepreneur, I had the  
7 honor of working with many of you in the public and  
8 the private sector of who are gathered here. And,  
9 the point I would like to raise is that we might be  
10 able to walk away at the end of the Energy Master  
11 Plan with a set of goals of how to meet the clean  
12 energy goals; but, the danger might be that we  
13 achieve those at a severe cost of economic leakage  
14 and significant economic loss to the taxpayers. As  
15 we know, there's a strong overlap between  
16 ratepayers and taxpayers. So, while I agree  
17 generally with the rate advocate, I think  
18 decoupling jobs from the goals of the Energy Master  
19 Plan, given the strong overlap between ratepayers  
20 and taxpayers, we might look right in the short  
21 term. But, in the terms of the long-term view,  
22 that might be the wrong decision. The Energy  
23 Master Plan is a twenty to thirty-year outlook.  
24 We're looking at clean energy by 2050, that's over  
25 thirty years from today.

1           So, if you would allow me, I'd like to  
2 be share some comments on how we can spur economic  
3 development, create jobs, and effectively --  
4 instead of only focusing on cost reduction of  
5 solutions -- we can focus on enhancing the benefit.

6           So, the benefit cost ratio rather than  
7 just the cost important itself. If we look at the  
8 main sectors that matter, frankly, in the Energy  
9 Master Plan as we go forward, obviously solar comes  
10 to the front. And, so, what can we do as a state  
11 when it comes to economic development for solar?  
12 How do we localize that sector in New Jersey?

13 Unfortunately that is, I think, a sector where the  
14 train has left the station. I think we know that  
15 Asia, and specifically China, is a major  
16 international manufacturing location for solar  
17 energy. Low cost wages and low cost labor is not  
18 what we are known for in the state of New Jersey,  
19 and I think that's something we can't compete with  
20 China on.

21           The next sector is wind. So, it's  
22 great we tap into our off-shore resources in terms  
23 of wind. And, luckily there are regional  
24 industries when it comes to manufacturing. If we  
25 think broadly about renewables, we actually find

1 that intermittent renewables today mostly are  
2 cheaper than fossil fuels. So, if they are, why do  
3 we have a committee when we have the Energy Master  
4 Plan? The market should take care of that. The  
5 fact is, intermittent renewables are cheaper than  
6 fossil fuels. I mean, you see PPA's and otherwise,  
7 a few cents a kilowatt hour -- three, four --  
8 that's actually cost-effective and highly  
9 competitive. However, the market needs firm  
10 energy. And firm energy is significantly more  
11 expensive than fossil fuels today. And, that's a  
12 challenge. So, how do we perk up renewables?  
13 Obviously, the first solution that comes to mind is  
14 through energy storage. And energy storage remains  
15 the holy grail of the power sector today. If  
16 energy storage is cost-effective, the Energy Master  
17 Plan goals would be met without the need of public  
18 and private -- just the sector would take care of  
19 itself.

20 Energy storage is complex,  
21 technologically complex. It includes disciplines  
22 like chemistry, electronics, steady conductors,  
23 software, nano-technology. And, remains an  
24 obstacle. And, if we look at those challenges, we  
25 see that innovation is still required to solve the

1 cost and the solution of energy storage. But, I  
2 argue that the good news is that New Jersey has  
3 many of the differentiated advantages that allow  
4 us, in the short term and the long term, to  
5 possible create a sector, localize a sector when it  
6 comes to energy storage right here in New Jersey.  
7 We have a strong chemical engineering base. We  
8 have a strong electronics and semi-conductor base.  
9 We have a strong nano-technology industry. We have  
10 a strong software industry. And, so, I consider  
11 that to be a worthy cause. A sector that we can  
12 go after and plant our flag and become  
13 differentiated internationally, not just locally.

14 As a matter of fact, Thomas Edison  
15 back in 1903 started battery manufacturing in West  
16 Orange, so we have a long heritage when it comes to  
17 energy storage. Batteries are one form. I'm not  
18 picking a particular chemistry or technology, I'm  
19 just talking about a sector when it comes to energy  
20 storage.

21 So, my recommendation here is that we  
22 pick a sector -- and I argue that energy storage  
23 might be that one, given the fact that it hasn't  
24 been addressed and solved yet, and we have some  
25 strategic advantages. But, my recommendation is

1 form a committee or a group that focuses within the  
2 Energy Master Plan on how we localize a sector in  
3 energy storage, and come up with recommendations.  
4 A committee that has public and private  
5 stakeholders. I don't know what the specific  
6 answer is. We have many of the best practices and  
7 learning experiences being active in having an  
8 energy storage in solar and wind and smart grid and  
9 in fossil fuels. We have, I believe, valuable  
10 advice and contribution that we can bring forward.  
11 But, there are many in the room that have amazing  
12 experiences that they can come together and have  
13 recommendations for the Energy Master Plan for  
14 localized in the sector, both in energy storage,  
15 that allows us to lower the cost, but, I would  
16 argue, enhancing the benefits for both the  
17 ratepayers and taxpayers. Thank you.

18 MR. SHEEHAN: Thank you very much.  
19 Our next speaker is Bill Wolfe. Okay. Gaylord  
20 Olson.

21 If I may, before we get started, on  
22 deck is James Pfeiffer, Gearoid Foley, William  
23 O'Hearn. And, that represents the last of the  
24 speakers I have who have indicated that they have  
25 submitted comments prior to the process. Sir?

1                   MR. BURCAT: I submitted comments and  
2 signed in.

3                   MR. SHEEHAN: Okay. You're name, sir?

4                   MR. BURCAT: Bruce Burcat.

5                   MR. SHEEHAN: Bruce Burcat. You're  
6 fourth on deck.

7                   Go ahead, sir.

8                   MR. OLSON: My name is Gaylord Olson.  
9 I'm not here representing any commercial interest.  
10 I'm a semi-retired electrical engineer. I happen  
11 to be on the advisory committee for engineering at  
12 Temple University in Philadelphia. I have an  
13 active interest in alternative energy in general,  
14 and energy storage.

15                   I'd like to leave you with one number  
16 today. And, I hope you remember this number.  
17 It's 2.8. And, I want to tell you what this number  
18 represents. I'll try to be clear.

19                   Last year there was a report published  
20 by the National Renewable Energy Laboratory, part  
21 of the Department of Energy -- that we all paid for  
22 through our income tax. The title of the report  
23 was the U.S. Solar Portable Take System Cost  
24 Benchmark for part of last year. There were five  
25 authors of this report. And, here are some of the

1 numbers. Actually, they wrote the numbers down  
2 into four major categories, the smallest being  
3 residential, the next size up was commercial, the  
4 next size up from that is utility scale, and then  
5 the utility scale fixed-tilt systems, and then  
6 another category, utility scale one-axis tracking  
7 systems.

8           Now, this gets a little bit into the  
9 weeds, maybe. But, when I say one-axis tracking,  
10 is that a term familiar to anybody here? I see  
11 some people nodding "yes". At any rate, it means  
12 that the solar panels can rotate to face the sun at  
13 all hours of the day, so you gather more energy  
14 that way when the panels can always approximately  
15 face where the sun line is. So, that's the very  
16 best possibility to get the most energy from a  
17 large scale system. And, fortunately, with our  
18 new governor, and we have the opportunity with  
19 community solar now, to have -- as far as I know --  
20 very large size arrays put out on open fields away  
21 from any city.

22           So, hear are some of the numbers that  
23 were in this report. For the residential,  
24 smallest scale, the cost for energy -- this is not  
25 power, this is energy -- and, you can assume it's

1 energy per year -- between 12.9 and 16.7 cents per  
2 kilowatt hour is the levelized cost of electricity  
3 for rooftop arrays. On the other end of the scale,  
4 the largest arrays, one-axis tracking utility scale  
5 cost, is a range of 4.4 to 6.1 cents per kilowatt  
6 hour. Now, if you take the mid points of those  
7 two ranges -- let's say fourteen cents per kilowatt  
8 hour for rooftop solar, and about five cents per  
9 kilowatt hour for one-axis tracking system, open  
10 field arrays, the ratio of those two numbers is  
11 2.8. I'd like you to remember that number and  
12 think about it. If you can buy ten kilowatts and  
13 have them on your rooftop, you can take the same  
14 investment -- according to these numbers -- and buy  
15 twenty-eight kilowatts, when you're a part owner of  
16 a large community array out in a big open field.

17 And, so, I hope that makes sense to  
18 everybody. And think about that as the best  
19 possible investment to give the most cost-effective  
20 solar electricity for New Jersey.

21 Two other factors that are related to  
22 this. If you happen to have a home that has  
23 enough space around it for large trees, then plant  
24 some trees around your home rather than put solar  
25 panels on your roof. If anybody's been out in the



1 open sun around here in the past few weeks, you'll  
2 know that it's pretty uncomfortable as compared to  
3 being in the shade of a large tree. It's the same  
4 for your home. Your home will have a lower air  
5 conditioning bill if it happens to have trees  
6 surrounding it to give it some shade. So, another  
7 cost benefit to being part owner of a community  
8 large array, rather than on your roof, is you'll  
9 have lower air conditioning bills for your home.

10 A third benefit is, if you look at the  
11 resale value of homes, you'll find that there's a  
12 very significant higher resale value for homes that  
13 happen to be surrounded by large trees. And, it's  
14 probably in the range of five to ten percent. I've  
15 collected some numbers on that. So, that  
16 represents another reason why everybody should be  
17 encouraged to be a part owner of a large community  
18 array, rather than rooftop. I know this goes  
19 against the grain of some people who have spoken  
20 here earlier, but, basically, I think it's going to  
21 be proven. Now, other states, of course, are way  
22 ahead of us in terms of community scale and large  
23 scale solar arrays.

24 Another point that I wanted to get to  
25 refers to Item 9, the discussion point. Which is

1 how should the state address the base load needs  
2 versus intermittent elements of clean energy  
3 generation? Now, we've heard a little bit about  
4 energy storage. But, with a large enough scale of  
5 energy storage, we really don't need anymore base  
6 load generation. And, let me explain that a little  
7 bit further.

8           By far, the largest form of energy  
9 storage in the world today were utility scale  
10 electricity happens to be what's called pump  
11 hydro-electricity. I'm sure some of you in the  
12 audience are familiar with that. Does that ring a  
13 bell with anybody here? Okay. All right. If  
14 not, look it up in Wikipedia. That is between 95  
15 and 99 percent of large-scale energy storage today  
16 in the world. Now, people will respond typically  
17 that the experts have studied this already and they  
18 cannot find anymore reasonable places to put dams  
19 to utilize pumped hydro-electricity. It so happens  
20 that in Germany there are at least three locations  
21 where they have large-scale utility pumped  
22 hydro-storage without a dam. And, the way that is  
23 done is with a naturally flowing river as a source  
24 of water at the bottom. And, and artificial  
25 reservoir with storage of the water at the top of a

1 nearby hill. No dam. No disruption of fish or  
2 anything of that sort.

3 Now, if any of you have ever hiked  
4 along the Appalachia trail up in the northeast  
5 corner of our state, you will see that there a  
6 thousand foot-high hills right next to the Delaware  
7 River. So, we can provide a massive energy storage  
8 of that form along the Delaware River. And, this  
9 can also be done along the Hudson River. Perhaps  
10 more in New York than New Jersey. But, basically,  
11 anywhere there's a river that has a high enough  
12 flow rate, and hills that are high enough, you can  
13 provide energy storage on a massive scale, which  
14 will enable a lot more solar and wind being  
15 intermittent to provide the power needed. So,  
16 that's why I say, we don't absolutely have to have  
17 base load continuous power as something to make up  
18 for the intermittency of solar and wind.

19 Also, a lot of the points that I'm  
20 making here are currently on the internet. If you  
21 want to see them, go to the website for the New  
22 Jersey Sierra Club. Look at their latest  
23 newsletter, and there's an article on Page 13 of  
24 the Sierra Club current newsletter. A few more  
25 details will be found there.

1                   So, that's about it. Except for one  
2 final point. I would recommend that you all keep  
3 an open mind with respect to the future for nuclear  
4 power. Don't just judge it on what we have today.  
5 There are lots of people researching smaller and  
6 more economical and safer forms of nuclear power  
7 that we should at least consider, rather than  
8 excluding nuclear forever more. Thank you for  
9 listening.

10                   MR. SHEEHAN: Thank you. James  
11 Pfeiffer is next.

12                   MR. PFEIFFER: Good afternoon. My  
13 name is James Pfeiffer. I do represent a company,  
14 Green Waste Energy. Chairman Sheehan, Ms. Corbit,  
15 Commissioner Chivukula, and panel members, thank  
16 you.

17                   So, the Energy Master Plan talks about  
18 innovation. And, that's what I'm here to talk  
19 about. The best way to get someplace is to open  
20 your minds, and to take a look at other  
21 technologies, other things that are out there that  
22 can move you in the direction that you want to go.  
23 And, along with innovation goes new jobs. They go  
24 hand-in-hand. So, as opposed to some of the  
25 earlier opening statements, I am recommending a

1 change, an update, to the code that defines  
2 renewable energy. And, I would like people to  
3 consider the addition of a new Point 8 that states,  
4 electricity generated by using the gas produced  
5 from the processing of any carbonaceous matter into  
6 fuel.

7 Now, most of you guys are not familiar  
8 with this part of code. And I wouldn't be if it  
9 wasn't part of my business. But, the code talks  
10 about anaerobic digestion. That's okay. It talks  
11 about waste gas from landfills as being okay. So,  
12 how about another process? How about a process  
13 like pyrolysis to take this wastewater treatment  
14 sludge and make it into a synthetic gas, then to  
15 create electricity from that gas. And, it's at  
16 that point, technology independent. It doesn't  
17 matter whether it's a turbine, a reciprocating  
18 engine, or a fuel cell to take that gas. So, the  
19 benefit is it's something that's easy to  
20 understand, like wastewater treatment sludge. If  
21 you go in with dry sludge, you have a hundred  
22 parts, you do anaerobic digestion, you still have  
23 eighty parts of the material left that you have to  
24 dispose of. And, you've created two parts of  
25 electricity -- some random number. If you do

1 something like pyrolysis, then you're going to have  
2 only fifteen parts left over, and you're going to  
3 have two or three times as much electricity. But  
4 it's any carbonaceous material. Which is why I'm  
5 suggesting it like this. It doesn't necessarily  
6 reflect pyrolysis. It could be gasification, or  
7 anything else. It's innovative. It's different.  
8 It is not incineration.

9           So, what we've got then is you're  
10 supporting a lot of the other fundamental -- first  
11 of all, this is Point 2 on your list of discussion  
12 points. What it does, though, it supports a lot  
13 of the other things in these other points. It  
14 supports job. Jobs to build these plants, jobs to  
15 run these plans. It supports environmental  
16 justice. These things are clean. These we're  
17 talking about the generation is going to be at  
18 least as clean as the emission standards for a  
19 combined heat and power system, possibly as clean  
20 as fuel cell, which means once you have the gas you  
21 can put them very close to populated areas. I  
22 would never recommend, really, putting them in  
23 downtown. But, you can certainly put them very  
24 close. It supports electric vehicle industry,  
25 because now you have a constant source of power.

1 It's not just daytime or windy power, it's  
2 constant. So, you can make electricity at night  
3 and rejuvenate all those electric vehicles. The  
4 life cycle costs of this are very reasonable, if  
5 you compare them to the other technologies of  
6 taking something and running it for a while and  
7 then having to dispose of it. So, I'm relatively  
8 sure.

9 That's all I have to say. Add a new  
10 Point 8, and I'll be glad to give you the verbiage  
11 again any time you want it. Thank you.

12 MR. SHEEHAN: Thank you. Next speaker  
13 is Gearoid Foley.

14 MR. FOLEY: Director Sheehan, members  
15 of the committee, thank you very much for giving me  
16 this opportunity. I'm here representing the  
17 Department of Energy's Combined Power and Technical  
18 Assistance Partnership. We did submit written  
19 comments, so I'm just going to cite a few of those  
20 comments, just brief, and a couple of reference to  
21 the points in the question list.

22 The DOE's CHP Technical Assistance  
23 Partnerships work with end users and policy makers  
24 to assist in transforming the market for combined  
25 heat and power, waste heat to power, and district

1 energy technologies throughout the United States.

2 Combining power technologies holds  
3 enormous potential to improve the nation's energy  
4 security and resiliency, and reduce greenhouse gas  
5 emissions. CHP supports our move to a clean energy  
6 economy, and the creation of green jobs. The  
7 Department of Energy has long championed CHP  
8 technologies to harness the flow of power of CHP to  
9 help the nation meet its energy goals.

10 CHP can be a dispatchable power  
11 resource that can work in conjunction with  
12 renewables, including wind and solar, to provide  
13 cost-effective power in hybrid applications. Such  
14 applications either at grid level or at micro-grid  
15 level, allow for a transition to afford renewable  
16 base grid in a cost-effective manner, that is  
17 compatible with the existing grid infrastructure.

18 CHP, as part of a community-based  
19 hybrid micro-grid including renewables and battery  
20 storage, represents a cost-effective means of  
21 providing resilient base load power and thermal  
22 energy for local community, including critical  
23 infrastructure in an accessible way for all.

24 CHP can play a key role in addressing  
25 24-hour base load, and can be configured to be



1 dispatchable as necessary when renewables are not  
2 available. CHP provides a cost-effective and  
3 clear near-term technology option as other  
4 technologies are being developed. CHP can be  
5 designed to meet local thermal needs, and export  
6 power to the grids when grid supplies are deficient  
7 to meet demands.

8           The advancement of CHP is part of the  
9 U.S. Department of Energy's Office of Energy  
10 Efficiency and Renewable Energy -- EERE -- mission  
11 to create sustained to American leadership and to  
12 transition to a strong prosperous America powered  
13 by domestic, affordable, and secure energy for  
14 industrial, manufacturing, federal, institution,  
15 commercial, and multi-family sector.

16           I want to just address a couple of the  
17 aspects in the -- particularly addressing the  
18 question list. On issue Number 2, question of  
19 flexibility in the definition of clean energy.  
20 Allowing for combined heat and power, which is a  
21 fossil fuel, typically can be bio-fuel but  
22 typically fossil fuel technology, does provide the  
23 option to provide a very cost-effective means of  
24 obtaining base load power.

25           In question Number 3, in terms of

1 obstacles. Certainly this morning, earlier, we  
2 heard from ratepayer -- rate counsel. Cost, and I  
3 think we recognize cost being one of the issues  
4 that need to be overcome. As CHP is  
5 cost-effective, that is really what spurs the use  
6 of CHP currently. So, it is a cost-effective  
7 method as we move forward with the transition, and  
8 gives us an option in that tool box as we move  
9 forward with this transition.

10                   Number 4. Just the issue of stranded  
11 cost. It's not necessarily defined very well, but  
12 I think just one issue relating, again, to combined  
13 heat and power. These are typically twenty-year  
14 length investments. Twenty-year life cycle  
15 investments. They're not infrastructural  
16 fifty-year life cycle investments, so they fit into  
17 that transition timeline. And, they are typically  
18 shared in large part by the whole site for that  
19 system.

20                   Reference just specifically to Number  
21 9. As I mentioned before, I think CHP is probably  
22 the go-to technology for base load power through  
23 this transition process. Most energy efficiency  
24 fossil fuel combined in a combined heat and power  
25 configuration available today, always better than

1 the best of the fossil fuel grid technologies.

2 And, finally, on Question Number 12,  
3 on the transition portfolio mixture. Again, I'd  
4 encourage maintaining CHP in the mix just adds to  
5 the tool box as a cost-effective method to  
6 assisting that transition towards a hundred percent  
7 renewable future. Thank you very much.

8 MR. SHEEHAN: Thank you. Agnes  
9 Marsala, could you step up?

10 MS. MARSALA: I applaud the state's  
11 efforts to transition to clean renewable energy. I  
12 feel we have more of an imperative to do so. We  
13 are at a common crisis, and need a ten-year phase  
14 out of fossil fuels. And, the best way to start is  
15 a moratorium on all fossil fuel infrastructure.

16 Further, all approved methane  
17 infrastructure should be halted until a full review  
18 of the permitting process under the Christie  
19 administration is conducted. There is no clear  
20 example, in my opinion, of regulatory capture than  
21 what we have witnessed in last eight years. Well  
22 past time we rethink that kind of policy, and  
23 reject the last twenty-five years of deregulation  
24 and market tools, which are proven to be a  
25 disaster. And, I applaud the Governor for taking

1 these steps.

2           We need to repeal the New Jersey  
3 energy deregulation law and replace it with truly  
4 public utility regulation, and public ownership.  
5 It's time for real energy democracy. It's time  
6 for bold ideas, such as cooperatives. Municipal  
7 control of certain functions and operations and  
8 reform efforts directed at utilities. Even a  
9 public works approach to energy transition that  
10 worked so successfully during the middle decades of  
11 the last century.

12           It's clear that the profits-based  
13 approach has failed, and in fact is a profound  
14 threat to all living things. Publicly-owned and  
15 operated energy may be the most equitable,  
16 efficient, and effective way to address the climate  
17 crisis, to protect workers, strengthen unions, and  
18 create an energy system responsive to community  
19 needs. Given the unions significant  
20 representation and existing energy utilities, and  
21 their ability to better protect workers in most  
22 publicly-owned and operated systems, the trade  
23 union movement has a much greater role to play in  
24 developing publicly renewable power. Creating  
25 energy systems that are both ecologically

1 sustainable and equitable depends largely on the  
2 ability to shift power from the fossil fuel  
3 industry to workers and communities. Utilities  
4 under public ownership and control, either through  
5 re-municipalization or by reform of existing public  
6 utilities, would be able to rapidly scale-up  
7 renewable energy, protect workers' rights, and  
8 generate decent and stable jobs. Create an energy  
9 system based on ecologically sustainable methods of  
10 energy extraction, transport, and use, be  
11 responsive to the needs of the community, address  
12 energy poverty, and aggressively promote energy  
13 conservation.

14           These ideas are not beyond the  
15 imagining. Back in 1990, the Florio administration  
16 combined some of the BPU energy programs with the  
17 DEP, forming the DEPE -- the Department of  
18 Environmental Protection and Energy, for example.  
19 Further, there are examples of municipally-owned  
20 utilities across the U.S., in places like  
21 Sacramento, Austin, Chattanooga, Aspen, and Winter  
22 Park, Florida.

23           Now, I've literally quoted from the  
24 Trade Unions for Energy Democracy's working papers  
25 here. Specifically, Power to the People Toward

1 Democratic Control of Electrical Power Generation.  
2 This, and eleven other really great titles, can be  
3 found at UnionsforEnergyDemocracy.org. And, I  
4 highly recommend everyone give them a read. And, I  
5 thank you very much for giving me this opportunity  
6 to speak.

7 MR. SHEEHAN: Thank you very much.  
8 Our next speaker is William O'Hearn.

9 MR. O'HEARN: Good afternoon. And  
10 thanks everybody for sticking around. My name is  
11 Bill O'Hearn. I'm the Corporate Communications and  
12 Outreach Manager for a non-profit group called  
13 Business Network for Off-Shore Wind. And we are a  
14 non-profit, but we take a business approach to the  
15 off-shore wind industry. We basically try to  
16 bring a lot of the wisdom from Europe over here  
17 into the east coast of the United States.

18 I want to thank Mr. Sheehan and the  
19 rest of the BPU for the great job that you've done  
20 on off-shore wind. We appreciate it. And, for  
21 having me here today.

22 So, here's the bad news for this  
23 group. People who know me, know that once I get  
24 talking about off-shore wind, I can go on for  
25 hours. Right? And here's the good news; the good

1 news is I have a dinner appointment with my wife  
2 and daughter in Boston at seven o'clock tonight.  
3 And, perhaps, even better news, is that in terms of  
4 full disclosure, my organization is proud to be  
5 part of what we call the RanBall team that is  
6 developing the strategic plan for off-shore wind  
7 for the state. So, I'm going to keep my remarks  
8 general, because, of course, we are working on the  
9 actual off-shore wind plan for New Jersey. And,  
10 we're proud to be doing that.

11           So, I also want to recognize Jersey  
12 Renews, members of Jersey Renews, and my colleague,  
13 Doug O'Malley, that has been great to work with,  
14 and helping us explain our point of view to the  
15 environmental community. And we had some great  
16 support there, and we appreciate that.

17           So, just a couple of bullets, a couple  
18 of points. I was here, by the way, I testified in  
19 the 2011 Energy Master Plan. And, I was here for  
20 the 2015 update. And I can assure you, this is a  
21 much happier occasion than those were. So, enjoy  
22 this. This is actually good, what we have here  
23 today. We appreciate it.

24           One of the points I would make is that  
25 -- and this is from the 2011 EMP and from 2015 EMP

1 update -- in those documents there was a real  
2 reliance on natural gas and new gas pipelines as  
3 the best way to meet electricity demand. Not  
4 surprisingly, considering that was the Christie  
5 administration back then. And, that was the flavor  
6 that we got. What I recommend, and what I'm  
7 hearing today, is that we change the whole flavor.  
8 Completely redo the plan. So that it has much more  
9 of the language of the climate change, global  
10 warming in it, and reliance, on stuff like new  
11 technology, and, of course, clean energy, as a way  
12 of driving economic development.

13           One of the things we cite in the work  
14 that we do, is we talk about the City of Riverhaven  
15 in Germany, which was completely revitalized by the  
16 off-shore wind industry. Same thing for some very  
17 sad fishing villages in England, one of which is  
18 called Gull. And, basically, has completely  
19 transformed itself into a high-tech assembly and  
20 off-shore wind manufacturing. So, that kind of  
21 economic development is possible with clean energy  
22 and driving the fighting against climate change.  
23 That's what really pushes us to do the work that we  
24 do.

25           So, one of the things that we'd like



1 to see, is we want to make sure that there's a  
2 description in some detail of how the clean energy  
3 elements of solar -- as you've heard a lot about  
4 today -- and wind conservation and storage will  
5 work together to achieve a hundred percent clean  
6 energy by 2050 goal. For example, I think it's  
7 important that we explain how the equitable and the  
8 daily cycles of solar and off-shore wind compliment  
9 each other. Quick example, is that off-shore wind  
10 is extremely strong in the winter, when solar is  
11 relatively light. Also, in terms of the -- if you  
12 think about the daytime hour-by-hour production of  
13 solar, of course it goes like this, with midday  
14 being strongest. And the way the off-shore wind  
15 goes is more like this. And we crank out the most  
16 power late afternoon, early evening, when those air  
17 conditioners are coming on in the summer time. So,  
18 it's a good match. I mean, these technologies can  
19 work together.

20 Of course, we recognize that it's a  
21 new technology. It's going to take some  
22 investment. And, so, we're certainly conscious --  
23 we heard from the advocate, and we completely agree  
24 that things should be done year by year in a  
25 planned transparent basis to minimize impact on

1 ratepayers. One of my jobs working with the Board  
2 will be to continually explain the relationship and  
3 the development between the Energy Master Plan and  
4 the Off-Shore Wind Strategic Plan, which again,  
5 we're part of that team.

6 And then, I guess, lastly, just to  
7 keep my remarks short -- and again, I appreciate  
8 your patience -- is I want us to make sure that we  
9 acknowledge New Jersey's role, and as a national  
10 clean energy leader and the spirit of the old  
11 Energy Master Plan that was done in 2008. Let's  
12 get back to that, that spirit, that desire to be  
13 the best. And we recognize the governor for  
14 pursuing that. And, we want to keep that as an  
15 ongoing goal for 2050. Thanks very much.

16 MR. SHEEHAN: Thank you very much.  
17 Bruce Burcat. And then Joe Accardo next.

18 MR. BURCAT: Good afternoon. I am  
19 Bruce Burcat. I'm the Executive Director of the  
20 Mid-Atlantic Renewable Energy Coalition. We're  
21 called MAREC. MAREC is a 501c(3) corporation that  
22 was founded to help advance the opportunities for  
23 renewable energy in this region, particularly in  
24 New Jersey and other states in the mid-atlantic, as  
25 part of the PJM region in the grid operator.

1           Our members consist of utility scale  
2 wind, including off-shore wind; and, solar  
3 developers, wind turbine manufacturers, and some  
4 non-profit organizations. MAREC supports  
5 Governor's Murphy's goal of moving away from the  
6 reliance upon fossil fuels as New Jersey's primary  
7 source of energy. A commitment to clean energy is  
8 the cornerstone of the policy to remove impacts of  
9 global warming, and other harmful emissions. MAREC  
10 believes that a future of renewable energy, coupled  
11 with energy storage by 2050, is achievable. And,  
12 will not only help protect New Jersey citizens from  
13 global warming, but continue to lead New Jersey  
14 forward as a state investing in its economy, thus  
15 bringing jobs, manufacturing, and new off-shore  
16 wind industry into the state.

17           Conversion to clean energy from fossil  
18 fuels will also require reliance. And I think this  
19 is very important -- a significant purchases of  
20 utility scale solar and on-shore wind from the PJM  
21 region to meet the goals of fifty percent, and a  
22 hundred percent clean energy. And that would also  
23 include, obviously, energy efficiency, as well.  
24 Clean energy, in our opinion, should be defined as  
25 renewable energy, a hundred percent carbon-free,

1 non-emitting, environmentally sound resources that  
2 are truly renewable in the sense that they do not  
3 deplete over time. These are sources like solar,  
4 wind, hydro-electric facilities -- three megawatts  
5 or less -- geo-thermal energy, and energy  
6 efficiency -- which is not renewable but obviously  
7 an important component in all of this. The state  
8 has already begun its transition to clean energy  
9 production. Obviously the enactment of the fifty  
10 percent RPS bill, 3500 megawatts of off-shore wind  
11 by 2030, a storage study and targets for storage,  
12 and other aspects of that bill we entirely support  
13 with a couple of minor exceptions.

14 Right now we've heard some comments  
15 earlier that on-shore wind coming from out of state  
16 is something that some folks, especially the  
17 distributor solar folks that had businesses here in  
18 New Jersey are concerned about. But, I think what  
19 the state has to really recognize is that there's  
20 limited land mass and area to put all this solar.  
21 There's extreme difference in cost between what  
22 might happen if you're overloaded with solar in the  
23 state because of a hundred percent requirement when  
24 the cost -- and we've heard some really low numbers  
25 today -- with the cost of off-shore wind coming

1 from other states is significantly cheaper. Part  
2 of this whole idea is to get to a hundred percent  
3 renewable energy or clean energy at a reasonable  
4 cost. And, I think that has to be a big component  
5 of this. And, it's abundant. And I think one of  
6 the major points of this is that in New Jersey,  
7 which has done a lot already to limit coal and  
8 other fossil fuel generation in the state -- if  
9 it's getting some of its renewable energy from out  
10 of state, that renewable energy is going to be  
11 replacing coal, other fossil fuel energy in those  
12 states. And that pollution coming from those other  
13 states are affecting New Jersey. So, there's a big  
14 advantage for New Jersey to continue to rely on  
15 that. Especially if we're going to fifty percent  
16 and even further going to a hundred percent goals  
17 for clean energy.

18 One other thing. I represent, of  
19 course, solar -- utility scale solar developers,  
20 and there's sort of -- and this works somewhat  
21 against my wind utility members, but they  
22 understand this, that there shouldn't be  
23 competition between utility scale solar, utility  
24 scale wind. And, so, right now there's a  
25 limitation that out of state solar cannot

1 participate in the -- it's an order,  
2 interpretation, from the Board of Public Utilities,  
3 but it does not allow out-of-state solar to compete  
4 within the direct market in the Class I REC market.  
5 Not the solar REC market, but the Tier 1 REC  
6 market. Our members believe that that should be  
7 something that's opened up. Maybe we have to do  
8 through legislation. But, it's something very  
9 important to your competition. And, to also open  
10 up additional resources that are in surrounding  
11 states to, as I said, help meet the goals as a  
12 requirement. So, I think that's very important.

13 I think the state should use the RPS  
14 model -- it's worked very well in the state --  
15 moving forward. So when we look to from fifty  
16 percent to a hundred percent, I think the RPS model  
17 at that point should be looked at very closely, and  
18 that should be a way to getting to a hundred  
19 percent. And I will tell you, that in the  
20 mid-atlantic region when the Lawrence Berkeley  
21 National Labs looked at this, what's driving  
22 renewable energy development -- because that's what  
23 we want -- the mid-atlantic region is primarily  
24 almost a hundred percent being driven by RPS goals  
25 in particular states. So, that's really important.

1           And, some things very important to my  
2 members but also has a tremendous benefit to New  
3 Jersey ratepayers, is that a portion -- we think a  
4 portion of the basic generation service, BGS,  
5 should be obtained through competitively procured  
6 bundled long-term contracts of renewable energy and  
7 renewable energy credits. It reduces prices for  
8 customers. We have a study specific to New Jersey  
9 that actually shows that, for hundreds of millions  
10 of dollars. That's a way of keeping costs down  
11 again. We're not saying do it all, but do a  
12 portion. Just like you would have an investment  
13 portfolio, you're not going to want to put it all  
14 in short-term investments the way it is being done  
15 now. Some of it should be long-term investments,  
16 as well. I think that's really important.

17           The other thing is that a long-term  
18 contract for solar or wind, because there's no fuel  
19 costs, is going to be consistent throughout the  
20 whole term -- whether it's ten, fifteen or twenty  
21 years. It's consistent, and it's going to provide  
22 an edge against prices that involve the stock  
23 market that's not there.

24           And, finally, energy storage and  
25 increasing transmission build-out to support

1 renewable energy integration are important policies  
2 to ensure a reliable grid in the future to achieve  
3 a hundred percent clean energy target.

4 In sum, we believe that New Jersey is  
5 on the right track, and support the Governor's  
6 vision of moving New Jersey away from reliance on  
7 fossil fuels, and to generate a portfolio -- by  
8 generating a portfolio of a hundred percent clean  
9 energy. So, thank you very much.

10 MR. SHEEHAN: Thank you very much.  
11 Joe Accardo.

12 MR. ACCARDO: Thank you. Good  
13 afternoon. My name is Joe Accardo, I'm head of  
14 regulatory for PSE&G. And, wanted to spend just a  
15 little time today provide some additional thoughts  
16 and comments with respect to the Energy Master  
17 Plan. And, specifically, with respect to today's  
18 Clean and Renewable Power stakeholder meeting.

19 PSE&G has a long history, well over a  
20 hundred years, of partnership with New Jersey, and  
21 aligning its interests with those of the state.  
22 This partnership has been critical to development  
23 of clean and renewable power in the state, making  
24 New Jersey one of the recognized leaders in the  
25 installation and operation of clean, carbon-free



1 energy technologies. Governor Murphy's 2019  
2 Energy Master Plan gives PSE&G a unique opportunity  
3 to build on that prior success, as we implement his  
4 vision of a hundred percent clean energy future.

5 My comments today will focus really on  
6 six core areas coming out of the list of nineteen,  
7 of whatever it was, that each of the parties  
8 received. Focus on six things; what is clean  
9 energy, what's the definition of it; how we  
10 transition to a hundred percent clean energy by  
11 2050; evaluating existing state policies as they  
12 relate to clean energy programs; planning and  
13 zoning issues that impact clean energy,  
14 transportation and energy; and, economic growth and  
15 workforce development. And then finally we're  
16 going to talk about environmental justice. So,  
17 those will be the six areas that we focus on here  
18 in my brief statement.

19 So, what is clean energy? Climate  
20 change is arguably the single biggest environmental  
21 threat to the planet. The State of New Jersey and  
22 Governor Murphy have made reducing greenhouse gas  
23 emissions in top priority, including most recently  
24 the Governor's action to rejoin the Regional  
25 Greenhouse Gas Initiative. To support these

1 efforts, clean energy should be defined as any  
2 energy source that emits zero greenhouse gas or  
3 other air emissions. This definition should be  
4 broad enough to encompass the multi-year range of  
5 the implementation process. Thus clean energy  
6 would essential include solar, off-shore wind,  
7 energy storage -- so long as energy stored is  
8 derived from clean energy sources -- and nuclear  
9 power, the number one clean energy resource in the  
10 state. The inclusion of clean, central station  
11 nuclear power generation into the clean energy  
12 sector will be essential if we were to realize the  
13 one hundred percent clean energy goal set by  
14 Governor Murphy, while maintaining a safe and  
15 reliable electric grid.

16 Reaching the Governor's goal will not  
17 be easy, as there are many obstacles to overcome  
18 along the way. The one hundred percent clean  
19 energy goal will likely have customer rate  
20 implications that cannot be ignored. Consistent  
21 with the Governor's goals, every effort should be  
22 made to minimize those rate impacts. In addition,  
23 the intermittent nature of many clean energy  
24 sources -- off-shore wind, solar -- will require  
25 both a continued reliance on nuclear base load

1 units, and a significant investment in transmission  
2 and distribution assets and technologies designed  
3 to mitigate the intermittent nature of wind and  
4 solar. Governor Murphy's goal of achieving 2000  
5 megawatts of energy storage by 2030 will certainly  
6 be a step in the right direction, further  
7 integrating renewable energy sources into the daily  
8 mix of energy consumed in the state.

9           Transition to a hundred percent clean  
10 energy by 2050. Consistent with the Clean Energy  
11 Act of 2018, the state should adopt policies which  
12 encourage competitive markets with the goal of  
13 encouraging and ensuring the emergence of new  
14 interests that can foster innovations and price  
15 competition in the clean energy sector. When new  
16 market participants do not invest in certain aspects  
17 of the clean energy sector, however, the state  
18 should continue to expand current policies and  
19 programs that encourage New Jersey utilities to  
20 develop renewable projects on under-utilized and  
21 underdeveloped landfills and brown fields. The  
22 state should encourage innovative technologies by  
23 establishing a New Jersey research and development  
24 group that would allow utilities and other market  
25 participants to promptly approve pilots to test new

1 technologies, and establish best practices based on  
2 successful programs in other states and countries.

3           Lastly, New Jersey should construct  
4 new natural gas infrastructure, such as expansion  
5 of high-pressure distribution systems and  
6 construction of new liquefied natural gas plants,  
7 to ensure the reliability and resiliency of the gas  
8 and electric supply.

9           With respect to state policy, the  
10 state's become a clean energy leader in many  
11 respects. It's now one of the more aggressive  
12 renewable portfolio standards in the nation, and  
13 it's opened up the solar market with its community  
14 solar program. And, it has established aggressive  
15 targets for energy efficiency. To achieve this  
16 long-term one hundred percent clean energy goal,  
17 the state should look to utility partnership  
18 policies adopted by other states with similar  
19 long-term goals. In many instances, states have  
20 adopted policies that align utility incentives and  
21 business models with clean energy goals. For  
22 example, to achieve carbon emission reductions from  
23 the transportation sector, California recently  
24 adopted policies that will reward its electric  
25 utilities for accelerating the build-out of the

1 electric charging infrastructure. State's with  
2 aggressive energy efficiency targets, such as  
3 Massachusetts, New York and California have adopted  
4 revenue decoupling mechanisms for their  
5 gas/electric utilities, so utilities can  
6 aggressively pursue energy efficiency goals without  
7 harming their bottom line.

8 PSE&G believes that the electric and  
9 gas utilities are central partners in the pursuit  
10 of this goal. We welcome this partnership in  
11 transitioning the utility business model to one in  
12 which its business success is fully aligned with  
13 all of the state's clean energy goals.

14 With respect to planning and zoning.  
15 The Energy Master Plan should acknowledge the  
16 economic and environmental benefits of electric  
17 transportation, and identify specific policies to  
18 advance and accelerate their adoption across the  
19 state. Indeed, PSE&G believes that clean  
20 transportation will be crucial if the state is to  
21 achieve Governor Murphy's one hundred percent clean  
22 energy goal. Electric vehicles will be critical  
23 because every electrically fueled mile by an  
24 automobile or truck produces seventy percent less  
25 emissions than a gas fuel model. Utilities should

1 be encouraged to build a robust electric vehicle  
2 charging infrastructure to support the growing  
3 clean transportation sector. PSE&G looks forward  
4 to discussing clean transportation options at the  
5 September 20th stakeholder meeting.

6 With respect to economic growth and  
7 workforce development. It's well understood that  
8 investments in clean and renewable energy yield  
9 good, high-paying jobs. PSE&G is committed to  
10 working with the BPU and New Jersey Department of  
11 Labor and Workforce Development, to ensure that  
12 it's workforce development is an integral part of  
13 it's clean energy efforts. Establishing New Jersey  
14 as a national leader in clean energy through the  
15 Governor's commitments to energy efficiency,  
16 electric vehicles, and off-shore wind provide a  
17 significant opportunity to reduce greenhouse gas  
18 emissions, while also creating jobs and benefiting  
19 customers.

20 And, lastly, with respect to  
21 environmental justice. The state should set  
22 policies and programs that encourage investments  
23 into clean energy into overburdened communities.  
24 PSE&G's upcoming clean energy future filing is one  
25 such program that specifically focuses on these

1 overburdened communities to ensure that they have  
2 access to energy efficiency programs, LED street  
3 lights, energy storage, and the benefits of vehicle  
4 electrification. Other policies the state should  
5 consider include establishing utility rate  
6 structures to ensure that everyone that is  
7 connected to the grid and taking advantage of the  
8 attributes of the grid is paying for the  
9 investments made by the utility in the grid.

10 PSE&G is willing to participate in  
11 other discussions with state to bring other clean  
12 energy solutions, including solar energy  
13 technologies, to these under-deserved markets.  
14 PSE&G should continue to be an important vehicle to  
15 ensuring universal access to clean energy  
16 advancements. Thank you.

17 MR. SHEEHAN: Thank you very much. Is  
18 there anyone else who had pre-submitted comments?  
19 Lyle. And Lyle is all that stands between us and  
20 lunch.

21 MR. RAWLINGS: I pre-submitted these  
22 comments, Director Sheehan, and also made  
23 printouts.

24 MR. SHEEHAN: Appreciate that. Thank  
25 you. Thank you.

1                   MR. RAWLINGS: Thank you, Director  
2 Sheehan. I'm Lyle Rawlings, president and  
3 co-founder of the Mid-Atlantic Solar Energy  
4 Industries Association, or MSEIA. MSEIA for  
5 twenty-one years has been advocating for solar  
6 energy and solar energy businesses in the  
7 mid-atlantic region. And, we started when solar  
8 energy was really a scientific curiosity, right  
9 through now when it's the fastest growing source of  
10 new electric generation capacity in the world.

11                   Throughout that time we've advocated  
12 on three simple principles for policy. One; grow  
13 solar energy as quickly as possible. Two; do so at  
14 the least possible cost do ratepayers. And, third;  
15 create a diverse market, especially with  
16 opportunity for local New Jersey businesses to  
17 thrive and create local New Jersey jobs. And,  
18 it's gratifying to see such a great array of staff  
19 talent here today. And we know that you guys have  
20 a little bit of work on your plate right now, and  
21 you have a lot of other things to do. So, we  
22 appreciate your showing up and staying all day to  
23 hear this testimony. And we understand that more  
24 help is on the way. You got new talent coming in,  
25 and that's gratifying.



1           Because, the magnitude of the job is  
2   incredibly impressive. Before you couldn't get to  
3   the details of the clean energy law and what it  
4   requires the BPU to do, and what it requires  
5   society and industry to do. Just the nature of the  
6   goal itself, a hundred percent renewable energy,  
7   when you're talking about a full transition of the  
8   way the society uses and generates something as  
9   fundamental to our economy as energy is, you know  
10  that the scale and complexity of that task has to  
11  be daunting. And it is. It's matched only by the  
12  urgency of dealing with climate change and  
13  pollution, which has been another issue of  
14  unprecedented worldwide scale and complexity. And  
15  this change, this transition, it's going to have  
16  cost attached to it, significant cost. That means  
17  the technical complexity, the economic complexity  
18  and the policy complexity, are going to require a  
19  great deal of effort and hard work, a lot of  
20  creative thinking, and advanced expertise is going  
21  to be required to get to this goal at the least  
22  possible cost. MSEIA has substantial internal  
23  expertise, and also relationships with some of the  
24  top creative thinkers and researchers in the world  
25  at our beckon call. And, we pledge those assets

1 and our energy and determination to the BPU and to  
2 the Governor's office to help realize these goals.

3 Now, our initial testimony at this  
4 time is going to answer many of the questions for  
5 their session. Not in order. We'll be giving more  
6 detailed testimony on certain aspects of this  
7 challenge in the last two stakeholder hearings  
8 later on this month.

9 First, on solar energy and  
10 cost-effectiveness -- and there's a slide in your  
11 packet there, and this will be on the web for those  
12 of you who don't have this in front of you. On  
13 slide number three, MSEIA commissioned a study in  
14 2012 by Clean Power Research. They are the go-to  
15 guys for doing study of the cost effectiveness of  
16 the solar, and the value thereof. They're the ones  
17 who did it for Maine and for Vermont, they were  
18 mentioned previously in testimony. They did it  
19 for Austin. They did it for the State of Minnesota  
20 most recently. And they did it for us for New  
21 Jersey and Pennsylvania. The result was they  
22 showed a value delivered by solar energy. And this  
23 is the premium value over and above the actual  
24 market value of the energy. That premium value  
25 averaged seventeen cents, that's \$170.00 per

1 megawatt hour. Now, if we move to a more  
2 efficient incentive system for evaluating that  
3 delivered value, that \$170.00 is much much higher  
4 than the cost it will actually be. We expect that  
5 cost in the nearer term to be more like \$90.00.  
6 So, in other words, we're delivering substantially  
7 greater value than the cost of incentives necessary  
8 to drive that solar development. That's if we can  
9 get to a highly cost-effective system of  
10 incentives.

11 Which brings us to a couple of the  
12 short-term challenges we have. The first is  
13 closing the SREC market in an orderly fashion.  
14 More than a year ago, MSEIA, as well as some other  
15 industry folks, recognized that the SREC system  
16 would have to change to something else that's much  
17 more cost-effective. That its cost was a multiple  
18 of what it is in neighboring states. We believe at  
19 MSEIA that the SREC market needs to be closed in an  
20 orderly fashion so as to attack the existing  
21 investment, ten billion by that time, that  
22 investors have entrusted in the state. But, it  
23 needs to happen ASAP so that we can begin those  
24 savings as soon as possible.

25 Now, we also, based on our analysis,

1 we believe that there will be a necessity for  
2 establishing an interim program. Because if it is  
3 to be closed truly at the 5.1 percent per the law,  
4 we believe that will happen around the end of the  
5 year or January. And, that's not enough time to  
6 put a permanent lower cost program in place. We  
7 will need an interim program. And, we hope that  
8 the BPU will consider and work on the potential to  
9 do an interim program using a fixed SREC. Because  
10 we've analyzed the cost of doing a fixed SREC as  
11 and interim program, versus doing a tradable  
12 commodity SREC for an interim program. And we find  
13 that the commodity model will be approximately  
14 sixty percent higher in cost than the fixed SREC  
15 would be for the first four years, and then fifty  
16 percent higher for the next five years. And,  
17 obviously, with the caps that are in place, we  
18 can't afford to pay fifty or sixty percent more if  
19 there's a lower cost way to do it. And, we  
20 realize that will take some exploration, but it  
21 will also take some fast action if an interim  
22 program is to be in place in time.

23           The solar industry could probably take  
24 a few months of hiatus in between starting an  
25 interim program and closing down applications under

1 the old, but not much longer than that. We don't  
2 want businesses closing their doors or losing jobs.

3 Another short-term problem that would  
4 need to be addressed soon can be seen on slides  
5 five and six in your packet. And, that is the  
6 closure of circuits in New Jersey, this is  
7 accelerating where the utilities are saying that  
8 certain circuits will be closed to further solar  
9 development, or severely restricted to further  
10 solar development. Those slides show a map of the  
11 overall territory of Atlantic City Electric, where  
12 a large number of circuits are already closed or  
13 severely restricted. And, there's also a blow up  
14 of a single town where you can see in a particular  
15 town, in this case Sommers Point, virtually all of  
16 circuits in the entire town are closed to further  
17 solar development. Now, this can be addressed.  
18 It's based on antiquated and obsolete standards.  
19 And, it does not take advantage of capabilities  
20 that are already built in to solar invertors that  
21 can help overcome any voltage control problems that  
22 might exist. As we move forward into a renewable  
23 future, we're going to have a massive need to  
24 address these circuit closure problems.

25 Now, long-term challenges. This

1 hundred percent goal, as I said, is very daunting.  
2 There's a great deal of study that's needed to  
3 determine what is the most efficient and lowest  
4 cost way to get to that hundred percent. We're  
5 making policy decisions now. Those need to be  
6 informed by what will get us to the destination in  
7 the least possible way. And there are surprises  
8 when this is studied and researched carefully. We  
9 have to adopt the most appropriate drivers for  
10 solar and wind and storage. You need to aim those  
11 drivers at opportunities to create additional  
12 public good. Examples of that would be locating  
13 solar landfills and brown fields, that's a very  
14 valuable thing to do. We do want to minimize the  
15 extent to which we take green fields and make them  
16 into solar. It involves aiming solar at congested  
17 areas. It involves aiming it at low-income and  
18 environmental justice communities, and creating  
19 jobs in those communities. We also want to aim  
20 policies at the projects and locations that can do  
21 double duty. For instance, aiming battery  
22 incentives at locations that cannot only stabilize  
23 the grid with those batteries, but also provide  
24 resilient power for critical facilities. So, we  
25 can get a lot of extra value out of our incentive

1 dollar.

2           We want to address infrastructure  
3 issues for incorporating large amounts of  
4 intermittent renewables into the electric system.  
5 You can see on slide seven and eight a list of  
6 infrastructure needs that we need. That's a list  
7 of nine areas of infrastructure development that  
8 are needed. We're going to give more detailed  
9 testimony on that part at the next to last meeting  
10 which is on that topic.

11           We also need to change the utility  
12 business model to make sure that utilities are  
13 better able to be partners in development of  
14 renewable energy, while at the same time keeping  
15 utilities healthy. Because those nine  
16 infrastructure issues that I just talked about,  
17 many of them are utility-specific infrastructure  
18 issues. And, if the utilities are unable to invest  
19 in those because they're -- because the development  
20 of renewables is making them less healthy, we won't  
21 be able to get to where we're going.

22           That brings me to MSEIA pathway study,  
23 and slide nine shows that. This is another clean  
24 power research study. And, it's the most  
25 sophisticated and the most comprehensive one yet.

1 It was commissioned by the U.S. Department of  
2 Energy and the Minnesota Department of Commerce.  
3 The study is not yet published. It's finished, but  
4 not published yet. That will happen some time in  
5 October. But, we have a very close relationship  
6 with the lead authors, Dr. Mark Perez and Dr.  
7 Richard Perez, who have given us some of the  
8 advanced results of that. And some of those  
9 results are surprising. Less reliance on  
10 batteries, for instance, and more reliance on  
11 curtailment of solar. Turns out to be a cheaper  
12 way to get there. A key finding is that they have  
13 said the Minnesota can achieve one hundred percent  
14 solar and wind 24/7, including base load, at a cost  
15 of about five cents per kilowatt hour premium over  
16 the cost of wholesale energy. Now, that's a  
17 surprisingly low cost to get to one hundred  
18 percent. They also found that an even lower cost  
19 would be achievable if you just mix in five percent  
20 natural gas, and 95 percent solar and wind. That  
21 brought the cost down to 3.6 cents per kilowatt  
22 hours. It's a great indicator of where we can go  
23 in New Jersey. That we can get to this goal and we  
24 can get to it at a reasonable cost.

25 Another recent study by Lawrence



1 Berkeley Laboratories, part of the U.S. Department  
2 of Energy, indicated that getting to 44 to 50  
3 percent solar and wind by the year 2030 -- similar  
4 to your goals -- in New York ISO -- one of four  
5 regional transmission organizations that they  
6 studied -- but, in New York ISO, they said that  
7 getting to fifty percent solar and wind would lower  
8 the cost of wholesale energy by 39 percent. So,  
9 this is goods news in terms of our getting to that  
10 future.

11 And, that concludes my comments for  
12 today. And, we'll see you on the 24th.

13 MR. SHEEHAN: Thank you very much. At  
14 this point, ladies and gentlemen, we still have  
15 about thirty speakers registered to move forward.  
16 So, I think it's probably appropriate at this Point  
17 for us to take about a 45-minute break, give the  
18 court reporter a chance to feel her fingers.

19 So, we'd request that everyone be back  
20 at 2:30. Thank you.

21 (Whereupon the luncheon recess was  
22 held.)

23

24

25

1                   A F T E R N O O N   S E S S I O N

2                   MR. SHEEHAN:   Okay.   Ladies and  
3 gentlemen, thank you for coming back.   So, we're  
4 going to go ahead and get started again.   We have  
5 the court reporter is back.   Thank you.

6                   So, we'll go ahead and pick up where  
7 we left off.   We have a fair number of speakers  
8 left on the list, although it looks as though a few  
9 of them are not in the room.   As we move forward,  
10 we have the room until -- I don't want to say until  
11 the end, but we have the room until the end.   So,  
12 I'm going to go ahead and get started and call the  
13 first person.   David Gahl.

14                  MR. GAHL:   Thank you, Director  
15 Sheehan, members of the committee.   My name is  
16 David Gahl.   I'm the Director for State of Affairs  
17 for the NorthEast Solar Energy Industries  
18 Association.   SEIA is the national trade  
19 association of U.S. solar industry.   We have more  
20 than a thousand members across the country.   Many  
21 of our members are doing business in New Jersey.  
22 And, we have nearly forty firms that have an  
23 operating address in New Jersey, as well.   And, I  
24 SEIA represents all different market segments of  
25 the solar industry, from the utility scale segment

1 to distributed generation to community solar. We  
2 have represent all the different solar industry.

3 So, I'm going to keep these comments  
4 fairly brief. I've submitted written comments for  
5 the record. And, I'm just going to hit the  
6 highlights here today. First of all, SEIA  
7 strongly supports the hundred percent by 2050 clean  
8 energy goal. And, while we think that that  
9 long-term goal is laudable, we want to focus the  
10 Board's attention specifically on some of the  
11 near-term issues that are facing the solar  
12 industry. Some of my other solar industry  
13 colleagues talked about these issues already today,  
14 so I'll try not to repeat where I can.

15 But, first of all, first and probably  
16 foremost, one of the most pressing issues on the  
17 minds of my members is the closure of the current  
18 SREC program. We believe that more clarity should  
19 be provided in the final regulations and in  
20 potential guidance documents about how key  
21 decisions will be made about the market closure.  
22 In particular, how the Department will determine  
23 that the overall 5.1 percent goal has been reached.  
24 That is a critical decision. And, from our view,  
25 we believe that the attainment should be based on

1 the actual installations of solar, which actually  
2 raises some questions about what happens to that  
3 pool of projects that potentially have submitted  
4 applications. And there are a number of different  
5 ways, probably, to address that issue. But, we  
6 believe that the 5.1 percent the definition should  
7 be based on attainment.

8           And probably one of the most simple  
9 solutions would be that in the event that the 5.1  
10 percent -- when the 5.1 percent goal is reached,  
11 and there's an additional pool of projects that  
12 submitted applications, there could be a minor  
13 adjustment that's made administratively to the RPS  
14 to account for those additional projects, to give  
15 those applications ultimately a compliance home.

16           So, the next major issue involves the  
17 creation of a new incentive program to the  
18 following the existing program. So when the  
19 current program closes we'd ideally like to see a  
20 new program open, almost simultaneously. I believe  
21 this will promote an orderly transition from the  
22 old regime to the new regime.

23           And my comments now are largely going  
24 to be consistent with, I think, some of the  
25 comments that were made by Fred and the various

1 DeSanti's. So, essentially, what we're suggesting  
2 is that there's a need for the next version of the  
3 program to be modelled off the existing SREC  
4 program -- I'd like to call it an SREC II program.  
5 This is consistent with the way -- Massachusetts  
6 actually moved from their initial version of an  
7 SREC program to a modified version. And their  
8 program included a series of cost containment  
9 measures that employed factory that helped steer  
10 projects in certain directions. And I think all  
11 those tools can be employed in a New Jersey  
12 program, as well. And, in addition to that, we  
13 support making sure that the program, the next  
14 generation incentive, supports the development of  
15 all market segments, residential development,  
16 commercial projects, and community solar moving  
17 forward.

18 One issue I did want to raise, as  
19 well, was about Class I1 REC eligibility for solar  
20 projects. We heard a little bit about this from  
21 the gentlemen from MAREC earlier today. SEIA has  
22 many utility scale members that would like access  
23 to the New Jersey market. And, just to be crystal  
24 clear, we're not talking about access to the SREC  
25 market. We're talking about access to Class I

1 RECs. So, in our view, that eligibility should be  
2 revisited to allow all solar projects to be  
3 eligible for the RPS. And, we believe this puts  
4 large scale solar projects on equal footing with  
5 wind projects going forward.

6 And, lastly, I just want to point out  
7 this is already a proceeding that the Board has  
8 underway. But, community solar. Community solar  
9 is an important component in the market going  
10 forward. We are clearly interested in seeing the  
11 community solar pilot program move forward without  
12 any delays. Appreciate the governor's leadership  
13 on this issue, and the Board's leadership here, and  
14 we look forward to seeing the details of the  
15 proposal. But, clearly, community solar will have  
16 an important role to play in the solar market in  
17 the future. And, would like to see that move along  
18 as quickly as possible.

19 And, that concludes my thoughts.  
20 Thank you.

21 MR. SHEEHAN: Thank you very much.  
22 Next up Jeff Tittel.

23 MR. TITTEL: Thank up. Jeff Tittel,  
24 Director, New Jersey Sierra Club. And, I just want  
25 to say that the interest of so many people showing

1 up, I think really shows you should have another  
2 hearing just on this topic. Because I think  
3 there's a lot more people who left that probably  
4 like to testify. And, also having it in other  
5 areas of the state, like Newark or Camden, or both,  
6 I think that would bring out more people, as well,  
7 and get more information on the record.

8 I don't want to reiterate a couple of  
9 points, but I don't want to repeat too much of what  
10 was said before. The definition of clean energy is  
11 very simple. It's renewable energy. It's energy  
12 that is sustainable and renewable. It is not  
13 nuclear. It is not bio-mass. It is wind, solar,  
14 and so forth, like some of the newer technology. I  
15 think that's what we need to do as far as the  
16 definition is concerned. But, Class I should not  
17 be emitting anything. Secondly -- and I think this  
18 is critical -- we're at a very important stage in  
19 the state when it comes to this battle between  
20 clean energy and fossil fuels. There are  
21 currently major proposals out there before gas  
22 fired power plants. If they all come on line we're  
23 talking about five million metric tons of CO2.  
24 We'll never get to our goals if they happen. There  
25 are seven power plant -- there are seven pipeline

1 applications out there, and there's potentially  
2 more power plants. We believe the first thing  
3 that has to be done in order to move to a hundred  
4 percent clean energy future, is there has to be a  
5 moratorium on fossil fuel infrastructure and on  
6 fossil fuel power plants. If we put ten billion  
7 dollars into natural gas and natural gas fired  
8 power plants, we will not have the money or  
9 resources to do off-shore wind and do the amount of  
10 solar that we need. And on top of it, if wind and  
11 other things are successful, we'll end up paying  
12 for it anyway with stranded assets. So, I think  
13 it's critical that we need to put a freeze in  
14 place. We're involved with many of those --  
15 actually, every one of those battles. And, I think  
16 it's critical.

17           Next. That the Energy Master Plan  
18 should require all new generation capacity to be  
19 carbon-free. We should not -- that's where we  
20 need to go, that's where we need to invest, that's  
21 where we need to put our efforts in resources to  
22 get those rules in place.

23           Two. DEP must promulgate rules that  
24 they haven't had the power since 2005 to regulate  
25 CO2 and other greenhouse gases. And they have to



1 put that into classified permitting on existing  
2 plants so it can start ratcheting down the carbon  
3 dioxide and greenhouse gases coming from our  
4 existing plants. The two most expensive power  
5 plants in New Jersey are two coal plants down in  
6 South Jersey. They need to get closed. It's bad  
7 for the ratepayers and bad for the environment.  
8 So, we believe that that process has to be part of  
9 this, that we have to go after coal, oil, and frack  
10 gas. And we must start ratcheting down our  
11 greenhouse gases, and methane, as well. And DEP  
12 needs to step up and regulate them. And, they have  
13 that power.

14           Also, and very clearly, in order to  
15 get there we should not allow for the extension of  
16 any nuclear licenses in New Jersey. Especially if  
17 they're getting subsidized. We need either not to  
18 subsidize them -- when you go through your numbers  
19 and hopefully you'll find that they don't really  
20 need it -- but, our concern is that as long as  
21 those plants keep operating, it's going to block  
22 us. And they may want to get extended, their  
23 licenses, because of the subsidy. And, one of the  
24 concerns that we have -- and again, you know, this  
25 is a plan, but a plan needs to also call for

1 regulatory and legislative action. Right now  
2 forty percent of our energy has to come from  
3 nuclear. There's no sunset on that. That will  
4 block us in 2050. So, we need to make sure that we  
5 not only have those plants when they close be  
6 replaced by renewable energy, but we also need to  
7 make sure that we end up ending the subsidies so  
8 that we can move to a clean economy. Just like  
9 when we do the Title 5 ratcheting down, we should  
10 ratchet down the carbon emissions from what they  
11 are now to zero by 2050, so they can be replaced  
12 with clean energy.

13 Other important point that I want to  
14 make is that when you look at the studies of off  
15 our coast, there is so much energy potential for  
16 off-shore wind. Especially as the price of wind  
17 is going down, wind turbines is going up and the  
18 size of turbines are going up. And when we first  
19 came out and suggested during the Corzine  
20 admiration the 3000 megawatts and two years ago  
21 suggested it to candidate for governor, Governor  
22 Murphy, the 3500 that's now in front of you. It's  
23 a great first step. When we look at the potential  
24 out there, we can go to ten gigawatts to 10,000  
25 megawatts in the second phase after we get to the

1 3500. But, the wind power is there. And that's  
2 only ten percent of the wind potential that we have  
3 off our coast. So, we really need to start  
4 looking to go not only to the 3500, but go beyond  
5 that. It's the same thing when we look at solar.  
6 And when you look at other methodologies for  
7 getting there, as well, paying for it in long-term  
8 contracts.

9           We need to also -- and this is  
10 critical -- fix the solar program. A year from now  
11 it's going to crash. And, even if we come up with  
12 another program there, with the cost cap with --  
13 office legislative services, the cost cap will come  
14 into affect in 2020, causing another problem. We  
15 need to in the next year, as we're doing this  
16 Energy Master Plan, come up with a sustainable  
17 lower cost solar program. And I actually think we  
18 should remove the cap. Because I don't believe  
19 that -- we don't cap nuclear, we don't cap coal, we  
20 don't cap oil, we don't cap natural gas. But we  
21 need to fix the solar program and fix it quickly.

22           For us, looking at the communities in  
23 the state that have had a disproportionate of  
24 burden of pollution, we need to focus our efforts  
25 there. Not only to reduce -- because that's where

1 most of the fossil fuel plants are. We need to  
2 reduce pollution in those communities. We also  
3 need to sustain those communities with more  
4 renewable energies, with community solar, rooftop  
5 solar. We believe there should be a set aside of  
6 twenty percent into urban, or communities, for a  
7 solar program. Twenty percent of the community  
8 solar, and twenty percent over, we should target  
9 those communities and target them with special  
10 incentives so that we can create not only jobs, but  
11 help reduce the air pollution that is choking those  
12 communities.

13                   So, to us, New Jersey is a state that  
14 has serious environmental problems. From ground  
15 level ozone, to seeing climate impacts on a daily  
16 basis. This weekend people down the shore won't  
17 be able to park on any of their streets because a  
18 high tide is coming and there's a storm off the  
19 coast. So, it's imperative and it's critical, and  
20 it's an existential threat. But, we have the  
21 ability in this state, as we have since the light  
22 bulb was invented here, and so many other things.  
23 Put the innovation forward, to put our  
24 technological knowledge forward. Put our minds as  
25 well as our financial resources forward so we can

1 solve the climate and clean energy, and the energy  
2 problems we have in the state.

3           And I just want to end with that we  
4 believe with this Governor's leadership we can get  
5 there. But to you and to the legislature, no  
6 matter how great this plan is, without  
7 implementation, without the legislation and the  
8 regulations and the financial mechanisms, we won't  
9 get there. And a plan without implementation is an  
10 hallucination. Thank you.

11           MR. SHEEHAN: Thank you. Bob  
12 Blumenthal. Barbara. Sorry.

13           MS. BLUMENTHAL: Good afternoon. My  
14 name is Barb Blumenthal. I serve as the research  
15 director for New Jersey Conservation Foundation.  
16 First, we'd like to applaud Governor Murphy for  
17 setting an ambitious goal to achieve a hundred  
18 percent clean energy by 2050. And, thanks to  
19 Mr. Sheehan and the panel for letting us take your  
20 time today to offer comments.

21           I want to start today with an informed  
22 insight. The same insight that Lyle got to a few  
23 minutes ago. New Jersey's clean energy future can  
24 be lower cost than a future that relies on natural  
25 gas. I'd like to share some details about how we

1 can get to a hundred percent clean energy by 2050,  
2 and stay on a low cost path. It involves a smart  
3 portfolio of clean energy resources. Smart  
4 portfolios can now offer the lowest cost pathway to  
5 provide reliable electricity by 2050. This means  
6 New Jersey no longer has to choose between policies  
7 that protect community health, natural resources  
8 and the climate, and those that protect our  
9 pocketbooks. We can have both. If the state's  
10 Energy Master Plan focuses on an optimized  
11 portfolio of renewable energy, flexible load,  
12 storage, transmission, and electrification of some  
13 -- three of our important sectors.

14 So, the reason is simple. The  
15 underlying economics of optimized portfolios are  
16 increasingly being found to be more favorable than  
17 the current gas heavy portfolios, even assuming a  
18 low gas cost future. So, how do we know this?  
19 The elements of a low cost pathway to 2050 have  
20 become clear in the past year. Lyle referred to a  
21 study in Minnesota. I'm referring to a different  
22 study that was released July 31st of this year, so  
23 this is a really new analysis. Policy makers and  
24 advisors around the U.S. have been using new  
25 modelling tools to identify these pathways to 2050.

1 This is something new. The models simulate the  
2 energy production needed to balance load on the  
3 grid, and provide reliable service over very long  
4 time frames using combinations of renewable and  
5 other resources that get you to your goal. A  
6 hundred percent goal or a ninety percent goal or an  
7 eighty percent goal. So, those are inputs to the  
8 model. These models have been used this year in  
9 Hawaii to develop pathways to a hundred percent  
10 clean energy. They've been used in California and  
11 in Minnesota. They're evaluating pathways to  
12 achieve an economy-wide eighty percent reduction in  
13 Minnesota. And for them it means a 91 percent  
14 reduction of emissions in the electric generation  
15 sector. So, that's the modeling exercise. I'm  
16 talking about that Minnesota is finished.

17 So, their study is really geared to  
18 reduce emissions over all of the economy. But  
19 then they look at different pathways to achieve  
20 de-carbonization. I just want to touch on a few  
21 key points. I'm submitting a longer comment.  
22 But all of the pathways, obviously, high levels of  
23 renewables because that's how you reduce emissions.  
24 But, what's interesting is that they rely heavily  
25 on flexible load. Because they electrified a good

1 portion of transportation and building heating and  
2 cooling systems. So, those are enormous sources of  
3 new electric load, and they're inherently -- they  
4 can have a high degree of flexibility. So, it  
5 becomes an important part of the puzzle. And, I'm  
6 not sure if it was obvious to policy makers until  
7 these studies pointed out how important that would  
8 be. So, electrified implementation alone may not  
9 do it, but these other sectors combined provide  
10 that balance that you need for ninety or even a  
11 hundred percent renewables. That's how you  
12 achieve it.

13           What's fascinating is that scenarios  
14 that both electrify and de-carbonize are estimated  
15 to produce savings of between 600 and \$1200.00 for  
16 each Minnesota household per year by 2050. And the  
17 cost savings start immediately and go up over time.  
18 Cost savings for your energy systems. But that  
19 includes the cost of transportation. You save a  
20 lot of money when you electrify transportation.  
21 You save money when you electrify heating system.  
22 So, they're not just looking at the cost of the  
23 electric generation sector -- which actually stays  
24 pretty flat despite all of this, and there's almost  
25 an imperceptible difference in the cost of electric



1 generation going forward.

2           This is new. We didn't know this two  
3 years ago. So, it's very exciting. Obviously, one  
4 of the conclusions is by 2050 we can high levels of  
5 variable generation with little to no natural gas.  
6 So that, mantra that we heard for many years now --  
7 which had some truth to it -- how are we going to  
8 balance flexible load, we need gas. Well, that's  
9 no longer true, when you actually treat resources  
10 as a combined package of resources. So,  
11 renewables, storage, flexible load,  
12 electrification, all of those things together  
13 provide a lower cost pathway. And these studies  
14 looked at can you provide a reliable electric  
15 system. And they did the modelings every five  
16 minutes, so these models looked at load and  
17 generation just as a dispatched model would every  
18 five minutes through all cycles of weather during  
19 the year, out to 2050. So they found you can  
20 provide reliable electric service with this  
21 renewable resources.

22           I want to just simplify a few key  
23 points that might be very relevant. These models  
24 don't answer the question for New Jersey. What it  
25 does tell me is that New Jersey needs to use

1 similar -- the same or similar integration and  
2 optimization models to calibrate and design new  
3 policies. So that you can both achieve emissions  
4 without chancing cost savings.

5 But, a few key points. Low cost  
6 benefit from having a big electric grid. We're  
7 fortunate that we're part of PJM. And the bigger  
8 the footprint, the better. The more variability of  
9 renewable resources across the geographic  
10 footprint, the costs come down. And that's an  
11 important point for New Jersey. Lower costs  
12 depend on the electrification of these other  
13 sectors. It's part of a package deal. The more  
14 flexible load the better. Low costs depend on  
15 location, that's why the modeling is so important.  
16 It isn't just saying we need solar or we need  
17 storage. It matters where and when. So, the  
18 models begin to answer those questions so that you  
19 can really craft policies that give you value for  
20 the money invested. So, big take away is that I  
21 think this means the demise of natural gas. And,  
22 the models actually showed that not only do you not  
23 have much natural gas by 2050, that it backs up to  
24 2030 that things begin to get stranded in  
25 Minnesota. So, gas looks like it's a

1 cost-effective or a comparable pathway, but it  
2 becomes an enormous cost going past that. So,  
3 that's why it's really important to look ahead  
4 before you're making those near-term decisions.

5           And then I want to say a couple of  
6 things just about -- we heard somebody talk earlier  
7 today about solar issues. And, I want to remind us  
8 of what happened in the clean energy bill that was  
9 passed. It dealt with some pretty important solar  
10 challenges that we have in New Jersey with the  
11 current SREC program. And the bill said we're  
12 going to end SRECs at 5.1 percent, we're going to  
13 transition to a new solar program that's more  
14 competitive and will bring down costs. And the  
15 combination of the existing solar and new solar,  
16 all of those Class I resources, have to remain  
17 under a cost cap. So, we know, we've been involved  
18 with many different people over the last few months  
19 talking about strategies and proposals that would  
20 accomplish those objectives. And we think that we  
21 can transition quickly to an interim program. We  
22 can keep the solar industry active. We can keep  
23 costs under the cost cap.

24           But I heard somebody today -- I guess  
25 it was Fred, Mr. DeSanti, who had a different idea

1 that doesn't accomplish any of those objectives.  
2 He wants to increase the percentage of the RPS for  
3 solar. Not end it quickly, keep it going for  
4 awhile. And I did a little math, and his idea  
5 would add 120 million dollars in the near term to  
6 the cost of the current SREC program. So, it's  
7 kind of going in the wrong direction. And if you  
8 believe there's no possible way of doing it  
9 otherwise, then I understand why they come up with  
10 a Plan B. But we feel strongly that we can find  
11 solutions that do work under the provisions of the  
12 new clean energy bill, and get it done, and get it  
13 done quickly. Thank you.

14 MR. SHEEHAN: Thank you very much.  
15 Next up Duncan Cambell. Ashley Lynn Chrzaszcz.

16 MS. CHRZASZCA: Hello everyone. My  
17 name is Ashley Lynn Chrzaszca. That's the American  
18 way of saying it. If you want to say the Polish  
19 version it's Chrzaszcz. It doesn't look like that,  
20 I don't think.

21 I represent ChargeEVC. We're a  
22 501c(6) non-profit based here in New Jersey. We  
23 have responded to other states in the northeast.  
24 Just a little bit about who we are. We represent  
25 interests that are the equivalent to a variety of

1 stakeholders -- a rainbow coalition, if you will --  
2 that includes the utilities, labor organization,  
3 local and national non-profit organizations,  
4 environmental coalitions, and other groups, as  
5 well. So, we kind of have a lot of individuals  
6 that all have the same message, that the  
7 electrification of transportation is one of the  
8 most transformative things we can do for the State  
9 of New Jersey.

10 I'm going to keep my comments brief.  
11 If New Jersey enacted both Global Warming Response  
12 Act and the Clean Car Act 2006, as such, these  
13 topics with clean and reliable power and clean  
14 transportation --

15 A MEMBER: Can you slow down? You're  
16 speaking too fast.

17 MS. CHRZASZCZ: Sorry. I'm responding  
18 to specifically to Question Number 10, which is how  
19 new clean and reliable power support the expansion  
20 of transportation. So, as I said, New Jersey  
21 enacted both a Global Warming Response Act and the  
22 Clean Car Act of 2006 -- and they're intrinsically  
23 connected. One hand can essentially wash the  
24 other. So there are many benefits of electricity  
25 into transportation sector, and even documented the

1 following, which is going to be submitted for  
2 written comments, which will be for September 20th.  
3 And, we understand that. So, we wanted to make our  
4 comments today.

5 To summarize the highlights. Based on  
6 the generation sources in place today, each two-car  
7 household saves an average \$1,900.00 per year  
8 through 2035, adding up to sixteen billion dollars  
9 through 2035, just by driving an electric vehicle.  
10 And ratepayers save 4.3 billion dollars through  
11 2035 due to a range of benefits. And, some of  
12 these benefits are air quality. And by extension,  
13 health. And, these are benefits that relate to  
14 everybody. Especially those who are in really  
15 sensitive groups and areas, like urban  
16 environments. It's been mentioned that it's  
17 seventy percent cleaner driving an electric vehicle  
18 than to drive a traditional internal combustion  
19 vehicle. In air quality it related emission  
20 reduction is only improved as we de-carbonized the  
21 grand transition to a clean and reliable energy  
22 future. So, think of electric vehicles as mobile  
23 distributed energy resources, or batteries on  
24 wheels, and you kind of start to see the way that  
25 it will interact with the grid.

1           So, this is vehicle to grid  
2 technology. And using electric vehicles is demand  
3 response assets, resiliency assets, energy assets.  
4 And the provider of other grid services, like  
5 frequency regulation. It's not a question of "if",  
6 but "when". And putting out extra storage -- we'll  
7 eventually be able to -- to behave more like base  
8 load, eliminate the fact that the sun does not  
9 always shine, and wind does not always blow. Thank  
10 you.

11           MR. SHEEHAN: Thank you very much.  
12 Jonathan Cloud.

13           MR. CLOUD: I'm Jonathan Cloud,  
14 Executive Director of New Jersey PACE. And --

15           MS. ZELLEN: I am Victor Zellen,  
16 Director of Development for New Jersey PACE, which  
17 is an initiative of Possible Planet, which is a  
18 501c(3). And, this will be new for some of you.

19           So, Property Assessed Clean Energy,  
20 commonly called PACE, is an innovative way to  
21 finance clean energy and resiliency improvements in  
22 buildings. PACE has been adopted by a majority of  
23 U.S. states since its invention in California in  
24 2008. And since then, 35 states -- including the  
25 newest I think was just this week, Delaware -- as

1 well as recently Pennsylvania, have adopted PACE  
2 laws. And many of our neighbors, or most of our  
3 neighbors, already have successful PACE programs.  
4 And, that would include New York, Connecticut,  
5 Maryland, Virginia, the District of Columbia, and  
6 Rhode Island.

7 Now, New Jersey enacted PACE  
8 legislation in 2011, but the existing statute is  
9 missing key elements needed for it to work. And  
10 we've been championing PACE throughout much of the  
11 prior administration. And under our new clean  
12 energy Governor, we hope to see mending legislation  
13 for commercial PACE passed and signed into law  
14 later this year. Governor Murphy has said several  
15 times to us personally that he supports PACE as a  
16 clean energy financing tool. So look forward to  
17 this new development.

18 So, PACE allows property owners to  
19 make clean energy improvements with no up-front  
20 costs, and a hundred percent financing. Where do  
21 you get a hundred percent financing these days?  
22 So, PACE makes it possible for property owners to  
23 save money immediately on energy costs. Because  
24 the improvements more than pay for themselves over  
25 time. Projects are designed to be cash flow



1 positive right from the start, which provides a  
2 natural incentive to do PACE. PACE uses a  
3 voluntary special assessment paid through property  
4 taxes to secure private sector financing that runs  
5 with the property for up to thirty years. This  
6 financing is treated as off balance sheet, which  
7 mean that energy projects do not have to compete  
8 with other capital expenditures in those businesses  
9 removing a key barrier that has stopped property  
10 owners from upgrading their buildings up to now.  
11 The benefits of PACE to the public include carbon  
12 reduction -- real important to all of us --  
13 improving the building stone of the community, and  
14 economic development. For every million dollars  
15 of investment in PACE improvements, fifteen jobs  
16 are created.

17 Now, it's important to note that PACE  
18 is voluntary, both for the municipality and the  
19 property owner. There is no expense to the public  
20 for PACE, as property owners pay for all of the  
21 costs of a PACE program. Now, we believe that  
22 PACE legislation should initially be implemented  
23 for the commercial sector, and subsequently  
24 residential.

25 PACE has the potential to transform

1 the build environment. Major energy efficiency  
2 retrofits a new construction that employs  
3 state-of-the-art energy technologies, all to be  
4 paid for through pays. They can make our  
5 buildings more efficient and more comfortable year  
6 'round. Onsite renewable energy generation  
7 produces a triple value add, and paid for through  
8 PACE; the savings of the actually energy produced,  
9 the displacement of carbon-emitting generation, and  
10 the ability to provide off-grid energy, especially  
11 during our season.

12           There are very strong market  
13 incentives for PACE. And they use private capital.  
14 It's all enabled by the state legislation. PACE  
15 allows municipalities to exercise the governmental  
16 power at literally no cost to the public to secure  
17 these improvement loans. Based on an informal  
18 market assessment by New Jersey PACE, the estimated  
19 potential for investing in New Jersey's existing  
20 commercial buildings alone exceeds a hundred  
21 billion dollars. Consequently, PACE may prove to  
22 have as great, if not a greater impact, on building  
23 performance as clean energy subsidies and financial  
24 incentives have ever produced, and at no cost to  
25 the public.

1           PACE compliments current subsidies and  
2 incentives providing attractive financing for the  
3 hard and soft costs that a property owner would  
4 otherwise have to pay. PACE financing removes a  
5 key barrier to property owners upgrading their  
6 buildings to clean energy standards.

7           Therefore, we urge the Board and this  
8 committee to conduct its own thorough analysis of  
9 commercial and residential PACE, and include them  
10 in its recommendations. We're happy to respond to  
11 any questions, and will be submitting our official  
12 report through the web.

13           So, again, I'm Victoria Zellen,  
14 Jonathan Cloud, with New Jersey PACE, an initiative  
15 of Possible Planet, which is a 501c(3) non-profit.  
16 Thank you very much.

17           MR. SHEEHAN: Thank you very much.  
18 Next up we have Brandon Smithwood.

19           MR. SMITHWOOD: Hi. I am Brandon  
20 Smithwood, and I am the Policy Director for the  
21 Coalition for Community Solar Access. We are a  
22 national trade association, over fifty companies,  
23 predominantly community solar project developers,  
24 and owner/operators. So, those that actually  
25 subscribe customers and product.

1           So, for my comments today, and in the  
2 spirit of the forum, the fact that we're here at a  
3 university, I'd like to kind of start from the big  
4 picture 2050, and work my way down to 2030, and  
5 right now. And, at the risk of getting academic, I  
6 do think starting at 2050 kind of illuminates some  
7 things that we need to be working on now.

8           So, the representative for the  
9 conservation foundation, she discussed a number of  
10 studies that have come out recently showing the  
11 feasibility of full renewables portfolio in 2050.  
12 I just went and pulled some studies that Mark  
13 Jacobson, professor at Stanford, did about three  
14 years ago. He did a fifty state state-by-state  
15 analysis, and I felt that could be a good place to  
16 just kind of start to get a high-level big picture  
17 that we can put community solar into, and kind of  
18 illuminate how community solar helps with some of  
19 the challenges.

20           So, Jacobson's study found that over  
21 thirty percent of the generation within New Jersey  
22 would be solar. And that's assuming a really  
23 robust off-shore and on-shore wind portfolio, kind  
24 of pulling out all the stops. About three-quarters  
25 of that thirty percent is non-rooftop, non-carport

1 systems. And, that's assuming that you're using  
2 two-thirds of the rooftop potential. So, we're  
3 maximizing our rooftops, the technical potential of  
4 our rooftops. And, that only gets you about a  
5 quarter of the way where you need to be to have the  
6 solar contribution to a hundred percent portfolio.  
7 So, to me that says you got to go get busters on  
8 rooftop solar. But, you're still going to have a  
9 lot of need for generation, and you're going to  
10 have non-technical challenges. And, one of the  
11 biggest non-technical challenges is if you don't  
12 own the building that you live under or that you  
13 operate your business under, it's exceedingly  
14 difficult to put that system up there even if your  
15 roof is technically sound. And, looking at just  
16 the population of Jersey today, there's about 3.19  
17 million households -- that doesn't include  
18 businesses and organizations or other tenants. Of  
19 them, 1.62 million, so 51 percent are either  
20 renters or they live in multi-family buildings.  
21 So, we've got about half of the population. We  
22 take that technical potential, and we cut it in  
23 half because of ownership issues.

24                   Even beyond the rooftop challenges,  
25 though, you can see that there's some implications

1 for land use. This state is one of the most  
2 densely populated in the country. It has a lot of  
3 beautiful, agricultural and other open space, and a  
4 strong interest in seeing them preserved. And, the  
5 big picture studies show we're going to have to  
6 find a way to marry ground-mount development with  
7 those objectives to preserve this open space.

8           Stepping down to 2030 -- and this is  
9 actually some research that we, two non-profits,  
10 both solar and grid alternatives that we  
11 commissioned from GreenTech Media Research now  
12 partnered with Mackenzie, The Global Energy  
13 Research Firm, we commissioned a study looking  
14 nationally out to 2030 at the market potential for  
15 community solar, and then looking at four states  
16 including New Jersey. And, so, just to give you a  
17 sense of the New Jersey potential. We believe that  
18 the addressable market is about 3.5 million  
19 customers, based on this research, in New Jersey.  
20 By 2030 we think it's economically feasible that  
21 the market could support 200 to 400,000 community  
22 solar customers -- 100 to 250,000 of which would be  
23 low and moderate income. And, I want to touch on  
24 that separately. There's a big impact on all the  
25 master meter buildings in particular.

1                   So, stepping back, so we start 2050.  
2   2030 today we have this pilot program at the BPU.  
3   And we're really excited to see draft regulations  
4   coming out in the next couple of weeks.   Assuming  
5   we have a robust program size and economics, and  
6   there are flexible siting rules, we're off towards  
7   this vision of achieving these 2030 goals and  
8   contributing to that portfolio in 2050.

9                   There was a study that we and both  
10   solar released yesterday, to kind of look at that  
11   year term pilot program.   We found that a 450  
12   megawatt pilot program over three years -- which  
13   based on the sketch of the pilot program we heard  
14   is within the bounds of what's likely to be  
15   proposed.   That if we do 450 megawatts over three  
16   years, that's 800 million dollars in economic  
17   benefit.   And the cost to the average residential  
18   ratepayer would be less than a postage stamp, about  
19   19 to 42 cents per month.   And, that doesn't  
20   include avoiding transmission, avoiding  
21   distribution, a number of benefits that are hard to  
22   immediately quantify -- what we know from our  
23   neighboring solar markets, our material.

24                   So, just -- and I'll turn the podium  
25   over in a moment here -- but I wanted to quickly

1 take some of these high-level points and drill down  
2 just on a few relevant year term items. So, land  
3 use. We've been working with some other parties.  
4 We think it's really important to bring some best  
5 practices from other states, pilot some of the  
6 cutting edge practices, that can actually improve  
7 the land, help preserve land. But we need  
8 flexibility on projects today. And actually been  
9 experimenting with that flexibility so that we're  
10 ready as we get to these higher goals.

11 On brown fields, historic fill and  
12 landfill, those are more expensive sites, and  
13 there's not enough of it. But the state should be  
14 taking action to get more of those projects beyond  
15 Subsection T of the RPS. And, some of these things  
16 are costless, so DEP could provide comfort letters  
17 and amend some technical requirements. We had  
18 details in our pilot filings and we have them in  
19 our release filings. But, there's some costless  
20 options. But beyond those costless options, we  
21 know that there are real costs, incremental costs,  
22 to building on some of these already developed or  
23 blinded sites. So, we've seen in other states as  
24 part of SREC successor programs, or separate  
25 incentives, differentiated incentives to get to



1 developing projects on these more difficult and  
2 expensive sites. And, so, in line with what Mr.  
3 Gahl said earlier, you know, factorizing SRECs  
4 could be a way to give an extra boost to on line  
5 projects and to development on already disturbed  
6 sites.

7           One last point. I already referred  
8 this, but on LMI. In addition to the kind of the  
9 potential in New Jersey -- and, again, we looked  
10 that vision study I referenced -- looked at the  
11 master metered buildings, and we think we can get  
12 to twenty percent to a third, and up to about  
13 200,000 customers. But, the community solar  
14 tariff that the utility creates, or the utility has  
15 to enable these solar projects, you need to  
16 scaffold policy supports on top of that to get to  
17 those low-income customers. And then the biggest  
18 thing is de-risking them. A typical financier who  
19 is going to look at a low-income customer -- and  
20 there's a lot of innovation to kind of get around  
21 FICO scores and kind of form proxies for credit  
22 worthiness of customers -- but, the practical  
23 matter is a financier typically looks at a low to  
24 moderate-income customer, and the revenue of that  
25 project, puts a zero. So new banks, clean energy

1 program funds, we and both solar and grid  
2 alternatives have identified a number of current  
3 funding sources that are available, or could be in  
4 the near future. And, it's really important to  
5 make sure that we're not only creating the vehicle  
6 to serve those low-income customers, but we're also  
7 scaffolding on top of that to make sure that  
8 projects are financeable and customers get the  
9 value proposition they need. So, thank you.

10 MR. SHEEHAN: Thank you very much. We  
11 have Ed Potosnak for New Jersey League.

12 MR. POTOSNAK: I'm going to stand over  
13 here. I'm from the New Jersey League of  
14 Conservation Voters. And, we represent voters.  
15 And generally, as I see voters, they're usually at  
16 the microphone not at the dais, I find better  
17 representation.

18 I'm really pleased to be here. Clean  
19 renewable power is a key to realizing our clean  
20 energy future and economy. As you've heard  
21 throughout the day today. An Energy Master Plan is  
22 well on it's way to -- put New Jersey on a path to  
23 realize this renewable economy of the future, and  
24 ensure that there's responsible development in our  
25 renewable energy resources. In fact, according to

1 the market trends that we're seeing, investing in  
2 renewable energy is both a prudent economic choice  
3 that protects our wallets, but it's also a prudent  
4 choice to protect our climate, our communities, and  
5 our families. An Energy Master Plan will serve as  
6 a foundation for this transformation. In fact, I  
7 want to pinch myself today at the atmosphere and  
8 the fact that we're here. I was very proud to  
9 stand behind Governor Murphy when he signed  
10 Executive Order 28 to put New Jersey on a path to a  
11 hundred percent energy by 2050. In that vein, I  
12 wanted to share some thoughts around the questions  
13 that you put out. There's just about six of them.

14 First, I want to start out by saying  
15 the only acceptable definition -- which is your  
16 Question 1 about what clean energy is -- is that  
17 it's renewable energy, like solar and wind. And,  
18 as you're aware, with the legislature's recently  
19 passed legislation, the legislature has sent a  
20 clear message that renewable energy is clean  
21 energy, and that clean energy is Class I  
22 renewables, putting us on a pathway for fifty  
23 percent by 2030.

24 It's also important to note that  
25 Governor Murphy's vision has catapulted New Jersey

1 back to the leader board of states that are taking  
2 climate change seriously, and making climate  
3 progress. We're going toe-to-toe with California  
4 in attacking the climate crisis, and enacting  
5 concrete policies to reduce our greenhouse gases.  
6 And, as you're aware, roughly about forty percent  
7 of our energy is produced in New Jersey coming from  
8 nuclear plants. And those nuclear plants are set  
9 to expire before 2050. So the idea of clean energy  
10 coming as part of nuclear with the expiration of  
11 those plants, it does not comport. The goal for  
12 New Jersey clearly is clean renewable energy.

13           Currently this technology, as you  
14 know, nuclear requires subsidies to operate. And,  
15 we're seeing that the cost of solar is competing  
16 directly with fossil fuels in other places. And  
17 some folks have indicated there needs to be some  
18 adjustment here in New Jersey, as well.

19           Second. The plan should set some  
20 interim targets. I know it's laid out, but vision  
21 for specifics over the next ten years, and going  
22 out forward in to 2050. But looking at five-year  
23 intervals to help put together plans for folks to  
24 look at around electrical generation on  
25 transportation, residential, and the commercial

1 sectors, to provide achievable goals and a clear  
2 pathway. In addition, it should align with the  
3 Global Warming Response Act. Which hasn't been  
4 talked a lot today. But the Global Warming  
5 Response Act, it sets a goal of statewide  
6 reductions of greenhouse gas emissions by 80  
7 percent of 2006 levels. So, that's a really  
8 component as you're looking at it from our  
9 perspective.

10 As you develop the comprehensive  
11 blueprint to achieve these interim targets, we  
12 think it's important to have some bi-annual  
13 reporting and monitoring, so that we can see how  
14 we're doing. We know that data will be a little  
15 bit behind as it tends to be. But, it will help us  
16 to look in the shorter term at what progress has  
17 been making, and then help with long-term  
18 projections and adjustments that might need to be  
19 made to ensure that we're constantly taking steps  
20 to move as closer to achieving Global Warming  
21 Response Act goals, the RPS goal, and the  
22 Governor's vision of a hundred percent clean energy  
23 by 2050.

24 Those interim targets statewide by  
25 sector would help policy makers be clear about the

1 goals and the transition from fossil fuels. And it  
2 will also help because I think it's important that  
3 the state is not picking winners and losers in the  
4 production of energy. It should rely on market  
5 forces to sort out which fuels decline at lower  
6 rates. That's important.

7           Thirdly. In our discussions of a just  
8 transition to clean energy, New Jersey is facing a  
9 multitude of proposed fossil fuel projects -- which  
10 have been talked about a hundred times today --  
11 including gas fired plants and pipelines, that  
12 aren't consistent with this collective shared  
13 vision to a hundred percent clean renewable energy  
14 future. So, we think it's important that the  
15 Energy Master Plan identifies regulatory changes  
16 that are needed for regulators to deny approval of  
17 new fossil fuel oil and gas projects that threaten  
18 statewide emissions reductions required under the  
19 Global Warming Response Act.

20           You asked some pretty insightful  
21 questions to gather input from stakeholders. And I  
22 wanted to address one of them, which was the  
23 stranded costs. As you're aware, New Jersey is  
24 deregulated as it relates to energy supply, leaving  
25 no risk for ratepayers from a stranded fossil fuel

1 electric generation assets, like a natural gas  
2 power plant. The state can reduce the risk of  
3 losses to investors -- I think many of which have  
4 left already in industry -- by providing clear and  
5 consistent signals to developers of fossil fuel  
6 assets. But where ratepayers are really on the  
7 hook are with pipelines. It's expected that by  
8 2030 there could be significant reductions in New  
9 Jersey of natural gas consumption, which could  
10 affect an under-utilization rate, and several  
11 interstate gas pipelines and distribution lines  
12 wouldn't have customers. Assuming that the costs  
13 to maintain these lines does not change, those  
14 costs will be spread over fewer customers, creating  
15 much higher rates for natural gas. That's  
16 something we really need to be concerned with.  
17 And, so, protect New Jersey customers, it's  
18 absolutely essential to utilize future projections  
19 of the natural gas consumptions and refraining from  
20 building these additional infrastructures, and that  
21 they're under-utilized and shifting, and as that  
22 goes through time to clean renewable energy  
23 resources. And, we shouldn't be putting  
24 ratepayers on the hook for the cost of these unwise  
25 project investments.

1                   So, I'm going to tell a little  
2 personal story. So, I had the pleasure of living  
3 on the D&R canal, which is a beautiful, beautiful  
4 place. Loved it. I think my dog Zena, she loves  
5 it more. She loves to go swimming in there. We  
6 have canoes, people go running on there, they go  
7 biking. Not so much swimming. But, the reason I  
8 bring that up is, history is a good predictor of  
9 the future. So, when we look at the canal, the  
10 reason we have it now as a wonderful state park --  
11 the largest reservoir in the state -- is because  
12 way back in the day there was a competition to get  
13 goods from Philadelphia to New York. And the canal  
14 was the tried and true method. And the train was  
15 this new fangled thing that people didn't really  
16 know if it would work. So they were really smart,  
17 and they said, well, we're not going to put  
18 everything in this new fangled train. We're going  
19 to build both. And which ever one -- we're  
20 prepared, which every one goes forward. And, as we  
21 know, the story goes the train is still moving lots  
22 of goods and services.

23                   I tell that story because the canal is  
24 now an asset that we use and enjoy both for  
25 recreation and for our water supply. But what kind



1 of assets are left behind from fossil fuel  
2 infrastructure like oil and gas pipelines? Future  
3 children are not going to make a little sled and go  
4 for a ride in an unused pipeline. It's something  
5 that really has a big degradation to our  
6 environment, to our communities. They're cutting  
7 down trees. It's great environmental degradation.  
8 Private properties being crossed. Preserved lands  
9 are being undone for this infrastructure. So, with  
10 that in mind, that history -- I'm trying to make an  
11 analogy -- we are on the cusp of sort of the  
12 future. And we have proven track records of  
13 renewable resources, like solar and wind. We don't  
14 have to build both simultaneously. So, that's my  
15 sort of personal example.

16 I'm on four. The Energy Master Plan  
17 should develop policies to guarantee pollution  
18 reductions in our environmental justice communities  
19 as soon as possible. So, if there's a choice to  
20 close a plant, they should be closed down in a  
21 low-income community. Communities of color are on  
22 the front lines. They're already overburdened with  
23 cumulative impacts that are disproportionately  
24 affecting the environmental justice communities.  
25 Expanding access to renewables and energy

1 efficiency environmental justice communities is  
2 also critical. There's community solar, which we  
3 just heard about. Through weatherization  
4 initiatives, energy efficiency. And, to ensure  
5 affordability for low and moderate-income  
6 households. And, we're also happy to work with you  
7 on the definition for that as you go forward.

8           The fifth point. While we strongly  
9 support swiftly transitioning to clean renewable  
10 energy, we also need to go through so  
11 responsibility and equitably. The plan should  
12 consider siting mechanisms to ensure maximum  
13 support from the community for renewable projects.  
14 Particularly with off-shore wind. There are better  
15 places than others to put windmills, and minimize  
16 the impact to the environment while we produce  
17 renewable energy. With solar, there is no need to  
18 cut down trees to put up solar panels when there  
19 are under-utilized locations like retail rooftops  
20 and roads and parking lots. Certainly farms should  
21 not be not providing food like we had for lunch,  
22 and having solar on them. We need farms. It's  
23 important for food. And, we have other places for  
24 solar. And, especially with our preserved lands  
25 that were preserved in the public trust for a

1 certain purpose. That's really important.

2           And, number six. To reduce the  
3 uncertainty in the market and of utility costs.  
4 The state should determine pathways to reach the  
5 2050 goals using state-of-the-art modelings. A few  
6 people talked about things that are happening out  
7 to 2050. We heard about Minnesota and Hawaii.  
8 They're doing all kinds of good work. And, I know  
9 you guys have that on the radar, as well. It's  
10 going to really important.

11           And, lastly -- and lucky number  
12 seven -- jobs. The EMP really should focus on  
13 these pathways to achieve the hundred percent  
14 renewable energy future while capitalizing on the  
15 tremendous opportunities there are to generate  
16 good, family-sustaining jobs right here in New  
17 Jersey, and to spur that economic development  
18 through the clean renewable energy projects and  
19 investments. And, the energy efficiency pieces  
20 that we've been talking about through  
21 electrification.

22           So, we're really looking forward to  
23 working with the BPU and all the members, with my  
24 former mayor and assemblymen, and now Commissioner  
25 Chivukula, and helping to really take advantage of

1 this unique opportunity that we have. And I want  
2 to thank you very much for your time.

3 MR. SHEEHAN: Thank you very much.  
4 We're going to take a five-minute break.

5 (Whereupon a short recess was held.)

6 MR. SHEEHAN: We are back on track.  
7 Our next speaker is Ray Albrecht with the National  
8 Biodiesel Board. Is Ray still here?

9 Debra Coyle. Henry Gajda. George  
10 Hay. Ibrahima Kalle. Nora Langweiler. Richard  
11 Lawton. Agnes Marsala. Veer Patel. Rezwan  
12 Razani.

13 MR. RAZANI: Hi. I'm Rezwan Razani,  
14 and I'm the founder of Footprint to Wings. We're  
15 turning the race to zero carbon into a national  
16 past time, and coaching each state to win. So, one  
17 of the things we're doing is we're writing a zero  
18 carbon playbook. And, the way I see the Energy  
19 Master Plan is essentially the playbook for New  
20 Jersey. So, your plan would be much more the  
21 detailed intellectual version for numeric stuff.  
22 But what we want to do is make sure these numbers  
23 are legible to everybody, so anybody can pretty  
24 much understand what's going on.

25 So, the first thing I notice with all

1 of your things, is maybe there could be a section  
2 for how do we make sure everybody understands the  
3 plan, so the public outreach section, general  
4 public outreach not just the stakeholders. So, the  
5 Governor, bless him -- this is so cool, it's like  
6 so historic. That we're actually having this  
7 meeting is very exciting. So, he wants a  
8 blueprint for conversion to a hundred percent clean  
9 energy. So, our first question, as zero carbon  
10 coaches is, a hundred percent of what? How big is  
11 the playing field? And, so, that's what I kind of  
12 want, like an Energy Master Plan. The quickest way  
13 to get legible for everybody is kind of put that  
14 right up there -- a hundred percent of what?

15 So, the EIA has this lovely  
16 information. And, it's kind of in, like, lines  
17 like this. But I put it together like this so it  
18 would look like a football field. Because, you  
19 want to see, well, where are we? How far are we to  
20 zero? And, how far do we have to go? And, this  
21 one has, like, motor gasoline is twenty percent  
22 natural gas, it's dirty. When you see it like  
23 this, it's a little bit more legible. That way,  
24 when you're writing the Energy Master Plan you can  
25 connect it, like well the motor gas play would

1 affect this field. Squish it, you can make it  
2 bigger, more whatever. The natural gas, well this  
3 is part electricity, this is part heating, so you  
4 know where the play fits, and you can quickly get  
5 people to grasp it, its in perspective. That's one  
6 thing we're going to do with out thing.

7           So, then the next thing is, oh,  
8 there's a big controversy of, I notice, running  
9 through this meeting of nuclear. If you don't like  
10 nuclear. But, that's kind of what's getting us to  
11 the twenty yard line. So, a lot of people want to  
12 get rid of it. That would take us back to the  
13 three-yard line, so we have to push forward again.  
14 The other thing that helps with this it to help  
15 quantify things. This is like about 3.6 gigawatt  
16 equipment for four nuclear power plants. A lot of  
17 people are saying, well, there's going to be 3,500  
18 gigawatts of wind power coming on line. But that's  
19 the play capacity, so you'd be like yeah, but  
20 that's this much. So, you can just start to realty  
21 get the quantifications down.

22           So, the next thing is how long is this  
23 field? I want that question answered. That  
24 question is going to vary, there's a lot of  
25 variables that go into it. Just get an initial,

1 like, if you were to electrify everything and  
2 supply the power for it, what would you do. And  
3 the number that I like best is what Mark Jacobson  
4 uses, the gigawatt equipment. Like the energy that  
5 you would supply with one plant running a year  
6 nonstop, 24/7. So, like a nuclear power plant has  
7 like 1.1 gigawatts at ninety percent capacity,  
8 whatever, it's about one gigawatt.

9 Now, off the top of your head, do you  
10 guys have a number, like how long if you were to  
11 electrify, like if you were to waive a magic wand  
12 and electrify everything? Out of curiosity.

13 MS. STROM-POWER: We are looking at  
14 those numbers. We do have some projections. Yes.

15 MS. RAZANI: So there is a field  
16 number? Okay. Because I would love as soon as you  
17 can get that. Because, the other thing, Mark  
18 Jacobson -- who was referred to by Brandon -- he  
19 has a number, and that's about 32.9, so roughly 33  
20 gigawatt equipment.

21 MR. HORNSBY: For electric cars  
22 itself?

23 MS. RAZANI: Everything. He even  
24 calculated the efficiency of electric cars, he  
25 squashed it and everything. So, that's including

1 that, the electric car advantage. Yeah. So, and  
2 his number was 33. So, I'm like wow, that's big.

3 MS. STROM-POWER: I don't think we  
4 have set numbers on any of these yet. Right now  
5 it's a --

6 MS. RAZANI: Fair enough. And, I just  
7 did an extrapolation with nuclear, I'm like, well,  
8 if this 3.6 gigawatts, then this should actually be  
9 22. So we need to know that number. That's a big  
10 difference. So, I want to know that number.

11 And then the next thing is, our  
12 colleague Brandon did talk about the renewable.  
13 So, the Governor wants a blueprint. So, Mark  
14 Jacobson did do us the favor of putting a blueprint  
15 down. So, you can go on his website  
16 solutionsprojects.org, you get the numbers. So,  
17 then the shocker for me was that rooftop, if you  
18 max it out for both buildings and commercial and  
19 residential, is 6.3 percent of the total, in his  
20 estimation. So, that's not even a first down. So,  
21 I was like whoa, that's not much. And then the 27  
22 percent solar, and then ten percent on-shore wind,  
23 and fifty percent off-shore word. Great.

24 So, the next thing that's important is  
25 to map this out. Give people an overlay. Like,



1    how much does this take? Most people don't look  
2    past the percents. How many wind turbines? How  
3    many things? So, what we have, and the off-shore  
4    wind, 55 percent. Just guess guys, guess how many  
5    wind turbines that is, if it's like five megawatt  
6    wind turbine? Anybody want to take a guess? Okay.  
7    It's 9,400 off-shore wind turbines -- according to  
8    Mark Jacobson. And the shore line is 130 miles  
9    long. So, that comes to 72 wind turbines per mile.  
10   And you put them in array, because you can't put  
11   them quite that way. So, at 72 wind turbines per  
12   mile is a lot.

13                   And then I'm looking at the -- your  
14   Euro of Energy Management Plan, their plan calls  
15   for -- they've set aside a certain amount of area,  
16   looks like 418 square miles. But, that would fit  
17   about a quarter of those turbines. So, then, the  
18   next question is, we want to begin with the end  
19   game in mind. We want all the players to see,  
20   well, how far can we go with this play, how far can  
21   it theoretically go, technically; and, how far do  
22   we kind of want it to go, and then what's the gap?  
23   Because now, you know, it will be like, well, it's  
24   supposed to be this, but we're only this far, so  
25   how we going to take a shortfall. That will show

1 you how much more efficient you need to be,  
2 etcetera.

3           Anyway, so, it helps you anchor the  
4 main plays, the big set pieces, the fantastic ones.  
5 And then the shortfall. And then, of course,  
6 on-shore wind was like 3,185 wind turbines. And it  
7 would take up an area the size of Atlantic County,  
8 which is 500 square miles, or whatever. So, these  
9 were large numbers. And I think when citizens --  
10 like I feel the big problem that we're facing isn't  
11 money, because after all cost does not determine  
12 value. Value is in the eye of the beholder. So, I  
13 feel is going to be a bigger problem than anything.

14           And, the final things I want to  
15 mention which is Six Flags, and the fabulous fiasco  
16 that occurred when Six Flags decided to go solar.  
17 And then they said, okay, great, we're going to cut  
18 down this forest here. And that created three  
19 years of lawsuits and acrimony, and a lot of people  
20 were upset about that. And, at the end they did a  
21 settlement. The judge decided in their favor, so  
22 that's the other thing. You say green is good and  
23 the judge is going to decide for the solar. So,  
24 instead of doing 90 acres, they went up to forty  
25 acres and they did some of the parking lot. But

1 still, 40 acres is like 7,000 trees cut down. And  
2 it ended up being for 23 megawatts of power. And  
3 that's 23 name plate, 23 megawatts of name plate,  
4 which is about four megawatts delivered. And,  
5 again, what is our end game? It's 33 gigawatts.  
6 So, if you're going to have three years of lawsuits  
7 over four megawatts, that's a lot of work. So,  
8 what we want to do at Footprint to Wings is get  
9 everything on the table up front as quickly as  
10 possible, to get through all of those arguments in  
11 a way that everyone can see. As quickly as  
12 possible, and come up with a solution that everyone  
13 will get behind and not regret. We feel a lot of  
14 people don't understand the full implication of  
15 each of their decisions. But, like, innovations  
16 can come up. Like Barb Blumenthal was interesting  
17 to me because it sounded like, well, that's the way  
18 to really shrink this and get it much more  
19 efficient. So, once you start with it, you tinker  
20 at it and you can show the improved play in each of  
21 the areas. Like, it really helps improve things.  
22 And if it's in a big, you know, if it's up there  
23 where everybody can see, okay, this is what we're  
24 working on, this is how it fits, we can work better  
25 as a team. Because everybody's got expertise in

1 this room. Everybody that's involved in this has a  
2 lot to offer. And, also, a lot of blind spots.  
3 So, we want to get through. We want to bring out  
4 the best in everybody, bring out the best solution  
5 that everybody can get behind. We want to make  
6 everybody out there, all the citizens, are aware of  
7 them. And, approve of them, ultimately. And the  
8 sooner we can get that all to happen, the better.

9 That's my --

10 MR. SHEEHAN: Thank you very much.

11 Julia Bobie.

12 MS. BOBIE: Hi. I'm Julia Bobie, I'm  
13 from Equinor, the Norwegian energy company that's  
14 been building off-shore wind in Norway for about  
15 twelve years. And, now we are the lease holder  
16 for a large off-shore wind area about twenty miles  
17 east of Sandy Hook. So, we've been following New  
18 Jersey's work very carefully. And, if all goes to  
19 plan, we hope to be one of the first bidders for  
20 New Jersey OREC. So, my primary purpose is to  
21 thank this working group for its service, and  
22 really, all of the public servants in New Jersey  
23 for the last year have been working very, very  
24 hard. And, we certainly appreciate it.

25 The nineteen questions are insightful.

1 And there are certainly experts on many different  
2 parts of renewable energy that I'm not here to talk  
3 about specifically. Although, energy efficiency,  
4 distributed energy resources, electrification, are  
5 all going to be hugely important for New Jersey.  
6 I'm here to talk about off-shore wind.

7 Off-shore wind can really replace a  
8 significant amount of fossil energy. And, what  
9 we're seeing -- as you all well no -- is most of  
10 the fossil generation in the northeast is going to  
11 go off line any way. It's old, it's inefficient.  
12 And, we plan to be there to replace that generation  
13 ideally using the infrastructure, the grid, that  
14 you already have that ratepayers already paid for.

15 I'm here to say that the goal that New  
16 Jersey has and whether there's goals for the energy  
17 or how to make sure that sort of justice and other  
18 issues are addressed is really a matter of market  
19 design. And if you get the market right, it will  
20 create competent that will drive down costs. We'll  
21 be there to bid. The other types of renewables  
22 will be there to bid. And New Jersey will be  
23 really well poised -- thanks to the good work of  
24 the public servants -- to run the market and really  
25 show other states how this can be done. So,

1 thanks again for your service.

2 MR. SHEEHAN: Thank you very much.  
3 Amy Goldsmith.

4 MS. GOLDSMITH: Hello. My name is Amy  
5 Goldsmith. I'm the New Jersey State Director for  
6 Clean Water Action. We have 150,000 members  
7 throughout the state. Maybe somebody came and  
8 knocked on your door and asked you to write a  
9 letter or give a donation, or be in support of our  
10 work. We work on a wide range of issues, including  
11 energy issues. We have extensive work that we do  
12 on climate in the City of Newark, in the community,  
13 primarily in the south ward but throughout the  
14 city. We have two climate organizers who come from  
15 the neighborhood, who work in the neighborhood.  
16 So, we know firsthand. And we've been doing it for  
17 almost over twenty years, a variety of different  
18 work.

19 We've trained people around heat  
20 precautions. We have lamp post banners hanging off  
21 of lamp posts in the Clinton Avenue neighborhood in  
22 the south ward around heat. We know what climate  
23 is. We know communities are getting flooded. And  
24 we know that people die in Newark because of  
25 respiratory distress. A very high number of women

1 who lose their lives in childbirth because they get  
2 into an asthma situation and do not recover and  
3 lose their life. And, it's a high price to pay to  
4 have climate-related greenhouse gases and other  
5 co-pollutants that impact this neighborhood to the  
6 extent that it does. And, so, we should both be  
7 reducing our carbon footprint, but also looking to  
8 reduce, obviously, the emissions that are in these  
9 neighborhoods. And, we can do that through changes  
10 in our energy practices.

11 I want to speak to a couple of issues  
12 around environmental justice. Others have spoken  
13 to this issue -- hearings should be in the  
14 communities where people typically don't have  
15 access to cars, and sometimes mass transit isn't so  
16 great even for them. So, there are cities like  
17 Camden and Newark and Paterson. But, there's also  
18 other communities throughout the state that are  
19 environmental justice and low-income communities,  
20 communities of color, where people don't have ready  
21 access to a forum such as this. And in some cases  
22 translations are needed. And, some of those  
23 locations they use sort of like UN translation  
24 systems where you don't have to translate  
25 everything over and over, but you have translators

1 so they can hear them in head phones and be part of  
2 the process. And, I think given the importance of  
3 energy in our lives it's important for us to think  
4 about better and creative ways to engage the  
5 community. We've always found that community  
6 people have incredibly thoughtful ideas and things  
7 that we don't even think about because we're not  
8 living in their neighborhoods.

9           The other is that this place is very  
10 far away from parking lots. If you're disabled,  
11 you know, there's a person here with a walker, she  
12 had to walk all the way from the other side, had to  
13 walk all the way over here. I think that would be  
14 quite challenging. There's not really much mass  
15 transit here. And, there clearly wasn't enough  
16 seating. I don't care about the Wi-Fi, we can  
17 figure that out.

18           So, the other point I want to make is  
19 that in the work that we do in Newark, we have  
20 trained people to be solar installers. And, they  
21 got certification from N.J.I.T, so it's a credible  
22 certification. They wanted to do the work, but the  
23 problem was that they couldn't get to the work.  
24 Because there was enough work in the City of Newark  
25 to do the work. They did a small project at



1 Wilson Avenue garage. But after that they couldn't  
2 really use their talent because most of the jobs  
3 were in the suburbs. So, if we're going to be  
4 doing renewable energy, we need to be doing  
5 renewable energy in the places where we're training  
6 people to do the work so they can actually get to  
7 the work. And, have a family-supporting wage so  
8 that they can add to the community, as well as add  
9 to their own family's well-being. So, I want to  
10 make that point.

11           The other is that HUD has, you know,  
12 oversees a lot of public housing in a lot of  
13 places, not just in Newark. And, they are required  
14 to hire people within HUD in their residences to do  
15 the work. And, if we actually had a program where  
16 we were looking at public housing -- the people who  
17 have the least ability to pay for their utilities  
18 and everything else -- and, if we actually had a  
19 program where we were training people who are in  
20 public housing to do renewable energy, energy  
21 efficiency, conservation, those kinds of things so  
22 that it would benefit the neighborhoods that they  
23 live in, that would be a good thing. So, we could  
24 use the pressure point that HUD should be hiring  
25 from within and training from within to do their

1 maintenance and other things. I know that Newark  
2 has been replacing their boilers and doing other  
3 things -- which is probably a topic for another one  
4 of your stakeholder meetings. But, I just wanted  
5 to raise that.

6           The other is that -- and this also  
7 might be partly something for the next topic, but I  
8 can't be at the next meeting -- is that a lot of  
9 the conversation is really focused on energy as  
10 electricity. And not everything is electricity.  
11 Obviously there's heating that needs to be done,  
12 and cooling. And, if we were doing a better  
13 building codes, appliance standards, some of the  
14 appliance energy efficiency, but also there's  
15 conservation. Right? Not using the power in the  
16 first place. That would be very important. And  
17 one thing that I always -- a place that I was in a  
18 long time ago, probably thirty years ago, in  
19 Wisconsin, a little tiny town in Wisconsin, they  
20 were forced to move their whole community because  
21 it kept getting flooded. And, they weren't going  
22 to get anymore federal money unless they moved  
23 their community. So, they moved their community,  
24 and they decided to make it a solar community.  
25 And, the way they did it wasn't actually with solar

1 panels on their roofs, they did it mostly doing  
2 passive solar to do heating. They did, you know,  
3 solar walls, solar attic. And, I don't think  
4 there's very much conversation about how can we  
5 reduce some of our heating by using some other more  
6 passive, you know, not such a high tech -- we don't  
7 need solar panels for heating our homes, we need  
8 other ways to do it. And, we have a lot of  
9 seniors, and a lot of them are in these electric  
10 complexes, even their heating, and they can't  
11 afford to pay for their heat. So, it's important  
12 for us to think about seniors and other places  
13 where we might be able to do some new kinds of  
14 building design, innovation, around integrating the  
15 kinds of renewable energy offerings that we want to  
16 have in the urban revitalization, or a lot of the  
17 suburbs, their towns are becoming new main streets.  
18 Right? So, how do we do that in a better way. And  
19 the healthy homes initiatives that are being done  
20 around lead in drinking water and paint, and how  
21 can we integrate from the energy elements into that  
22 without intensifying the neighborhood so much that  
23 the people who live there now can no longer afford  
24 to live in the communities that they're in.

25 There's mention has been made about

1 benchmarks, annual benchmarks, interim benchmarks  
2 to get to fifty percent renewable by 2030 for  
3 electricity, and a hundred percent at 2050. I'm  
4 not going to go into more detail on that. But, I  
5 do also want to emphasize that the BPU and the DEP  
6 must have clear regulations to deny these gas  
7 plants and lines -- as has been mentioned by  
8 others. We have been actively working against  
9 these facilities. It's not consistent with the  
10 goals of the Governor and of the Executive Order.  
11 We should be misclassifying power producers ways to  
12 energy, it should not be a part of the equation.  
13 Natural gas is not a renewable energy. We should  
14 not be doing that at all. And, also, why would we  
15 want to invest time and money -- I think the  
16 previous speaker spoke to why would we want to  
17 spend all these years in a permit and a ratepayer  
18 situation where you have to use all the agency  
19 resources to build the plant that actually we don't  
20 really want in the first place because it doesn't  
21 get us to where we want to go. And, so we're  
22 wasting public resources, private resources,  
23 non-profit resources, community resources. People  
24 would rather stay home with their families than  
25 fighting natural gas plants and power lines. And,

1 they're only going to be around for twenty years,  
2 well, actually they don't end up around for twenty  
3 years. We have nuclear power plants that have been  
4 around for forty and sixty years. So, you're not  
5 going to build something, invest all that money,  
6 and then suddenly shut it down.

7           And, there has been mention of the  
8 Stanford University numbers and data. This will  
9 be my last point. That using existing  
10 technologies, and the Stanford University and  
11 solutions project work. You know, we started  
12 several years ago, so the technology is even  
13 advanced since that work was done. But even just  
14 looking at the existing technology at the time they  
15 issued their report for wind, solar, and water,  
16 you'd produce 140,000 jobs here in New Jersey.  
17 These are forty year or lifetime jobs. And, that's  
18 really important that you're not jumping from job  
19 to job. Most electricians, when they become an  
20 electrician they stay an electrician for quite a  
21 long time. It's a good paying job, why would you  
22 want to change your job if you're an electrician.  
23 And, also, it's cheaper if you factor in -- 25  
24 percent cheaper if you factor in the cost savings  
25 of avoided healthcare costs over 12 billion dollars

1 of healthcare cost per year. 1500 deaths avoided  
2 due to pollution and climate. And, those numbers  
3 are higher in a community like Newark, where I do a  
4 lot of work. The average in the state, just using  
5 asthma as a number -- my final point -- using  
6 asthmas as a number, it's about twelve percent  
7 nationally and in New Jersey, but in Newark it's  
8 one in four kids have asthma. Why do they have  
9 asthma? Because of the gas plants. Because of the  
10 port. Because a lots of cumulative impacts. So,  
11 when we can look at the energy sector and figure  
12 out ways to reduce the cumulative impacts, the  
13 co-pollutants associated with energy production --  
14 especially in places that are highly concentrated,  
15 densely populate, highly vulnerable people -- we  
16 should do everything that we can, and we should  
17 make it a priority. Thank you.

18 MR. SHEEHAN: Thank you very much.  
19 Sorry about that, Ms. Smith. You can come on up.

20 MS. SMITH: Good afternoon. Thank  
21 you. I want to say thank you to Governor Murphy  
22 and Mr. Sheehan for convening this hearing. And  
23 members of the committee for spending your day here  
24 listening to comments.

25 My name is Laina Smith. I am a senior

1 organizer and policy advocate of Food and Water  
2 Watch. We are a national advocacy organization.  
3 We champion healthy food, clean water, and a  
4 livable planet. And we advocate for a democracy  
5 that improves peoples lives and protects the  
6 environment. We are also a founding organization  
7 of the New Jersey All Fossil Fuels Coalition which  
8 includes over fifty faith, labor, environmental,  
9 community, business, and political organizations,  
10 committed to addressing the urgency of climate  
11 change by moving all fossil fuels and on to a one  
12 hundred percent clean renewable energy future.

13 I'm going to keep my comments to one  
14 general -- a general comment on climate change, and  
15 then in three of the topic areas that you laid out  
16 for us. So, first, general comments on the  
17 urgency of climate change. We need a rapid  
18 development of clean renewable power to avert the  
19 worse impacts of climate change. And, while we  
20 applaud Governor Murphy's goal of achieving one  
21 hundred percent renewable energy, the goal of  
22 achieving that by the year 2050 is far short of  
23 what is needed to stop irreversible climate change.  
24 In 2014 the intergovernmental panel on climate  
25 change reported that recent climate changes have

1 had widespread impacts on human health and natural  
2 systems. This includes violent storms, floods,  
3 acidifying and rapidly warming oceans. And we have  
4 seen this in events like Superstorm Sandy.

5 As the Paris climate talks in 2015,  
6 the nations of the world agreed that preventing the  
7 planet from warming one and half degree celsius of  
8 the pre-industrial levels would significantly  
9 reduce the risks and impacts of climate change.

10 In order to have a two out of three chance of  
11 avoiding a catastrophe one and a half degree  
12 celsius rise in temperature, the IPCC found we can  
13 only emit 400 gigatons of carbon dioxide after  
14 2011. And between 2011 and 2017, the global  
15 economy released 295 gigatons of carbon dioxide  
16 into the atmosphere from burning fossil fuels. We  
17 only have about ten years to cut our emissions.  
18 Reductions of burning of fossil fuels are critical  
19 to avoiding the worse impacts of climate change,  
20 and we encourage the BPU to develop an Energy  
21 Master Plan that front loads most of the energy  
22 development in this first decade, charting a  
23 pathway for eighty percent clean renewable energy  
24 by year 2028, and one hundred percent clean  
25 renewable energy by the year 2035.



1           Someone mentioned earlier today, one  
2 of the hurdles is the lack of a federal renewable  
3 energy plan. There is a bill introduced by Bruce  
4 Gavern from Hawaii that lays out this timeline  
5 towards a hundred percent renewable energy by 2035.  
6 The state could support that bill and advocate in  
7 Congress for that.

8           Second, for the definitions of clean  
9 energy sources, we support a clean energy economy  
10 that is built solely on solar, wind, and titled  
11 sources. Solar can be used in utility, and  
12 distributed solar to meet our energy needs. A  
13 renewable portfolio standard is an effective tool  
14 for requiring utilities to build utility scaled  
15 solar projects. Additional sources can come from  
16 distributed rooftop solar projects. This requires  
17 policies and public investment. These policies can  
18 focus on maximizing developments and access to  
19 community solar projects, which we are moving  
20 forward on -- and could move faster, frankly.  
21 Removing caps on net metering, and changing  
22 building code to require the new construction is  
23 fitted with on-site and/or rooftop solar panels.

24           Wind energy. We can see the  
25 potential from unrealized energy potential from

1 off-shore wind, and the technical potential to  
2 provide double the energy demand for current  
3 electricity needs exist in off-shore wind, plus  
4 estimated demand for electrified vehicles and  
5 heating. New Jersey shows significant  
6 opportunities for wind, but we should not rely  
7 solely on off-shore wind, and must also consider  
8 on-shore wind energy. Because even with proper  
9 off-shore siting of off-shore wind resources,  
10 typically the fishing shipping lanes and ecological  
11 impacts, this may result in lower levels of wind  
12 energy being harnessed. It will take time to study  
13 and build out the infrastructure to fully utilize  
14 off-shore wind, so we must act immediately to  
15 replace fossil fuel energy sources with clean  
16 energy sources.

17                   And with title technology, the  
18 technology is improving. And, it could provide a  
19 steady flow of energy to meet demand when  
20 intermittent electricity sources like wind and  
21 solar are not producing electricity. Stock  
22 renewable of titled power recently released report  
23 that a two megawatt loading titles turbine produced  
24 over three gigawatt hours of renewable electricity  
25 in its first year of testing.

1                   To the point of sources of dirty  
2 energy standards. The state's current renewable  
3 portfolio standard actually allows many sources of  
4 dirty energy to be counted as renewable. And this  
5 RPS should be addressed. These include sources of  
6 greenhouse gases and other harmful pollutants that  
7 adversely affect public health, including bio-gas  
8 and garbage incineration. We also call on New  
9 Jersey to address the expansion of fracked gas  
10 infrastructure. And we agree with the comments  
11 that nuclear is not clean energy.

12                   Continuing to reliable fracked gas.  
13 This is one of greatest threats to our planet.  
14 While it may burn cleaner at an end point, methane  
15 is 85 times more potent at trapping heat than  
16 carbon dioxide. Methane leaks from every stage of  
17 the natural gas system, from well sites to  
18 processing plants, and compressor stations to  
19 beneath city streets. With over twelve proposed  
20 pipelines, several compressor stations and gas  
21 fired power plants being proposed in places like  
22 the Meadowlands, New Jersey must put a moratorium  
23 on all new fossil fuel infrastructure, while it  
24 continues to develop its Energy Master Plan and  
25 build out a clean renewable energy system.

1                   Bio-gases has been included in New  
2 Jersey's RPS before. And this includes bringing  
3 waste methane from landfills through its treatment  
4 plants, and animal waste such as factory farming  
5 manure. This methane often referred to as bio-gas  
6 is essentially indistinguishable from fracked  
7 natural gas, with many of the same problems.  
8 Burning bio-gas or methane releases greenhouse  
9 gases and pollutants including nitrogen oxides,  
10 ammonia, and hydrogen sulfite. New Jersey  
11 currently allows garbage incineration. This  
12 produces toxic air emissions like mercury, and  
13 contributes to climate change. New Jersey is home  
14 to five municipal waste incinerators that combined  
15 burn about 4.8 billion pounds of municipal waste  
16 annually. And overburdened predominantly lower  
17 income communities of color of Newark and Camden  
18 for decades.

19                   Besides the adverse impacts to the  
20 public health and climate, allowing these fuels to  
21 masquerade as renewable, undermines the importance  
22 of the state's RPS and efforts to achieve truly  
23 renewable clean electricity. Even by including  
24 these sources of dirty energy in the transition  
25 allows for the creation of markets that don't

1 currently exist, and thereby facilitates the demand  
2 for dirty energy. The market incentivizes  
3 polluters to continue to expand operations. We  
4 must acknowledge that we cannot consider fracked  
5 gas as a bridge fuel, and not consider sources of  
6 dirty energy like bio-gas and garbage incineration  
7 as a bridge fuel, like has happened for so many  
8 years with fracked gas. And, will result in  
9 stranded assets if we don't put a moratorium on  
10 fracked gas.

11                   Finally, to the point of clean energy  
12 definitions. New Jersey's REC program, Renewable  
13 Energy Credit Program, while it's in the process of  
14 being overhauled, it has been meeting its RPS goals  
15 with almost as much renewable energy from garbage  
16 incineration RECs as from solar power. In  
17 addition, to only allowing utilities to purchase  
18 RECs from clean energy sources, the state must  
19 ensure that the RECs are bundled with the  
20 electricity that they represent, versus unbundled  
21 where they're able to be tied to sources of dirty  
22 energy. And, thereby that energy is will send  
23 dirty energy into the grid and offset vastly the  
24 purchase of meaningless credit. Worse yet,  
25 ratepayers then must subsidize these unsustainable

1 industry dirty energy sources through their  
2 electricity bill.

3           Some of the technology -- so, the  
4 third point to the technology that the state can  
5 build, it can be addressed through redundancy,  
6 storage, demand and response, and energy  
7 efficiency, calls for consumer in the transition to  
8 renewable energy and reduce the ecological impacts.  
9 Electricity storage is improving significantly and  
10 becoming cost-effective, and will reduce the need  
11 for redundancy. The California Public Utility  
12 Commission has already taken action to force  
13 utilities to installing utility scale batteries to  
14 replace gas to meet peak energy demand.

15           Demand response programs can help  
16 reduce peak electricity demand by reducing the cost  
17 associated with storage for redundancy to meet  
18 energy demands on high days. The BPU should  
19 explore various incentives and penalties that could  
20 be incorporated to ensure large energy users are  
21 implementing demand response programs. Energy  
22 efficiency. We've heard about a lot about it  
23 today. So, it helps reduce peak demand by reducing  
24 our overall energy footprint. And the state could  
25 institute an energy efficiency portfolio standard.

1                   Finally, environmental justice and a  
2 just transition. We need to address the workers  
3 from jobs in the fossil fuel industry, and  
4 transition them to living wage union jobs to  
5 support energy efficiency and the development of  
6 renewable energy. Low-income communities and  
7 communities of color have long experienced the  
8 overburden of relying on fossil fuels. And  
9 environmental justice communities must be  
10 productive in our state energy plan. We are  
11 proposing that to achieve a just transition the  
12 state establish a state renewable energy revolving  
13 fund to provide grants and low-interest loans that  
14 support the generation of renewable energy and job  
15 training programs in the renewable energy sector.  
16 Priority should be given to low-income communities,  
17 communities of color, immigrant communities, and  
18 communities disproportionately impacted by fossil  
19 fuel development. The program should include job  
20 training programs, relocation assistance that  
21 prioritizes workers in displaced industries, and  
22 those living in environmental justice communities.  
23 These funds shall always support community solar  
24 projects, and provide technical assistance where at  
25 least fifty percent of the customers are either of

1 minority, immigrants, low-income, people of color.  
2 And any projects that utilize these funds must rely  
3 on union labor and a work force that is at least  
4 fifty percent minority.

5           To move forward on environmental  
6 justice, we recommend a creation of a statewide  
7 appointed climate justice working group be  
8 established as one of the principles of  
9 environmental justice and meaningful community  
10 input. They will advise the DEP and BPU on plans  
11 and progress made by state agencies and utilities  
12 that are developing and implementing the plan to  
13 achieve one hundred percent renewable energy. The  
14 working group shall be comprised of members who are  
15 residents of low-income communities or  
16 environmental justice communities. And, similarly,  
17 for county or municipalities with at least 50,000  
18 residents, they have to create local climate  
19 justice working groups.

20           Finally, to the point of environmental  
21 justice, these stakeholder meetings are completely  
22 inaccessible to the communities that have been  
23 overburdened by our reliance on dirty fossil fuels,  
24 and those most directly impacted catastrophe. So,  
25 we encourage the scheduling of additional meetings,



1 and evening meetings in environmental justice  
2 communities like Newark and Camden, along with  
3 others, to create a more inclusive process. Thank  
4 you.

5 MR. SHEEHAN: Christopher Grablutz.  
6 Come on up.

7 MR. GRABLUTZ: Hi. My name is Chris  
8 Grablutz. I work for a company called PV Pros out  
9 of Hoboken, New Jersey. We're an independent  
10 engineering and maintenance firm in the commercial  
11 utility solar industry. And, there's been a common  
12 message I've heard today, but I'd like to give it  
13 from a little bit different perspective.

14 Seeing a lot of solar systems that  
15 have been deployed over the last ten or so years,  
16 we quite often are out there on the front line  
17 fixing a lot of these systems, and keeping them up  
18 and running. So, what I would like to strongly  
19 suggest during your consideration is that when you  
20 look to incentivize and motivate folks to deploy  
21 the renewable energies to meet this mandate, is  
22 that you consider it from a performance-based  
23 directive rather than a capital deployment or  
24 capacity base. Too often the folks that are not  
25 in it for the long term make short-term decisions

1 that leave somebody else holding the bag with these  
2 renewable energy systems. And, I can only speak  
3 for solar energy, but I know that this tends to  
4 happen in other industries as well. So, that  
5 there's a very long life span on these systems, and  
6 that it's not just about the total capacity of  
7 install of solar, it's about the generation year  
8 over year. We want to deploy a lot of money for a  
9 fantastic cause, but we want to make sure that that  
10 money is not just deployed to satisfy, but deploy  
11 it meaningfully and to produce clean energy over a  
12 very, very long period of time. Thank you.

13 MR. SHEEHAN: Thank you very much.  
14 With that, is there anyone else would like to come  
15 up and make a comment? Well, thank you ladies and  
16 gentlemen. Thank you. Thank you those of you  
17 that stuck it out with us towards the end. We  
18 appreciate this.

19 As we said, these comments -- both the  
20 oral comments and anything submitted -- will be  
21 part of the record, will be used as part and parcel  
22 in developing the draft. And I think as Grace  
23 indicated, there will be continued opportunities  
24 for stakeholder involvement as we move forward.  
25 This was only the first, certainly not the last. I

1 think we've probably taken into consideration a  
2 fair number of the comments about locations and  
3 process. I'm hoping that we can work forward on  
4 that as we move forward. And beyond that, we look  
5 forward to seeing you at the next meeting. Thank  
6 you very much.

7 (Whereupon the proceedings were  
8 concluded at 4:30 p.m.)

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C E R T I F I C A T E

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2  
3 I, CHRISTINA RESTUCCIA, a Court Reporter  
4 of the State of New Jersey, authorized to  
5 administer oaths pursuant to R.S.41:2-2, do hereby  
6 CERTIFY that the foregoing is a true and accurate  
7 transcript of the testimony that was taken  
8 stenographically by and before me at the time,  
9 place and on the date herein before set forth.

10 I DO FURTHER CERTIFY that I am neither a  
11 relative nor employee nor attorney nor counsel of  
12 any of the parties to this action, and that I am  
13 not financially interested in the action.

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Notary Public of the State of New Jersey  
My Commission expires November 14, 2021  
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STATE OF NEW JERSEY  
BOARD OF PUBLIC UTILITIES  
FRIDAY, SEPTEMBER 7, 2018

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ENERGY MASTER PLAN  
STAKEHOLDER MEETING  
  
CLEAN AND RENEWABLE POWER  
-----\*

HELD AT:  
THE COLLEGE OF NEW JERSEY  
GITENSTEIN LIBRARY  
2000 PENNINGTON ROAD  
EWING TOWNSHIP, NEW JERSEY  
11:47 A.M.

BEFORE:  
  
KENNETH SHEEHAN  
Director  
Division of Clean Energy

PANEL MEMBERS:  
  
ALANA BURMAN  
STEPHEN MYERS  
KARL HARTKOPF  
MICHAEL L. HORNSBY  
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1                   (Whereupon a short recess was  
2 held.)

3                   MS. GRIFFETH: Hello. I'm Nancy  
4 Griffeth of Unitarian Universalist Faith Action.  
5 And, I'd like to thank the EMP Committee for  
6 letting me speak today. My group is partners with  
7 Jersey Removes, and we support almost all of the  
8 revisions, so we would like to move faster than  
9 they want to to a hundred percent renewable energy.  
10 We do support Governor Murphy's one hundred percent  
11 by 2050, and we would like it to go faster.

12                   Now, we focus on environmental justice  
13 and we've been working closely Reverend Ronald  
14 Tuff, the energy director of GreenPlay. And when I  
15 finish my comments he's going to make some  
16 comments, additional comments, about environmental  
17 justice.

18                   So, thirty years ago we could have  
19 fixed our climate change problem much more easily.  
20 And, ten years ago New Jersey was actually on a  
21 great track to take care of stuff, but that was  
22 unpassable. So, now we're going to have to move a  
23 lot faster, and it's going to be much more  
24 difficult.

25                   Here are the four essential things

1 that Unitarian Universalist Faith Action supports:

2 First, don't allow anymore fossil fuel  
3 infrastructure. There was a discussion on stranded  
4 assets, so from the financial point of view those  
5 assets are going to be stranded ultimately. Let's  
6 just not invest anymore.

7 Secondly, the cleanest energy is no  
8 energy. So, let's focus on energy efficiency and  
9 reducing our use.

10 Third, the transportation sector is  
11 the biggest user of energy, so we have to focus on  
12 that. We need to encourage the use of electric  
13 vehicles while converting the electrical grid to  
14 clean energy. We need to convert fleets in New  
15 Jersey Transit to electric. We need to require  
16 trucks to reduce their emissions and convert to  
17 electric as fast as possible.

18 Fourth, last point, poorer communities  
19 are overburdened by emissions from vehicles and  
20 power plants, and by the consequences of climate  
21 change including flooding. We need to take action  
22 to lift this burden. And, as we convert to new  
23 industries, we should provide jobs and job training  
24 in these communities.

25 The cost in dollars may be high, but

1 the cost in human suffering will be much higher if  
2 we do too little. Thank you for listening to me.  
3 And, let me introduce Reverend Ronald Tuff or  
4 GreenPlay.

5 REVEREND TUFF: Good afternoon,  
6 everyone. I'm going to address the economic  
7 justice, and I'm going to address Question Number  
8 17; how will the state consider and integrate  
9 overburdened communities into the clean energy  
10 advancement?

11 The state must first address both the  
12 public health and economic aspects of the problem  
13 in low-income communities. First, for public  
14 health, the issues are primarily air quality and  
15 increase flooding due to global warming. For air  
16 quality, the state must put its priority on  
17 overburdened communities for reducing the number of  
18 fossil fuels and on vehicles. This can begin with  
19 what the state controls. First of all, New Jersey  
20 Transit. We ought to be talking about electric  
21 buses and electric vehicles. And as the vehicles  
22 are replaced, they must be replaced with electric  
23 vehicles. And, this should happen first in the  
24 overburdened communities.

25 Economics. The state must support the

1 development of jobs and job training in  
2 overburdened communities. Incentives to develop  
3 its need only to be for the need now to be  
4 financial, but could include moving the developers  
5 up in their queues for approval of projects. And  
6 if they provide jobs and job training in  
7 overburdened communities, it would be a great help  
8 and a major part in working with the low and  
9 moderate-income people.

10           Finally, the benefits of clean energy  
11 can be provided in overburdened communities in two  
12 ways. One is to provide clean energy alternatives  
13 and the generation of electricity. And, this is  
14 available but not widely known, and confusing to  
15 understand. Educational programs should be  
16 developed to help consumers in all communities, but  
17 especially overburdened communities, to understand  
18 the possibilities of using clean energy. The  
19 community solar pilot offers an opportunity for  
20 renters and people in houses not suitable for  
21 solar, but to obtain the benefits of using solar,  
22 ultimately including lower electricity prices. It  
23 is important that we bring this industry to our  
24 community. And, it's also important that we  
25 develop jobs. Another industry is the electric

1 vehicle industry. We're not involved in the  
2 beginning of the industry, in the distribution of  
3 the industry. So, we're talking about developing  
4 jobs in the low-income communities.

5 And, finally, I'd like to close with  
6 -- if we're going to talk about low and  
7 moderate-income folks, we ought to have these  
8 hearings in low and moderate-income community. And  
9 we ought to be sitting at this table and become  
10 part of what the solution are. Because whatever we  
11 come up with is going to affect our community.

12 So, today I'm going to invite you to  
13 the clergy meetings, about 75 churches meets every  
14 Monday in Newark. So, I'd like to invite one of  
15 your hearings to be centered in Newark. We'll get  
16 the clergy there, we'll get the community there, so  
17 we can be part of the process in the master energy  
18 plan, in order to help get jobs into our community.  
19 And, also, to educate our community so they can  
20 understand and be part of the solution. Thank  
21 you.

22 MR. SHEEHAN: Our next speaker is Pat  
23 Sonti. And, in the meantime I just want to  
24 recognize the Commissioner Chivukula has joined us.  
25 Thank you, Commissioner. Appreciate you being

1 here.

2 MR. Sonti: Thank you very much. I'm  
3 Pat Sonti for Maxim. Our global headquarters is in  
4 San Francisco, California.

5 First of all, we applaud the state  
6 government and the Board of Public Utilities for  
7 undertaking the energy master plan. As a company  
8 we have worked in with international governments,  
9 also in the United States on the federal and state  
10 level, especially in developing energy master  
11 plans. And, we have submitted written comments,  
12 but I will summarize a very few key bullet points.

13 Number one. We believe the EMP  
14 should provide guidelines for comprehensive  
15 framework and legislative policy, clearly defining  
16 renewable power, clean power, and solar wind  
17 bio-mass, bio-fuels, et cetera. The other aspect  
18 is it also has to provide guidelines for base load  
19 transition from the current energy mix to an  
20 optimal energy mix, which does have to include  
21 carbon capture, sequestration, energy storage,  
22 thermal energy storage. Also, it should provide  
23 guidelines for fiscal financial incentives, credits  
24 and tax provisions. Guidelines for grid  
25 integration of renewal energy, analysis and access



1 which is very critical. And, moreover, guidelines  
2 for mail order dispatch, demand response, and  
3 demand side management which are very critical for  
4 market integration of renewable and clean energy.

5           Second. Detailed market assessment  
6 trends and forecasts up to 2050 of energy supply,  
7 demand, and pricing in terms of levelized cost of  
8 energy, levelized cost of storage, based on an  
9 optimal energy mix.

10           Number three. The EMP should provide  
11 guidelines for key market-ready technologies. We  
12 recommend technology readiness greater than nine,  
13 which can be deployed, including energy storage and  
14 thermal energy storage by project developers and  
15 project sponsors. Key emphasis is on  
16 techno-economics and viability.

17           Number four. For proper economic  
18 growth and jobs creation there should be succinct  
19 and clear guidelines for potential investors in  
20 terms of equity, project developers, sponsors, and  
21 lenders because at the end of the day debt capital  
22 is critical for achieving financial closure and  
23 commercial operation.

24           Number 5. It's important for the EMP  
25 to provide guidelines advocating proper technical

1 and commercial due diligence process with a list of  
2 mandatory studies, assessments, and reports, which  
3 are required for cleaner renewable power for  
4 receiving proper approval, and permitting a project  
5 at the BPU level and other stakeholders in the  
6 approval process.

7           And, lastly. End of the day, New  
8 Jersey does require a fingerprint pneumatic capital  
9 for a base project to reach commercial operations.  
10 So, it's important to elaborate on smoother project  
11 financing guidelines, with some clarity on  
12 long-term PBA's, which is the traditional, versus  
13 the SRECs, ORECs, for offshore wind. But there's  
14 got to be more clarity on the focus for bankable  
15 funding mechanisms, and financing mechanisms, along  
16 with payment structures and plans. And at this  
17 point, the financial community is embarking on a  
18 corporate blocktin technology as a way through the  
19 distributed electric process, which could be  
20 leveraged for New Jersey's benefit across all  
21 stakeholders, all demographics, on a non-exclusive  
22 basis.

23           We look forward and the honor to work  
24 with the BPU and the state governor on empowering  
25 the Energy Master Plan. And, we look forward to

1 being part of the stakeholder process throughout.  
2 And thank you for this great opportunity to be here  
3 today. Appreciate it very much.

4 MR. SHEEHAN: Thank you very much.  
5 Our next speaker Lawrence Furman. Lawrence Furman.  
6 Did we lose you?

7 Going to move on to Derek Phelps.

8 MR. PHELPS: Good afternoon, Director  
9 Sheehan, distinguished members of the BPU, governor  
10 staff, and committee members of the EMP.

11 My name is Derek Phelps, and I'm the  
12 Director of Market and Project Development at Fuel  
13 Cell Energy. We're in our 50th year of operation,  
14 headquartered in Danbury, Connecticut, with a  
15 manufacturing facility in Torrington, Connecticut.  
16 We employ over 450 people. And, the fuel cell  
17 products we manufacture in the northeast are  
18 exported all over the world.

19 We currently have over 250 megawatts  
20 of stationary fuel cells installed and backlogged  
21 on three continents. Our clean, efficient fuel  
22 cells generated over seven billion kilowatt hours  
23 of power. Our stationary carbon and fuel cells  
24 are well-suited to many application as a  
25 distributed energy in generation resource. Our

1 carbon shore source fuel cells come in three size;  
2 1.4 megawatts, 2.8 megawatts, and 3.7 megawatts,  
3 and are scalable for any project size.

4 We have previously provided testimony  
5 in comments to the Board of Public Utilities  
6 concerning our products, value, proposition, and  
7 contributions to a group resiliency and reduction  
8 of greenhouse gases. I will not repeat those  
9 comments here, but instead offer a brief synopsis  
10 and more wholesome testimony that we will file in  
11 writing prior to the October 12th deadline.

12 We are pleased to participate in the  
13 development of New Jersey's Energy Master Plan to  
14 achieve Governor Murphy's goal of one hundred  
15 percent clean energy usage in New Jersey by 2050.  
16 And, respectfully submit that fuel cells can make  
17 an important contribution to New Jersey's clean  
18 energy goals.

19 It is important to note that there is  
20 no silver bullet or perfect solution when it comes  
21 to clean energy. And, that clean energy is not  
22 necessarily synonymous with zero carbon. The  
23 smartest most secure clean energy strategy is in  
24 all of the above strategy, where a diverse  
25 portfolio of clean energy resources with their

1 intended strengths and benefits are employed, can  
2 ensure the lowest possible emissions at the lowest  
3 possible cost, while advancing grid reliability and  
4 resiliency and smart land use policy.

5           With respect to the various questions  
6 posed in your recently circulated discussion points  
7 memo, FCE respectfully suggests that New Jersey  
8 policy makers should look and ensure that clean  
9 energy power resources are defined to include  
10 resources in a position to meet the diverse and  
11 immediate energy needs of New Jersey's residents,  
12 by obtaining the lowest possible emissions from the  
13 most resilient, reliable, and cost-effective  
14 electrical grid possible. In practical terms,  
15 that means around-the-clock reliable, easily-sited  
16 resources such as stationary fuel cells should be  
17 in the equation.

18           Fuel cells are a form of clean energy  
19 that provide reliable consistent around-the-clock  
20 power where the power is needed most. Fuel cells  
21 emit negligible NOx and SOx and particulate  
22 pollutants. That is because in a fuel cell there  
23 is no combustion. Power is efficiently produced  
24 from fuel through a chemical reaction. As a  
25 result, all fuel cells do emit some carbon dioxide,

1 it is only a fraction of the carbon dioxide emitted  
2 by traditional grid generators because of the  
3 inherent efficiency of direct power conversion  
4 without combustion. As compared to the best  
5 available natural gas combined cycle power plant,  
6 our fuel cells emit 99 percent less particulate  
7 pollution, 99 percent less SOx, 80 percent less  
8 NOx. And, depending on configuration, 20 percent  
9 less carbon dioxide. Unlike renewable zero carbon  
10 resources, fuel cells provide steady continuous  
11 power, avoiding the need for backup or peaking  
12 generation to solve intermittency issues.

13 Over emphasis on zero carbon power  
14 generation will have the unintended consequence of  
15 masking the direction that carbon-reducing policy  
16 efforts should be headed towards; that is the  
17 reduction in transportation-based carbon.  
18 According to the US Energy Information  
19 Administration, power generation is no longer the  
20 greatest source of greenhouse gas emissions in the  
21 United States. Transportation is, as several  
22 speakers have pointed out so far today. Global  
23 fuel cell power can be utilized to advance hydrogen  
24 production and electricity for vehicle charging,  
25 thus producing not only grid emissions, but

1 transportation emissions, as well. Thus, the  
2 definition of clean energy will need to remain  
3 flexible in order to account for new and emerging  
4 technologies, as well as to ensure that the grid is  
5 progressively getting cleaner and greener.

6 State policies should also take into  
7 account land use impacts of clean energy  
8 installations. Our sure source fuel cells are  
9 easy to site, occupying less than an acre of land  
10 for ten megawatts installed. This compared to  
11 approximately seventy acres per ten megawatts  
12 installed of solar. Fuel cells are often sited in  
13 dense urban areas, providing power directly where  
14 the load is, thus avoiding transmission. In any  
15 evaluation process, large scale solar projects that  
16 displace core forest or farmland should be assigned  
17 with the carbon footprint that would have otherwise  
18 been absorbed by the forest removed to accommodate  
19 such an installation.

20 Our capacity and available factors  
21 exceed 90 percent as compared to an average of  
22 between 15 to 25 percent for solar and wind.  
23 Providing steady, reliable power irrespective of  
24 weather, creating resiliency where the grid goes  
25 down, and on site where it is needed. Fuel cells

1 in urban areas also contribute to the remediation  
2 and restoration to the tax rolls of brown fields.  
3 Fuel cell energy has constructed numerous projects  
4 in dense urban areas, such as the fifteen megawatt  
5 project in downtown Bridgeport, Connecticut where  
6 the fuel cell project was placed in the heart of a  
7 distressed urban community, remediating a  
8 long-vacant and polluted property, and restoring it  
9 to the city's tax rolls. At completion, the  
10 project became the largest property tax payer on  
11 the first square footage basis in the city.

12 Frankly, fuel cells are the perfect  
13 clean energy solution for dense urban communities  
14 where large tracts of open space are simply not  
15 available. Where smaller tracts of brown fields  
16 are right for project development. Where  
17 emissions are highest. And where local property  
18 taxes are sorely needed. As noted, fuel cell  
19 installations in urban areas can also provide  
20 hydrogen fueling and clean power for electrical  
21 vehicle charging. It also bears noting that more  
22 than 93 percent of the content of our fuel cells  
23 are recycled at end of life. Unlike most battery  
24 and solar technologies, our fuel cells do not end  
25 up in landfills, leaking lead or cadmium as they



1 degrade. Recent news reports have noted the  
2 difficulties in disposal of renewable energy  
3 technologies at end of life. Germany, for  
4 instance, reportedly had to manage 54,000 tons of  
5 waste from rotor blades from decommissioned wind  
6 turbines in 2014 alone. Fuel cell energy has also  
7 put in place measures to deal with end of life  
8 recycling of our product, further contributing to  
9 the environmental goals of New Jersey. We  
10 respectfully submit that any clean energy plan  
11 developed addressed end of life disposal and  
12 recycling.

13 To its credit, New Jersey has taken  
14 several steps to develop a thoughtful clean energy  
15 program and a Clean Energy Master Plan, encouraging  
16 the use of a wide array of new generation  
17 technologies. To help ensure the success of this  
18 program, Fuel Cell Energy suggests that it is now  
19 important to implement the program tools necessary  
20 to meet these important goals.

21 Thank you for your time. Fuel Cell  
22 Energy looks forward to contributing to New  
23 Jersey's pathway to clean energy, and being a part  
24 of New Jersey's Clean Energy Master Plan.

25 MR. SHEEHAN: Thank you very much.

1 Our next speaker is Doug O'Malley. And then the  
2 five up on deck are Ed Kelly, Joanne Milliken,  
3 Shihab Kuran, Bill Wolfe, and Gaylord Olson.

4 MR. O'Malley: Hi. My name is Doug  
5 O'Malley, I'm the Director of Environment New  
6 Jersey. And, I wanted to start off by thanking  
7 Commissioner Chivukula for his attendance at this  
8 hearing, as well as the leadership of the chair of  
9 the Energy Master Plan process, Grace Strom-Power,  
10 as well as the work of Ken Sheehan. And, really,  
11 just a thank you to all of you. I think this is  
12 on some ways a very painful process for us to be  
13 disconnected from Wi-Fi for a long time, and forces  
14 us to listen to what all of us are saying. And, I  
15 think there's value in that. A painful value, but  
16 there's value there.

17 That being said. I do just want to  
18 talk about the logistics of these meetings. I  
19 wanted to emphasize that, you know, I think we can  
20 think not only holding these hearings at this site,  
21 but to consider the State House for some of the  
22 future meetings. And then, most importantly, to be  
23 thinking of people that don't live or breathe  
24 energy and that can't be here at ten o'clock on a  
25 Friday morning. So, look at communities all around

1 the state, specifically environmental justice  
2 communities. You know. The E023 process and  
3 environmental justice has hearings in Newark and  
4 Camden in the evening hours. That's a process that  
5 we'd recommend that you replicated here.

6 That being said. I do think it's  
7 important to note that the BPU and the  
8 collaboration here on the Energy Master Plan  
9 process, is the first step. And unlike the  
10 Christie administration where you see a draft and  
11 have another set of hearings in the spring. And  
12 that does not go unnoticed. So, I also wanted to  
13 thank the BPU on that process. We obviously want  
14 to move full speed ahead.

15 I want to just talk about some global  
16 comments, and then talk specifically about Question  
17 1 and Question 5. Because I think that's really  
18 the heart, from at least our concern, with the  
19 clean renewable power hearing that we're holding  
20 today. I think the global comments -- and this  
21 cannot be reiterated enough -- is that we are in a  
22 climate crisis on global warming. The northeast  
23 just had its warmest climates on record. New  
24 Jersey just had its second warmest in August in  
25 record. For those of you that are familiar with

1 California, the climate crisis is not so an  
2 esoteric issue anymore. And then when we thing  
3 about what this impact is on New Jersey, all we  
4 need to do is look at the groundbreaking research  
5 of Professor Bob Cobb from Rutgers to look at the  
6 impacts of sea level rise on the state. And,  
7 again, these are not academic issues. We already  
8 are seeing property value loss on the Jersey shore  
9 from the impacts of climate change. Talk to anyone  
10 who lives in Norfolk, Virginia, and suddenly  
11 coastal flooding does not seem like a far away  
12 issue. And, so, that needs to be a guiding  
13 principal of this process.

14 One of the other aspects that have  
15 been mentioned, but there needs to be a larger  
16 emphasis, is the economic cost and the public  
17 health cost of our continued inability to have air  
18 quality that's healthy to breathe in this state.  
19 A vast majority of Jersey's counties, including  
20 Mercer, fail -- according to the American Lung  
21 Association -- for ground level ozone. And, I  
22 think it's ironic because we're kicking off the  
23 school year here in New Jersey, we are seeing not  
24 closures and early dismissal dates on snow days,  
25 but on heat days. That process will only move

1 forward.

2           In that vein, I think it is critical  
3 to note that the process in 2015 during the  
4 Christie administration wasn't just flawed in  
5 process, but also was flawed in the sense that  
6 climate change was a four-letter word. And, we  
7 obviously are very thankful that the administration  
8 is moving forward on a process that acknowledges  
9 that climate change is a real crisis. Especially  
10 in light of the Trump administration's climate  
11 denialism.

12           And, I wanted to obviously reference  
13 the importance of Governor Murphy's commitment for  
14 this process to have one hundred percent clean  
15 energy by 2050. And, the fact that, as the  
16 governor said, New Jersey should work to be the  
17 California of the east coast. As some of you  
18 probably saw, California just passed groundbreaking  
19 legislation to get one hundred percent clean  
20 renewable energy by 2045 through its legislature,  
21 and is awaiting signature by Governor Brown.  
22 That's where this state needs to go.

23           And then when we're speaking  
24 specifically about Question 1 -- because this  
25 question ultimately is -- you know, all of the

1 questions flow from Question 1. Which is, what is  
2 our definition of clean power. And, specifically,  
3 the definition and the title here is clean and  
4 renewable power. And, I think it's critical as the  
5 ratepayer counsel, those comments represented the  
6 clean renewable power does not include fossil fuel  
7 generation. We've lived through generations of  
8 treating our open skies like sewers for carbon.  
9 That needs to end. And then we also need to ensure  
10 the waste of energy, as the euphemism is, i.e.  
11 incinerators, are not considered to be clean  
12 renewable power. And, I think it's also critical  
13 to note that our nuclear fleet is not a renewable  
14 source of energy. And nuclear energy should not be  
15 considered a clean renewable source of energy. And  
16 I think it's important to note as we talk about  
17 2050, the Salem 1, Salem 2, and Hook Creek have  
18 retirement dates of 2036, 2040 and 2044. So, I  
19 certainly think that the planning process we should  
20 be respecting the current NRC licensing, and not  
21 planning for the extension of those facilities.  
22 And, really, we should be planning for the early  
23 retirement of those facilities in order the whole  
24 scale changes in our electricity grid over the  
25 course of the next three decades.

1           I wanted, also, to reference the  
2 importance of Question Number 5, because this  
3 ultimately gets at the challenge that is at the  
4 heart of a transition to one hundred percent clean  
5 renewable energy future. And, that is, we cannot  
6 continue to invest in fossil fuel infrastructure.  
7 And, we would urge this administration to implement  
8 a full moratorium on new planned fossil fuel  
9 infrastructure projects until the Energy Master  
10 Plan process is finalized next June. And,  
11 specifically, as part of this process the state  
12 needs to incorporate a full carbon life cycle of  
13 all proposed fossil fuel infrastructure projects.  
14 And, these incorporate an independent analysis  
15 relying on the office of ratepayer counsel and the  
16 actual stated need, which is removed as a part of a  
17 lobbying effort through EDECA, a generation ago in  
18 the late 90s. And, also, to incorporate a social  
19 cost carbon methodology that actually looks at the  
20 full impacts of any new proposed fossil fuel  
21 infrastructure. This is detailed in comments that  
22 Environment New Jersey submitted regarding the BPU  
23 OREC proposal.

24           And then, finally, we need to  
25 incorporate global warming emission analysis into a

1 new proposed air permits. That being said. We  
2 have multiple proposed fossil fuel projects around  
3 this state. Whether they be the Penny's Pipeline,  
4 whether they be the South Jersey Gas or New Jersey  
5 Natural Gas pipeline through the Pinelands -- which  
6 New Jersey Sierra Club Pinelands Preservation  
7 Alliance and Environment New Jersey are actually  
8 engaged in litigation. We have a new proposal to  
9 have a power plant in the heart of the Meadowlands  
10 for 1200 megawatts to go through New York, that  
11 would exist for generations. We have a proposal  
12 for a new gas plant in the heart of the Pinelands,  
13 in the Musconetcong. We cannot meet our goal for  
14 a one hundred percent clean renewable energy future  
15 if we continue to invest in fossil fuels.

16 And, I wanted to reference, also, just  
17 the reality that we are in a place of beyond  
18 climate inaction, or climate denialism. Roll backs  
19 at the federal level. This governor has committed  
20 to meeting goals of the Paris Climate Accord, and  
21 as a part of that the EPA clean power plant --  
22 which is under attack and being rolled back as we  
23 speak -- talked about New Jersey having an  
24 aggressive goal of -- the initial goal was more  
25 than forty percent reduction from our power sector.



1 Those are goals that we certainly should not be  
2 ignoring.

3 I wanted to make three final points.  
4 One is just the importance of off-shore wind. And,  
5 obviously, I wanted to reference the important  
6 collaboration of New Jersey Renews Climate Clean  
7 Energy Coalition. It's more than sixty  
8 organizations of labor fee, environmental, and  
9 community organizations. And most important for  
10 this it includes the business for off-shore wind as  
11 well as for United Steelworkers. Off-shore wind  
12 can be our future for meeting our renewable  
13 portfolio standard goal, that are now in law. And,  
14 also, it can be our future for building a true  
15 clean renewable energy economy.

16 Second, I also just wanted to  
17 reference the importance of the Regional Greenhouse  
18 Gas Initiative, and having a process on the  
19 re-entry on the Regional Greenhouse Gas Initiative,  
20 that it reflects those initial goals from clean  
21 power plant, and reflects a modeling to ensure that  
22 we have the strongest possible caps to generate  
23 more investment in clean renewable technologies.  
24 And, specifically, a cap that reflects those  
25 initial clean power plant goals. And, at a minimum

1 a cap of 12 million metric tons a year. We should  
2 not certainly have a cap that merely reflects our  
3 current emission goals.

4 And then, finally, I just wanted to  
5 reference the ongoing process around the nuclear  
6 subsidy bill, which was signed into law at the end  
7 of May; and, after a massive campaign urging the  
8 legislature to not move forward with that -- and  
9 the governor, as well. And, one of the aspects of  
10 the review process through the Board of Public  
11 Utilities, that it's critical -- is not only to  
12 ensure that the ratepayer counsel is part of that  
13 process, but receives full access to any  
14 confidential documents. We need to ensure that we  
15 are not going to unnecessarily subsidize currently  
16 profitable nuclear facilities, both in state and  
17 out of state. Those are investments that we need  
18 to be making a clean renewable energy technologies,  
19 and should not be going to currently profitable  
20 nuclear facilities.

21 And, with that, I'll conclude my  
22 testimony. Thank you. Thank you very much.

23 MR. SHEEHAN: Thank you. Next up we  
24 have Ed Kelly.

25 MR. KELLY: Good afternoon. My name

1 Edward Kelly. I'm the Executive Director of the  
2 Maritime Association of the Port of New York and  
3 New Jersey. We are here today to talk about the  
4 impact of clean renewable energy potentially on  
5 maritime domain awareness and safety. The Maritime  
6 Association represents over 580 corporate and  
7 individual members with the commercial maritime  
8 industries, specifically those which operate within  
9 the port of New York and New Jersey. The maritime  
10 industry is an important economic engine in the  
11 State of New Jersey. A 2016 economic study has  
12 revealed that our industry is responsible for  
13 229,000 direct jobs, 25.7 billion dollars in  
14 personal income, 64.8 billion dollars in business  
15 income, and the payments of a little over 8.5  
16 billion dollars in federal, state, and local tax  
17 revenues. This is important. And, we have to be  
18 very careful to protect that.

19           Clearly, the need to protect the safe  
20 and economic operation of the commercial maritime  
21 industry must be carefully considered whenever and  
22 wherever off-shore development projects are  
23 considered. It should be obvious to all parties  
24 that the introduction of in-water structures that  
25 are in or near an active navigation area will

1 dramatically increase both the potential for vessel  
2 collision and vessel or vessel collisions. We  
3 have to ensure that the development of energy is  
4 done in a safe, responsible, and secure manner.

5 Most notably, we would require that  
6 the EMP mandate and ensure that any in-water  
7 production capacity construction does not result in  
8 the degradation of navigational safety, national  
9 security, or the protection of the marine and  
10 coastal environment. Should such provisions not be  
11 taken, we must remind all concerned parties that  
12 the potential impact of a significant marine  
13 casualty in the New York by area would extreme and  
14 generational adverse impact on lives, property, the  
15 marine environment, and the multi-billion dollar  
16 tourism industry of the bordering states; as well  
17 as the degradation of the economic engine benefits  
18 which are derived from the maritime industry.

19 We have submitted written comments to  
20 point out specific points that we look at to ensure  
21 safety, security, and the protection of the  
22 environment as, we hope, collaboratively move  
23 toward creating clean, renewable, off-shore energy.  
24 We look forward to continuing to work together to  
25 ensure the safety of navigation, the security of

1 the marine domain, and the protection of the marine  
2 environment; as well as preserve the immense  
3 economic benefits provided by the commercial  
4 maritime industry through the port of New York and  
5 New Jersey. The coastal ocean is a very big place.  
6 We can and will work cooperatively to assist in the  
7 production of clean, renewable energy; but, we have  
8 to have a mandate that degradation of safety and  
9 the actual potential for severe damage to the  
10 tourism and marine environment in the coastal areas  
11 is not the result. Thank you.

12 MR. SHEEHAN: Up next, JoAnne  
13 Milliken.

14 MS. MILLIKEN: Good afternoon. I'm  
15 JoAnne Milliken with the New Jersey Fuel Cell  
16 Coalition. Prior to this position, I served for  
17 more than twenty years in the U.S. Department of  
18 Energy's Office of Energy Efficiency and Renewable  
19 Energy, where I directed programs covering hydrogen  
20 and fuel cell systems, energy efficient buildings,  
21 and solar wind and geo-thermal energy.

22 As a New Jersey native and a current  
23 part-time resident, I would like to thank the State  
24 of New Jersey for establishing this process for  
25 public input into the Energy Master Plan. My

1 comments were developed in collaboration with the  
2 National Fuel Cell Research Center at University of  
3 California Irvine. And, they will focus on  
4 hydrogen and fuel cell systems and their ability to  
5 help New Jersey achieve the goal of a hundred  
6 percent clean energy usage by 2050.

7 I want to thank Derek Phelps of Fuel  
8 Cell Energy who covered many of the comments that I  
9 was planning to make. And, I will modify my  
10 comments on the fly. I will try to not repeat his  
11 comments, as the committee requested.

12 MR. SHEEHAN: Thank you.

13 MS. MILLIKEN: We recommend that New  
14 Jersey's definition of clean energy be technology  
15 neutral, an focus of attributes required to achieve  
16 state energy requirements and economic and  
17 environmental objectives. Clean energy should be  
18 defined as heat power sources that reduce  
19 greenhouse gas emissions, criterion air pollutes,  
20 short-lived climate pollutant, and air toxic  
21 emissions, and water usage. All while improving  
22 power and transportation system efficiency,  
23 resiliency, and air quality at both the local and  
24 regional level.

25 As Derek pointed out, fuel cell

1 systems possess all of these attributes. They're  
2 highly efficient by-products electricity heat and  
3 water. And, the importance of resiliency as an  
4 attribute that should be highly valued and included  
5 in the definition.

6           Derek alluded to the full flexibility  
7 of fuel cell systems. We all know that hydrogen  
8 is the ideal fuel, but they also operate on  
9 hydrogen-rich fuels, natural gas, bio-gas, propane.  
10 While New Jersey should aspire to fuel cells  
11 operating on renewable hydrogen in the longer term,  
12 hydrogen from natural gas is a viable approach now  
13 and for the transition, given it's relatively low  
14 cost and the high efficiency and reduced emissions  
15 of fuel cells. This is another example of not  
16 letting the enemy of the good, especially since we  
17 need to get to the economies of scale necessary to  
18 reduce the cost of these systems.

19           All emerging clean energy technology  
20 shares some common obstacles. We are all familiar  
21 with them. Economies of scales I just alluded  
22 to. Overcoming consumer resistance to change, and  
23 establishing consistent and stable policies that  
24 reduce the risk to companies, investors, and  
25 consumers. Factor-specific to the transportation

1 sectors have limited the market growth of battery  
2 electric vehicles -- gasoline prices have remained  
3 relatively low, and there's limited charging  
4 infrastructure in many locations. The limited  
5 driving range and long recharging times compared to  
6 conventional vehicles also discourages some  
7 consumers from purchasing battery electric  
8 vehicles. Fuel cell electric vehicles face  
9 similar infrastructure challenges in the  
10 marketplace, but they offer consumers a choice of  
11 different vehicle attributes. In addition to  
12 charging infrastructure, New Jersey should support  
13 development of a hydrogen refueling infrastructure.  
14 It is the key enabler to greater market adoption of  
15 fuel cell vehicles, and realizing their substantial  
16 advantages that include greater driving ranges,  
17 fast refueling, and the ability to co-locate with  
18 existing fueling infrastructure during the  
19 transition.

20           Some states have developed programs to  
21 address fuel cell market challenges, like the  
22 alternative and renewable and fuel and vehicle  
23 technology program which has supported the  
24 installation of almost sixty hydrogen fueling  
25 stations in California -- thirty-five which are



1 operating today. And, the state's self-generation  
2 incentive program and fuel cell energy metering  
3 tariff that has supported around 250 megawatts of  
4 stationary fuel cell simulations. Through a  
5 reverse auction, that metering and utility  
6 procurement, Connecticut has over 150 megawatts of  
7 systems operating and in development today --  
8 stationary systems. By contrast, there are less  
9 than ten megawatts of stationary fuel cell systems  
10 installed in New Jersey. To ensure transition to a  
11 sustainable energy system, New Jersey should invest  
12 in technologies that provide resilient power,  
13 decreased emissions, and improved air quality.

14 A lot of these comments that follow  
15 were mentioned by Derek. I will just reiterate  
16 that tri-generation fuel cell systems produce  
17 electricity heat and hydrogen for refueling fuel  
18 cell electric vehicles that span the range of  
19 light-duty vehicles to heavy-duty vehicles, and  
20 cargo and material-handling equipment. I will also  
21 add to some of Derek's comments, that New Jersey  
22 should look to states like California where a large  
23 magnitude of intermittent renewables has caused  
24 some gaps in generation and demand response issues.  
25 And, I think there's a lot to learn there from

1 California's relatively rapid pace of installing  
2 renewable energy.

3           Regarding state policy, New Jersey has  
4 taken great initial steps to develop a clean energy  
5 program. The next generation of this program  
6 should incorporate market mechanisms such as a  
7 reverse auction to allow clean energy projects to  
8 compete based on desired attributes and  
9 cost-effectiveness in the short term. Future  
10 incentives should be paid based on the technologies  
11 rather than an up-front incentive.

12           California, Connecticut, and New York  
13 have all implemented pay-for-performance clean  
14 energy incentives to assure continued operation and  
15 pay back from their investments. On the  
16 transportation side, Governor Murphy has taken the  
17 important step to signing the state zero emission  
18 vehicles program's memorandum of understanding  
19 committing to coordinated action with eight other  
20 states to ensure the successful implementation of  
21 ZEV programs. New Jersey should follow up by  
22 setting ZEV targets, expanding policy to include  
23 hydrogen refueling stations, hydrogen refueling  
24 infrastructure, and encouraging state and municipal  
25 ZEV fleet purchases.

1           The New Jersey Fuel Cell Coalition has  
2 partnered with organizations in other northeast  
3 states. For example, the Connecticut Center for  
4 Advanced Technology, to identify the near-term  
5 opportunities in New Jersey for hydrogen and fuel  
6 cell systems. And, we will include these in our  
7 more detailed comments.

8           Finally, environmental justice to  
9 ensure direct deposited impact on overburdened  
10 communities. We recommend bonus incentives be  
11 provided for projects installed in those identified  
12 communities. New York has established such a  
13 bonus incentive of program in their clean energy  
14 fund to encourage project development in local  
15 communities.

16           In conclusion, I would like to thank  
17 you for this opportunity to present  
18 recommendations. And, the New Jersey Fuel Cell  
19 Coalition and our collaborators look forward to  
20 engaging further in the public input activities,  
21 and submitting detailed written comments as part of  
22 this public stakeholder engagement.

23           MR. SHEEHAN: Thank you very much.  
24 Our next speaker is Shihab Kuran.

25           MR. KURAN: Thank you, Ken. My name

1 is Shihab Kuran. I'm a local entrepreneur. I  
2 submitted written answers to the questions. But,  
3 I'd like to focus on one topic today through my  
4 verbal comments. And, that specifically, economic  
5 development.

6           As a local entrepreneur, I had the  
7 honor of working with many of you in the public and  
8 the private sector of who are gathered here. And,  
9 the point I would like to raise is that we might be  
10 able to walk away at the end of the Energy Master  
11 Plan with a set of goals of how to meet the clean  
12 energy goals; but, the danger might be that we  
13 achieve those at a severe cost of economic leakage  
14 and significant economic loss to the taxpayers. As  
15 we know, there's a strong overlap between  
16 ratepayers and taxpayers. So, while I agree  
17 generally with the rate advocate, I think  
18 decoupling jobs from the goals of the Energy Master  
19 Plan, given the strong overlap between ratepayers  
20 and taxpayers, we might look right in the short  
21 term. But, in the terms of the long-term view,  
22 that might be the wrong decision. The Energy  
23 Master Plan is a twenty to thirty-year outlook.  
24 We're looking at clean energy by 2050, that's over  
25 thirty years from today.

1           So, if you would allow me, I'd like to  
2 be share some comments on how we can spur economic  
3 development, create jobs, and effectively --  
4 instead of only focusing on cost reduction of  
5 solutions -- we can focus on enhancing the benefit.

6           So, the benefit cost ratio rather than  
7 just the cost important itself. If we look at the  
8 main sectors that matter, frankly, in the Energy  
9 Master Plan as we go forward, obviously solar comes  
10 to the front. And, so, what can we do as a state  
11 when it comes to economic development for solar?  
12 How do we localize that sector in New Jersey?

13 Unfortunately that is, I think, a sector where the  
14 train has left the station. I think we know that  
15 Asia, and specifically China, is a major  
16 international manufacturing location for solar  
17 energy. Low cost wages and low cost labor is not  
18 what we are known for in the state of New Jersey,  
19 and I think that's something we can't compete with  
20 China on.

21           The next sector is wind. So, it's  
22 great we tap into our off-shore resources in terms  
23 of wind. And, luckily there are regional  
24 industries when it comes to manufacturing. If we  
25 think broadly about renewables, we actually find

1 that intermittent renewables today mostly are  
2 cheaper than fossil fuels. So, if they are, why do  
3 we have a committee when we have the Energy Master  
4 Plan? The market should take care of that. The  
5 fact is, intermittent renewables are cheaper than  
6 fossil fuels. I mean, you see PPA's and otherwise,  
7 a few cents a kilowatt hour -- three, four --  
8 that's actually cost-effective and highly  
9 competitive. However, the market needs firm  
10 energy. And firm energy is significantly more  
11 expensive than fossil fuels today. And, that's a  
12 challenge. So, how do we perk up renewables?  
13 Obviously, the first solution that comes to mind is  
14 through energy storage. And energy storage remains  
15 the holy grail of the power sector today. If  
16 energy storage is cost-effective, the Energy Master  
17 Plan goals would be met without the need of public  
18 and private -- just the sector would take care of  
19 itself.

20 Energy storage is complex,  
21 technologically complex. It includes disciplines  
22 like chemistry, electronics, steady conductors,  
23 software, nano-technology. And, remains an  
24 obstacle. And, if we look at those challenges, we  
25 see that innovation is still required to solve the

1 cost and the solution of energy storage. But, I  
2 argue that the good news is that New Jersey has  
3 many of the differentiated advantages that allow  
4 us, in the short term and the long term, to  
5 possible create a sector, localize a sector when it  
6 comes to energy storage right here in New Jersey.  
7 We have a strong chemical engineering base. We  
8 have a strong electronics and semi-conductor base.  
9 We have a strong nano-technology industry. We have  
10 a strong software industry. And, so, I consider  
11 that to be a worthy cause. A sector that we can  
12 go after and plant our flag and become  
13 differentiated internationally, not just locally.

14 As a matter of fact, Thomas Edison  
15 back in 1903 started battery manufacturing in West  
16 Orange, so we have a long heritage when it comes to  
17 energy storage. Batteries are one form. I'm not  
18 picking a particular chemistry or technology, I'm  
19 just talking about a sector when it comes to energy  
20 storage.

21 So, my recommendation here is that we  
22 pick a sector -- and I argue that energy storage  
23 might be that one, given the fact that it hasn't  
24 been addressed and solved yet, and we have some  
25 strategic advantages. But, my recommendation is

1 form a committee or a group that focuses within the  
2 Energy Master Plan on how we localize a sector in  
3 energy storage, and come up with recommendations.  
4 A committee that has public and private  
5 stakeholders. I don't know what the specific  
6 answer is. We have many of the best practices and  
7 learning experiences being active in having an  
8 energy storage in solar and wind and smart grid and  
9 in fossil fuels. We have, I believe, valuable  
10 advice and contribution that we can bring forward.  
11 But, there are many in the room that have amazing  
12 experiences that they can come together and have  
13 recommendations for the Energy Master Plan for  
14 localized in the sector, both in energy storage,  
15 that allows us to lower the cost, but, I would  
16 argue, enhancing the benefits for both the  
17 ratepayers and taxpayers. Thank you.

18 MR. SHEEHAN: Thank you very much.  
19 Our next speaker is Bill Wolfe. Okay. Gaylord  
20 Olson.

21 If I may, before we get started, on  
22 deck is James Pfeiffer, Gearoid Foley, William  
23 O'Hearn. And, that represents the last of the  
24 speakers I have who have indicated that they have  
25 submitted comments prior to the process. Sir?



1                   MR. BURCAT: I submitted comments and  
2 signed in.

3                   MR. SHEEHAN: Okay. You're name, sir?

4                   MR. BURCAT: Bruce Burcat.

5                   MR. SHEEHAN: Bruce Burcat. You're  
6 fourth on deck.

7                   Go ahead, sir.

8                   MR. OLSON: My name is Gaylord Olson.  
9 I'm not here representing any commercial interest.  
10 I'm a semi-retired electrical engineer. I happen  
11 to be on the advisory committee for engineering at  
12 Temple University in Philadelphia. I have an  
13 active interest in alternative energy in general,  
14 and energy storage.

15                   I'd like to leave you with one number  
16 today. And, I hope you remember this number.  
17 It's 2.8. And, I want to tell you what this number  
18 represents. I'll try to be clear.

19                   Last year there was a report published  
20 by the National Renewable Energy Laboratory, part  
21 of the Department of Energy -- that we all paid for  
22 through our income tax. The title of the report  
23 was the U.S. Solar Portable Take System Cost  
24 Benchmark for part of last year. There were five  
25 authors of this report. And, here are some of the

1 numbers. Actually, they wrote the numbers down  
2 into four major categories, the smallest being  
3 residential, the next size up was commercial, the  
4 next size up from that is utility scale, and then  
5 the utility scale fixed-tilt systems, and then  
6 another category, utility scale one-axis tracking  
7 systems.

8           Now, this gets a little bit into the  
9 weeds, maybe. But, when I say one-axis tracking,  
10 is that a term familiar to anybody here? I see  
11 some people nodding "yes". At any rate, it means  
12 that the solar panels can rotate to face the sun at  
13 all hours of the day, so you gather more energy  
14 that way when the panels can always approximately  
15 face where the sun line is. So, that's the very  
16 best possibility to get the most energy from a  
17 large scale system. And, fortunately, with our  
18 new governor, and we have the opportunity with  
19 community solar now, to have -- as far as I know --  
20 very large size arrays put out on open fields away  
21 from any city.

22           So, hear are some of the numbers that  
23 were in this report. For the residential,  
24 smallest scale, the cost for energy -- this is not  
25 power, this is energy -- and, you can assume it's

1 energy per year -- between 12.9 and 16.7 cents per  
2 kilowatt hour is the levelized cost of electricity  
3 for rooftop arrays. On the other end of the scale,  
4 the largest arrays, one-axis tracking utility scale  
5 cost, is a range of 4.4 to 6.1 cents per kilowatt  
6 hour. Now, if you take the mid points of those  
7 two ranges -- let's say fourteen cents per kilowatt  
8 hour for rooftop solar, and about five cents per  
9 kilowatt hour for one-axis tracking system, open  
10 field arrays, the ratio of those two numbers is  
11 2.8. I'd like you to remember that number and  
12 think about it. If you can buy ten kilowatts and  
13 have them on your rooftop, you can take the same  
14 investment -- according to these numbers -- and buy  
15 twenty-eight kilowatts, when you're a part owner of  
16 a large community array out in a big open field.

17 And, so, I hope that makes sense to  
18 everybody. And think about that as the best  
19 possible investment to give the most cost-effective  
20 solar electricity for New Jersey.

21 Two other factors that are related to  
22 this. If you happen to have a home that has  
23 enough space around it for large trees, then plant  
24 some trees around your home rather than put solar  
25 panels on your roof. If anybody's been out in the

1 open sun around here in the past few weeks, you'll  
2 know that it's pretty uncomfortable as compared to  
3 being in the shade of a large tree. It's the same  
4 for your home. Your home will have a lower air  
5 conditioning bill if it happens to have trees  
6 surrounding it to give it some shade. So, another  
7 cost benefit to being part owner of a community  
8 large array, rather than on your roof, is you'll  
9 have lower air conditioning bills for your home.

10 A third benefit is, if you look at the  
11 resale value of homes, you'll find that there's a  
12 very significant higher resale value for homes that  
13 happen to be surrounded by large trees. And, it's  
14 probably in the range of five to ten percent. I've  
15 collected some numbers on that. So, that  
16 represents another reason why everybody should be  
17 encouraged to be a part owner of a large community  
18 array, rather than rooftop. I know this goes  
19 against the grain of some people who have spoken  
20 here earlier, but, basically, I think it's going to  
21 be proven. Now, other states, of course, are way  
22 ahead of us in terms of community scale and large  
23 scale solar arrays.

24 Another point that I wanted to get to  
25 refers to Item 9, the discussion point. Which is

1 how should the state address the base load needs  
2 versus intermittent elements of clean energy  
3 generation? Now, we've heard a little bit about  
4 energy storage. But, with a large enough scale of  
5 energy storage, we really don't need anymore base  
6 load generation. And, let me explain that a little  
7 bit further.

8           By far, the largest form of energy  
9 storage in the world today were utility scale  
10 electricity happens to be what's called pump  
11 hydro-electricity. I'm sure some of you in the  
12 audience are familiar with that. Does that ring a  
13 bell with anybody here? Okay. All right. If  
14 not, look it up in Wikipedia. That is between 95  
15 and 99 percent of large-scale energy storage today  
16 in the world. Now, people will respond typically  
17 that the experts have studied this already and they  
18 cannot find anymore reasonable places to put dams  
19 to utilize pumped hydro-electricity. It so happens  
20 that in Germany there are at least three locations  
21 where they have large-scale utility pumped  
22 hydro-storage without a dam. And, the way that is  
23 done is with a naturally flowing river as a source  
24 of water at the bottom. And, and artificial  
25 reservoir with storage of the water at the top of a

1 nearby hill. No dam. No disruption of fish or  
2 anything of that sort.

3 Now, if any of you have ever hiked  
4 along the Appalachia trail up in the northeast  
5 corner of our state, you will see that there a  
6 thousand foot-high hills right next to the Delaware  
7 River. So, we can provide a massive energy storage  
8 of that form along the Delaware River. And, this  
9 can also be done along the Hudson River. Perhaps  
10 more in New York than New Jersey. But, basically,  
11 anywhere there's a river that has a high enough  
12 flow rate, and hills that are high enough, you can  
13 provide energy storage on a massive scale, which  
14 will enable a lot more solar and wind being  
15 intermittent to provide the power needed. So,  
16 that's why I say, we don't absolutely have to have  
17 base load continuous power as something to make up  
18 for the intermittency of solar and wind.

19 Also, a lot of the points that I'm  
20 making here are currently on the internet. If you  
21 want to see them, go to the website for the New  
22 Jersey Sierra Club. Look at their latest  
23 newsletter, and there's an article on Page 13 of  
24 the Sierra Club current newsletter. A few more  
25 details will be found there.

1                   So, that's about it. Except for one  
2 final point. I would recommend that you all keep  
3 an open mind with respect to the future for nuclear  
4 power. Don't just judge it on what we have today.  
5 There are lots of people researching smaller and  
6 more economical and safer forms of nuclear power  
7 that we should at least consider, rather than  
8 excluding nuclear forever more. Thank you for  
9 listening.

10                   MR. SHEEHAN: Thank you. James  
11 Pfeiffer is next.

12                   MR. PFEIFFER: Good afternoon. My  
13 name is James Pfeiffer. I do represent a company,  
14 Green Waste Energy. Chairman Sheehan, Ms. Corbit,  
15 Commissioner Chivukula, and panel members, thank  
16 you.

17                   So, the Energy Master Plan talks about  
18 innovation. And, that's what I'm here to talk  
19 about. The best way to get someplace is to open  
20 your minds, and to take a look at other  
21 technologies, other things that are out there that  
22 can move you in the direction that you want to go.  
23 And, along with innovation goes new jobs. They go  
24 hand-in-hand. So, as opposed to some of the  
25 earlier opening statements, I am recommending a

1 change, an update, to the code that defines  
2 renewable energy. And, I would like people to  
3 consider the addition of a new Point 8 that states,  
4 electricity generated by using the gas produced  
5 from the processing of any carbonaceous matter into  
6 fuel.

7           Now, most of you guys are not familiar  
8 with this part of code. And I wouldn't be if it  
9 wasn't part of my business. But, the code talks  
10 about anaerobic digestion. That's okay. It talks  
11 about waste gas from landfills as being okay. So,  
12 how about another process? How about a process  
13 like pyrolysis to take this wastewater treatment  
14 sludge and make it into a synthetic gas, then to  
15 create electricity from that gas. And, it's at  
16 that point, technology independent. It doesn't  
17 matter whether it's a turbine, a reciprocating  
18 engine, or a fuel cell to take that gas. So, the  
19 benefit is it's something that's easy to  
20 understand, like wastewater treatment sludge. If  
21 you go in with dry sludge, you have a hundred  
22 parts, you do anaerobic digestion, you still have  
23 eighty parts of the material left that you have to  
24 dispose of. And, you've created two parts of  
25 electricity -- some random number. If you do



1 something like pyrolysis, then you're going to have  
2 only fifteen parts left over, and you're going to  
3 have two or three times as much electricity. But  
4 it's any carbonaceous material. Which is why I'm  
5 suggesting it like this. It doesn't necessarily  
6 reflect pyrolysis. It could be gasification, or  
7 anything else. It's innovative. It's different.  
8 It is not incineration.

9           So, what we've got then is you're  
10 supporting a lot of the other fundamental -- first  
11 of all, this is Point 2 on your list of discussion  
12 points. What it does, though, it supports a lot  
13 of the other things in these other points. It  
14 supports job. Jobs to build these plants, jobs to  
15 run these plans. It supports environmental  
16 justice. These things are clean. These we're  
17 talking about the generation is going to be at  
18 least as clean as the emission standards for a  
19 combined heat and power system, possibly as clean  
20 as fuel cell, which means once you have the gas you  
21 can put them very close to populated areas. I  
22 would never recommend, really, putting them in  
23 downtown. But, you can certainly put them very  
24 close. It supports electric vehicle industry,  
25 because now you have a constant source of power.

1 It's not just daytime or windy power, it's  
2 constant. So, you can make electricity at night  
3 and rejuvenate all those electric vehicles. The  
4 life cycle costs of this are very reasonable, if  
5 you compare them to the other technologies of  
6 taking something and running it for a while and  
7 then having to dispose of it. So, I'm relatively  
8 sure.

9 That's all I have to say. Add a new  
10 Point 8, and I'll be glad to give you the verbiage  
11 again any time you want it. Thank you.

12 MR. SHEEHAN: Thank you. Next speaker  
13 is Gearoid Foley.

14 MR. FOLEY: Director Sheehan, members  
15 of the committee, thank you very much for giving me  
16 this opportunity. I'm here representing the  
17 Department of Energy's Combined Power and Technical  
18 Assistance Partnership. We did submit written  
19 comments, so I'm just going to cite a few of those  
20 comments, just brief, and a couple of reference to  
21 the points in the question list.

22 The DOE's CHP Technical Assistance  
23 Partnerships work with end users and policy makers  
24 to assist in transforming the market for combined  
25 heat and power, waste heat to power, and district

1 energy technologies throughout the United States.

2 Combining power technologies holds  
3 enormous potential to improve the nation's energy  
4 security and resiliency, and reduce greenhouse gas  
5 emissions. CHP supports our move to a clean energy  
6 economy, and the creation of green jobs. The  
7 Department of Energy has long championed CHP  
8 technologies to harness the flow of power of CHP to  
9 help the nation meet its energy goals.

10 CHP can be a dispatchable power  
11 resource that can work in conjunction with  
12 renewables, including wind and solar, to provide  
13 cost-effective power in hybrid applications. Such  
14 applications either at grid level or at micro-grid  
15 level, allow for a transition to afford renewable  
16 base grid in a cost-effective manner, that is  
17 compatible with the existing grid infrastructure.

18 CHP, as part of a community-based  
19 hybrid micro-grid including renewables and battery  
20 storage, represents a cost-effective means of  
21 providing resilient base load power and thermal  
22 energy for local community, including critical  
23 infrastructure in an accessible way for all.

24 CHP can play a key role in addressing  
25 24-hour base load, and can be configured to be

1 dispatchable as necessary when renewables are not  
2 available. CHP provides a cost-effective and  
3 clear near-term technology option as other  
4 technologies are being developed. CHP can be  
5 designed to meet local thermal needs, and export  
6 power to the grids when grid supplies are deficient  
7 to meet demands.

8           The advancement of CHP is part of the  
9 U.S. Department of Energy's Office of Energy  
10 Efficiency and Renewable Energy -- EERE -- mission  
11 to create sustained to American leadership and to  
12 transition to a strong prosperous America powered  
13 by domestic, affordable, and secure energy for  
14 industrial, manufacturing, federal, institution,  
15 commercial, and multi-family sector.

16           I want to just address a couple of the  
17 aspects in the -- particularly addressing the  
18 question list. On issue Number 2, question of  
19 flexibility in the definition of clean energy.  
20 Allowing for combined heat and power, which is a  
21 fossil fuel, typically can be bio-fuel but  
22 typically fossil fuel technology, does provide the  
23 option to provide a very cost-effective means of  
24 obtaining base load power.

25           In question Number 3, in terms of

1 obstacles. Certainly this morning, earlier, we  
2 heard from ratepayer -- rate counsel. Cost, and I  
3 think we recognize cost being one of the issues  
4 that need to be overcome. As CHP is  
5 cost-effective, that is really what spurs the use  
6 of CHP currently. So, it is a cost-effective  
7 method as we move forward with the transition, and  
8 gives us an option in that tool box as we move  
9 forward with this transition.

10                   Number 4. Just the issue of stranded  
11 cost. It's not necessarily defined very well, but  
12 I think just one issue relating, again, to combined  
13 heat and power. These are typically twenty-year  
14 length investments. Twenty-year life cycle  
15 investments. They're not infrastructural  
16 fifty-year life cycle investments, so they fit into  
17 that transition timeline. And, they are typically  
18 shared in large part by the whole site for that  
19 system.

20                   Reference just specifically to Number  
21 9. As I mentioned before, I think CHP is probably  
22 the go-to technology for base load power through  
23 this transition process. Most energy efficiency  
24 fossil fuel combined in a combined heat and power  
25 configuration available today, always better than

1 the best of the fossil fuel grid technologies.

2 And, finally, on Question Number 12,  
3 on the transition portfolio mixture. Again, I'd  
4 encourage maintaining CHP in the mix just adds to  
5 the tool box as a cost-effective method to  
6 assisting that transition towards a hundred percent  
7 renewable future. Thank you very much.

8 MR. SHEEHAN: Thank you. Agnes  
9 Marsala, could you step up?

10 MS. MARSALA: I applaud the state's  
11 efforts to transition to clean renewable energy. I  
12 feel we have more of an imperative to do so. We  
13 are at a common crisis, and need a ten-year phase  
14 out of fossil fuels. And, the best way to start is  
15 a moratorium on all fossil fuel infrastructure.

16 Further, all approved methane  
17 infrastructure should be halted until a full review  
18 of the permitting process under the Christie  
19 administration is conducted. There is no clear  
20 example, in my opinion, of regulatory capture than  
21 what we have witnessed in last eight years. Well  
22 past time we rethink that kind of policy, and  
23 reject the last twenty-five years of deregulation  
24 and market tools, which are proven to be a  
25 disaster. And, I applaud the Governor for taking

1 these steps.

2           We need to repeal the New Jersey  
3 energy deregulation law and replace it with truly  
4 public utility regulation, and public ownership.  
5 It's time for real energy democracy. It's time  
6 for bold ideas, such as cooperatives. Municipal  
7 control of certain functions and operations and  
8 reform efforts directed at utilities. Even a  
9 public works approach to energy transition that  
10 worked so successfully during the middle decades of  
11 the last century.

12           It's clear that the profits-based  
13 approach has failed, and in fact is a profound  
14 threat to all living things. Publicly-owned and  
15 operated energy may be the most equitable,  
16 efficient, and effective way to address the climate  
17 crisis, to protect workers, strengthen unions, and  
18 create an energy system responsive to community  
19 needs. Given the unions significant  
20 representation and existing energy utilities, and  
21 their ability to better protect workers in most  
22 publicly-owned and operated systems, the trade  
23 union movement has a much greater role to play in  
24 developing publicly renewable power. Creating  
25 energy systems that are both ecologically

1 sustainable and equitable depends largely on the  
2 ability to shift power from the fossil fuel  
3 industry to workers and communities. Utilities  
4 under public ownership and control, either through  
5 re-municipalization or by reform of existing public  
6 utilities, would be able to rapidly scale-up  
7 renewable energy, protect workers' rights, and  
8 generate decent and stable jobs. Create an energy  
9 system based on ecologically sustainable methods of  
10 energy extraction, transport, and use, be  
11 responsive to the needs of the community, address  
12 energy poverty, and aggressively promote energy  
13 conservation.

14           These ideas are not beyond the  
15 imagining. Back in 1990, the Florio administration  
16 combined some of the BPU energy programs with the  
17 DEP, forming the DEPE -- the Department of  
18 Environmental Protection and Energy, for example.  
19 Further, there are examples of municipally-owned  
20 utilities across the U.S., in places like  
21 Sacramento, Austin, Chattanooga, Aspen, and Winter  
22 Park, Florida.

23           Now, I've literally quoted from the  
24 Trade Unions for Energy Democracy's working papers  
25 here. Specifically, Power to the People Toward



1 Democratic Control of Electrical Power Generation.  
2 This, and eleven other really great titles, can be  
3 found at UnionsforEnergyDemocracy.org. And, I  
4 highly recommend everyone give them a read. And, I  
5 thank you very much for giving me this opportunity  
6 to speak.

7 MR. SHEEHAN: Thank you very much.  
8 Our next speaker is William O'Hearn.

9 MR. O'HEARN: Good afternoon. And  
10 thanks everybody for sticking around. My name is  
11 Bill O'Hearn. I'm the Corporate Communications and  
12 Outreach Manager for a non-profit group called  
13 Business Network for Off-Shore Wind. And we are a  
14 non-profit, but we take a business approach to the  
15 off-shore wind industry. We basically try to  
16 bring a lot of the wisdom from Europe over here  
17 into the east coast of the United States.

18 I want to thank Mr. Sheehan and the  
19 rest of the BPU for the great job that you've done  
20 on off-shore wind. We appreciate it. And, for  
21 having me here today.

22 So, here's the bad news for this  
23 group. People who know me, know that once I get  
24 talking about off-shore wind, I can go on for  
25 hours. Right? And here's the good news; the good

1 news is I have a dinner appointment with my wife  
2 and daughter in Boston at seven o'clock tonight.  
3 And, perhaps, even better news, is that in terms of  
4 full disclosure, my organization is proud to be  
5 part of what we call the RanBall team that is  
6 developing the strategic plan for off-shore wind  
7 for the state. So, I'm going to keep my remarks  
8 general, because, of course, we are working on the  
9 actual off-shore wind plan for New Jersey. And,  
10 we're proud to be doing that.

11           So, I also want to recognize Jersey  
12 Renews, members of Jersey Renews, and my colleague,  
13 Doug O'Malley, that has been great to work with,  
14 and helping us explain our point of view to the  
15 environmental community. And we had some great  
16 support there, and we appreciate that.

17           So, just a couple of bullets, a couple  
18 of points. I was here, by the way, I testified in  
19 the 2011 Energy Master Plan. And, I was here for  
20 the 2015 update. And I can assure you, this is a  
21 much happier occasion than those were. So, enjoy  
22 this. This is actually good, what we have here  
23 today. We appreciate it.

24           One of the points I would make is that  
25 -- and this is from the 2011 EMP and from 2015 EMP

1 update -- in those documents there was a real  
2 reliance on natural gas and new gas pipelines as  
3 the best way to meet electricity demand. Not  
4 surprisingly, considering that was the Christie  
5 administration back then. And, that was the flavor  
6 that we got. What I recommend, and what I'm  
7 hearing today, is that we change the whole flavor.  
8 Completely redo the plan. So that it has much more  
9 of the language of the climate change, global  
10 warming in it, and reliance, on stuff like new  
11 technology, and, of course, clean energy, as a way  
12 of driving economic development.

13           One of the things we cite in the work  
14 that we do, is we talk about the City of Riverhaven  
15 in Germany, which was completely revitalized by the  
16 off-shore wind industry. Same thing for some very  
17 sad fishing villages in England, one of which is  
18 called Gull. And, basically, has completely  
19 transformed itself into a high-tech assembly and  
20 off-shore wind manufacturing. So, that kind of  
21 economic development is possible with clean energy  
22 and driving the fighting against climate change.  
23 That's what really pushes us to do the work that we  
24 do.

25           So, one of the things that we'd like

1 to see, is we want to make sure that there's a  
2 description in some detail of how the clean energy  
3 elements of solar -- as you've heard a lot about  
4 today -- and wind conservation and storage will  
5 work together to achieve a hundred percent clean  
6 energy by 2050 goal. For example, I think it's  
7 important that we explain how the equitable and the  
8 daily cycles of solar and off-shore wind compliment  
9 each other. Quick example, is that off-shore wind  
10 is extremely strong in the winter, when solar is  
11 relatively light. Also, in terms of the -- if you  
12 think about the daytime hour-by-hour production of  
13 solar, of course it goes like this, with midday  
14 being strongest. And the way the off-shore wind  
15 goes is more like this. And we crank out the most  
16 power late afternoon, early evening, when those air  
17 conditioners are coming on in the summer time. So,  
18 it's a good match. I mean, these technologies can  
19 work together.

20 Of course, we recognize that it's a  
21 new technology. It's going to take some  
22 investment. And, so, we're certainly conscious --  
23 we heard from the advocate, and we completely agree  
24 that things should be done year by year in a  
25 planned transparent basis to minimize impact on

1 ratepayers. One of my jobs working with the Board  
2 will be to continually explain the relationship and  
3 the development between the Energy Master Plan and  
4 the Off-Shore Wind Strategic Plan, which again,  
5 we're part of that team.

6 And then, I guess, lastly, just to  
7 keep my remarks short -- and again, I appreciate  
8 your patience -- is I want us to make sure that we  
9 acknowledge New Jersey's role, and as a national  
10 clean energy leader and the spirit of the old  
11 Energy Master Plan that was done in 2008. Let's  
12 get back to that, that spirit, that desire to be  
13 the best. And we recognize the governor for  
14 pursuing that. And, we want to keep that as an  
15 ongoing goal for 2050. Thanks very much.

16 MR. SHEEHAN: Thank you very much.  
17 Bruce Burcat. And then Joe Accardo next.

18 MR. BURCAT: Good afternoon. I am  
19 Bruce Burcat. I'm the Executive Director of the  
20 Mid-Atlantic Renewable Energy Coalition. We're  
21 called MAREC. MAREC is a 501c(3) corporation that  
22 was founded to help advance the opportunities for  
23 renewable energy in this region, particularly in  
24 New Jersey and other states in the mid-atlantic, as  
25 part of the PJM region in the grid operator.

1           Our members consist of utility scale  
2 wind, including off-shore wind; and, solar  
3 developers, wind turbine manufacturers, and some  
4 non-profit organizations. MAREC supports  
5 Governor's Murphy's goal of moving away from the  
6 reliance upon fossil fuels as New Jersey's primary  
7 source of energy. A commitment to clean energy is  
8 the cornerstone of the policy to remove impacts of  
9 global warming, and other harmful emissions. MAREC  
10 believes that a future of renewable energy, coupled  
11 with energy storage by 2050, is achievable. And,  
12 will not only help protect New Jersey citizens from  
13 global warming, but continue to lead New Jersey  
14 forward as a state investing in its economy, thus  
15 bringing jobs, manufacturing, and new off-shore  
16 wind industry into the state.

17           Conversion to clean energy from fossil  
18 fuels will also require reliance. And I think this  
19 is very important -- a significant purchases of  
20 utility scale solar and on-shore wind from the PJM  
21 region to meet the goals of fifty percent, and a  
22 hundred percent clean energy. And that would also  
23 include, obviously, energy efficiency, as well.  
24 Clean energy, in our opinion, should be defined as  
25 renewable energy, a hundred percent carbon-free,

1 non-emitting, environmentally sound resources that  
2 are truly renewable in the sense that they do not  
3 deplete over time. These are sources like solar,  
4 wind, hydro-electric facilities -- three megawatts  
5 or less -- geo-thermal energy, and energy  
6 efficiency -- which is not renewable but obviously  
7 an important component in all of this. The state  
8 has already begun its transition to clean energy  
9 production. Obviously the enactment of the fifty  
10 percent RPS bill, 3500 megawatts of off-shore wind  
11 by 2030, a storage study and targets for storage,  
12 and other aspects of that bill we entirely support  
13 with a couple of minor exceptions.

14 Right now we've heard some comments  
15 earlier that on-shore wind coming from out of state  
16 is something that some folks, especially the  
17 distributor solar folks that had businesses here in  
18 New Jersey are concerned about. But, I think what  
19 the state has to really recognize is that there's  
20 limited land mass and area to put all this solar.  
21 There's extreme difference in cost between what  
22 might happen if you're overloaded with solar in the  
23 state because of a hundred percent requirement when  
24 the cost -- and we've heard some really low numbers  
25 today -- with the cost of off-shore wind coming

1 from other states is significantly cheaper. Part  
2 of this whole idea is to get to a hundred percent  
3 renewable energy or clean energy at a reasonable  
4 cost. And, I think that has to be a big component  
5 of this. And, it's abundant. And I think one of  
6 the major points of this is that in New Jersey,  
7 which has done a lot already to limit coal and  
8 other fossil fuel generation in the state -- if  
9 it's getting some of its renewable energy from out  
10 of state, that renewable energy is going to be  
11 replacing coal, other fossil fuel energy in those  
12 states. And that pollution coming from those other  
13 states are affecting New Jersey. So, there's a big  
14 advantage for New Jersey to continue to rely on  
15 that. Especially if we're going to fifty percent  
16 and even further going to a hundred percent goals  
17 for clean energy.

18 One other thing. I represent, of  
19 course, solar -- utility scale solar developers,  
20 and there's sort of -- and this works somewhat  
21 against my wind utility members, but they  
22 understand this, that there shouldn't be  
23 competition between utility scale solar, utility  
24 scale wind. And, so, right now there's a  
25 limitation that out of state solar cannot



1 participate in the -- it's an order,  
2 interpretation, from the Board of Public Utilities,  
3 but it does not allow out-of-state solar to compete  
4 within the direct market in the Class I REC market.  
5 Not the solar REC market, but the Tier 1 REC  
6 market. Our members believe that that should be  
7 something that's opened up. Maybe we have to do  
8 through legislation. But, it's something very  
9 important to your competition. And, to also open  
10 up additional resources that are in surrounding  
11 states to, as I said, help meet the goals as a  
12 requirement. So, I think that's very important.

13 I think the state should use the RPS  
14 model -- it's worked very well in the state --  
15 moving forward. So when we look to from fifty  
16 percent to a hundred percent, I think the RPS model  
17 at that point should be looked at very closely, and  
18 that should be a way to getting to a hundred  
19 percent. And I will tell you, that in the  
20 mid-atlantic region when the Lawrence Berkeley  
21 National Labs looked at this, what's driving  
22 renewable energy development -- because that's what  
23 we want -- the mid-atlantic region is primarily  
24 almost a hundred percent being driven by RPS goals  
25 in particular states. So, that's really important.

1           And, some things very important to my  
2 members but also has a tremendous benefit to New  
3 Jersey ratepayers, is that a portion -- we think a  
4 portion of the basic generation service, BGS,  
5 should be obtained through competitively procured  
6 bundled long-term contracts of renewable energy and  
7 renewable energy credits. It reduces prices for  
8 customers. We have a study specific to New Jersey  
9 that actually shows that, for hundreds of millions  
10 of dollars. That's a way of keeping costs down  
11 again. We're not saying do it all, but do a  
12 portion. Just like you would have an investment  
13 portfolio, you're not going to want to put it all  
14 in short-term investments the way it is being done  
15 now. Some of it should be long-term investments,  
16 as well. I think that's really important.

17           The other thing is that a long-term  
18 contract for solar or wind, because there's no fuel  
19 costs, is going to be consistent throughout the  
20 whole term -- whether it's ten, fifteen or twenty  
21 years. It's consistent, and it's going to provide  
22 an edge against prices that involve the stock  
23 market that's not there.

24           And, finally, energy storage and  
25 increasing transmission build-out to support

1 renewable energy integration are important policies  
2 to ensure a reliable grid in the future to achieve  
3 a hundred percent clean energy target.

4 In sum, we believe that New Jersey is  
5 on the right track, and support the Governor's  
6 vision of moving New Jersey away from reliance on  
7 fossil fuels, and to generate a portfolio -- by  
8 generating a portfolio of a hundred percent clean  
9 energy. So, thank you very much.

10 MR. SHEEHAN: Thank you very much.  
11 Joe Accardo.

12 MR. ACCARDO: Thank you. Good  
13 afternoon. My name is Joe Accardo, I'm head of  
14 regulatory for PSE&G. And, wanted to spend just a  
15 little time today provide some additional thoughts  
16 and comments with respect to the Energy Master  
17 Plan. And, specifically, with respect to today's  
18 Clean and Renewable Power stakeholder meeting.

19 PSE&G has a long history, well over a  
20 hundred years, of partnership with New Jersey, and  
21 aligning its interests with those of the state.  
22 This partnership has been critical to development  
23 of clean and renewable power in the state, making  
24 New Jersey one of the recognized leaders in the  
25 installation and operation of clean, carbon-free

1 energy technologies. Governor Murphy's 2019  
2 Energy Master Plan gives PSE&G a unique opportunity  
3 to build on that prior success, as we implement his  
4 vision of a hundred percent clean energy future.

5 My comments today will focus really on  
6 six core areas coming out of the list of nineteen,  
7 of whatever it was, that each of the parties  
8 received. Focus on six things; what is clean  
9 energy, what's the definition of it; how we  
10 transition to a hundred percent clean energy by  
11 2050; evaluating existing state policies as they  
12 relate to clean energy programs; planning and  
13 zoning issues that impact clean energy,  
14 transportation and energy; and, economic growth and  
15 workforce development. And then finally we're  
16 going to talk about environmental justice. So,  
17 those will be the six areas that we focus on here  
18 in my brief statement.

19 So, what is clean energy? Climate  
20 change is arguably the single biggest environmental  
21 threat to the planet. The State of New Jersey and  
22 Governor Murphy have made reducing greenhouse gas  
23 emissions in top priority, including most recently  
24 the Governor's action to rejoin the Regional  
25 Greenhouse Gas Initiative. To support these

1 efforts, clean energy should be defined as any  
2 energy source that emits zero greenhouse gas or  
3 other air emissions. This definition should be  
4 broad enough to encompass the multi-year range of  
5 the implementation process. Thus clean energy  
6 would essential include solar, off-shore wind,  
7 energy storage -- so long as energy stored is  
8 derived from clean energy sources -- and nuclear  
9 power, the number one clean energy resource in the  
10 state. The inclusion of clean, central station  
11 nuclear power generation into the clean energy  
12 sector will be essential if we were to realize the  
13 one hundred percent clean energy goal set by  
14 Governor Murphy, while maintaining a safe and  
15 reliable electric grid.

16 Reaching the Governor's goal will not  
17 be easy, as there are many obstacles to overcome  
18 along the way. The one hundred percent clean  
19 energy goal will likely have customer rate  
20 implications that cannot be ignored. Consistent  
21 with the Governor's goals, every effort should be  
22 made to minimize those rate impacts. In addition,  
23 the intermittent nature of many clean energy  
24 sources -- off-shore wind, solar -- will require  
25 both a continued reliance on nuclear base load

1 units, and a significant investment in transmission  
2 and distribution assets and technologies designed  
3 to mitigate the intermittent nature of wind and  
4 solar. Governor Murphy's goal of achieving 2000  
5 megawatts of energy storage by 2030 will certainly  
6 be a step in the right direction, further  
7 integrating renewable energy sources into the daily  
8 mix of energy consumed in the state.

9           Transition to a hundred percent clean  
10 energy by 2050. Consistent with the Clean Energy  
11 Act of 2018, the state should adopt policies which  
12 encourage competitive markets with the goal of  
13 encouraging and ensuring the emergence of new  
14 interests that can foster innovations and price  
15 competition in the clean energy sector. When new  
16 market participants do not invest in certain aspects  
17 of the clean energy sector, however, the state  
18 should continue to expand current policies and  
19 programs that encourage New Jersey utilities to  
20 develop renewable projects on under-utilized and  
21 underdeveloped landfills and brown fields. The  
22 state should encourage innovative technologies by  
23 establishing a New Jersey research and development  
24 group that would allow utilities and other market  
25 participants to promptly approve pilots to test new

1 technologies, and establish best practices based on  
2 successful programs in other states and countries.

3           Lastly, New Jersey should construct  
4 new natural gas infrastructure, such as expansion  
5 of high-pressure distribution systems and  
6 construction of new liquefied natural gas plants,  
7 to ensure the reliability and resiliency of the gas  
8 and electric supply.

9           With respect to state policy, the  
10 state's become a clean energy leader in many  
11 respects. It's now one of the more aggressive  
12 renewable portfolio standards in the nation, and  
13 it's opened up the solar market with its community  
14 solar program. And, it has established aggressive  
15 targets for energy efficiency. To achieve this  
16 long-term one hundred percent clean energy goal,  
17 the state should look to utility partnership  
18 policies adopted by other states with similar  
19 long-term goals. In many instances, states have  
20 adopted policies that align utility incentives and  
21 business models with clean energy goals. For  
22 example, to achieve carbon emission reductions from  
23 the transportation sector, California recently  
24 adopted policies that will reward its electric  
25 utilities for accelerating the build-out of the

1 electric charging infrastructure. State's with  
2 aggressive energy efficiency targets, such as  
3 Massachusetts, New York and California have adopted  
4 revenue decoupling mechanisms for their  
5 gas/electric utilities, so utilities can  
6 aggressively pursue energy efficiency goals without  
7 harming their bottom line.

8 PSE&G believes that the electric and  
9 gas utilities are central partners in the pursuit  
10 of this goal. We welcome this partnership in  
11 transitioning the utility business model to one in  
12 which its business success is fully aligned with  
13 all of the state's clean energy goals.

14 With respect to planning and zoning.  
15 The Energy Master Plan should acknowledge the  
16 economic and environmental benefits of electric  
17 transportation, and identify specific policies to  
18 advance and accelerate their adoption across the  
19 state. Indeed, PSE&G believes that clean  
20 transportation will be crucial if the state is to  
21 achieve Governor Murphy's one hundred percent clean  
22 energy goal. Electric vehicles will be critical  
23 because every electrically fueled mile by an  
24 automobile or truck produces seventy percent less  
25 emissions than a gas fuel model. Utilities should



1 be encouraged to build a robust electric vehicle  
2 charging infrastructure to support the growing  
3 clean transportation sector. PSE&G looks forward  
4 to discussing clean transportation options at the  
5 September 20th stakeholder meeting.

6 With respect to economic growth and  
7 workforce development. It's well understood that  
8 investments in clean and renewable energy yield  
9 good, high-paying jobs. PSE&G is committed to  
10 working with the BPU and New Jersey Department of  
11 Labor and Workforce Development, to ensure that  
12 it's workforce development is an integral part of  
13 it's clean energy efforts. Establishing New Jersey  
14 as a national leader in clean energy through the  
15 Governor's commitments to energy efficiency,  
16 electric vehicles, and off-shore wind provide a  
17 significant opportunity to reduce greenhouse gas  
18 emissions, while also creating jobs and benefiting  
19 customers.

20 And, lastly, with respect to  
21 environmental justice. The state should set  
22 policies and programs that encourage investments  
23 into clean energy into overburdened communities.  
24 PSE&G's upcoming clean energy future filing is one  
25 such program that specifically focuses on these

1 overburdened communities to ensure that they have  
2 access to energy efficiency programs, LED street  
3 lights, energy storage, and the benefits of vehicle  
4 electrification. Other policies the state should  
5 consider include establishing utility rate  
6 structures to ensure that everyone that is  
7 connected to the grid and taking advantage of the  
8 attributes of the grid is paying for the  
9 investments made by the utility in the grid.

10 PSE&G is willing to participate in  
11 other discussions with state to bring other clean  
12 energy solutions, including solar energy  
13 technologies, to these under-deserved markets.  
14 PSE&G should continue to be an important vehicle to  
15 ensuring universal access to clean energy  
16 advancements. Thank you.

17 MR. SHEEHAN: Thank you very much. Is  
18 there anyone else who had pre-submitted comments?  
19 Lyle. And Lyle is all that stands between us and  
20 lunch.

21 MR. RAWLINGS: I pre-submitted these  
22 comments, Director Sheehan, and also made  
23 printouts.

24 MR. SHEEHAN: Appreciate that. Thank  
25 you. Thank you.

1                   MR. RAWLINGS: Thank you, Director  
2 Sheehan. I'm Lyle Rawlings, president and  
3 co-founder of the Mid-Atlantic Solar Energy  
4 Industries Association, or MSEIA. MSEIA for  
5 twenty-one years has been advocating for solar  
6 energy and solar energy businesses in the  
7 mid-atlantic region. And, we started when solar  
8 energy was really a scientific curiosity, right  
9 through now when it's the fastest growing source of  
10 new electric generation capacity in the world.

11                   Throughout that time we've advocated  
12 on three simple principles for policy. One; grow  
13 solar energy as quickly as possible. Two; do so at  
14 the least possible cost do ratepayers. And, third;  
15 create a diverse market, especially with  
16 opportunity for local New Jersey businesses to  
17 thrive and create local New Jersey jobs. And,  
18 it's gratifying to see such a great array of staff  
19 talent here today. And we know that you guys have  
20 a little bit of work on your plate right now, and  
21 you have a lot of other things to do. So, we  
22 appreciate your showing up and staying all day to  
23 hear this testimony. And we understand that more  
24 help is on the way. You got new talent coming in,  
25 and that's gratifying.

1           Because, the magnitude of the job is  
2   incredibly impressive. Before you couldn't get to  
3   the details of the clean energy law and what it  
4   requires the BPU to do, and what it requires  
5   society and industry to do. Just the nature of the  
6   goal itself, a hundred percent renewable energy,  
7   when you're talking about a full transition of the  
8   way the society uses and generates something as  
9   fundamental to our economy as energy is, you know  
10  that the scale and complexity of that task has to  
11  be daunting. And it is. It's matched only by the  
12  urgency of dealing with climate change and  
13  pollution, which has been another issue of  
14  unprecedented worldwide scale and complexity. And  
15  this change, this transition, it's going to have  
16  cost attached to it, significant cost. That means  
17  the technical complexity, the economic complexity  
18  and the policy complexity, are going to require a  
19  great deal of effort and hard work, a lot of  
20  creative thinking, and advanced expertise is going  
21  to be required to get to this goal at the least  
22  possible cost. MSEIA has substantial internal  
23  expertise, and also relationships with some of the  
24  top creative thinkers and researchers in the world  
25  at our beckon call. And, we pledge those assets

1 and our energy and determination to the BPU and to  
2 the Governor's office to help realize these goals.

3 Now, our initial testimony at this  
4 time is going to answer many of the questions for  
5 their session. Not in order. We'll be giving more  
6 detailed testimony on certain aspects of this  
7 challenge in the last two stakeholder hearings  
8 later on this month.

9 First, on solar energy and  
10 cost-effectiveness -- and there's a slide in your  
11 packet there, and this will be on the web for those  
12 of you who don't have this in front of you. On  
13 slide number three, MSEIA commissioned a study in  
14 2012 by Clean Power Research. They are the go-to  
15 guys for doing study of the cost effectiveness of  
16 the solar, and the value thereof. They're the ones  
17 who did it for Maine and for Vermont, they were  
18 mentioned previously in testimony. They did it  
19 for Austin. They did it for the State of Minnesota  
20 most recently. And they did it for us for New  
21 Jersey and Pennsylvania. The result was they  
22 showed a value delivered by solar energy. And this  
23 is the premium value over and above the actual  
24 market value of the energy. That premium value  
25 averaged seventeen cents, that's \$170.00 per

1 megawatt hour. Now, if we move to a more  
2 efficient incentive system for evaluating that  
3 delivered value, that \$170.00 is much much higher  
4 than the cost it will actually be. We expect that  
5 cost in the nearer term to be more like \$90.00.  
6 So, in other words, we're delivering substantially  
7 greater value than the cost of incentives necessary  
8 to drive that solar development. That's if we can  
9 get to a highly cost-effective system of  
10 incentives.

11 Which brings us to a couple of the  
12 short-term challenges we have. The first is  
13 closing the SREC market in an orderly fashion.  
14 More than a year ago, MSEIA, as well as some other  
15 industry folks, recognized that the SREC system  
16 would have to change to something else that's much  
17 more cost-effective. That its cost was a multiple  
18 of what it is in neighboring states. We believe at  
19 MSEIA that the SREC market needs to be closed in an  
20 orderly fashion so as to attack the existing  
21 investment, ten billion by that time, that  
22 investors have entrusted in the state. But, it  
23 needs to happen ASAP so that we can begin those  
24 savings as soon as possible.

25 Now, we also, based on our analysis,

1 we believe that there will be a necessity for  
2 establishing an interim program. Because if it is  
3 to be closed truly at the 5.1 percent per the law,  
4 we believe that will happen around the end of the  
5 year or January. And, that's not enough time to  
6 put a permanent lower cost program in place. We  
7 will need an interim program. And, we hope that  
8 the BPU will consider and work on the potential to  
9 do an interim program using a fixed SREC. Because  
10 we've analyzed the cost of doing a fixed SREC as  
11 and interim program, versus doing a tradable  
12 commodity SREC for an interim program. And we find  
13 that the commodity model will be approximately  
14 sixty percent higher in cost than the fixed SREC  
15 would be for the first four years, and then fifty  
16 percent higher for the next five years. And,  
17 obviously, with the caps that are in place, we  
18 can't afford to pay fifty or sixty percent more if  
19 there's a lower cost way to do it. And, we  
20 realize that will take some exploration, but it  
21 will also take some fast action if an interim  
22 program is to be in place in time.

23           The solar industry could probably take  
24 a few months of hiatus in between starting an  
25 interim program and closing down applications under

1 the old, but not much longer than that. We don't  
2 want businesses closing their doors or losing jobs.

3 Another short-term problem that would  
4 need to be addressed soon can be seen on slides  
5 five and six in your packet. And, that is the  
6 closure of circuits in New Jersey, this is  
7 accelerating where the utilities are saying that  
8 certain circuits will be closed to further solar  
9 development, or severely restricted to further  
10 solar development. Those slides show a map of the  
11 overall territory of Atlantic City Electric, where  
12 a large number of circuits are already closed or  
13 severely restricted. And, there's also a blow up  
14 of a single town where you can see in a particular  
15 town, in this case Sommers Point, virtually all of  
16 circuits in the entire town are closed to further  
17 solar development. Now, this can be addressed.  
18 It's based on antiquated and obsolete standards.  
19 And, it does not take advantage of capabilities  
20 that are already built in to solar invertors that  
21 can help overcome any voltage control problems that  
22 might exist. As we move forward into a renewable  
23 future, we're going to have a massive need to  
24 address these circuit closure problems.

25 Now, long-term challenges. This



1 hundred percent goal, as I said, is very daunting.  
2 There's a great deal of study that's needed to  
3 determine what is the most efficient and lowest  
4 cost way to get to that hundred percent. We're  
5 making policy decisions now. Those need to be  
6 informed by what will get us to the destination in  
7 the least possible way. And there are surprises  
8 when this is studied and researched carefully. We  
9 have to adopt the most appropriate drivers for  
10 solar and wind and storage. You need to aim those  
11 drivers at opportunities to create additional  
12 public good. Examples of that would be locating  
13 solar landfills and brown fields, that's a very  
14 valuable thing to do. We do want to minimize the  
15 extent to which we take green fields and make them  
16 into solar. It involves aiming solar at congested  
17 areas. It involves aiming it at low-income and  
18 environmental justice communities, and creating  
19 jobs in those communities. We also want to aim  
20 policies at the projects and locations that can do  
21 double duty. For instance, aiming battery  
22 incentives at locations that cannot only stabilize  
23 the grid with those batteries, but also provide  
24 resilient power for critical facilities. So, we  
25 can get a lot of extra value out of our incentive

1 dollar.

2           We want to address infrastructure  
3 issues for incorporating large amounts of  
4 intermittent renewables into the electric system.  
5 You can see on slide seven and eight a list of  
6 infrastructure needs that we need. That's a list  
7 of nine areas of infrastructure development that  
8 are needed. We're going to give more detailed  
9 testimony on that part at the next to last meeting  
10 which is on that topic.

11           We also need to change the utility  
12 business model to make sure that utilities are  
13 better able to be partners in development of  
14 renewable energy, while at the same time keeping  
15 utilities healthy. Because those nine  
16 infrastructure issues that I just talked about,  
17 many of them are utility-specific infrastructure  
18 issues. And, if the utilities are unable to invest  
19 in those because they're -- because the development  
20 of renewables is making them less healthy, we won't  
21 be able to get to where we're going.

22           That brings me to MSEIA pathway study,  
23 and slide nine shows that. This is another clean  
24 power research study. And, it's the most  
25 sophisticated and the most comprehensive one yet.

1 It was commissioned by the U.S. Department of  
2 Energy and the Minnesota Department of Commerce.  
3 The study is not yet published. It's finished, but  
4 not published yet. That will happen some time in  
5 October. But, we have a very close relationship  
6 with the lead authors, Dr. Mark Perez and Dr.  
7 Richard Perez, who have given us some of the  
8 advanced results of that. And some of those  
9 results are surprising. Less reliance on  
10 batteries, for instance, and more reliance on  
11 curtailment of solar. Turns out to be a cheaper  
12 way to get there. A key finding is that they have  
13 said the Minnesota can achieve one hundred percent  
14 solar and wind 24/7, including base load, at a cost  
15 of about five cents per kilowatt hour premium over  
16 the cost of wholesale energy. Now, that's a  
17 surprisingly low cost to get to one hundred  
18 percent. They also found that an even lower cost  
19 would be achievable if you just mix in five percent  
20 natural gas, and 95 percent solar and wind. That  
21 brought the cost down to 3.6 cents per kilowatt  
22 hours. It's a great indicator of where we can go  
23 in New Jersey. That we can get to this goal and we  
24 can get to it at a reasonable cost.

25 Another recent study by Lawrence

1 Berkeley Laboratories, part of the U.S. Department  
2 of Energy, indicated that getting to 44 to 50  
3 percent solar and wind by the year 2030 -- similar  
4 to your goals -- in New York ISO -- one of four  
5 regional transmission organizations that they  
6 studied -- but, in New York ISO, they said that  
7 getting to fifty percent solar and wind would lower  
8 the cost of wholesale energy by 39 percent. So,  
9 this is goods news in terms of our getting to that  
10 future.

11 And, that concludes my comments for  
12 today. And, we'll see you on the 24th.

13 MR. SHEEHAN: Thank you very much. At  
14 this point, ladies and gentlemen, we still have  
15 about thirty speakers registered to move forward.  
16 So, I think it's probably appropriate at this Point  
17 for us to take about a 45-minute break, give the  
18 court reporter a chance to feel her fingers.

19 So, we'd request that everyone be back  
20 at 2:30. Thank you.

21 (Whereupon the luncheon recess was  
22 held.)

23

24

25

1                   A F T E R N O O N   S E S S I O N

2                   MR. SHEEHAN:   Okay.   Ladies and  
3 gentlemen, thank you for coming back.   So, we're  
4 going to go ahead and get started again.   We have  
5 the court reporter is back.   Thank you.

6                   So, we'll go ahead and pick up where  
7 we left off.   We have a fair number of speakers  
8 left on the list, although it looks as though a few  
9 of them are not in the room.   As we move forward,  
10 we have the room until -- I don't want to say until  
11 the end, but we have the room until the end.   So,  
12 I'm going to go ahead and get started and call the  
13 first person.   David Gahl.

14                  MR. GAHL:   Thank you, Director  
15 Sheehan, members of the committee.   My name is  
16 David Gahl.   I'm the Director for State of Affairs  
17 for the NorthEast Solar Energy Industries  
18 Association.   SEIA is the national trade  
19 association of U.S. solar industry.   We have more  
20 than a thousand members across the country.   Many  
21 of our members are doing business in New Jersey.  
22 And, we have nearly forty firms that have an  
23 operating address in New Jersey, as well.   And, I  
24 SEIA represents all different market segments of  
25 the solar industry, from the utility scale segment

1 to distributed generation to community solar. We  
2 have represent all the different solar industry.

3 So, I'm going to keep these comments  
4 fairly brief. I've submitted written comments for  
5 the record. And, I'm just going to hit the  
6 highlights here today. First of all, SEIA  
7 strongly supports the hundred percent by 2050 clean  
8 energy goal. And, while we think that that  
9 long-term goal is laudable, we want to focus the  
10 Board's attention specifically on some of the  
11 near-term issues that are facing the solar  
12 industry. Some of my other solar industry  
13 colleagues talked about these issues already today,  
14 so I'll try not to repeat where I can.

15 But, first of all, first and probably  
16 foremost, one of the most pressing issues on the  
17 minds of my members is the closure of the current  
18 SREC program. We believe that more clarity should  
19 be provided in the final regulations and in  
20 potential guidance documents about how key  
21 decisions will be made about the market closure.  
22 In particular, how the Department will determine  
23 that the overall 5.1 percent goal has been reached.  
24 That is a critical decision. And, from our view,  
25 we believe that the attainment should be based on

1 the actual installations of solar, which actually  
2 raises some questions about what happens to that  
3 pool of projects that potentially have submitted  
4 applications. And there are a number of different  
5 ways, probably, to address that issue. But, we  
6 believe that the 5.1 percent the definition should  
7 be based on attainment.

8           And probably one of the most simple  
9 solutions would be that in the event that the 5.1  
10 percent -- when the 5.1 percent goal is reached,  
11 and there's an additional pool of projects that  
12 submitted applications, there could be a minor  
13 adjustment that's made administratively to the RPS  
14 to account for those additional projects, to give  
15 those applications ultimately a compliance home.

16           So, the next major issue involves the  
17 creation of a new incentive program to the  
18 following the existing program. So when the  
19 current program closes we'd ideally like to see a  
20 new program open, almost simultaneously. I believe  
21 this will promote an orderly transition from the  
22 old regime to the new regime.

23           And my comments now are largely going  
24 to be consistent with, I think, some of the  
25 comments that were made by Fred and the various

1 DeSanti's. So, essentially, what we're suggesting  
2 is that there's a need for the next version of the  
3 program to be modelled off the existing SREC  
4 program -- I'd like to call it an SREC II program.  
5 This is consistent with the way -- Massachusetts  
6 actually moved from their initial version of an  
7 SREC program to a modified version. And their  
8 program included a series of cost containment  
9 measures that employed factory that helped steer  
10 projects in certain directions. And I think all  
11 those tools can be employed in a New Jersey  
12 program, as well. And, in addition to that, we  
13 support making sure that the program, the next  
14 generation incentive, supports the development of  
15 all market segments, residential development,  
16 commercial projects, and community solar moving  
17 forward.

18 One issue I did want to raise, as  
19 well, was about Class I1 REC eligibility for solar  
20 projects. We heard a little bit about this from  
21 the gentlemen from MAREC earlier today. SEIA has  
22 many utility scale members that would like access  
23 to the New Jersey market. And, just to be crystal  
24 clear, we're not talking about access to the SREC  
25 market. We're talking about access to Class I



1 RECs. So, in our view, that eligibility should be  
2 revisited to allow all solar projects to be  
3 eligible for the RPS. And, we believe this puts  
4 large scale solar projects on equal footing with  
5 wind projects going forward.

6 And, lastly, I just want to point out  
7 this is already a proceeding that the Board has  
8 underway. But, community solar. Community solar  
9 is an important component in the market going  
10 forward. We are clearly interested in seeing the  
11 community solar pilot program move forward without  
12 any delays. Appreciate the governor's leadership  
13 on this issue, and the Board's leadership here, and  
14 we look forward to seeing the details of the  
15 proposal. But, clearly, community solar will have  
16 an important role to play in the solar market in  
17 the future. And, would like to see that move along  
18 as quickly as possible.

19 And, that concludes my thoughts.  
20 Thank you.

21 MR. SHEEHAN: Thank you very much.  
22 Next up Jeff Tittel.

23 MR. TITTEL: Thank up. Jeff Tittel,  
24 Director, New Jersey Sierra Club. And, I just want  
25 to say that the interest of so many people showing

1 up, I think really shows you should have another  
2 hearing just on this topic. Because I think  
3 there's a lot more people who left that probably  
4 like to testify. And, also having it in other  
5 areas of the state, like Newark or Camden, or both,  
6 I think that would bring out more people, as well,  
7 and get more information on the record.

8 I don't want to reiterate a couple of  
9 points, but I don't want to repeat too much of what  
10 was said before. The definition of clean energy is  
11 very simple. It's renewable energy. It's energy  
12 that is sustainable and renewable. It is not  
13 nuclear. It is not bio-mass. It is wind, solar,  
14 and so forth, like some of the newer technology. I  
15 think that's what we need to do as far as the  
16 definition is concerned. But, Class I should not  
17 be emitting anything. Secondly -- and I think this  
18 is critical -- we're at a very important stage in  
19 the state when it comes to this battle between  
20 clean energy and fossil fuels. There are  
21 currently major proposals out there before gas  
22 fired power plants. If they all come on line we're  
23 talking about five million metric tons of CO2.  
24 We'll never get to our goals if they happen. There  
25 are seven power plant -- there are seven pipeline

1 applications out there, and there's potentially  
2 more power plants. We believe the first thing  
3 that has to be done in order to move to a hundred  
4 percent clean energy future, is there has to be a  
5 moratorium on fossil fuel infrastructure and on  
6 fossil fuel power plants. If we put ten billion  
7 dollars into natural gas and natural gas fired  
8 power plants, we will not have the money or  
9 resources to do off-shore wind and do the amount of  
10 solar that we need. And on top of it, if wind and  
11 other things are successful, we'll end up paying  
12 for it anyway with stranded assets. So, I think  
13 it's critical that we need to put a freeze in  
14 place. We're involved with many of those --  
15 actually, every one of those battles. And, I think  
16 it's critical.

17           Next. That the Energy Master Plan  
18 should require all new generation capacity to be  
19 carbon-free. We should not -- that's where we  
20 need to go, that's where we need to invest, that's  
21 where we need to put our efforts in resources to  
22 get those rules in place.

23           Two. DEP must promulgate rules that  
24 they haven't had the power since 2005 to regulate  
25 CO2 and other greenhouse gases. And they have to

1 put that into classified permitting on existing  
2 plants so it can start ratcheting down the carbon  
3 dioxide and greenhouse gases coming from our  
4 existing plants. The two most expensive power  
5 plants in New Jersey are two coal plants down in  
6 South Jersey. They need to get closed. It's bad  
7 for the ratepayers and bad for the environment.  
8 So, we believe that that process has to be part of  
9 this, that we have to go after coal, oil, and frack  
10 gas. And we must start ratcheting down our  
11 greenhouse gases, and methane, as well. And DEP  
12 needs to step up and regulate them. And, they have  
13 that power.

14           Also, and very clearly, in order to  
15 get there we should not allow for the extension of  
16 any nuclear licenses in New Jersey. Especially if  
17 they're getting subsidized. We need either not to  
18 subsidize them -- when you go through your numbers  
19 and hopefully you'll find that they don't really  
20 need it -- but, our concern is that as long as  
21 those plants keep operating, it's going to block  
22 us. And they may want to get extended, their  
23 licenses, because of the subsidy. And, one of the  
24 concerns that we have -- and again, you know, this  
25 is a plan, but a plan needs to also call for

1 regulatory and legislative action. Right now  
2 forty percent of our energy has to come from  
3 nuclear. There's no sunset on that. That will  
4 block us in 2050. So, we need to make sure that we  
5 not only have those plants when they close be  
6 replaced by renewable energy, but we also need to  
7 make sure that we end up ending the subsidies so  
8 that we can move to a clean economy. Just like  
9 when we do the Title 5 ratcheting down, we should  
10 ratchet down the carbon emissions from what they  
11 are now to zero by 2050, so they can be replaced  
12 with clean energy.

13 Other important point that I want to  
14 make is that when you look at the studies of off  
15 our coast, there is so much energy potential for  
16 off-shore wind. Especially as the price of wind  
17 is going down, wind turbines is going up and the  
18 size of turbines are going up. And when we first  
19 came out and suggested during the Corzine  
20 admiration the 3000 megawatts and two years ago  
21 suggested it to candidate for governor, Governor  
22 Murphy, the 3500 that's now in front of you. It's  
23 a great first step. When we look at the potential  
24 out there, we can go to ten gigawatts to 10,000  
25 megawatts in the second phase after we get to the

1 3500. But, the wind power is there. And that's  
2 only ten percent of the wind potential that we have  
3 off our coast. So, we really need to start  
4 looking to go not only to the 3500, but go beyond  
5 that. It's the same thing when we look at solar.  
6 And when you look at other methodologies for  
7 getting there, as well, paying for it in long-term  
8 contracts.

9           We need to also -- and this is  
10 critical -- fix the solar program. A year from now  
11 it's going to crash. And, even if we come up with  
12 another program there, with the cost cap with --  
13 office legislative services, the cost cap will come  
14 into affect in 2020, causing another problem. We  
15 need to in the next year, as we're doing this  
16 Energy Master Plan, come up with a sustainable  
17 lower cost solar program. And I actually think we  
18 should remove the cap. Because I don't believe  
19 that -- we don't cap nuclear, we don't cap coal, we  
20 don't cap oil, we don't cap natural gas. But we  
21 need to fix the solar program and fix it quickly.

22           For us, looking at the communities in  
23 the state that have had a disproportionate of  
24 burden of pollution, we need to focus our efforts  
25 there. Not only to reduce -- because that's where

1 most of the fossil fuel plants are. We need to  
2 reduce pollution in those communities. We also  
3 need to sustain those communities with more  
4 renewable energies, with community solar, rooftop  
5 solar. We believe there should be a set aside of  
6 twenty percent into urban, or communities, for a  
7 solar program. Twenty percent of the community  
8 solar, and twenty percent over, we should target  
9 those communities and target them with special  
10 incentives so that we can create not only jobs, but  
11 help reduce the air pollution that is choking those  
12 communities.

13                   So, to us, New Jersey is a state that  
14 has serious environmental problems. From ground  
15 level ozone, to seeing climate impacts on a daily  
16 basis. This weekend people down the shore won't  
17 be able to park on any of their streets because a  
18 high tide is coming and there's a storm off the  
19 coast. So, it's imperative and it's critical, and  
20 it's an existential threat. But, we have the  
21 ability in this state, as we have since the light  
22 bulb was invented here, and so many other things.  
23 Put the innovation forward, to put our  
24 technological knowledge forward. Put our minds as  
25 well as our financial resources forward so we can

1 solve the climate and clean energy, and the energy  
2 problems we have in the state.

3           And I just want to end with that we  
4 believe with this Governor's leadership we can get  
5 there. But to you and to the legislature, no  
6 matter how great this plan is, without  
7 implementation, without the legislation and the  
8 regulations and the financial mechanisms, we won't  
9 get there. And a plan without implementation is an  
10 hallucination. Thank you.

11           MR. SHEEHAN: Thank you. Bob  
12 Blumenthal. Barbara. Sorry.

13           MS. BLUMENTHAL: Good afternoon. My  
14 name is Barb Blumenthal. I serve as the research  
15 director for New Jersey Conservation Foundation.  
16 First, we'd like to applaud Governor Murphy for  
17 setting an ambitious goal to achieve a hundred  
18 percent clean energy by 2050. And, thanks to  
19 Mr. Sheehan and the panel for letting us take your  
20 time today to offer comments.

21           I want to start today with an informed  
22 insight. The same insight that Lyle got to a few  
23 minutes ago. New Jersey's clean energy future can  
24 be lower cost than a future that relies on natural  
25 gas. I'd like to share some details about how we



1 can get to a hundred percent clean energy by 2050,  
2 and stay on a low cost path. It involves a smart  
3 portfolio of clean energy resources. Smart  
4 portfolios can now offer the lowest cost pathway to  
5 provide reliable electricity by 2050. This means  
6 New Jersey no longer has to choose between policies  
7 that protect community health, natural resources  
8 and the climate, and those that protect our  
9 pocketbooks. We can have both. If the state's  
10 Energy Master Plan focuses on an optimized  
11 portfolio of renewable energy, flexible load,  
12 storage, transmission, and electrification of some  
13 -- three of our important sectors.

14 So, the reason is simple. The  
15 underlying economics of optimized portfolios are  
16 increasingly being found to be more favorable than  
17 the current gas heavy portfolios, even assuming a  
18 low gas cost future. So, how do we know this?  
19 The elements of a low cost pathway to 2050 have  
20 become clear in the past year. Lyle referred to a  
21 study in Minnesota. I'm referring to a different  
22 study that was released July 31st of this year, so  
23 this is a really new analysis. Policy makers and  
24 advisors around the U.S. have been using new  
25 modelling tools to identify these pathways to 2050.

1 This is something new. The models simulate the  
2 energy production needed to balance load on the  
3 grid, and provide reliable service over very long  
4 time frames using combinations of renewable and  
5 other resources that get you to your goal. A  
6 hundred percent goal or a ninety percent goal or an  
7 eighty percent goal. So, those are inputs to the  
8 model. These models have been used this year in  
9 Hawaii to develop pathways to a hundred percent  
10 clean energy. They've been used in California and  
11 in Minnesota. They're evaluating pathways to  
12 achieve an economy-wide eighty percent reduction in  
13 Minnesota. And for them it means a 91 percent  
14 reduction of emissions in the electric generation  
15 sector. So, that's the modeling exercise. I'm  
16 talking about that Minnesota is finished.

17 So, their study is really geared to  
18 reduce emissions over all of the economy. But  
19 then they look at different pathways to achieve  
20 de-carbonization. I just want to touch on a few  
21 key points. I'm submitting a longer comment.  
22 But all of the pathways, obviously, high levels of  
23 renewables because that's how you reduce emissions.  
24 But, what's interesting is that they rely heavily  
25 on flexible load. Because they electrified a good

1 portion of transportation and building heating and  
2 cooling systems. So, those are enormous sources of  
3 new electric load, and they're inherently -- they  
4 can have a high degree of flexibility. So, it  
5 becomes an important part of the puzzle. And, I'm  
6 not sure if it was obvious to policy makers until  
7 these studies pointed out how important that would  
8 be. So, electrified implementation alone may not  
9 do it, but these other sectors combined provide  
10 that balance that you need for ninety or even a  
11 hundred percent renewables. That's how you  
12 achieve it.

13           What's fascinating is that scenarios  
14 that both electrify and de-carbonize are estimated  
15 to produce savings of between 600 and \$1200.00 for  
16 each Minnesota household per year by 2050. And the  
17 cost savings start immediately and go up over time.  
18 Cost savings for your energy systems. But that  
19 includes the cost of transportation. You save a  
20 lot of money when you electrify transportation.  
21 You save money when you electrify heating system.  
22 So, they're not just looking at the cost of the  
23 electric generation sector -- which actually stays  
24 pretty flat despite all of this, and there's almost  
25 an imperceptible difference in the cost of electric

1 generation going forward.

2           This is new. We didn't know this two  
3 years ago. So, it's very exciting. Obviously, one  
4 of the conclusions is by 2050 we can high levels of  
5 variable generation with little to no natural gas.  
6 So that, mantra that we heard for many years now --  
7 which had some truth to it -- how are we going to  
8 balance flexible load, we need gas. Well, that's  
9 no longer true, when you actually treat resources  
10 as a combined package of resources. So,  
11 renewables, storage, flexible load,  
12 electrification, all of those things together  
13 provide a lower cost pathway. And these studies  
14 looked at can you provide a reliable electric  
15 system. And they did the modelings every five  
16 minutes, so these models looked at load and  
17 generation just as a dispatched model would every  
18 five minutes through all cycles of weather during  
19 the year, out to 2050. So they found you can  
20 provide reliable electric service with this  
21 renewable resources.

22           I want to just simplify a few key  
23 points that might be very relevant. These models  
24 don't answer the question for New Jersey. What it  
25 does tell me is that New Jersey needs to use

1 similar -- the same or similar integration and  
2 optimization models to calibrate and design new  
3 policies. So that you can both achieve emissions  
4 without chancing cost savings.

5 But, a few key points. Low cost  
6 benefit from having a big electric grid. We're  
7 fortunate that we're part of PJM. And the bigger  
8 the footprint, the better. The more variability of  
9 renewable resources across the geographic  
10 footprint, the costs come down. And that's an  
11 important point for New Jersey. Lower costs  
12 depend on the electrification of these other  
13 sectors. It's part of a package deal. The more  
14 flexible load the better. Low costs depend on  
15 location, that's why the modeling is so important.  
16 It isn't just saying we need solar or we need  
17 storage. It matters where and when. So, the  
18 models begin to answer those questions so that you  
19 can really craft policies that give you value for  
20 the money invested. So, big take away is that I  
21 think this means the demise of natural gas. And,  
22 the models actually showed that not only do you not  
23 have much natural gas by 2050, that it backs up to  
24 2030 that things begin to get stranded in  
25 Minnesota. So, gas looks like it's a

1 cost-effective or a comparable pathway, but it  
2 becomes an enormous cost going past that. So,  
3 that's why it's really important to look ahead  
4 before you're making those near-term decisions.

5           And then I want to say a couple of  
6 things just about -- we heard somebody talk earlier  
7 today about solar issues. And, I want to remind us  
8 of what happened in the clean energy bill that was  
9 passed. It dealt with some pretty important solar  
10 challenges that we have in New Jersey with the  
11 current SREC program. And the bill said we're  
12 going to end SRECs at 5.1 percent, we're going to  
13 transition to a new solar program that's more  
14 competitive and will bring down costs. And the  
15 combination of the existing solar and new solar,  
16 all of those Class I resources, have to remain  
17 under a cost cap. So, we know, we've been involved  
18 with many different people over the last few months  
19 talking about strategies and proposals that would  
20 accomplish those objectives. And we think that we  
21 can transition quickly to an interim program. We  
22 can keep the solar industry active. We can keep  
23 costs under the cost cap.

24           But I heard somebody today -- I guess  
25 it was Fred, Mr. DeSanti, who had a different idea

1 that doesn't accomplish any of those objectives.  
2 He wants to increase the percentage of the RPS for  
3 solar. Not end it quickly, keep it going for  
4 awhile. And I did a little math, and his idea  
5 would add 120 million dollars in the near term to  
6 the cost of the current SREC program. So, it's  
7 kind of going in the wrong direction. And if you  
8 believe there's no possible way of doing it  
9 otherwise, then I understand why they come up with  
10 a Plan B. But we feel strongly that we can find  
11 solutions that do work under the provisions of the  
12 new clean energy bill, and get it done, and get it  
13 done quickly. Thank you.

14 MR. SHEEHAN: Thank you very much.  
15 Next up Duncan Cambell. Ashley Lynn Chrzaszcz.

16 MS. CHRZASZCA: Hello everyone. My  
17 name is Ashley Lynn Chrzaszca. That's the American  
18 way of saying it. If you want to say the Polish  
19 version it's Chrzaszcz. It doesn't look like that,  
20 I don't think.

21 I represent ChargeEVC. We're a  
22 501c(6) non-profit based here in New Jersey. We  
23 have responded to other states in the northeast.  
24 Just a little bit about who we are. We represent  
25 interests that are the equivalent to a variety of

1 stakeholders -- a rainbow coalition, if you will --  
2 that includes the utilities, labor organization,  
3 local and national non-profit organizations,  
4 environmental coalitions, and other groups, as  
5 well. So, we kind of have a lot of individuals  
6 that all have the same message, that the  
7 electrification of transportation is one of the  
8 most transformative things we can do for the State  
9 of New Jersey.

10 I'm going to keep my comments brief.  
11 If New Jersey enacted both Global Warming Response  
12 Act and the Clean Car Act 2006, as such, these  
13 topics with clean and reliable power and clean  
14 transportation --

15 A MEMBER: Can you slow down? You're  
16 speaking too fast.

17 MS. CHRZASZCZ: Sorry. I'm responding  
18 to specifically to Question Number 10, which is how  
19 new clean and reliable power support the expansion  
20 of transportation. So, as I said, New Jersey  
21 enacted both a Global Warming Response Act and the  
22 Clean Car Act of 2006 -- and they're intrinsically  
23 connected. One hand can essentially wash the  
24 other. So there are many benefits of electricity  
25 into transportation sector, and even documented the



1 following, which is going to be submitted for  
2 written comments, which will be for September 20th.  
3 And, we understand that. So, we wanted to make our  
4 comments today.

5 To summarize the highlights. Based on  
6 the generation sources in place today, each two-car  
7 household saves an average \$1,900.00 per year  
8 through 2035, adding up to sixteen billion dollars  
9 through 2035, just by driving an electric vehicle.  
10 And ratepayers save 4.3 billion dollars through  
11 2035 due to a range of benefits. And, some of  
12 these benefits are air quality. And by extension,  
13 health. And, these are benefits that relate to  
14 everybody. Especially those who are in really  
15 sensitive groups and areas, like urban  
16 environments. It's been mentioned that it's  
17 seventy percent cleaner driving an electric vehicle  
18 than to drive a traditional internal combustion  
19 vehicle. In air quality it related emission  
20 reduction is only improved as we de-carbonized the  
21 grand transition to a clean and reliable energy  
22 future. So, think of electric vehicles as mobile  
23 distributed energy resources, or batteries on  
24 wheels, and you kind of start to see the way that  
25 it will interact with the grid.

1           So, this is vehicle to grid  
2 technology. And using electric vehicles is demand  
3 response assets, resiliency assets, energy assets.  
4 And the provider of other grid services, like  
5 frequency regulation. It's not a question of "if",  
6 but "when". And putting out extra storage -- we'll  
7 eventually be able to -- to behave more like base  
8 load, eliminate the fact that the sun does not  
9 always shine, and wind does not always blow. Thank  
10 you.

11           MR. SHEEHAN: Thank you very much.  
12 Jonathan Cloud.

13           MR. CLOUD: I'm Jonathan Cloud,  
14 Executive Director of New Jersey PACE. And --

15           MS. ZELLEN: I am Victor Zellen,  
16 Director of Development for New Jersey PACE, which  
17 is an initiative of Possible Planet, which is a  
18 501c(3). And, this will be new for some of you.

19           So, Property Assessed Clean Energy,  
20 commonly called PACE, is an innovative way to  
21 finance clean energy and resiliency improvements in  
22 buildings. PACE has been adopted by a majority of  
23 U.S. states since its invention in California in  
24 2008. And since then, 35 states -- including the  
25 newest I think was just this week, Delaware -- as

1 well as recently Pennsylvania, have adopted PACE  
2 laws. And many of our neighbors, or most of our  
3 neighbors, already have successful PACE programs.  
4 And, that would include New York, Connecticut,  
5 Maryland, Virginia, the District of Columbia, and  
6 Rhode Island.

7 Now, New Jersey enacted PACE  
8 legislation in 2011, but the existing statute is  
9 missing key elements needed for it to work. And  
10 we've been championing PACE throughout much of the  
11 prior administration. And under our new clean  
12 energy Governor, we hope to see mending legislation  
13 for commercial PACE passed and signed into law  
14 later this year. Governor Murphy has said several  
15 times to us personally that he supports PACE as a  
16 clean energy financing tool. So look forward to  
17 this new development.

18 So, PACE allows property owners to  
19 make clean energy improvements with no up-front  
20 costs, and a hundred percent financing. Where do  
21 you get a hundred percent financing these days?  
22 So, PACE makes it possible for property owners to  
23 save money immediately on energy costs. Because  
24 the improvements more than pay for themselves over  
25 time. Projects are designed to be cash flow

1 positive right from the start, which provides a  
2 natural incentive to do PACE. PACE uses a  
3 voluntary special assessment paid through property  
4 taxes to secure private sector financing that runs  
5 with the property for up to thirty years. This  
6 financing is treated as off balance sheet, which  
7 mean that energy projects do not have to compete  
8 with other capital expenditures in those businesses  
9 removing a key barrier that has stopped property  
10 owners from upgrading their buildings up to now.  
11 The benefits of PACE to the public include carbon  
12 reduction -- real important to all of us --  
13 improving the building stone of the community, and  
14 economic development. For every million dollars  
15 of investment in PACE improvements, fifteen jobs  
16 are created.

17 Now, it's important to note that PACE  
18 is voluntary, both for the municipality and the  
19 property owner. There is no expense to the public  
20 for PACE, as property owners pay for all of the  
21 costs of a PACE program. Now, we believe that  
22 PACE legislation should initially be implemented  
23 for the commercial sector, and subsequently  
24 residential.

25 PACE has the potential to transform

1 the build environment. Major energy efficiency  
2 retrofits a new construction that employs  
3 state-of-the-art energy technologies, all to be  
4 paid for through pays. They can make our  
5 buildings more efficient and more comfortable year  
6 'round. Onsite renewable energy generation  
7 produces a triple value add, and paid for through  
8 PACE; the savings of the actually energy produced,  
9 the displacement of carbon-emitting generation, and  
10 the ability to provide off-grid energy, especially  
11 during our season.

12           There are very strong market  
13 incentives for PACE. And they use private capital.  
14 It's all enabled by the state legislation. PACE  
15 allows municipalities to exercise the governmental  
16 power at literally no cost to the public to secure  
17 these improvement loans. Based on an informal  
18 market assessment by New Jersey PACE, the estimated  
19 potential for investing in New Jersey's existing  
20 commercial buildings alone exceeds a hundred  
21 billion dollars. Consequently, PACE may prove to  
22 have as great, if not a greater impact, on building  
23 performance as clean energy subsidies and financial  
24 incentives have ever produced, and at no cost to  
25 the public.

1           PACE compliments current subsidies and  
2 incentives providing attractive financing for the  
3 hard and soft costs that a property owner would  
4 otherwise have to pay. PACE financing removes a  
5 key barrier to property owners upgrading their  
6 buildings to clean energy standards.

7           Therefore, we urge the Board and this  
8 committee to conduct its own thorough analysis of  
9 commercial and residential PACE, and include them  
10 in its recommendations. We're happy to respond to  
11 any questions, and will be submitting our official  
12 report through the web.

13           So, again, I'm Victoria Zellen,  
14 Jonathan Cloud, with New Jersey PACE, an initiative  
15 of Possible Planet, which is a 501c(3) non-profit.  
16 Thank you very much.

17           MR. SHEEHAN: Thank you very much.  
18 Next up we have Brandon Smithwood.

19           MR. SMITHWOOD: Hi. I am Brandon  
20 Smithwood, and I am the Policy Director for the  
21 Coalition for Community Solar Access. We are a  
22 national trade association, over fifty companies,  
23 predominantly community solar project developers,  
24 and owner/operators. So, those that actually  
25 subscribe customers and product.

1           So, for my comments today, and in the  
2 spirit of the forum, the fact that we're here at a  
3 university, I'd like to kind of start from the big  
4 picture 2050, and work my way down to 2030, and  
5 right now. And, at the risk of getting academic, I  
6 do think starting at 2050 kind of illuminates some  
7 things that we need to be working on now.

8           So, the representative for the  
9 conservation foundation, she discussed a number of  
10 studies that have come out recently showing the  
11 feasibility of full renewables portfolio in 2050.  
12 I just went and pulled some studies that Mark  
13 Jacobson, professor at Stanford, did about three  
14 years ago. He did a fifty state state-by-state  
15 analysis, and I felt that could be a good place to  
16 just kind of start to get a high-level big picture  
17 that we can put community solar into, and kind of  
18 illuminate how community solar helps with some of  
19 the challenges.

20           So, Jacobson's study found that over  
21 thirty percent of the generation within New Jersey  
22 would be solar. And that's assuming a really  
23 robust off-shore and on-shore wind portfolio, kind  
24 of pulling out all the stops. About three-quarters  
25 of that thirty percent is non-rooftop, non-carport

1 systems. And, that's assuming that you're using  
2 two-thirds of the rooftop potential. So, we're  
3 maximizing our rooftops, the technical potential of  
4 our rooftops. And, that only gets you about a  
5 quarter of the way where you need to be to have the  
6 solar contribution to a hundred percent portfolio.  
7 So, to me that says you got to go get busters on  
8 rooftop solar. But, you're still going to have a  
9 lot of need for generation, and you're going to  
10 have non-technical challenges. And, one of the  
11 biggest non-technical challenges is if you don't  
12 own the building that you live under or that you  
13 operate your business under, it's exceedingly  
14 difficult to put that system up there even if your  
15 roof is technically sound. And, looking at just  
16 the population of Jersey today, there's about 3.19  
17 million households -- that doesn't include  
18 businesses and organizations or other tenants. Of  
19 them, 1.62 million, so 51 percent are either  
20 renters or they live in multi-family buildings.  
21 So, we've got about half of the population. We  
22 take that technical potential, and we cut it in  
23 half because of ownership issues.

24                   Even beyond the rooftop challenges,  
25 though, you can see that there's some implications



1 for land use. This state is one of the most  
2 densely populated in the country. It has a lot of  
3 beautiful, agricultural and other open space, and a  
4 strong interest in seeing them preserved. And, the  
5 big picture studies show we're going to have to  
6 find a way to marry ground-mount development with  
7 those objectives to preserve this open space.

8           Stepping down to 2030 -- and this is  
9 actually some research that we, two non-profits,  
10 both solar and grid alternatives that we  
11 commissioned from GreenTech Media Research now  
12 partnered with Mackenzie, The Global Energy  
13 Research Firm, we commissioned a study looking  
14 nationally out to 2030 at the market potential for  
15 community solar, and then looking at four states  
16 including New Jersey. And, so, just to give you a  
17 sense of the New Jersey potential. We believe that  
18 the addressable market is about 3.5 million  
19 customers, based on this research, in New Jersey.  
20 By 2030 we think it's economically feasible that  
21 the market could support 200 to 400,000 community  
22 solar customers -- 100 to 250,000 of which would be  
23 low and moderate income. And, I want to touch on  
24 that separately. There's a big impact on all the  
25 master meter buildings in particular.

1                   So, stepping back, so we start 2050.  
2   2030 today we have this pilot program at the BPU.  
3   And we're really excited to see draft regulations  
4   coming out in the next couple of weeks.   Assuming  
5   we have a robust program size and economics, and  
6   there are flexible siting rules, we're off towards  
7   this vision of achieving these 2030 goals and  
8   contributing to that portfolio in 2050.

9                   There was a study that we and both  
10   solar released yesterday, to kind of look at that  
11   year term pilot program.   We found that a 450  
12   megawatt pilot program over three years -- which  
13   based on the sketch of the pilot program we heard  
14   is within the bounds of what's likely to be  
15   proposed.   That if we do 450 megawatts over three  
16   years, that's 800 million dollars in economic  
17   benefit.   And the cost to the average residential  
18   ratepayer would be less than a postage stamp, about  
19   19 to 42 cents per month.   And, that doesn't  
20   include avoiding transmission, avoiding  
21   distribution, a number of benefits that are hard to  
22   immediately quantify -- what we know from our  
23   neighboring solar markets, our material.

24                  So, just -- and I'll turn the podium  
25   over in a moment here -- but I wanted to quickly

1 take some of these high-level points and drill down  
2 just on a few relevant year term items. So, land  
3 use. We've been working with some other parties.  
4 We think it's really important to bring some best  
5 practices from other states, pilot some of the  
6 cutting edge practices, that can actually improve  
7 the land, help preserve land. But we need  
8 flexibility on projects today. And actually been  
9 experimenting with that flexibility so that we're  
10 ready as we get to these higher goals.

11           On brown fields, historic fill and  
12 landfill, those are more expensive sites, and  
13 there's not enough of it. But the state should be  
14 taking action to get more of those projects beyond  
15 Subsection T of the RPS. And, some of these things  
16 are costless, so DEP could provide comfort letters  
17 and amend some technical requirements. We had  
18 details in our pilot filings and we have them in  
19 our release filings. But, there's some costless  
20 options. But beyond those costless options, we  
21 know that there are real costs, incremental costs,  
22 to building on some of these already developed or  
23 blinded sites. So, we've seen in other states as  
24 part of SREC successor programs, or separate  
25 incentives, differentiated incentives to get to

1 developing projects on these more difficult and  
2 expensive sites. And, so, in line with what Mr.  
3 Gahl said earlier, you know, factorizing SRECs  
4 could be a way to give an extra boost to on line  
5 projects and to development on already disturbed  
6 sites.

7           One last point. I already referred  
8 this, but on LMI. In addition to the kind of the  
9 potential in New Jersey -- and, again, we looked  
10 that vision study I referenced -- looked at the  
11 master metered buildings, and we think we can get  
12 to twenty percent to a third, and up to about  
13 200,000 customers. But, the community solar  
14 tariff that the utility creates, or the utility has  
15 to enable these solar projects, you need to  
16 scaffold policy supports on top of that to get to  
17 those low-income customers. And then the biggest  
18 thing is de-risking them. A typical financier who  
19 is going to look at a low-income customer -- and  
20 there's a lot of innovation to kind of get around  
21 FICO scores and kind of form proxies for credit  
22 worthiness of customers -- but, the practical  
23 matter is a financier typically looks at a low to  
24 moderate-income customer, and the revenue of that  
25 project, puts a zero. So new banks, clean energy

1 program funds, we and both solar and grid  
2 alternatives have identified a number of current  
3 funding sources that are available, or could be in  
4 the near future. And, it's really important to  
5 make sure that we're not only creating the vehicle  
6 to serve those low-income customers, but we're also  
7 scaffolding on top of that to make sure that  
8 projects are financeable and customers get the  
9 value proposition they need. So, thank you.

10 MR. SHEEHAN: Thank you very much. We  
11 have Ed Potosnak for New Jersey League.

12 MR. POTOSNAK: I'm going to stand over  
13 here. I'm from the New Jersey League of  
14 Conservation Voters. And, we represent voters.  
15 And generally, as I see voters, they're usually at  
16 the microphone not at the dais, I find better  
17 representation.

18 I'm really pleased to be here. Clean  
19 renewable power is a key to realizing our clean  
20 energy future and economy. As you've heard  
21 throughout the day today. An Energy Master Plan is  
22 well on it's way to -- put New Jersey on a path to  
23 realize this renewable economy of the future, and  
24 ensure that there's responsible development in our  
25 renewable energy resources. In fact, according to

1 the market trends that we're seeing, investing in  
2 renewable energy is both a prudent economic choice  
3 that protects our wallets, but it's also a prudent  
4 choice to protect our climate, our communities, and  
5 our families. An Energy Master Plan will serve as  
6 a foundation for this transformation. In fact, I  
7 want to pinch myself today at the atmosphere and  
8 the fact that we're here. I was very proud to  
9 stand behind Governor Murphy when he signed  
10 Executive Order 28 to put New Jersey on a path to a  
11 hundred percent energy by 2050. In that vein, I  
12 wanted to share some thoughts around the questions  
13 that you put out. There's just about six of them.

14 First, I want to start out by saying  
15 the only acceptable definition -- which is your  
16 Question 1 about what clean energy is -- is that  
17 it's renewable energy, like solar and wind. And,  
18 as you're aware, with the legislature's recently  
19 passed legislation, the legislature has sent a  
20 clear message that renewable energy is clean  
21 energy, and that clean energy is Class I  
22 renewables, putting us on a pathway for fifty  
23 percent by 2030.

24 It's also important to note that  
25 Governor Murphy's vision has catapulted New Jersey

1 back to the leader board of states that are taking  
2 climate change seriously, and making climate  
3 progress. We're going toe-to-toe with California  
4 in attacking the climate crisis, and enacting  
5 concrete policies to reduce our greenhouse gases.  
6 And, as you're aware, roughly about forty percent  
7 of our energy is produced in New Jersey coming from  
8 nuclear plants. And those nuclear plants are set  
9 to expire before 2050. So the idea of clean energy  
10 coming as part of nuclear with the expiration of  
11 those plants, it does not comport. The goal for  
12 New Jersey clearly is clean renewable energy.

13           Currently this technology, as you  
14 know, nuclear requires subsidies to operate. And,  
15 we're seeing that the cost of solar is competing  
16 directly with fossil fuels in other places. And  
17 some folks have indicated there needs to be some  
18 adjustment here in New Jersey, as well.

19           Second. The plan should set some  
20 interim targets. I know it's laid out, but vision  
21 for specifics over the next ten years, and going  
22 out forward in to 2050. But looking at five-year  
23 intervals to help put together plans for folks to  
24 look at around electrical generation on  
25 transportation, residential, and the commercial

1 sectors, to provide achievable goals and a clear  
2 pathway. In addition, it should align with the  
3 Global Warming Response Act. Which hasn't been  
4 talked a lot today. But the Global Warming  
5 Response Act, it sets a goal of statewide  
6 reductions of greenhouse gas emissions by 80  
7 percent of 2006 levels. So, that's a really  
8 component as you're looking at it from our  
9 perspective.

10 As you develop the comprehensive  
11 blueprint to achieve these interim targets, we  
12 think it's important to have some bi-annual  
13 reporting and monitoring, so that we can see how  
14 we're doing. We know that data will be a little  
15 bit behind as it tends to be. But, it will help us  
16 to look in the shorter term at what progress has  
17 been making, and then help with long-term  
18 projections and adjustments that might need to be  
19 made to ensure that we're constantly taking steps  
20 to move as closer to achieving Global Warming  
21 Response Act goals, the RPS goal, and the  
22 Governor's vision of a hundred percent clean energy  
23 by 2050.

24 Those interim targets statewide by  
25 sector would help policy makers be clear about the



1 goals and the transition from fossil fuels. And it  
2 will also help because I think it's important that  
3 the state is not picking winners and losers in the  
4 production of energy. It should rely on market  
5 forces to sort out which fuels decline at lower  
6 rates. That's important.

7 Thirdly. In our discussions of a just  
8 transition to clean energy, New Jersey is facing a  
9 multitude of proposed fossil fuel projects -- which  
10 have been talked about a hundred times today --  
11 including gas fired plants and pipelines, that  
12 aren't consistent with this collective shared  
13 vision to a hundred percent clean renewable energy  
14 future. So, we think it's important that the  
15 Energy Master Plan identifies regulatory changes  
16 that are needed for regulators to deny approval of  
17 new fossil fuel oil and gas projects that threaten  
18 statewide emissions reductions required under the  
19 Global Warming Response Act.

20 You asked some pretty insightful  
21 questions to gather input from stakeholders. And I  
22 wanted to address one of them, which was the  
23 stranded costs. As you're aware, New Jersey is  
24 deregulated as it relates to energy supply, leaving  
25 no risk for ratepayers from a stranded fossil fuel

1 electric generation assets, like a natural gas  
2 power plant. The state can reduce the risk of  
3 losses to investors -- I think many of which have  
4 left already in industry -- by providing clear and  
5 consistent signals to developers of fossil fuel  
6 assets. But where ratepayers are really on the  
7 hook are with pipelines. It's expected that by  
8 2030 there could be significant reductions in New  
9 Jersey of natural gas consumption, which could  
10 affect an under-utilization rate, and several  
11 interstate gas pipelines and distribution lines  
12 wouldn't have customers. Assuming that the costs  
13 to maintain these lines does not change, those  
14 costs will be spread over fewer customers, creating  
15 much higher rates for natural gas. That's  
16 something we really need to be concerned with.  
17 And, so, protect New Jersey customers, it's  
18 absolutely essential to utilize future projections  
19 of the natural gas consumptions and refraining from  
20 building these additional infrastructures, and that  
21 they're under-utilized and shifting, and as that  
22 goes through time to clean renewable energy  
23 resources. And, we shouldn't be putting  
24 ratepayers on the hook for the cost of these unwise  
25 project investments.

1                   So, I'm going to tell a little  
2 personal story. So, I had the pleasure of living  
3 on the D&R canal, which is a beautiful, beautiful  
4 place. Loved it. I think my dog Zena, she loves  
5 it more. She loves to go swimming in there. We  
6 have canoes, people go running on there, they go  
7 biking. Not so much swimming. But, the reason I  
8 bring that up is, history is a good predictor of  
9 the future. So, when we look at the canal, the  
10 reason we have it now as a wonderful state park --  
11 the largest reservoir in the state -- is because  
12 way back in the day there was a competition to get  
13 goods from Philadelphia to New York. And the canal  
14 was the tried and true method. And the train was  
15 this new fangled thing that people didn't really  
16 know if it would work. So they were really smart,  
17 and they said, well, we're not going to put  
18 everything in this new fangled train. We're going  
19 to build both. And which ever one -- we're  
20 prepared, which every one goes forward. And, as we  
21 know, the story goes the train is still moving lots  
22 of goods and services.

23                   I tell that story because the canal is  
24 now an asset that we use and enjoy both for  
25 recreation and for our water supply. But what kind

1 of assets are left behind from fossil fuel  
2 infrastructure like oil and gas pipelines? Future  
3 children are not going to make a little sled and go  
4 for a ride in an unused pipeline. It's something  
5 that really has a big degradation to our  
6 environment, to our communities. They're cutting  
7 down trees. It's great environmental degradation.  
8 Private properties being crossed. Preserved lands  
9 are being undone for this infrastructure. So, with  
10 that in mind, that history -- I'm trying to make an  
11 analogy -- we are on the cusp of sort of the  
12 future. And we have proven track records of  
13 renewable resources, like solar and wind. We don't  
14 have to build both simultaneously. So, that's my  
15 sort of personal example.

16 I'm on four. The Energy Master Plan  
17 should develop policies to guarantee pollution  
18 reductions in our environmental justice communities  
19 as soon as possible. So, if there's a choice to  
20 close a plant, they should be closed down in a  
21 low-income community. Communities of color are on  
22 the front lines. They're already overburdened with  
23 cumulative impacts that are disproportionately  
24 affecting the environmental justice communities.  
25 Expanding access to renewables and energy

1 efficiency environmental justice communities is  
2 also critical. There's community solar, which we  
3 just heard about. Through weatherization  
4 initiatives, energy efficiency. And, to ensure  
5 affordability for low and moderate-income  
6 households. And, we're also happy to work with you  
7 on the definition for that as you go forward.

8           The fifth point. While we strongly  
9 support swiftly transitioning to clean renewable  
10 energy, we also need to go through so  
11 responsibility and equitably. The plan should  
12 consider siting mechanisms to ensure maximum  
13 support from the community for renewable projects.  
14 Particularly with off-shore wind. There are better  
15 places than others to put windmills, and minimize  
16 the impact to the environment while we produce  
17 renewable energy. With solar, there is no need to  
18 cut down trees to put up solar panels when there  
19 are under-utilized locations like retail rooftops  
20 and roads and parking lots. Certainly farms should  
21 not be not providing food like we had for lunch,  
22 and having solar on them. We need farms. It's  
23 important for food. And, we have other places for  
24 solar. And, especially with our preserved lands  
25 that were preserved in the public trust for a

1 certain purpose. That's really important.

2           And, number six. To reduce the  
3 uncertainty in the market and of utility costs.  
4 The state should determine pathways to reach the  
5 2050 goals using state-of-the-art modelings. A few  
6 people talked about things that are happening out  
7 to 2050. We heard about Minnesota and Hawaii.  
8 They're doing all kinds of good work. And, I know  
9 you guys have that on the radar, as well. It's  
10 going to really important.

11           And, lastly -- and lucky number  
12 seven -- jobs. The EMP really should focus on  
13 these pathways to achieve the hundred percent  
14 renewable energy future while capitalizing on the  
15 tremendous opportunities there are to generate  
16 good, family-sustaining jobs right here in New  
17 Jersey, and to spur that economic development  
18 through the clean renewable energy projects and  
19 investments. And, the energy efficiency pieces  
20 that we've been talking about through  
21 electrification.

22           So, we're really looking forward to  
23 working with the BPU and all the members, with my  
24 former mayor and assemblymen, and now Commissioner  
25 Chivukula, and helping to really take advantage of

1 this unique opportunity that we have. And I want  
2 to thank you very much for your time.

3 MR. SHEEHAN: Thank you very much.  
4 We're going to take a five-minute break.

5 (Whereupon a short recess was held.)

6 MR. SHEEHAN: We are back on track.  
7 Our next speaker is Ray Albrecht with the National  
8 Biodiesel Board. Is Ray still here?

9 Debra Coyle. Henry Gajda. George  
10 Hay. Ibrahima Kalle. Nora Langweiler. Richard  
11 Lawton. Agnes Marsala. Veer Patel. Rezwan  
12 Razani.

13 MR. RAZANI: Hi. I'm Rezwan Razani,  
14 and I'm the founder of Footprint to Wings. We're  
15 turning the race to zero carbon into a national  
16 past time, and coaching each state to win. So, one  
17 of the things we're doing is we're writing a zero  
18 carbon playbook. And, the way I see the Energy  
19 Master Plan is essentially the playbook for New  
20 Jersey. So, your plan would be much more the  
21 detailed intellectual version for numeric stuff.  
22 But what we want to do is make sure these numbers  
23 are legible to everybody, so anybody can pretty  
24 much understand what's going on.

25 So, the first thing I notice with all

1 of your things, is maybe there could be a section  
2 for how do we make sure everybody understands the  
3 plan, so the public outreach section, general  
4 public outreach not just the stakeholders. So, the  
5 Governor, bless him -- this is so cool, it's like  
6 so historic. That we're actually having this  
7 meeting is very exciting. So, he wants a  
8 blueprint for conversion to a hundred percent clean  
9 energy. So, our first question, as zero carbon  
10 coaches is, a hundred percent of what? How big is  
11 the playing field? And, so, that's what I kind of  
12 want, like an Energy Master Plan. The quickest way  
13 to get legible for everybody is kind of put that  
14 right up there -- a hundred percent of what?

15 So, the EIA has this lovely  
16 information. And, it's kind of in, like, lines  
17 like this. But I put it together like this so it  
18 would look like a football field. Because, you  
19 want to see, well, where are we? How far are we to  
20 zero? And, how far do we have to go? And, this  
21 one has, like, motor gasoline is twenty percent  
22 natural gas, it's dirty. When you see it like  
23 this, it's a little bit more legible. That way,  
24 when you're writing the Energy Master Plan you can  
25 connect it, like well the motor gas play would



1 affect this field. Squish it, you can make it  
2 bigger, more whatever. The natural gas, well this  
3 is part electricity, this is part heating, so you  
4 know where the play fits, and you can quickly get  
5 people to grasp it, its in perspective. That's one  
6 thing we're going to do with out thing.

7           So, then the next thing is, oh,  
8 there's a big controversy of, I notice, running  
9 through this meeting of nuclear. If you don't like  
10 nuclear. But, that's kind of what's getting us to  
11 the twenty yard line. So, a lot of people want to  
12 get rid of it. That would take us back to the  
13 three-yard line, so we have to push forward again.  
14 The other thing that helps with this it to help  
15 quantify things. This is like about 3.6 gigawatt  
16 equipment for four nuclear power plants. A lot of  
17 people are saying, well, there's going to be 3,500  
18 gigawatts of wind power coming on line. But that's  
19 the play capacity, so you'd be like yeah, but  
20 that's this much. So, you can just start to realty  
21 get the quantifications down.

22           So, the next thing is how long is this  
23 field? I want that question answered. That  
24 question is going to vary, there's a lot of  
25 variables that go into it. Just get an initial,

1 like, if you were to electrify everything and  
2 supply the power for it, what would you do. And  
3 the number that I like best is what Mark Jacobson  
4 uses, the gigawatt equipment. Like the energy that  
5 you would supply with one plant running a year  
6 nonstop, 24/7. So, like a nuclear power plant has  
7 like 1.1 gigawatts at ninety percent capacity,  
8 whatever, it's about one gigawatt.

9 Now, off the top of your head, do you  
10 guys have a number, like how long if you were to  
11 electrify, like if you were to waive a magic wand  
12 and electrify everything? Out of curiosity.

13 MS. STROM-POWER: We are looking at  
14 those numbers. We do have some projections. Yes.

15 MS. RAZANI: So there is a field  
16 number? Okay. Because I would love as soon as you  
17 can get that. Because, the other thing, Mark  
18 Jacobson -- who was referred to by Brandon -- he  
19 has a number, and that's about 32.9, so roughly 33  
20 gigawatt equipment.

21 MR. HORNSBY: For electric cars  
22 itself?

23 MS. RAZANI: Everything. He even  
24 calculated the efficiency of electric cars, he  
25 squashed it and everything. So, that's including

1 that, the electric car advantage. Yeah. So, and  
2 his number was 33. So, I'm like wow, that's big.

3 MS. STROM-POWER: I don't think we  
4 have set numbers on any of these yet. Right now  
5 it's a --

6 MS. RAZANI: Fair enough. And, I just  
7 did an extrapolation with nuclear, I'm like, well,  
8 if this 3.6 gigawatts, then this should actually be  
9 22. So we need to know that number. That's a big  
10 difference. So, I want to know that number.

11 And then the next thing is, our  
12 colleague Brandon did talk about the renewable.  
13 So, the Governor wants a blueprint. So, Mark  
14 Jacobson did do us the favor of putting a blueprint  
15 down. So, you can go on his website  
16 solutionsprojects.org, you get the numbers. So,  
17 then the shocker for me was that rooftop, if you  
18 max it out for both buildings and commercial and  
19 residential, is 6.3 percent of the total, in his  
20 estimation. So, that's not even a first down. So,  
21 I was like whoa, that's not much. And then the 27  
22 percent solar, and then ten percent on-shore wind,  
23 and fifty percent off-shore word. Great.

24 So, the next thing that's important is  
25 to map this out. Give people an overlay. Like,

1 how much does this take? Most people don't look  
2 past the percents. How many wind turbines? How  
3 many things? So, what we have, and the off-shore  
4 wind, 55 percent. Just guess guys, guess how many  
5 wind turbines that is, if it's like five megawatt  
6 wind turbine? Anybody want to take a guess? Okay.  
7 It's 9,400 off-shore wind turbines -- according to  
8 Mark Jacobson. And the shore line is 130 miles  
9 long. So, that comes to 72 wind turbines per mile.  
10 And you put them in array, because you can't put  
11 them quite that way. So, at 72 wind turbines per  
12 mile is a lot.

13                   And then I'm looking at the -- your  
14 Euro of Energy Management Plan, their plan calls  
15 for -- they've set aside a certain amount of area,  
16 looks like 418 square miles. But, that would fit  
17 about a quarter of those turbines. So, then, the  
18 next question is, we want to begin with the end  
19 game in mind. We want all the players to see,  
20 well, how far can we go with this play, how far can  
21 it theoretically go, technically; and, how far do  
22 we kind of want it to go, and then what's the gap?  
23 Because now, you know, it will be like, well, it's  
24 supposed to be this, but we're only this far, so  
25 how we going to take a shortfall. That will show

1 you how much more efficient you need to be,  
2 etcetera.

3           Anyway, so, it helps you anchor the  
4 main plays, the big set pieces, the fantastic ones.  
5 And then the shortfall. And then, of course,  
6 on-shore wind was like 3,185 wind turbines. And it  
7 would take up an area the size of Atlantic County,  
8 which is 500 square miles, or whatever. So, these  
9 were large numbers. And I think when citizens --  
10 like I feel the big problem that we're facing isn't  
11 money, because after all cost does not determine  
12 value. Value is in the eye of the beholder. So, I  
13 feel is going to be a bigger problem than anything.

14           And, the final things I want to  
15 mention which is Six Flags, and the fabulous fiasco  
16 that occurred when Six Flags decided to go solar.  
17 And then they said, okay, great, we're going to cut  
18 down this forest here. And that created three  
19 years of lawsuits and acrimony, and a lot of people  
20 were upset about that. And, at the end they did a  
21 settlement. The judge decided in their favor, so  
22 that's the other thing. You say green is good and  
23 the judge is going to decide for the solar. So,  
24 instead of doing 90 acres, they went up to forty  
25 acres and they did some of the parking lot. But

1 still, 40 acres is like 7,000 trees cut down. And  
2 it ended up being for 23 megawatts of power. And  
3 that's 23 name plate, 23 megawatts of name plate,  
4 which is about four megawatts delivered. And,  
5 again, what is our end game? It's 33 gigawatts.  
6 So, if you're going to have three years of lawsuits  
7 over four megawatts, that's a lot of work. So,  
8 what we want to do at Footprint to Wings is get  
9 everything on the table up front as quickly as  
10 possible, to get through all of those arguments in  
11 a way that everyone can see. As quickly as  
12 possible, and come up with a solution that everyone  
13 will get behind and not regret. We feel a lot of  
14 people don't understand the full implication of  
15 each of their decisions. But, like, innovations  
16 can come up. Like Barb Blumenthal was interesting  
17 to me because it sounded like, well, that's the way  
18 to really shrink this and get it much more  
19 efficient. So, once you start with it, you tinker  
20 at it and you can show the improved play in each of  
21 the areas. Like, it really helps improve things.  
22 And if it's in a big, you know, if it's up there  
23 where everybody can see, okay, this is what we're  
24 working on, this is how it fits, we can work better  
25 as a team. Because everybody's got expertise in

1 this room. Everybody that's involved in this has a  
2 lot to offer. And, also, a lot of blind spots.  
3 So, we want to get through. We want to bring out  
4 the best in everybody, bring out the best solution  
5 that everybody can get behind. We want to make  
6 everybody out there, all the citizens, are aware of  
7 them. And, approve of them, ultimately. And the  
8 sooner we can get that all to happen, the better.

9 That's my --

10 MR. SHEEHAN: Thank you very much.

11 Julia Bobie.

12 MS. BOBIE: Hi. I'm Julia Bobie, I'm  
13 from Equinor, the Norwegian energy company that's  
14 been building off-shore wind in Norway for about  
15 twelve years. And, now we are the lease holder  
16 for a large off-shore wind area about twenty miles  
17 east of Sandy Hook. So, we've been following New  
18 Jersey's work very carefully. And, if all goes to  
19 plan, we hope to be one of the first bidders for  
20 New Jersey OREC. So, my primary purpose is to  
21 thank this working group for its service, and  
22 really, all of the public servants in New Jersey  
23 for the last year have been working very, very  
24 hard. And, we certainly appreciate it.

25 The nineteen questions are insightful.

1 And there are certainly experts on many different  
2 parts of renewable energy that I'm not here to talk  
3 about specifically. Although, energy efficiency,  
4 distributed energy resources, electrification, are  
5 all going to be hugely important for New Jersey.  
6 I'm here to talk about off-shore wind.

7           Off-shore wind can really replace a  
8 significant amount of fossil energy. And, what  
9 we're seeing -- as you all well no -- is most of  
10 the fossil generation in the northeast is going to  
11 go off line any way. It's old, it's inefficient.  
12 And, we plan to be there to replace that generation  
13 ideally using the infrastructure, the grid, that  
14 you already have that ratepayers already paid for.

15           I'm here to say that the goal that New  
16 Jersey has and whether there's goals for the energy  
17 or how to make sure that sort of justice and other  
18 issues are addressed is really a matter of market  
19 design. And if you get the market right, it will  
20 create competent that will drive down costs. We'll  
21 be there to bid. The other types of renewables  
22 will be there to bid. And New Jersey will be  
23 really well poised -- thanks to the good work of  
24 the public servants -- to run the market and really  
25 show other states how this can be done. So,



1 thanks again for your service.

2 MR. SHEEHAN: Thank you very much.  
3 Amy Goldsmith.

4 MS. GOLDSMITH: Hello. My name is Amy  
5 Goldsmith. I'm the New Jersey State Director for  
6 Clean Water Action. We have 150,000 members  
7 throughout the state. Maybe somebody came and  
8 knocked on your door and asked you to write a  
9 letter or give a donation, or be in support of our  
10 work. We work on a wide range of issues, including  
11 energy issues. We have extensive work that we do  
12 on climate in the City of Newark, in the community,  
13 primarily in the south ward but throughout the  
14 city. We have two climate organizers who come from  
15 the neighborhood, who work in the neighborhood.  
16 So, we know firsthand. And we've been doing it for  
17 almost over twenty years, a variety of different  
18 work.

19 We've trained people around heat  
20 precautions. We have lamp post banners hanging off  
21 of lamp posts in the Clinton Avenue neighborhood in  
22 the south ward around heat. We know what climate  
23 is. We know communities are getting flooded. And  
24 we know that people die in Newark because of  
25 respiratory distress. A very high number of women

1 who lose their lives in childbirth because they get  
2 into an asthma situation and do not recover and  
3 lose their life. And, it's a high price to pay to  
4 have climate-related greenhouse gases and other  
5 co-pollutants that impact this neighborhood to the  
6 extent that it does. And, so, we should both be  
7 reducing our carbon footprint, but also looking to  
8 reduce, obviously, the emissions that are in these  
9 neighborhoods. And, we can do that through changes  
10 in our energy practices.

11 I want to speak to a couple of issues  
12 around environmental justice. Others have spoken  
13 to this issue -- hearings should be in the  
14 communities where people typically don't have  
15 access to cars, and sometimes mass transit isn't so  
16 great even for them. So, there are cities like  
17 Camden and Newark and Paterson. But, there's also  
18 other communities throughout the state that are  
19 environmental justice and low-income communities,  
20 communities of color, where people don't have ready  
21 access to a forum such as this. And in some cases  
22 translations are needed. And, some of those  
23 locations they use sort of like UN translation  
24 systems where you don't have to translate  
25 everything over and over, but you have translators

1 so they can hear them in head phones and be part of  
2 the process. And, I think given the importance of  
3 energy in our lives it's important for us to think  
4 about better and creative ways to engage the  
5 community. We've always found that community  
6 people have incredibly thoughtful ideas and things  
7 that we don't even think about because we're not  
8 living in their neighborhoods.

9           The other is that this place is very  
10 far away from parking lots. If you're disabled,  
11 you know, there's a person here with a walker, she  
12 had to walk all the way from the other side, had to  
13 walk all the way over here. I think that would be  
14 quite challenging. There's not really much mass  
15 transit here. And, there clearly wasn't enough  
16 seating. I don't care about the Wi-Fi, we can  
17 figure that out.

18           So, the other point I want to make is  
19 that in the work that we do in Newark, we have  
20 trained people to be solar installers. And, they  
21 got certification from N.J.I.T, so it's a credible  
22 certification. They wanted to do the work, but the  
23 problem was that they couldn't get to the work.  
24 Because there was enough work in the City of Newark  
25 to do the work. They did a small project at

1 Wilson Avenue garage. But after that they couldn't  
2 really use their talent because most of the jobs  
3 were in the suburbs. So, if we're going to be  
4 doing renewable energy, we need to be doing  
5 renewable energy in the places where we're training  
6 people to do the work so they can actually get to  
7 the work. And, have a family-supporting wage so  
8 that they can add to the community, as well as add  
9 to their own family's well-being. So, I want to  
10 make that point.

11           The other is that HUD has, you know,  
12 oversees a lot of public housing in a lot of  
13 places, not just in Newark. And, they are required  
14 to hire people within HUD in their residences to do  
15 the work. And, if we actually had a program where  
16 we were looking at public housing -- the people who  
17 have the least ability to pay for their utilities  
18 and everything else -- and, if we actually had a  
19 program where we were training people who are in  
20 public housing to do renewable energy, energy  
21 efficiency, conservation, those kinds of things so  
22 that it would benefit the neighborhoods that they  
23 live in, that would be a good thing. So, we could  
24 use the pressure point that HUD should be hiring  
25 from within and training from within to do their

1 maintenance and other things. I know that Newark  
2 has been replacing their boilers and doing other  
3 things -- which is probably a topic for another one  
4 of your stakeholder meetings. But, I just wanted  
5 to raise that.

6           The other is that -- and this also  
7 might be partly something for the next topic, but I  
8 can't be at the next meeting -- is that a lot of  
9 the conversation is really focused on energy as  
10 electricity. And not everything is electricity.  
11 Obviously there's heating that needs to be done,  
12 and cooling. And, if we were doing a better  
13 building codes, appliance standards, some of the  
14 appliance energy efficiency, but also there's  
15 conservation. Right? Not using the power in the  
16 first place. That would be very important. And  
17 one thing that I always -- a place that I was in a  
18 long time ago, probably thirty years ago, in  
19 Wisconsin, a little tiny town in Wisconsin, they  
20 were forced to move their whole community because  
21 it kept getting flooded. And, they weren't going  
22 to get anymore federal money unless they moved  
23 their community. So, they moved their community,  
24 and they decided to make it a solar community.  
25 And, the way they did it wasn't actually with solar

1 panels on their roofs, they did it mostly doing  
2 passive solar to do heating. They did, you know,  
3 solar walls, solar attic. And, I don't think  
4 there's very much conversation about how can we  
5 reduce some of our heating by using some other more  
6 passive, you know, not such a high tech -- we don't  
7 need solar panels for heating our homes, we need  
8 other ways to do it. And, we have a lot of  
9 seniors, and a lot of them are in these electric  
10 complexes, even their heating, and they can't  
11 afford to pay for their heat. So, it's important  
12 for us to think about seniors and other places  
13 where we might be able to do some new kinds of  
14 building design, innovation, around integrating the  
15 kinds of renewable energy offerings that we want to  
16 have in the urban revitalization, or a lot of the  
17 suburbs, their towns are becoming new main streets.  
18 Right? So, how do we do that in a better way. And  
19 the healthy homes initiatives that are being done  
20 around lead in drinking water and paint, and how  
21 can we integrate from the energy elements into that  
22 without intensifying the neighborhood so much that  
23 the people who live there now can no longer afford  
24 to live in the communities that they're in.

25 There's mention has been made about

1 benchmarks, annual benchmarks, interim benchmarks  
2 to get to fifty percent renewable by 2030 for  
3 electricity, and a hundred percent at 2050. I'm  
4 not going to go into more detail on that. But, I  
5 do also want to emphasize that the BPU and the DEP  
6 must have clear regulations to deny these gas  
7 plants and lines -- as has been mentioned by  
8 others. We have been actively working against  
9 these facilities. It's not consistent with the  
10 goals of the Governor and of the Executive Order.  
11 We should be misclassifying power producers ways to  
12 energy, it should not be a part of the equation.  
13 Natural gas is not a renewable energy. We should  
14 not be doing that at all. And, also, why would we  
15 want to invest time and money -- I think the  
16 previous speaker spoke to why would we want to  
17 spend all these years in a permit and a ratepayer  
18 situation where you have to use all the agency  
19 resources to build the plant that actually we don't  
20 really want in the first place because it doesn't  
21 get us to where we want to go. And, so we're  
22 wasting public resources, private resources,  
23 non-profit resources, community resources. People  
24 would rather stay home with their families than  
25 fighting natural gas plants and power lines. And,

1 they're only going to be around for twenty years,  
2 well, actually they don't end up around for twenty  
3 years. We have nuclear power plants that have been  
4 around for forty and sixty years. So, you're not  
5 going to build something, invest all that money,  
6 and then suddenly shut it down.

7           And, there has been mention of the  
8 Stanford University numbers and data. This will  
9 be my last point. That using existing  
10 technologies, and the Stanford University and  
11 solutions project work. You know, we started  
12 several years ago, so the technology is even  
13 advanced since that work was done. But even just  
14 looking at the existing technology at the time they  
15 issued their report for wind, solar, and water,  
16 you'd produce 140,000 jobs here in New Jersey.  
17 These are forty year or lifetime jobs. And, that's  
18 really important that you're not jumping from job  
19 to job. Most electricians, when they become an  
20 electrician they stay an electrician for quite a  
21 long time. It's a good paying job, why would you  
22 want to change your job if you're an electrician.  
23 And, also, it's cheaper if you factor in -- 25  
24 percent cheaper if you factor in the cost savings  
25 of avoided healthcare costs over 12 billion dollars



1 of healthcare cost per year. 1500 deaths avoided  
2 due to pollution and climate. And, those numbers  
3 are higher in a community like Newark, where I do a  
4 lot of work. The average in the state, just using  
5 asthma as a number -- my final point -- using  
6 asthmas as a number, it's about twelve percent  
7 nationally and in New Jersey, but in Newark it's  
8 one in four kids have asthma. Why do they have  
9 asthma? Because of the gas plants. Because of the  
10 port. Because a lots of cumulative impacts. So,  
11 when we can look at the energy sector and figure  
12 out ways to reduce the cumulative impacts, the  
13 co-pollutants associated with energy production --  
14 especially in places that are highly concentrated,  
15 densely populate, highly vulnerable people -- we  
16 should do everything that we can, and we should  
17 make it a priority. Thank you.

18 MR. SHEEHAN: Thank you very much.  
19 Sorry about that, Ms. Smith. You can come on up.

20 MS. SMITH: Good afternoon. Thank  
21 you. I want to say thank you to Governor Murphy  
22 and Mr. Sheehan for convening this hearing. And  
23 members of the committee for spending your day here  
24 listening to comments.

25 My name is Laina Smith. I am a senior

1 organizer and policy advocate of Food and Water  
2 Watch. We are a national advocacy organization.  
3 We champion healthy food, clean water, and a  
4 livable planet. And we advocate for a democracy  
5 that improves peoples lives and protects the  
6 environment. We are also a founding organization  
7 of the New Jersey All Fossil Fuels Coalition which  
8 includes over fifty faith, labor, environmental,  
9 community, business, and political organizations,  
10 committed to addressing the urgency of climate  
11 change by moving all fossil fuels and on to a one  
12 hundred percent clean renewable energy future.

13 I'm going to keep my comments to one  
14 general -- a general comment on climate change, and  
15 then in three of the topic areas that you laid out  
16 for us. So, first, general comments on the  
17 urgency of climate change. We need a rapid  
18 development of clean renewable power to avert the  
19 worse impacts of climate change. And, while we  
20 applaud Governor Murphy's goal of achieving one  
21 hundred percent renewable energy, the goal of  
22 achieving that by the year 2050 is far short of  
23 what is needed to stop irreversible climate change.  
24 In 2014 the intergovernmental panel on climate  
25 change reported that recent climate changes have

1 had widespread impacts on human health and natural  
2 systems. This includes violent storms, floods,  
3 acidifying and rapidly warming oceans. And we have  
4 seen this in events like Superstorm Sandy.

5 As the Paris climate talks in 2015,  
6 the nations of the world agreed that preventing the  
7 planet from warming one and half degree celsius of  
8 the pre-industrial levels would significantly  
9 reduce the risks and impacts of climate change.

10 In order to have a two out of three chance of  
11 avoiding a catastrophe one and a half degree  
12 celsius rise in temperature, the IPCC found we can  
13 only emit 400 gigatons of carbon dioxide after  
14 2011. And between 2011 and 2017, the global  
15 economy released 295 gigatons of carbon dioxide  
16 into the atmosphere from burning fossil fuels. We  
17 only have about ten years to cut our emissions.  
18 Reductions of burning of fossil fuels are critical  
19 to avoiding the worse impacts of climate change,  
20 and we encourage the BPU to develop an Energy  
21 Master Plan that front loads most of the energy  
22 development in this first decade, charting a  
23 pathway for eighty percent clean renewable energy  
24 by year 2028, and one hundred percent clean  
25 renewable energy by the year 2035.

1           Someone mentioned earlier today, one  
2 of the hurdles is the lack of a federal renewable  
3 energy plan. There is a bill introduced by Bruce  
4 Gavern from Hawaii that lays out this timeline  
5 towards a hundred percent renewable energy by 2035.  
6 The state could support that bill and advocate in  
7 Congress for that.

8           Second, for the definitions of clean  
9 energy sources, we support a clean energy economy  
10 that is built solely on solar, wind, and titled  
11 sources. Solar can be used in utility, and  
12 distributed solar to meet our energy needs. A  
13 renewable portfolio standard is an effective tool  
14 for requiring utilities to build utility scaled  
15 solar projects. Additional sources can come from  
16 distributed rooftop solar projects. This requires  
17 policies and public investment. These policies can  
18 focus on maximizing developments and access to  
19 community solar projects, which we are moving  
20 forward on -- and could move faster, frankly.  
21 Removing caps on net metering, and changing  
22 building code to require the new construction is  
23 fitted with on-site and/or rooftop solar panels.

24           Wind energy. We can see the  
25 potential from unrealized energy potential from

1 off-shore wind, and the technical potential to  
2 provide double the energy demand for current  
3 electricity needs exist in off-shore wind, plus  
4 estimated demand for electrified vehicles and  
5 heating. New Jersey shows significant  
6 opportunities for wind, but we should not rely  
7 solely on off-shore wind, and must also consider  
8 on-shore wind energy. Because even with proper  
9 off-shore siting of off-shore wind resources,  
10 typically the fishing shipping lanes and ecological  
11 impacts, this may result in lower levels of wind  
12 energy being harnessed. It will take time to study  
13 and build out the infrastructure to fully utilize  
14 off-shore wind, so we must act immediately to  
15 replace fossil fuel energy sources with clean  
16 energy sources.

17                   And with title technology, the  
18 technology is improving. And, it could provide a  
19 steady flow of energy to meet demand when  
20 intermittent electricity sources like wind and  
21 solar are not producing electricity. Stock  
22 renewable of titled power recently released report  
23 that a two megawatt loading titles turbine produced  
24 over three gigawatt hours of renewable electricity  
25 in its first year of testing.

1                   To the point of sources of dirty  
2 energy standards. The state's current renewable  
3 portfolio standard actually allows many sources of  
4 dirty energy to be counted as renewable. And this  
5 RPS should be addressed. These include sources of  
6 greenhouse gases and other harmful pollutants that  
7 adversely affect public health, including bio-gas  
8 and garbage incineration. We also call on New  
9 Jersey to address the expansion of fracked gas  
10 infrastructure. And we agree with the comments  
11 that nuclear is not clean energy.

12                   Continuing to reliable fracked gas.  
13 This is one of greatest threats to our planet.  
14 While it may burn cleaner at an end point, methane  
15 is 85 times more potent at trapping heat than  
16 carbon dioxide. Methane leaks from every stage of  
17 the natural gas system, from well sites to  
18 processing plants, and compressor stations to  
19 beneath city streets. With over twelve proposed  
20 pipelines, several compressor stations and gas  
21 fired power plants being proposed in places like  
22 the Meadowlands, New Jersey must put a moratorium  
23 on all new fossil fuel infrastructure, while it  
24 continues to develop its Energy Master Plan and  
25 build out a clean renewable energy system.

1                   Bio-gases has been included in New  
2 Jersey's RPS before. And this includes bringing  
3 waste methane from landfills through its treatment  
4 plants, and animal waste such as factory farming  
5 manure. This methane often referred to as bio-gas  
6 is essentially indistinguishable from fracked  
7 natural gas, with many of the same problems.  
8 Burning bio-gas or methane releases greenhouse  
9 gases and pollutants including nitrogen oxides,  
10 ammonia, and hydrogen sulfite. New Jersey  
11 currently allows garbage incineration. This  
12 produces toxic air emissions like mercury, and  
13 contributes to climate change. New Jersey is home  
14 to five municipal waste incinerators that combined  
15 burn about 4.8 billion pounds of municipal waste  
16 annually. And overburdened predominantly lower  
17 income communities of color of Newark and Camden  
18 for decades.

19                   Besides the adverse impacts to the  
20 public health and climate, allowing these fuels to  
21 masquerade as renewable, undermines the importance  
22 of the state's RPS and efforts to achieve truly  
23 renewable clean electricity. Even by including  
24 these sources of dirty energy in the transition  
25 allows for the creation of markets that don't

1 currently exist, and thereby facilitates the demand  
2 for dirty energy. The market incentivizes  
3 polluters to continue to expand operations. We  
4 must acknowledge that we cannot consider fracked  
5 gas as a bridge fuel, and not consider sources of  
6 dirty energy like bio-gas and garbage incineration  
7 as a bridge fuel, like has happened for so many  
8 years with fracked gas. And, will result in  
9 stranded assets if we don't put a moratorium on  
10 fracked gas.

11 Finally, to the point of clean energy  
12 definitions. New Jersey's REC program, Renewable  
13 Energy Credit Program, while it's in the process of  
14 being overhauled, it has been meeting its RPS goals  
15 with almost as much renewable energy from garbage  
16 incineration RECs as from solar power. In  
17 addition, to only allowing utilities to purchase  
18 RECs from clean energy sources, the state must  
19 ensure that the RECs are bundled with the  
20 electricity that they represent, versus unbundled  
21 where they're able to be tied to sources of dirty  
22 energy. And, thereby that energy is will send  
23 dirty energy into the grid and offset vastly the  
24 purchase of meaningless credit. Worse yet,  
25 ratepayers then must subsidize these unsustainable



1 industry dirty energy sources through their  
2 electricity bill.

3           Some of the technology -- so, the  
4 third point to the technology that the state can  
5 build, it can be addressed through redundancy,  
6 storage, demand and response, and energy  
7 efficiency, calls for consumer in the transition to  
8 renewable energy and reduce the ecological impacts.  
9 Electricity storage is improving significantly and  
10 becoming cost-effective, and will reduce the need  
11 for redundancy. The California Public Utility  
12 Commission has already taken action to force  
13 utilities to installing utility scale batteries to  
14 replace gas to meet peak energy demand.

15           Demand response programs can help  
16 reduce peak electricity demand by reducing the cost  
17 associated with storage for redundancy to meet  
18 energy demands on high days. The BPU should  
19 explore various incentives and penalties that could  
20 be incorporated to ensure large energy users are  
21 implementing demand response programs. Energy  
22 efficiency. We've heard about a lot about it  
23 today. So, it helps reduce peak demand by reducing  
24 our overall energy footprint. And the state could  
25 institute an energy efficiency portfolio standard.

1                   Finally, environmental justice and a  
2 just transition. We need to address the workers  
3 from jobs in the fossil fuel industry, and  
4 transition them to living wage union jobs to  
5 support energy efficiency and the development of  
6 renewable energy. Low-income communities and  
7 communities of color have long experienced the  
8 overburden of relying on fossil fuels. And  
9 environmental justice communities must be  
10 productive in our state energy plan. We are  
11 proposing that to achieve a just transition the  
12 state establish a state renewable energy revolving  
13 fund to provide grants and low-interest loans that  
14 support the generation of renewable energy and job  
15 training programs in the renewable energy sector.  
16 Priority should be given to low-income communities,  
17 communities of color, immigrant communities, and  
18 communities disproportionately impacted by fossil  
19 fuel development. The program should include job  
20 training programs, relocation assistance that  
21 prioritizes workers in displaced industries, and  
22 those living in environmental justice communities.  
23 These funds shall always support community solar  
24 projects, and provide technical assistance where at  
25 least fifty percent of the customers are either of

1 minority, immigrants, low-income, people of color.  
2 And any projects that utilize these funds must rely  
3 on union labor and a work force that is at least  
4 fifty percent minority.

5           To move forward on environmental  
6 justice, we recommend a creation of a statewide  
7 appointed climate justice working group be  
8 established as one of the principles of  
9 environmental justice and meaningful community  
10 input. They will advise the DEP and BPU on plans  
11 and progress made by state agencies and utilities  
12 that are developing and implementing the plan to  
13 achieve one hundred percent renewable energy. The  
14 working group shall be comprised of members who are  
15 residents of low-income communities or  
16 environmental justice communities. And, similarly,  
17 for county or municipalities with at least 50,000  
18 residents, they have to create local climate  
19 justice working groups.

20           Finally, to the point of environmental  
21 justice, these stakeholder meetings are completely  
22 inaccessible to the communities that have been  
23 overburdened by our reliance on dirty fossil fuels,  
24 and those most directly impacted catastrophe. So,  
25 we encourage the scheduling of additional meetings,

1 and evening meetings in environmental justice  
2 communities like Newark and Camden, along with  
3 others, to create a more inclusive process. Thank  
4 you.

5 MR. SHEEHAN: Christopher Grablutz.  
6 Come on up.

7 MR. GRABLUTZ: Hi. My name is Chris  
8 Grablutz. I work for a company called PV Pros out  
9 of Hoboken, New Jersey. We're an independent  
10 engineering and maintenance firm in the commercial  
11 utility solar industry. And, there's been a common  
12 message I've heard today, but I'd like to give it  
13 from a little bit different perspective.

14 Seeing a lot of solar systems that  
15 have been deployed over the last ten or so years,  
16 we quite often are out there on the front line  
17 fixing a lot of these systems, and keeping them up  
18 and running. So, what I would like to strongly  
19 suggest during your consideration is that when you  
20 look to incentivize and motivate folks to deploy  
21 the renewable energies to meet this mandate, is  
22 that you consider it from a performance-based  
23 directive rather than a capital deployment or  
24 capacity base. Too often the folks that are not  
25 in it for the long term make short-term decisions

1 that leave somebody else holding the bag with these  
2 renewable energy systems. And, I can only speak  
3 for solar energy, but I know that this tends to  
4 happen in other industries as well. So, that  
5 there's a very long life span on these systems, and  
6 that it's not just about the total capacity of  
7 install of solar, it's about the generation year  
8 over year. We want to deploy a lot of money for a  
9 fantastic cause, but we want to make sure that that  
10 money is not just deployed to satisfy, but deploy  
11 it meaningfully and to produce clean energy over a  
12 very, very long period of time. Thank you.

13 MR. SHEEHAN: Thank you very much.  
14 With that, is there anyone else would like to come  
15 up and make a comment? Well, thank you ladies and  
16 gentlemen. Thank you. Thank you those of you  
17 that stuck it out with us towards the end. We  
18 appreciate this.

19 As we said, these comments -- both the  
20 oral comments and anything submitted -- will be  
21 part of the record, will be used as part and parcel  
22 in developing the draft. And I think as Grace  
23 indicated, there will be continued opportunities  
24 for stakeholder involvement as we move forward.  
25 This was only the first, certainly not the last. I

1 think we've probably taken into consideration a  
2 fair number of the comments about locations and  
3 process. I'm hoping that we can work forward on  
4 that as we move forward. And beyond that, we look  
5 forward to seeing you at the next meeting. Thank  
6 you very much.

7 (Whereupon the proceedings were  
8 concluded at 4:30 p.m.)

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C E R T I F I C A T E

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2  
3 I, CHRISTINA RESTUCCIA, a Court Reporter  
4 of the State of New Jersey, authorized to  
5 administer oaths pursuant to R.S.41:2-2, do hereby  
6 CERTIFY that the foregoing is a true and accurate  
7 transcript of the testimony that was taken  
8 stenographically by and before me at the time,  
9 place and on the date herein before set forth.

10 I DO FURTHER CERTIFY that I am neither a  
11 relative nor employee nor attorney nor counsel of  
12 any of the parties to this action, and that I am  
13 not financially interested in the action.

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Notary Public of the State of New Jersey  
My Commission expires November 14, 2021  
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