2019 ENERGY MASTER PLAN
STAKEHOLDERS MEETING

CLEAN AND RELIABLE TRANSPORTATION

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KEVIN DeSMEDT
RYAN GERGELY
LORIEANN WILKERSON-LECONTE
ANDY SWORDS
JAMIE DEROSE

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MR. VINN WHITE: Good morning. My name is Vinn White. I am a senior policy advisor for Governor Murphy. I'm up here today joining my colleagues for what's a very important forum. And I guess at the outset I want to say thank you to everyone who have moved around their regular lives to be here today. It's very important.

What we plan to do here today is strictly an eliciting session, so I'm joined up here by my colleagues from the various agencies. I see commissioners in the audience, I see other members of the governor's staff here, and I want to point that out because that's a testament to how important we believe this process to be. And our presence should spell that out. So I don't want to take up too much more oxygen here, but I want to turn it over BPU

At the outset I wanted to say thank you very much. We look forward to all of

your comments here today.

MS. NOREEN GIBLIN: Good morning. My name is Noreen Giblin, and I'm the Chief

Counsel for the Board of Public Utilities. I'm pinch-hitting today for my colleague, Grace Strom Power. I am pinch hitting today for my colleague Grace Strom Power, who is chair of the committee. She's upstairs testifying for ATU as we speak.

On behalf of Governor Murphy and BPU President Fiordaliso we would like to thank you for joining us for our third stakeholder meeting on clean reliable transportation. On May 23, 2018, Governor Murphy signed Executive Order Number 28 directing the New Jersey Board of Public Utilities and other state agencies to develop the 2019 energy master plan that achieves the goal of 100 percent clean energy by 2050. The new EMP is to be completed by June of 2019.

Following its June 18, 2018, kickoff meeting the energy master plan committee identified five work groups made up of NJBPU staff and senior staff from state departments

and agencies. These work groups will provide analysis and recommendations to support the development of the EMP.

Each work group also includes senior

staff designees from the following state agencies: The Board of Public Utilities, the Department of Community Affairs, the Economic Development Authority, the Department of Environmental Protection, the Department of Health, the Department of Human Services, the Department of Transportation, the Department of Labor and Workforce Development, the Department of the Treasury, and New Jersey Transit.

While this is the first opportunity for stakeholder participation, there will also be another commentary after a draft EMP is released in the spring of 2019.

I would also like to acknowledge some of the BPU commissioners that are here today. We'd like to welcome Commissioner Diane Solomon, Commissioner Bob Gordon, Commissioner Upendra J. Chivukula and Commissioner Mary-Anna Holden. I'd also like

to recognize former BPU president Jeanne Fox.

Now I'd like to turn it over to my colleague, Mike Hornsby.

MR. MICHAEL HORNSBY: Thanks, Noreen. Before we go any further, I'm Mike Hornsby.

I'm sharing this task force for clean and reliable transportation. And, first, I'd like to go around the table and have our fellow members introduce themselves.

MR. JOHN GEITNER: Good morning. My name is John Geitner. I'm the Senior Director of Energy, Environment, and Sustainability at New Jersey Transit.

MR. STEVE JENKS: Steve Jenks, New Jersey Transit. I run the energy sustainability programs.

MR. BEN GOLDSTEIN: Good morning. My name is Ben Goldstein. I am with the Division of Clean Energy and Board of Public Services.

MR. JONATHAN RATNER: I'm Jonathan Ratner. I'm in the Office of Economic Transformation at the Economic Development Authority.

MS. PEG HANNA: Peg Hanna, New Jersey Department of Environmental Protection-Air Quality Management.

MR. KEVIN DeSMEDT: Kevin DeSmedt. I'm a senior quality advisor and economic developer.

MR. RYAN GERGELY: Ryan Gergely, Department of Environmental Protection.

MS. LORIEANN WILKERSON-LECONTE: Good morning. My name is LorieAnn Wilkerson-Leconte. I'm with New Jersey State Department of Health, Stroke Prevention Program.

MR. ANDY SWORDS: Good morning. Andy Swords, Division of Statewide Planning, New Jersey D.O.T.

MR. JAMIE DEROSE: Jamie Derose, New Jersey D.O.T.

MR. HORNSBY: Thank you, members of the committee. Recognizing that the transportation sector is the leading source of greenhouse gas emissions in New Jersey, our group is going to focus on how to reduce the state's carbon footprint and advance

electric and alternative fuel vehicles. This plan will also identify methods to incentivize use of clean, efficient, technological advances in commercial and public transportation.

MS. GIBLIN: Thanks for raising those key housekeeping issues before we begin. We

ask that, if you have not already done so, please sign up at the table outside the door. This will help us accurately capture all the policy holders that attended.

For those of you wishing to attend future EMP stakeholder meetings, additional information will be covered in specific meeting notices that are posted on the EMP website.

The comment time period will remain open until Friday, October 12th, at 5 p.m. Stakeholders are not encouraged to share any confidential or privileged information as all comments will be posted online. This request for comments, and all comments received, will help inform the EMP committees drafting the Energy Master Plan.

We will be calling speakers forward, first people who submitted advanced summaries and then people who signed up to speak upon arrival. There is a court reporter here today, and we ask that you identify yourself and your organizations and spell your name fully.

Speakers, please be prepared to

answer any questions from the dais, if there are any. However, our primary goal today is to hear what you have to say. A gentle reminder that we appreciate that you be mindful of all who wish to speak today, and please limit your remarks to ten minutes. Please try to keep your remarks to discussion points and summarize any written testimony. We ask if others have made your point, then you cover other topics.

And With that, I'd like to turn it back over to Mike Hornsby, who is going to call the first speaker.

MR. HORNSBY: Thank you, Noreen. First, are there any elected officials in the audience that wish to speak?

(No response.)

See none, I'll begin to call the speakers. Keep a note, I'm going to be holding up these signs with a hook. So please be respectful that this a, you know, large audience, and of the time. I'll call the speaker and then beyond that guy, so if you're that guy, you're up, please be ready. So first up, Pam Frank from ChargEVC. On

deck, Ronald Cascone from Nexant, Inc.

MS. PAM FRANK: Good morning. My name is Pam Frank, F-R-A-N-K, and thank you for the opportunity to provide some remarks. I'm happy to be in front of the committee today. A lot of faces I know, some I don't, and in the row in back of me there's also a lot of faces I know. So it's good to be here. We've been waiting for about two years to have an opportunity to talk about some of our findings.

First, who we are. So ChargEVC, for those that don't know the organization, was formed November 2016, because of the realization about the opportunity we're about

to describe for New Jersey, which we believe is historic and generational in nature.

It's a 501(c)6, not-for-profit association, and it is made up of about 30 members. It keeps growing. But essentially, we've got a very interesting group of interests aligned here. We've got all the utilities in the state, we've got the Car Dealer Association. NJCAR represents over 150 dealers in the state of New Jersey.

We've got environmental advocates, consumer advocates, technology companies, quite a cross-section of interests, and we all feel very strongly about one thing, which is electrified transportation as an enormous opportunity for both economic growth and for cleaning our air in a historic way.

This is a fairly complex area, as we waded into it over the last two years. We've spent time studying the issue. We've spent time coming up with a policy and program recommendation to accelerate electrical vehicle adoption in the state. And we have attempted to simplify, at least for the short

term, a very complex area. So in terms of what we feel we need to do over the next three to five years, say it's relatively simple in terms of the steps that we need to take. Some of it is historic, it's somewhat unprecedented, but so is the opportunity.

The one thing I will make a note of is, that it does require -- and we understand government processes are meant to work somewhat slowly, but this does require some fresh thinking and new approaches in terms of

how government works and how it works with the private sector. And we've been thinking that for years, you know, good public/private collaboration, but this is really asking something very different, very unique, and very historic, and we also have a bit of a ticking clock.

So what I would say just as a general comment is our organization spent a lot of time going over data, did a lot of work. We would like our findings to be respected. We certainly think there's a lot of corroboration, and we would ask, just in the

spirit of efficiency, that the state not spend too much time replicating work that we believe has already been done and establishing facts that we believe are uncontestable. So, having said that, let me just launch into three quick areas, cognizant of time and those who want to speak.

First, I just want to characterize the opportunity for New Jersey. We've got, obviously, some very untapped adoption potential here, and we believe when we compare New Jersey to other leading states

across the country, that have achieved a higher level of per-capita penetration of cars that plug in, electric vehicles that plug into the grid, we believe investment in additional market development efforts could reinforce natural growth by at least a factor of two.

Now, that should answer the question when do we think this market's going to grow, and it has, but it's not growing fast enough in order to meet our goals and to take advantage of the opportunity. So the market

development efforts we recommend could advance our penetration by a factor of two. So that's thing number one.

Thing number two, we, as I said, developed a roadmap. Took us quite a while to do this, but we have eight policy and program recommendations. We have submitted those into the record as part of our comments. I'll highlight three or four of what we think are the most impactful program policy initiatives.

One is to set goals and clarify authorizations. Clearly we saw what that did

in the renewable portfolio standard with clean energy. It's important for the state to set goals so we know and measure how -- the initiatives in order to reach those goals, and to clarify authorizations that will be necessary.

And number two really important thing, I've been hearing from a lot of people today to talk about this, is to eliminate what is the biggest barrier to adoption of electric vehicles. And you all may know it

by different names, but the name in the business is range anxiety, which is just a fear of running out of charge. And that's done through infrastructure in the state that allows people to charge at publicly available charging stations, and that relieves that range anxiety.

And number three is to address the affordability gap. Prices have come down. They will continue to come down on battery technology, there's no doubt about that if you look at all the data. However, there's still a premium that exists to these cars. Compared to the car that I drive, which is an

EV Volt, the Chevy Volt, with a V, to a simpler car, there's a pretty hefty premium that exists for a similar car in terms of its form and its function. So we need to close the affordability gap, and there are plenty of (inaudible), who have put in some very good rebate programs, so we know from their history what works well and those familiar with the market.

And then fourth I'll say is consider

a basket of programs under ensuring the right to charge. What that means is providing for routine charging for people that are living in, for instance, apartment houses, that don't have easy access or don't have a garage. There's a number of solutions to that, I'm not going to go into them now, but they're in our comments that we submitted. But also more important is to be able to manage the load, in the longer term, instead of stuff like they're doing not right from the beginning.

And then the last thing really is awareness, awareness, awareness. We have no idea how many people just don't understand

this is, in fact, an option today.

Last, in the remaining minute I have, I want to just outline some of the costs and benefits that we have found here. This is only for the light-duty fleet, and we have not even considered vehicle-to-grid patterns in this preliminary data.

First thing, mass savings for all utility customers. The more we plug in, the

more that all electric customers save. It's about $150 million a year in savings, $156 million annually, and that's a savings of over almost 3 billion by 2035.

Second, savings for people that own and operate electric vehicles. That's really tremendous, About $1,900. That's cash that people will have, disposable income, for every two-car household in New Jersey.

And, third, long-term benefits. So just looking at these carbon emissions, we're going to save about $2.3 billion through 2035. So these are really big and significant numbers, which is why we're so excited about the opportunity to help, again, economic development in the state, help New

Jersey clean its air, and push into the 21st century.

So thank you for your time.

MR. HORNSBY: Next up, Ronald Cascone, Nexant Energy. On deck, Fred DeSanti, and then Michael Egenton.

MR. RONALD CASCONE: Good morning. I want to thank the Board of Public Utilities

and Mike Hornsby for having -- making this -- making it available for us to speak and address -- to hear us speak and the written comments that were submitted.

My name is Ronnie Cascone, C-A-S-C-O-N-E. I'm the principal of Nexant, Inc., N-E-X-A-N-T. We are an international consulting firm based in utilities, grid, software, energy efficiency, chemicals, fuels, and other biofuels and biochemicals.

First, let me say that I agree with everything that Ms. Frank said just now, covered some of things I was going to talk about so I'll try to skip through those, especially range anxiety as an issue.

We see a great emphasis on electric power to assist in growth carbon

transportation, but I think, as has occurred in the first section we had at the college, there is a kind of avoidance or, in fact, hostility to, among certain stakeholders, the idea of biofuels. It was incorrectly stated, I think, and completely incorrectly stated that biofuels are not a net carbon benefit.

Now, I don't know if the committee is aware that there are technologies that are being developed and commercialized now globally that will take CO2 from stats with renewable electricity and create fuels, fuels that can be used in existing engine biofuels.

The problem with the idea of the advent of EVS, and of course PHEVs, PHE means plug-in hybrid, or really training wheels for the battery electric vehicles, total electric vehicles. And we have to consider what fuels those PHEVs will be using.

One thing that we have to be aware of is that the average turnover of the auto fleet is ten years, and cars remain on the road much longer that ten years, in fact, in some cases. And the other thing we have to be aware of is that trucks and heavy-duty

vehicles can have even more miles. So if we think we're going to convert the entire fleet, the problem is not only now lack of knowledge or lack of infrastructure, and so on, it's the fact that there's literally trillions of thousands invested in existing

infrastructure, which is transportation vehicles. So we have to think about biofuels, low-carbon biofuels, as the interim, as the tax break to a low-carbon transportation scenario. You know, better is the enemy of good, and a lot of the people who got up and spoke at the first section seemed to think that, if we're better, we should ignore good. It's wrong.

Now, we're doing well in terms of the use of electric vehicles in the state of New Jersey, but the statistics are the Union of Concerned Scientists say that right now the average is 70 miles per gallon in terms of GHG emissions equivalent to an electric vehicle. But as you look at the tools that they have available and just the area -- look at just the zip code for Trenton, for example, it's more like 115 or higher. So

really it makes sense, of course, to adapt an electric vehicle from the point of view from the already high level of renewable electricity that goes into the New Jersey grid from solar, from wind, and from other

sources that are renewable.

Okay. So I think the challenge, as suggested by Ms. Frank, is that the future utility rating design for electric vehicle charging stations is uncertain, and especially around demand charges, say for high-voltage charging stations. The business case for investing in charging infrastructure is evolving as utilities, charging station manufactures, retail businesses, and others involved, other stakeholders, consider these opportunities.

I've got something completely different. I'm not sure that you know this, but, you know, we're also talking -- we talked about only cars, but -- and maybe trucks, but New Jersey is home to some major airports. It has one of the major ports in the world -- ship ports. And we have to think about fueling those vehicles as well

because the emissions occur in New Jersey and there are other global, geopolitical, and local issues to consider. Planes land in New Jersey, ships dock in New Jersey, we have

considerable trans fuels that we use.

One particular case that's important is that the International Marine Organization, the IMO, of the UN has a rule that's going to be implemented in 2020, which will drop marine bunkers as the fuel that ships use from 3 percent sulphur to half a percent on the high seas, which has allowed 3 percent fuel up until now. Also the land fuel sulphur has been around 0.1 percent in and around New York, in the Baltic Sea, in the Straits of Balaka, and so on. But at the same time, the IMO is aiming for zero carbon footprint of shipping by 2050, very much coordinated with what New Jersey wants to do.

So what ship owners are considering is lower sulphur fuels. They should be considering zero-carbon fuels at the same time, and New Jersey can play a role in this. Why is this important? Because New Jersey is kind of the poster child for diesel

fuel. Trucks pass through New Jersey every day. The city -- the state has infrastructures that requires diesel trucks.

What's going to happen when this rule is implemented in 2020, we're pretty sure that there will be a major fly-up in diesel fuel prices, which will incentivize conversion to low-carbon fuels.

At the same time, we have to think about and build into the plan what's happening in shipping and what's happening in aviation because aviation is not going to have electric vehicles and -- not in the near future, and aviation and shipping's not going to have electric vehicles.

So you can talk about electric vehicles for cars, but we have to think about the transition period and the availability of low-carbon biofuels to serve those other transportation modes that are a part of the impact on New Jersey's economy.

So I think that the -- basically that's all I had to say. Thank you very much and I hope that we will begin to think about the biofuel issue as part of the picture of

all of the above. Now EV's fine, but let's talk about -- let's also think about

biofuels. Thank you.

MR. HORNSBY: Up now Fred DeSanti, on deck Mike Egenton, after that is Brett Muney.

MR. FRED DeSANTI: Good morning. My name is Fred DeSanti. I'm here today with Marcy Bauer with EVgo. EVgo, as you may know, is a national company that builds almost exclusively to high capacity car chargers. Marcy has been working with the State of New Jersey on a number of projects. One of these charging facilities on the turnpike and parkway, so we're pleased to introduce her. She'll make the comments. Thank you, Marcy.

MS. MARCY BAUER: Okay. That's Marcy Bauer, M-A-R-C-Y, B-A-U-E-R. Hello and good morning, members of the subcommittee, and thank you so much for the opportunity to participate in this very important planning process. As Fred mentioned, I am with EVgo. I'm the Director of Programs for EVgo, and we're working on a number of projects in the

east.

At the outset I would like to extend our thanks to Governor Murphy for his leadership in accelerating New Jersey's advancement in this plan of clean energy in all topics, but particularly in the subject of today's hearing, clean transportation technologies.

EVgo operates America's largest public EV fast charging network with over 1,050 chargers in 66 metropolitan markets across the country. As Fred mentioned, we primarily use direct current fast chargers, all at a charge rate of 50 kilowatts or faster. EVgo fast charges more drivers for more miles than any public charging network in the nation.

While our work is headquartered in California, we have a very strong footprint on the east coast, in both chargers and personnel. We were recently awarded the first contract under Appendix D of the Volkswagen settlement to build a statewide charging network for the Commonwealth of Virginia, and we are actively building

throughout the mid-Atlantic and northeast, including New Jersey. As Fred already mentioned, we're building along the turnpike and the GSP, and I'm fortunate enough to be overseeing those projects as well.

I'm pleased to share that in addition to -- or inclusive of those turnpike and GSP chargers, we will deploy nearly 30 fast chargers in the state and are partway through the deployment of charging stations again along the turnpike and GSP. The closest to this location are at Molly Pitcher and Joyce Kilmer.

Those chargers on the turnpikes, several of which will be co-branded under a partnership with PSE&G, and, again, Molly Pitcher and Joyce Kilmer are two samples of that co-branding partnership. Our east coast staffing contingent is strong and growing, and I myself am a native-born Jerseyan, I am proud to say.

As already referenced, the need for the electric vehicle market is still amazing in New Jersey. We have a fraction of what's needed to achieve the state's goal for

greenhouse gas emission reduction, but as Pam mentioned, the opportunities ahead of us are monumental. Two and a half million EVs are expected to be on the road by 2022, and automakers will roll out over 160 EV models by that same year.

We expect that this boom in EV car sales will necessitate a national network of almost 25,000 fast chargers, and that's just fast chargers, not inclusive of all the other types of chargers.

EVgo has long believed that the rising tide is all boats, and that is why we've been supportive of all sorts of investments in the electric vehicle charge infrastructure, in addition to the vast network that we have deployed to date. We will continue to invest and grow in EVgo's nation (inaudible) public fast charging network, but utilities and other charging companies also can and will invest in public charging infrastructure, and we welcome all of that as well.

As New Jersey looks to develop its next Energy Master Plan and electrified

transportation sector here in this state EVgo proposes the following key issues for your further consideration:

First, utilities have a critical role to play in the transportation electrification effort. From our experience in installing fast charging stations in New Jersey, Pennsylvania, and New York, and other locations across the country, we know that utilities are a key stakeholder and a critical partner in the EV charging space.

Not only must they provide the interconnection for fast chargers and participate in citings and design conversation as we move to plan higher power levels, many utilities themselves are also seeking approval from the regulators to invest directly in EV charging infrastructure. And, again, we welcome that.

One area where there is incentives on utility investment is in make-ready (inaudible) on the infrastructure behind here. Utilities investing in electrical infrastructure leading up to the charger is a

25 win-win-win scenario for the utilities, the

1 EV drivers, both present and future, and the
2 EV charger operators. The utility is able to
3 focus on its core competencies, able to work
4 demand for them to serve these drivers to
5 themselves and get more and better charging
6 stations, and charging companies get much
7 needed capital cost reduction to continue our
8 work to deploy infrastructure where it's
9 needed most. Utilities should work in
10 partnership with experienced EV charging
11 partners to deliver the infrastructure that
12 EV consumers need in a driver-centric
13 fashion.
14 Expanding on previous comments
15 regarding rate structure is point number 2.
16 Rate structure is another area where
17 utilities are critically important.
18 Forward-thinking tariff structures are needed
19 to ensure fueling costs are competitive with
20 internal combustion engine vehicles. Current
21 commercial rate structures are not designed
22 with electric vehicles' unique growth
23 profiles in mind. Electricity costs can

account from anywhere from 30 to 80 percent of a charger's operating costs. And, again,

30 to 80 percent. And a high demand charge tariff often means the difference between a certain site being viable and not viable for citing very important charging infrastructure that we need.

EVgo has been a top leader on this topic and continues to work with others in this state and those who are responsible for tariff reforms to advocate for fair and appropriate EV charger rates. Notably, we would recommend that the BPU look to precedents being set in Washington, New York, and California on this critical piece of the EV puzzle.

A third item is streamlined permitting, which will enable more efficient deployment of EV infrastructure. Successful driver-centric deployments of EV infrastructure happen when utilities and charger companies plan together early and often, especially in passing analysis.

Conversely, disjointed, slow

permitting process creates a serious lag in deploying EV infrastructure. Design, permitting, and inspection can collectively

be a painful schedule killer, sometimes so much so that it kills the site itself, taking upwards of 6 to 12 months to be completed.

Incorporating that utility input early and often into the design process and then streamlining both permitting and the inspection processes with local jurisdictions and utilities will help keep what really are relatively simple projects from getting bogged down simply because we'd be new and unfamiliar to those assessing the sites and reviewing our applications.

Additionally, the Board of Public Utilities should encourage utilities to staff accordingly so they have the means to respond quickly to the soon-to-drastically-increase number of requests for design input, counter availability, checks, inspections, and finally interconnection to turn the chargers on.

I definitely think that the teamwork

to streamline these processes is crucial. The electric vehicle market is poised to store, as you've heard and will probably likely hear a couple more times to go, and

utilities must be staffed before a need to prepare for a surge in these requests.

To ensure efficiency in planning electric vehicle technology, EVgo also recommends an initiative led by the state to develop a current guidebook that local jurisdictions may reference and may look to raise more EV infrastructure in their communities. And there's a great example of this out in California where the governor's focus office has involved stakeholders just for such an effort.

The final point is incentives. And I'm going to skip over a little bit to mention EV vehicle incentives which has already been raised. But we also would like to see ways that business case for charging infrastructure in New Jersey, both increase as vehicle sales go, grow, and more EV drivers are on the road using our charging

networks. And this is why EVgo is supportive of legislation meant to provide both rebates, as I mentioned, as well as policy tools that facilitate widespread deployment of charging infrastructure, including things like

property tax abatements for site posts, which provide the real estate for EV chargers. Possibly as well changes in building code to enhance opportunities for EV charging in new construction.

To close on behalf of EVgo, I, again, want to thank Governor Murphy for his leadership and the Board of Public Utilities and staff for their work in moving the Governor's vision forward. EVgo looks forward to continuing our prioritization with the Board and other entities in New Jersey to freely support this new era of clean transportation.

Please do not hesitate to reach out to EVgo and myself personally as a resource moving forward. Thank you.

MR. HORNSBY: Thank you, Marcy. Next up Michael Egenton from the New Jersey

Chamber, after that, Brett Muney from Greenspot, and after that is Jerome Lutin from New Jersey Transit.

MR. MICHAEL EGENTON: Thank you. I'm Michael Egenton, E-G-E-N-T-O-N. I'm Executive Vice President of the New Jersey

State Chamber of Commerce. I am currently serving on the New Jersey Clean Air Council, my 23rd year. Clean Air Council is an advisory body that makes recommendations to the State of New Jersey on matters and programs pertaining to air pollution control.

We held a public hearing this past April to attempt to provide recommendations to the BPU Commissioner to help expand the use of zero-emission vehicles in the state. I served as the hearing chair providing copies to co-chairs this morning. It's also available on the website. I also recognize several individuals around the table here that participated at that hearing.

The following report summarizes the testimony and the data received from the Clean Air Council's public hearing and

comments on this important issue. The Council formally presented a report to the BPU Commissioner McCabe on July 11th of 2018. I also provided a personal copy to DOT Commissioner Scaccetti, Senate Environment Committee Chairman Bob Smith, Senate Environment Committee Chairman Bob Smith, the

Senate Environment Committee Chairwoman Nancy Pinken, and First Lady Tammy Murphy.

This report is a start to promoting zero-emission vehicles in New Jersey and supplementing the Murphy administration goal for further reducing air emissions in the state.

So for over 25 years the State of New Jersey has made great strides in reducing air pollution resulting in cleaner air for its residents for generations. Through the implementation of federal and state regulatory and enforcement departments, major emitting sources have been required to meet strict emission standards. Control technology, such as selective catalytic reduction scrubbers, carbon ejection

baghouses have been installed on power plants.

As we clean New Jersey's air, one of the largest contributors to air pollution continues to be the transportation sector. While the emissions of the automobile fleet continues to improve the fact remains that automobiles as well as light- and heavy-duty

vehicles continue to be a significant source of New Jersey's air pollution. Transportation is the largest source of ozone precursors in New Jersey, and contributes nearly half of the greenhouse gas emissions. Electric vehicles are expected to be a significant part of the solution to the air pollution problem in New Jersey region.

In recent years, an increasing number of electric automobiles have been sold in New Jersey. However, much more must be done in order to increase the sale and use of these vehicles, particularly to more of the mainstream public as well as fleets of both heavy-duty vehicles and buses.

The development of the electric

vehicle fleet has inherent challenges, such as affordability and the expansion of charging infrastructure. Issues of equity are a particular challenge, as New Jersey tends to reap the benefits of electric vehicles in highly impacted urban areas.

We came to the report with three key recommendations for -- to approach zero-emission vehicle ownership:

Number one, affordability. Develop greater financial incentives for consumers to purchase zero-emission vehicles, while being sensitive to our current economic climate and fiscal challenges of the state. One of the Council's key recommendations is a zero-emission vehicle purchase rebate program.

Number 2, infrastructure. Develop a long-term, sustainable, strategic plan for set infrastructure in consultation with stakeholders, such as the New Jersey Board of Public Utilities, New Jersey Department of Transportation, and Turnpike Authority, NJ Transit, our metropolitan planning

organizations, and so on, to guide state, regional, and local deployment of infrastructure to support the broad portfolio of charging needs at home, work, around town, at destination locations and on the road.

Finally, awareness. Develop consumer awareness strategies that highlight the wide range of desirable high performing zero-emission vehicles available incentives, a rapidly expanding network of charging

stations, and the economic, environmental, and public health benefits of zero-emission vehicle ownership.

The Council is sensitive to our current economic climate and fiscal challenges of the state, recognize that identifying funding for (inaudible) is challenging in a time of competing budget priorities.

In the report we've made 34 recommendations as well as several sub recommendations. Three recommendations focus on encouraging opportunities and crucial considerations for electrification:

Number 1, equity. Prioritize electrification of medium-duty and heavy-duty vehicles and equipment that operate in large numbers of low-income communities and communities of color.

Number 2, heavy-duty and fleet vehicles. We encourage the Port Authority to continue expanding partnerships with air carriers and ground support contractors to purchase a huge selection of ground support equipment wherever possible. Add ZEVs to the

state vehicle contracts that support procurement of fleet vehicles by state agencies, municipalities, and other entities that can purchase vehicles from the state contracts. And lead by example by incorporating ZEVs into the state agency fleets.

The Council received testimony on the role of electric utilities in EV charging and we made several recommendations. Of course, we recognize that this is BPU's jurisdiction and not the EP's. We also understand that the BPU recently completed a stakeholder

process on the role of utilities in EV infrastructure, and we certainly look forward to collaborating and combining our efforts.

One cross-cutting recommendation that we did make in the report. The BPU should lead an inter-agency task force of relevant state agencies, many around this table, including BPU, the DOT, and others. And the task force would perform and develop an implementation of the strategic plan for said infrastructure and address critical issues such as infrastructure and operability,

signage, building codes, permitting, rate design, rate interdiction, and electrification of the state fleet.

One final note on -- since we're on the topic of transportation. My organization, the New Jersey State Chamber of Commerce, led the way and was instrumental in the coalition effort called Forward New Jersey. We helped replenish the transportation trust fund, and those needed dollars go towards roads, bridges, and transit.

I wanted to give a plug on the importance of the Gateway Tunnel Project. We don't have a seamless operating infrastructure that people won't take transit, people will be waiting long for the trains to come, so we have to put our investment in projects like that. Such importance on transit villages, we need billboard, we need more local communities.

And as we talk about transit options with the next generation that are moving back into our cities, we have to utilize things like a transit system, utilize using Uber and

Lyft, provide zip cars and other methods to get people out of their single vehicle.

Thank you for the opportunity to provide these comments, and certainly look forward to engaging the stakeholders for future discussions. Thank you.

MR. HORNSBY: Thanks, Mike. Up next, Brett Muney from Greenspot, on deck Jerome Lutin from New Jersey Transit, following him Henry Gajda from New Jersey League of Conservation Voters.

MR. BRETT MUNEY: Good Morning. I'd like to thank the committee for allowing us to speak and allowing me to speak. My name is --

MR. HORNSBY: Push it -- it's got to be red.

MR. MUNEY: Got to be red?

MR. HORNSBY: Yep. You need a red light. You're good to go.

MR. MUNEY: Sorry about that. First time doing this.

So I'd like to thank the committee for allowing me to speak, allowing everyone here to have a voice and listen to what we

have to say. My name is Brett Muney, B-R-E-T-T, M-U-N-E-Y. My company is Greenspot. We are a smart mobility company that is out of Jersey City, New Jersey, where we marry EV infrastructure and car sharing, and I will go into that a little bit.

I'd like to try not to rehash what everybody else has said. I know everyone's talking about electric vehicles and the heavy-duty stuff, and the ports are certainly

very important because one out of four kids in downtown Newark and by Port Newark gets asthma, so that's certainly something that is very important.

But getting on to what we do and what we'd like to encourage, what we'd like to see from the committee and the EMP, Just going over what we think will adopt electric vehicles will get us to where we need to be.

One, we need the faster charging, we need lower car prices, which hopefully will happen by 2022 when batteries become the -- when the technology is better and the price of batteries comes down, so the equivalent car for an electric vehicle becomes less that

an internal combustion engine vehicle. The available charging (inaudible) infrastructure, obviously, and education. I know everybody's spoken about those, so...

I want to go into a little bit about EV car share and about affordability. We definitely want to see infrastructure build out, but we want to see a good percentage of that in the environmental justice

communities, just because that provides them with an affordable alternative form of transportation.

It's something we're also -- environmental justice communities a lot of times don't have the bandwidth, don't have the resources to speak out for themselves and advocate for themselves, so we would like to do that here. We do think that charging stations and electric vehicle car shares should be placed in those environmental justice communities as well as the community at large, and I know the previous speaker touched on that right at the end, so I'm glad I had the chance to follow through on that.

Also when we talk about car sharing

and we talk about electric vehicle car sharing -- and I know the Union of Concerned Scientists was mentioned before and also the Department of Energy has some studies out. And you can go on those two websites and you can see what the difference is, both in what it takes to run a car, an internal combustion engine vehicle, versus an electric vehicle in

the price of a gallon of gasoline and the equivalent electricity, and it's about -- in New Jersey it's about half. It's 2.90-something, right, per gallon and it's about $1.40 for the equivalent e-gallon. So that's going to reduce operators' cost by a lot.

And then also the carbon emissions which is about 387, I think, grams per mile -- grams per gallon of carbon emissions on an internal combustion engine vehicle, and in New Jersey right now it's about 118 with the battery/electric vehicle. Obviously, the battery/electric vehicle is zero, so the 118 comes from grid. And as the grid gets better, that number is going to come down as well. So what that's going to do is get us

closer to the Paris Climate Accord that we're all striving for. We're all striving for the 80 percent by 2050, And when you throw in car share, it gets it down even less because obviously we're taking cars off the road.

So talking about car share. What we're trying to accomplish, what Greenspot

does is we marry the EV infrastructure and we marry the car share and we provide electric vehicle car share solutions, smart mobility solutions, more than just car sharing.

And there are a bunch of micro transit solutions that I'll get into, but one of the things that car sharing does, is it reduces congestion. It reduces traffic congestion, so it takes cars off the road, people can get around easier, and it also reduces parking congestion so we can then repurpose some of those parking spaces, either for green spaces, maybe in complete streets, re-energizing the city, and doing the economic development and building up the towns in that way so that the micro transit solutions that an EV car share can provide, the technology now that they are first and

last mile solutions.

So if you take a commuter who needs to get to the train station, instead of four commuters taking their car to catch that 7:52 train they need to catch, they can go onto an app, state that they need to be at that 7:52

train, somebody -- a gate economy driver, basically Uber driver or Lyft driver can come, they can get that electric car, they go around, they pick up four people, they drop them off at the 7:52, then they go and they can get four more people to the 8:24 train. Okay. So rush hour in the morning, and the same thing coming home, rush hour in the evening. That way we take two trips, we've taken eight cars off the road, eight cars out of the parking lots.

So we'd like to see the committee advocate for some of these types of solutions in urban areas, in first-tier suburbs where there's a lot of commuters, and be able to take the cars off the road. And that will save both in costs, in traffic, in fatalities, in vehicular fatalities, and obviously in carbon emissions.

Municipal police can also use these cars as they will be available and they can supplement either their fleet or they can replace their fleet and that will save them money instead of paying for at least the

monthly payment, the maintenance, the insurance, and the gas costs, and they can go greener. So it gets the municipality to go greener, which I'm sure our friends from Sustainable New Jersey will be happy about as well.

What I'd also like to see from the committee is a streamlined purchasing process for municipalities where they can go ahead and purchase a program such as Greenspot's with no cost to a municipality, but where they can implement a program such as Greenspot's without going through a difficult R&D process. We'd like to see something where it might be a way for them to purchase some of these electric vehicle solutions in a much easier way than having to send it out to an RFP or a difficult ordinance, something like that.

We'd also like to see the contract

law be available for a longer length of time. I don't know if that's something that this committee would be handling, but it might be something that we can propose to our senators

and assemblymen where contract law can go out to longer lengths of time, more than two years or five years on certain exceptions. We'd like to see it extended to ten years to at least see this electric vehicle proliferation growing better.

And the last thing I would like to say is we also think that there should be research done mostly by universities in conjunction with a lot of these program implementations, and we certainly welcome that, to the Bloustein School at Rutgers to any other institution, especially Jersey institutions, that would like to participate.

And also funding made available to fund the DEP, the DOT, and anybody else would be good if they could basically let us know what they're thinking and also let us advocate for having some of these funds put towards a lot of these programs. So I know they've already done a lot of that, but we'd

like to see a lot more of this, especially in the cases of the DOT and the funding that comes through from the federal program.

That's all. Thank you very much for your time. We appreciate it, and look forward to more electric vehicles in the state.

MR. HORNSBY: Thank you, Mr. Muney.

Next up Jerome Lutin from New Jersey Transit, on deck Henry Gajda for New Jersey League of Conservation Voters, and after that Amy Goldsmith from Clean Water Action.

MR. JEROME LUTIN: Good morning. Thank you for the opportunity to testify today. My name's Dr. Jerome Lutin, J-E-R-O-M-E, L-U-T-I-N. I'm a civil engineer, retired engineer, with over 50 years of professional experience.

I retired from positions as Distinguished Research Professor at New Jersey Institute of Technology and retired from the position of Senior Director of Statewide and Regional Planning at New Jersey Transit. Retired being the operative word here, so I'm not -- my words do not represent

any official position by NJ Transit. These are all personal statements.

I'd like to address just four topics. First is electric vehicle enabling infrastructure; and second is bus transit electrification; the third is reconfiguration of bus service; and fourth is the impact of changing travel impacts of autonomous electric vehicles.

We all know that the adoption rate for electric vehicles, the battery power of electric vehicles has been fairly slow. It has increased dramatically over the past couple of years, particularly with the introduction and the production of the Tesla Model 3.

However, I think we need to recognize that the U.S. is no longer a leader in the global market for autos. That lead has shifted to China, which has an enormous air quality problem and is already announcing intensions to electrify a fleet of autos. They bought Volvo, and Volvo has come out and talked about increasing the share of electric vehicles available. I think what the State

needs to do is to focus on engaging the

electric cars industry, which I'm sure they're going to be able to meet the challenges. This is -- the need to power electric vehicles has probably doubled the capacity requirements for our electric grid.

Energy suppliers need to ramp up capacity and harden infrastructure. Underground distribution should be a part of the program to upgrade and harness the system, and in addition it will make roadways safer by eliminating poles.

Bus transit electrification. Battery-powered buses have not be able to match the rate of diesel buses, especially in extreme temperatures. They will, however, steadily improve and eventually become standard for fixed-route transit, especially given their ability to utilize interim charging.

I think we need to understand that the bus procurement cycle for New Jersey Transit takes about 3 years from the time the cities need to start budgeting for buses, about the time that contracts are written and

the first articles are delivered. If buses are bought with federal funds, they need to be kept on in service for at least 12 years. However, it's more desirable to keep them for as much as 18 years, so the buses that are currently existing or currently passing procurement, they're going to be around well into, say, 2038, so that's pretty far into the master plan.

NJ Transit really needs to be in early planning if they're going to go to electric buses. They need to acquire the technical and planning expertise to begin converting as the technology matures. And mature it will, but because of the long cycle for procurements, you need to start really thinking about it now.

Reconfiguring bus service. New Jersey Transit should prepare to redeploy its bus fleet services. Rider services are already significantly reducing ridership in numerous locations. Buses that carry few people are inefficient uses of energy. In some instances, services on select corridors of New Jersey could be strengthened and

improve ridership, and in some areas bus routes should be eliminated in favor or ride share. That's going to be especially true as vehicles are electrified.

Autonomous electric vehicles -- during the period that this master plan is expected to address we're not only going to go innovation here, we're going to see automation. It is growing already, Waymo and Uber are already working on expanding their fleets.

Autonomous electric vehicles rapidly will be entering the market within this planning horizon. The ability to transport people and goods and reposition vehicles without using labor will lead to additional loss of travel and more energy consumption. Lower costs and the ability to use time and motion for non-driving activities such as work, recreation, and sleep, will lead to longer commuting trips, more congested roads, and further suburban sprawl.

All levels of government needs to be finding other ways to increase share rides in automated electric vehicles and to focus on

land use policies that will result in shared rides and reduce the overall demand for vehicular travel. Thank you very much.

MR. 7HORNSBY: Thank you, Mr. Lutin. Next up, Henry Gajda, New Jersey League of Conservation Voters, followed by Amy Goldsmith, Clean Water Action, and Norah Langweiler of Jersey Renews.

MR. HENRY GAJDA: Henry Gajda, New Jersey League of Conservation Voters. I thank you for the opportunity to testify today and provide some comments again (inaudible). I think it goes without saying, just to preface the rests of my testimony morning, the State should do everything in if its power to prevent the federal rollbacks and the standards. They're proven to work, they save consumers almost a trillion dollars and they're widely supported throughout our country.

So, first, electric vehicles. The state should continue to work with the legislature to pass legislation that incentivizes electric vehicle market growth.

New Jersey needs 330,000 EVs on the road to meet its California ZEV program goals. Any personal vehicle policies considered should evaluate whether it moves the state closer to actually accomplishing these goals. Increased investment in public EV charging infrastructure and implementation of a statewide plan to establish a functioning charging network at public rest stops to reduce recharge anxiety is essential to the role of EVs around the state.

In addition, the EMP should evaluate mechanisms that encourage private investment in charging infrastructure to catalyze market growth, encourage consumer choice in equipment, and ensure that the state isn't picking winners to build the most dynamic market possible.

Regarding public transportation, the EMP should provide guidelines and supply chain recommendations to transition to a 100 percent clean electric bus fleet as soon as possible. While at face value electric buses are still more expensive than conventional

buses, incorporating life cycle assessments that detail mechanical and operational costs,

electric buses are much cheaper due to the reduced mechanical and fueling needs, repairs, and improvements.

In addition, and more importantly to New Jersey League of Conservation Voters, electric school buses need to be prioritized and supply chain recommendations need to be made to the school districts in a collaborative effort with the Department of Education, (inaudible) and other such entities.

And also grants or low interest loans should be designed for school districts, especially districts within environmental justice communities, urban low/moderate income communities, and communities of color to really help prioritize and encourage the upkeep of electric school buses. The Health studies are showing urban communities suffer from much heavier air, and children are particularly vulnerable.

Policies similar to those in France,

Sweden, and Norway, which impose higher fees or sales taxes on higher-emission vehicles to give rebates to cleaner vehicles should also

be considered. Cities across Europe and China restrict the use of high-polluting vehicles and actually give preferential access to electric vehicles, such as free parking, or right-of-way lanes. These are all things that should be considered.

And also we should also be encouraging mayors really on how to (inaudible) for them to make decisions in their own communities.

And then, lastly, transit oriented development. The EMP should encourage smart development practices that prioritize development in areas that increase density, instead of encouraging sprawl, specifically in communities where there are public transportation opportunities that provide alternatives to commute rather than to just drive.

It's empirically shown that (inaudible) increases innovation and economic

development, so this isn't just smart land-use planning, this is also just smart economic theory.

In addition, more dense communities

with downtowns should encourage massive transportation methods such as walking or biking, similar to really encouraging people to be able to catch some other means of transportation other than driving.

And, lastly, within the EMP, the state should consider methodology that incentivizes electrification of our ports due to the serious environmental justice impacts and here in our communities.

Thank you.

MR. HORNSBY: Thank you, Mr. Gajda. Next up, Amy Goldsmith from Clean Water Action, followed by Norah Langweiler from Jersey Renews, then James Appleton from New Jersey Coalition of Automotive Retailers.

MS. AMY GOLDSMITH: Hello. My name is Amy Goldsmith. I'm the New Jersey State Director for Clean Water Action. We have 150,000 members throughout the state. We

knock on doors every day talking to people in communities about the issues that are relevant here today.

I want to point out, in particular I want to talk about two things, not gasoline

so much, but really specifically about diesel. Diesel produces particulate matter, black carbon, greenhouse gases, and (inaudible) such as heavy metals and carcinogens.

And the black carbon is something I want to emphasize today because it's the largest contributor to global warming after CO2 and largely ignored in the planning of our energy strategies. It's more pollutant than CO2, it absorbs sunlight and radiates heat. It's kind of like having lots of dark shirts hanging in the air, you know, it gets really hot on a hot day. We have a lot of that, we have of lot of black soot that comes out of our diesel vehicles.

And so the benefits of the black carbon reduction, in other words, diesel reduction, are very significant because it

would actually reduce the heating of our planet within months by reducing black carbon rather than the decades, or forever, on CO2. So I just want to bring extra emphasis to that. In fact, there are experts from Stamford University and others who have done

studies on this and the importance of addressing black carbon.

I want to speak first to the issues of buses. In 2005 Clean Water Action and others secured business tax funds to retrofit school, transit, and municipal vehicles and buses with pollution-controlled devices and retrofit tech analysts as part of that process under the EDP.

But now we need to virtually eliminate fossil fuels and greenhouse gases from this part of the sector. It poses a hazard to the air, to climate, to our lungs, and the pollution levels inside the vehicles for the riders, for the drivers is five to ten times higher than outside. So it's a real public health issue. A dollar saved is not just energy issues around electric

powering of buses, but also the health costs that are, you know, incurred by families.

Families and children are particularly vulnerable, especially in our cities where we have buses, whether they're school buses or they're public transit. Whether they're riding in it or walking along

the bus routes. Children's lungs don't fully develop; they become more brittle, more stunted.

Drivers, it's a safety issue. Drivers end up getting nauseous with headaches and lightheaded from the diesel fumes, from the leaking crank cases, and the rest. So as we accelerate our buses, we have more belching of corn diesel, more soot, more ozone precursors, and with electric buses we could, again, remedy that particular issue.

I want to move to the next main topic that I want to cover today, which has to do with the logistics industry, or as some have mentioned, the ports. In the Port of Newark and Elizabeth 14,000 trucks every day go in and out of the port.

Primarily 68 percent of them are older -- 2007 and older trucks. That means they're not running with the best technology available. In fact, back to 2011 trucks are the best technology for (inaudible) at 2.5.

The ports are where trucks go to die. They're owned by -- trucks are primarily owned by independent operators who cannot

afford to upgrade their trucks. We should focus in on fleets, and on the terminal operators, and also a number of other avenues that I'd like to mention in my remaining moments.

Despite the successful programs on the west coast to turn over the entire fleet, New Jersey Port Authority actually rolled back their 2009 clean trucks program that would have banned all pre-2007 trucks. Now we have trucks that are 1996 and, quote, newer that are allowed in the port, except for any ones that registered for the first time. We need to reinstitute that program.

According to a study that we commissioned, and the Coalition for Healthy

Ports did not share, it allows 15 years to achieve the diesel reductions that we anticipated achieving on the spot, starting January 1, 2017. By the Port Authority's own admission, they will not reach their greenhouse gas goals, which is a 5 percent annual average decrease in greenhouse gases to get a 70 percent decrease from the baseline of 2006, even despite the growth of

the port through 2020. This is from the 2014 clean air strategy of the Port Authority.

So the remedies. One, we should reinstitute the ban on old, dirty trucks at the port. Two, we should create a container fee to turn over the fleet paid by terminal operators, shippers, and shipping companies, as was done in California.

This is not a hardship. I just want to point out that the container volume is up 8.3 percent, bulk has gone up 11 percent, the business revenue 21 percent. There is money to be done, whether the public/private partnership or just by the private sector.

Clean trucks should be exempt so that

they aren't paying any extra fees. There should be a concession agreement that includes these provisions so that no truck, no operator, no fleet can operate without moving towards clean trucks.

We say that you should use CMAQ, which is C-M-A-Q, DERA, which is Diesel Emission Reduction money, Volkswagen money, DOT, tiger grants to replace and repower these diesels. We want these diesels to then

move towards electric.

We also know that you may not think about this, but ships are transportation. They're 35 to 40 percent of the NOX and 95 percent of the SOX. There are capture-and-control technologies that exist to reduce diesel emissions from ships at the dock by 90 percent. The Port Authority was going to run a pilot program. It then took back its commitment because it said that the shippers didn't want to pay the fee to hook up. There's no retrofit required for the ships to hook up and you get this reduction, which is very significant. So you should

look at ships.

The port should be electrified. We've had these discussions with the Port Authority, we have had discussions also with the City of Newark, some of whom are sitting in the audience today. We want the port to be electrified. All the trucks, so the Port America trucks right now run back and forth to the rail yard. They could be easily electrified. In fact, there's a company Orange EV, they're a T-Series electric

terminal truck that is running, has been proven, has been tested. It can carry a load. It can bring things to warehouses, terminals, distribution centers, and rail yards. It can be charged in 48 hours, it can do a fast charge in two hours. There's no idling, there's no emissions, there's no emission controls to manage, which is very important because diesel trucks are really difficult to manage now. They're very expensive because they're all computerized, so that the drivers can't really fix their trucks, and so therefore they don't, because

they don't have the money to do that.

We want, in this plan, to include zero-emission zones and corridors. We want to have certain sections of the port -- we want the entire port electrified. The port is moving in that direction, but we'd like to see more happening with the trucks. They are doing it with some of the cargo-handling equipment.

We would like -- as the warehouses are moving closer and closer to the Port of Newark and Elizabeth, we would like to make

sure that only electric vehicles are going in and out of the port to these warehouses, that they hook up and recharge at these warehouses.

It is both an environmental justice issue, it is a public health issue as these communities are being bombarded with 14,000 trucks just from the port, no less from all the other goods that are moving on our roads. It's also a climate issue, as the heat in these neighborhoods is 10 degrees higher than elsewhere, and part is because of diesel

emissions.

So I call on you to look at the Energy Master Plan to include these elements and to define basically zero-emission zones where we can be reducing emissions, especially in communities that are so hard hit and are gasping for air. I have one staff person that has three asthmatic children who lives in south part of Newark. It's unconscionable that we don't move forward to provide real relief and saving lives. And I thank you for this opportunity to speak today.

MR. HORNSBY: Thank you, Ms. Goldsmith. Up now is Norah Langweiler from New Jersey Renews, followed by James Appleton of New Jersey Coalition of Automotive Retailers, followed by Jim Tittle from New Jersey Sierra Club.

MS. NORAH LANGWEILER: Good morning. I'm Norah Langweiler,that's L-A-N-G-W-E-I-L-E-R, campaign organizer for Jersey Renews and New Jersey Work Environment Council. Here with me is Reverend Tuff, one

of our many partners with Green Faith.

Jersey Renews is a coalition committed to state-based action on climate change that was launched in January 2017 in recognition of the urgency of our climate crisis. Unfortunately, it responds to the lack of leadership at the federal level.

We're a strong coalition of more than 60 partners that includes labor, faith, environment, community, health, and student organizations pushing for increased investment in clean energy infrastructure, reduced greenhouse gas emissions, and good family-sustaining jobs in the transition to a

cleaner energy economy. More than 1,200 people have signed our petition supporting those goals, and we're just getting started.

As we know, climate change is a pivotal issue of our time. What we do today and what we haven't done in the past will impact us for generations. Climate change isn't just a future hazard, it has real consequences today in massive storms, fever heat, ever-present allergies, and dangerous

working conditions wreaking havoc across New Jersey.

Nearly 50 percent of greenhouse gas emissions in New Jersey come from the transportation centers, like the automobiles, like the standard family car, are the dominant source of transportation emissions. The heavy-duty vehicles, like diesel trucks for industrial or commercial use, and buses for transportation are also a significant source of emissions.

Particulate matter from the transportation center contributes to poor air quality and negatively impacts residents' health. To address these issues we need to

invest significantly in our transportation infrastructure. Every traveled mile converted to electric is 70 percent cleaner than a gas-powered mile.

Increasing the number of electric vehicles on the road is a crucial step to meeting the state's emission reduction goals. To echo charge EVC we need specific and concrete goals for electric vehicle adoption

and infrastructure.

New Jersey residents, particularly those in urban areas like Newark and Camden are subject to high concentrations of greenhouse gas emissions and air pollution, resulting in higher rates of asthma and other respiratory illnesses.

In New Jersey, 1 in 13 people have asthma. According to the American Lung Association's 2017 State of the Air report, 11 counties in New Jersey received a failing rate on air quality. Out of the most polluted cities Newark was rated number 10 and Camden was rated number 20 for ozone pollution. Camden was also rated number 12 for year-round particle pollution. So we

have both a climate and a public health issue.

Buses, particularly older ones, drive at low speeds in highly populated areas all day, pushing diesel emissions and particulate matter directly into our communities. Transitioning our public fleet of buses, trucks, and cars will improve the air quality

in urban areas where these vehicles are most put to use. The state needs to lead by example and convert public transportation and public fleet to electric, which can help meet emissions reductions, goals, and improve air quality.

The Port Authority of New York and New Jersey are some of the most polluted in the state, predominately harming the low-income communities that reside nearby. Reinstating the truck ban from the early aughts that would require clean trucks, as long as the cost is not translated to workers, would help to significantly reduce the air pollution that plague these vulnerable communities.

New Jersey needs to invest in

multiple modes of transportation by prioritizing investments of public transportation, repair critical infrastructure, and develop walkable and bike-able communities, where good jobs, housing, and amenities are within easy reach of each other while maintaining transparency,

accountability, and equitability.

The needs of whole communities must be built into the foundation of the Energy Master Plan, Especially for transit, which is the universal (inaudible) that connects us.

Thank you.

MR. RONALD TUFF: Good morning. My name is Reverend Ronald Tuff, and I am representing Green Faith, an interfaith environment organization based in New Jersey. We are a proud member of Jersey Renews coalition.

As my remarks said, I'm reading a statement that was signed by over 20 faith leaders from the greater Newark area at an electric vehicle blessing event that Green Faith organized at Mt. Olive Baptist Church in Newark on May 31st, attended by over 80

faith and community leaders. Green Faith and Jersey Renews will be holding another electric vehicle blessing in Paterson on October 29, 2018, and we invite you to join us.

Pollution from vehicles also

constitutes climate change, which effects on urban communities suffer from the dangerously high heat levels of the summer months, and downpours of the overflow that combine from sewer drains, and sewer systems, and flooding during severe storms such as Sandy, that exposed our neighborhoods to toxic floodwaters and ruined our homes.

Across the state, air pollution from various kinds of vehicles costs us more than 4 billion annually in medical problems and climate change-related damaged. The areas hit hardest by this damage are our cities. Electrified transportation for our communities can help create safer, healthier communities, green jobs, and environmental justice for our state.

Lastly, we call on our state leaders to dramatically to accelerate the

installation of electric vehicles infrastructure across our state through methods such as those in bill S2252 and S2382, prioritizing reducing air pollution and creating jobs in our cities and other

areas of the state most heavily affected by air pollution.

Two, develop legislation plans to electrify our cargo handling and other sources of air pollution at Ports Newark and Elizabeth.

Ensure legislation to promote electric transport includes the focus on electrified New Jersey Transit buses and diesel-powered construction equipment used in our city.

Lastly, ensure that the electric vehicle legislation includes state rebates and subsidies such as the bill 2382 does to ensure that all New Jersey outposts have access to electric vehicles.

For our cities, the electrification of transportation is a matter of life and death. To our political and business leaders, we say, choose life. Thank you very much.

MR. HORNSBY: Thank you, Reverend Tuff, and thank you, Ms. Langweiler.

Next up is James Appleton, New Jersey

Coalition of Automotive Retailers. On deck, Jim Tittle, New Jersey Sierra Club, followed by Zachary Kahn from BYD.

MR. JAMES APPLETON: Good morning, and thanks for the opportunity to testify this morning before the Master Plan stakeholders group on clean transportation. My name is Jim Appleton. I'm president of the New Jersey Coalition of Automotive Retailers. We represent the following 15 franchise new car and truck dealers who sell over a half a million vehicles, cars and trucks, in a year in the State of New Jersey, a $34 billion a year industry. It sells new cars, used cars, services vehicles.

I want to make it clear at the onset that New Jersey's franchise new car and truck retailers are all in when it comes to replacing older, less environmentally friendly vehicles with greater numbers of electric vehicles, or EVs. These vehicles

save consumers thousands of dollars per year in gasoline costs, and, of course, EVs provide tremendous benefits to the

environment.

But there are two primary obstacles to greater EV adoption right now, price and infrastructure. If we make smart rules to knock down these obstacles, consumers will buy these vehicles in greater numbers and that's ultimately what's best for the environment and for the economy here in the State of New Jersey.

But let's review a little bit of the history and find some perspective about how far we've come and how much further we've yet to have to go. In 2008 New Jersey new car buyers purchased just 10 ZEVs, 10 zero-emission vehicles. In 2017, ZEV sales reached 1900 units. That's incredible progress. But last year's ZEVs accounted for just 3/10 of 1 percent of the total new car market in the State of New Jersey.

This year EV sales are expected to climb, but still year-to-date ZEV sales right now account for just 24 percent of the total

market.

All this despite the fact that New

Jersey's clean car law requires somewhere in the neighborhood of four and a half percent of all vehicles delivered by manufacturers for sale in the Garden State this year are supposed to be zero-emission vehicles. That's 24,000 vehicles, more than 12 times the number that sold last year.

And that's just the start. Because that sales mandate ramps up exponentially from there. We estimate that the existing clean car mandate that requires that new car dealers sell somewhere in the neighborhood of a half a million ZEVs in New Jersey between 2018 and 2025. As I said, New Jersey's new car dealers want to sell, for obvious reason, every one of those half a million or more new vehicles.

And the good news is that the automakers have stepped up and in recent years started to provide significant options for consumers. Right now, there are 40 plug-in electric vehicles available in the marketplace, and there are more than more

than 60 new models that are scheduled to be

introduced between 2018 and 2021 by various manufacturers. And I scan the (inaudible). When you see the product that's on its way, it's truly exciting. Dealers are really enthusiastic about the opportunities to sell.

Again, one of the primary obstacles to overcome is the higher price of EVs compared to regular gas engine vehicles. There really are two components to this price problem. First, electric vehicles are not priced by manufacturers to sell simply because New Jersey's clean car law doesn't give automakers real incentives to do so. The law doesn't actually require automakers to see any ZEVs placed in service. It simply requires manufacturers to deliver cars for dealers to sell.

This deliver-for-sale mandate allows automakers to earn their clean car credits by simply dumping ZEVs on dealer lots in New Jersey. The automakers have no incentive. In the meantime, unsold fleet car inventory does nothing to clear the air in New Jersey and actually poses a very heavy financial

burden on New Jersey's local businesses and car dealers.

Now, if the law stipulated that manufacturers don't receive their clean car credits until the vehicle is actually sold and placed in service by a consumer, that would provide greater incentive to price them more competitively, which would greatly benefit consumers and, of course, the environment.

The second component that would alleviate the price crunch on EVs is as simple as cash-on-the-hood incentives and tax breaks that encourage consumers to move from the familiar internal combustion engine vehicle that they've driven forever to something new.

Of course, change is never easy, especially when it involves a major purchase, such as a new vehicle. Sometimes change requires a gentle nudge in the right direction. Cash-on-the-hood incentives will certainly go a long way towards accomplishing that goal of dramatically increasing the number of clean vehicles sold on the road.

These financial and legal issues have impeded EV sales, of course so has lack of existing infrastructure. Right now New Jersey has only about 500 to 600 charging stations spread throughout the state. That's compared to an estimated 3,500 gas stations offering more than 20,000 pumps. Before consumers will adopt EVs in greater numbers, they're going to need to have great access to an infrastructure that lets them charge their cars when they want and where they want.

But we're faced with a -- kind of a classic chicken-and-egg problem. Investors are reluctant to spend millions on charging stations until they're confident consumer demand is there for EVs, but consumer demand for EVs is being thwarted by the inadequate number of charging stations.

There are many ways to dramatically expand the charging infrastructure necessary to handle the growing number of EVs on the road. Parking lots, municipal parking lots, shopping malls, commercial office complexes, big box stores, grocery stores, convenience stores, restaurants, and virtually any place

where individuals park vehicles for an extended period of time are prime locations for charging stations.

Building and facility owners need to know, first, there's current demand for charging stations, and that this demand will grow. They also need to recognize that electric charging stations are an amenity that consumers will come to expect, just like a public restroom, complimentary Wi-Fi, free coffee or water.

Offering charging facilities is, and will, increasingly be good for business. New Jersey needs an aggressive game plan to offer consumer incentives and to build a robust charging infrastructure. And we need an all-hands-on-deck effort to accomplish this goal.

NJCAR's very pleased to be working with other EV stakeholders as part of the group such as ChargEVC help develop that game plan. ChargEVC, as you've already heard, is a coalition made up of a diverse group of organizations including technology companies,

25 utilities, environmental groups, community

1 advocates, and others. Our mission is to
2 design and promote policies that boost EV
3 sales and will lead to greater environmental
4 and economic benefits.
5 I can tell you this, if state and
6 federal regulators, elected officials,
7 automakers, and public utilities pull
8 together to address the most pressing
9 infrastructure and affordability challenges
10 we've discussed, franchise new car and truck
11 dealers, the folks I represent in New Jersey
12 and across the country, will be relentless in
13 promoting, selling, and delivering electric
14 vehicles to more and more consumers.
15 There's a lot going on and dealers
16 and automakers are busy preparing to meet the
17 growing need and demand. But we have a lot
18 of work to do, and the Board of Public
19 Utilities can help New Jersey consumers
20 overcome obstacles to greater EV acceptance
21 by encouraging and improving rate buy-ins
22 that allow for EV acceptance and which fund
23 infrastructure development.

Everyone in New Jersey, whether they own an electric vehicle or not, relies on a

secure electric power grid. BPU can work with various stakeholders to identify ways to generate revenue and help build -- help fund and build out a stronger, more resilient, and more environmentally friendly electrical grid.

Cash-on-the-hood incentives are not a give-away to EV buyers. In the long run, investments made create more reliable and efficient energy grid benefits to all rate payers. It's simply time for government to put its money and its policy priorities where its mouth is and offer up real financial incentives on extending sales tax exemptions beyond pure ZEVS to include partial exemptions for hybrid and other advanced technology clean cars.

It's also critical that utilities invest in EV infrastructure and that we accelerate efforts to protect and strengthen our electrical power infrastructure. It will take dedicated teamwork between legislators,

regulators, dealers, automakers, public utilities, environmental community members to achieve our shared goal, removing obstacles

to cleaner and more reliable transportation on New Jersey's roads.

I want to thank you for the opportunity to share NJCAR's perspective on the future of clean and reliable transportation here in New Jersey. Thank you.

MR. HORNSBY: Thank you, Mr. Appleton. Up now Jeff Tittle from New Jersey Sierra Club. On deck, Zachary Kahn from BYD, followed by Scott Fisher from Greenlots.

MR. JEFF TITTLE: Thank you, Mike. And I think it's appropriate that I'm following Jim because 14 years ago wherever he went in the State House, I went because we were on opposite sides of this. Really good that we're working with the car dealers and so many other people on trying to make this a reality. When we first passed New Jersey's clean car bill 14 years ago, it was a major

battle. I think it's paying off and will pay off even more so.

One of the, I think, important things that is happening is that this new

administration and new members of the Board of Public Utilities, as well as other changes in the new administration, that we're going to be able to start moving forward and jump-starting electric vehicles. New Jersey finally joined a compact with the other states in the region to work on EVs together.

I think it's critical, so that when people are taking trips, with the range anxiety, that we can ultimately build a network that will go at least from Maine down to Virginia, maybe further, North Carolina now has a democratic governor that is pro-EV and they were originally part of the clean car state. So we're just building out.

But I think the important part for New Jersey is the biggest source of air pollution in the state comes from old sources. We're choking to death in certain communities in New Jersey because of the high

levels of particulates, and half these air pollutants are coming -- a lot of it from the mobile sector, whether it's trucks, buses, (inaudible) or particulates, it's having a big effect. And I think that's part of what

needs to be looked at in the calculation.

It's not only the economic benefits and jobs an electric vehicle would create, but the health benefits, plus trips to the emergency room, plus people who have respiratory illnesses getting sick, and I think there is a big economic benefit for that alone.

I think the biggest stumbling blocks that we have for electric vehicles is, first, education. I mean, the public really does not understand how important electric vehicles are to the future of the state, whether it's economical, or to themselves, that even though the costs up front are expensive, the operation and maintenance is about 70 percent less than the traditional internal combustion engine. You know, You'll never have to buy another muffler or replace

a PEC valve, whatever that is, and I think that's critical.

And there's so many other benefits from electric vehicles. There's the $7,500 federal tax credit that we don't pay sales tax on. We can expand it to other benefits.

If New Jersey had more HOV lanes like in California, electric vehicles are -- can use the HOV lane. Some states are also giving them discounts for tolls. It's a critical part of incentivizing, but also the education part.

Next part is the infrastructure. Right now we're sitting on $72 million from the Volkswagen settlement. No one knows -- we did our comments back in February. No one knows where that money is going. A portion of that should be going to infrastructure, other portions could be going for rebates or for electric buses, But we really have it for anything, and hopefully that money will be freed up soon. We also have utilities coming in for rate cases, some of them light, others we're concerned with.

Right now we've believe that the infrastructure for electric vehicles in many parts of the state can be met through market forces, that there is a market demand for that and let the market do that. In the areas where the market will not work, in the areas that are underserved by the market,

that's where the utilities should concentrate. No one needs to put -- have a utility put a charging station in Short Hills Mall, but in Bellville or Kearney, yes. I think that's everything we'll look at because the market will take care of that.

The other point to us is -- for electric vehicles is to make sure that every part of New Jersey and every person in New Jersey could have access to an electric vehicle, whether it's an electric bus, or jitney or -- you know, to take people to the train station, but also electric vehicles. And there are programs that we're working on.

And the one thing about Sierra Club is that since we're in all 50 states and Canada, you know, we see what's working in

other states and, you know, in California we worked very closely with non-profits to build charging stations in Watts. We actually put a bank of 14 of them in Watts tower. We were working in Northern California with ride-share programs and in Seattle with the electrification of buses.

So there's a lot of potential out

there. And the point is that we don't need to subsidize someone, you know, out buying a Tesla, but we do need to help people in Linden or Newark or Camden or maybe other communities. And so some of the things beside ride-share or Zip cars. We think there should be a Cash-For-Clunkers program, where we try to get these dirty cars off the road by offering larger incentives, not just rebates.

We also believe that we can look at resale and re-lease of the first generation or second generation of electric cars as they come out, that there really isn't going to be a market for a 2012 Leaf, but it could be that it -- with a new battery, it could be

fixed up and we could re-lease it out very cheaply or almost for nothing because it's going out of market. We're just trying to get these cars to people who can't afford to buy a new generation electric vehicle. And that technology is coming. We need to grab it.

One of the things that we need to also look at is building codes. We need to

make sure that all new construction, multi-family, strip malls require charging stations. Any funding -- any project that gets funded by the State of New Jersey through EPA or grants or anything else, or factory direct financing, should require charging stations.

We have to also look at right-to-charge and when we expand -- I'll give you a good example. In this building, there's a charging station. The only people who can use it are the people in this building. If you're a visitor to the State House complex, you can't charge there. That makes no sense. So we need to expand

right-to-charge to allow access to some of the private charging stations.

By the way, last time I checked it wasn't working, but… So we need to get an electrician on it, but that's one of the things that we can do to make sure that people all over can charge because that's where we need to be going. It is new technology, there will be all these cars out there, Volvo, BMW, and many other companies

are all going to make electric vehicles.

Finally, it just costs money. And there are different things we can do to help to pay for it. We can give businesses, if they do ride-share programs, electric vehicles and electric vans and shuttles; cash-out park, where you can get extra money for getting rid of parking spaces, or use that for something else. We can have a tax on gas guzzlers. We can take air pollution fines and put them into charging stations.

We have a lot of opportunities ahead of us and a lot of work ahead, but we can get there, and I think now is the best time we've

had -- you know, we've had a roadblock up for eight years now. It's time to really remove those roadblocks and accelerate these programs and move forward because our economy, our lungs depend on the BPU doing the right thing, and I think we can get there, but we need to work together. I think we're at that time.

So I just want to end on that and say that we should also think about when the BPU does programs on renewable energy we tie that

to plug-ins as well, that projects that have solar are tied to electric plug-ins. When we're putting a new solar array at train station, you get priority. If you're putting solar in your house and you're going to put a plug-in station, you get priority. It incentivizes that because I think that will help also do something even more beneficial, which is tying electric vehicles to renewable energy directly. And, again, your benefits are not just pushing from, you know, trucks and buses and cars, but from off-shore drilling. It takes away that cred as well as

pollution from refineries and other things.

Thank you.

MR. HORNSBY: Thank you, Mr. Tittle.

MS. GIBLIN: Just before we go on to our next speaker, I just want to recognize BPU Commissioners Upendra J. Chivukula and Bob Gordon, who are joining us. We thank them for being with us today.

MR. HORNSBY: Up now is Zachary Kahn from BYD, followed by Scott Fisher from Greenlots, and Richard Lawton from New Jersey Sustainable Business Council.

MR. ZACHARY KAHN: Thank you for the opportunity to provide comments here today. My name is Zachary Kahn, K-A-H-N. I'm director of government relations at BYD Heavy Industries.

I want to thank Governor Murphy for his leadership on energy and climate initiatives and his determination to put New Jersey on a path to a clean energy future. I commend the state for putting clean and reliable transportation as one of the main pillars of the plan, and look forward to

engaging the stakeholders, particularly on issues related to the electrification of medium- and heavy-duty vehicles.

BYD is an international leader in developing and manufacturing electric vehicles. In 2017 BYD was the largest manufacturer of electric buses, electric trucks, and for the third year in a row, plug-in electric vehicles around the world.

Our North American headquarters and manufacturing facilities are located in California, but our northeast presence includes an office in the Bronx. We are

excited to soon be opening a service center in northern New Jersey in the fourth quarter of 2018. This service center will support all of the electric buses, trucks, and forklifts that we have in service east of the Mississippi and will (inaudible) 75 jobs in Jersey.

We're also developing a dealer network, hopefully in New Jersey and in New York, to support and sell our products. Our California-based facility is capable of

manufacturing 1,500 electric vehicles per year and employing a workforce of over 1,000 people. We are proud of this workforce with more than 730 unionized manufacturing employees with the Sheet Metal, Air, Rail and Transit union, SMART.

Together with the union, we partner with Jobs That Move America to create a first of its kind community benefits agreement, establishing training and apprenticeship programs for workers with traditionally high barriers to employment, and mandating diversity in our hiring.

Our U.S.-based fleet includes more

than 270 electric transit buses delivered to customers around the country, in the broader portfolio medium- and heavy-duty zero-emission trucks being used by commercial vehicle operators. In addition to expanding (inaudible) fleet, our northeast team is actively engaged with developing a regional policy to enhance the adoption of electric vehicles.

We recognize the importance of clean

energy and its key roles in both the economic development and environmental sustainability in states in the northeast. Electrifying the vehicles across the spectrum of on- and off-road vehicles can support the state fulfilling ambitious but achievable goals set forth in Executive Order 28.

The medium- and heavy-duty electric vehicle sector is maturing rapidly, and there's a large range of vehicle options now available for most bus and truck applications in New Jersey. The truck space, which is a little less well known in the market as the bus space, really need to focus on urban delivery trucks, all types, residential

trucks and hard-handling equipment, (inaudible) trucks, (inaudible) trucks, and in 2019 (inaudible) ports.

Our class (inaudible) all-electric trucks in being demoed this fall with city agencies throughout the northeast. We have Jersey City, New York City, and Washington, D.C. Next month a new distribution center -- two distribution companies at Hunts Point

will begin demoing our all-electric refrigerator truck for their last-mile delivery needs. We plan to circulate these vehicles to numerous agencies and companies in the coming months in order to get feedback on their performance in the northeast region.

On the bus side, we plan to (inaudible) offer more than ten newer bus models, covering every bus type used in transit service, including articulated and coach buses. All of our transit buses meet Buy America requirements and are either through or in the process of testing.

Governments across the world recognize that from a technical point of view medium- and heavy-duty vehicle -- electric

vehicle programs are scalable now. In Xi'an, China, home to our global headquarters they have already deployed more than 16,000 electric buses in service, more than 12,500 electric taxis, and recently ordered over 500 electric dump trucks. These electric buses would make up the top five electric -- or transit-use bus fleets in the U.S. just in

one city.

In the U.S., transit agencies include the LMA, Los Angeles Metro, King County Transit in Seattle, and New York City Transit are committed to converting their entire fleet to electric buses by, the latest, 2040, and as early as 2030. New Jersey has the opportunity to build upon commitments made in other municipalities and states and countries and emerge as a leader in sustainable transportation.

Based on our experience, we suggest that New Jersey adopt the following -- or consider the following policy proposals. First, join the numerous transit (inaudible) across the country by moving to commit to a transition to zero-emission buses at New

Jersey Transit. Establish zero-emission medium- and heavy-duty vehicle purchase requirements for New Jersey state fleet vehicles, as was done recently in California with A.B. 739. Adopt incentives, such as green express lanes in Ports Newark and Elizabeth to replace diesel trucks with

(inaudible) and zero-emission models.

Ensure all Volkswagen settlement funds are allocated to electric vehicle and infrastructure investment, especially in communities with heavy-duty sectors, which will maximize the nitrous oxide, or NOX, of these investments.

Adopt the most successful incentive programs from other states, such as the truck and bus voucher programs being used in New York and California. Look into broader purchasing agreements that allow municipalities to buy refuge trucks, non-municipal vehicles, even if you decide collectively to (inaudible) the benefits of purchasing in volume. Work with our fellow RGGI states to create a RGGI transportation-type program, which we're

already working on, and then consider other promising incentives that will emerge as the discussion continues, such as a low-carbon fuel standard program already adopted in California and Oregon, and utilizing (inaudible) in these investments.

As mentioned the other day, New Jersey has serious air quality issues. Low-income communities and communities in Newark and Elizabeth and other cities, have traditionally borne disproportionate health impacts of diesel pollution due to their proximity to the state's ports, truck facilities, and major highways.

By supporting electrified medium- and heavy-duty vehicles operating in these areas, New Jersey could immediately reduce harmful GHG and NOX emissions, generate environmental health and economic benefits. Converting transit and shuttle buses, as well as delivery, cab-forward and tractor-trucks, many of which are (inaudible) that operate almost entirely within the dense communities or areas with air pollution, would deliver immediate environmental and public health

benefits.

New Jersey has the opportunity to work on key obstacles to widespread electric bus and truck performance, a last-minute investment in infrastructure vital to the

advancement of the industry.

Getting two to three vehicle demo projects up and running as well as can be easy. We are now focused on setting up the infrastructure for our own (inaudible) of 500 to 1,000 vehicle deployments. In order to successfully do so, the right policies at the state level must be in place to address incremental costs of EV true development and the utility must be an active participant in finding infrastructure incentives.

The public and private sectors must demonstrate political will, leadership, and commitment. Large-scale investments from both public and private sector charging infrastructure is needed to support the rapid transportational electrification that we need to meet our carbon and air quality goals.

On behalf of my team I appreciate the opportunity to offer these comments regarding

the Energy Master Plan. I sincerely appreciate the (inaudible). We will be submitting detailed responses addressing many of the discussion points. We look forward to

future collaboration that will help New Jersey meet its environmental, fiscal, and social justice goals. Thank you.

MR. HORNSBY: Thank you, Mr. Kahn. Up now is Scott Fisher from Greenlots. On deck, Richard Lawton, followed by Paul Boudreau.

MR. SCOTT FISHER: Thank you for the opportunity to be here today. I am Scott Fisher, F-I-S-H-E-R. I'm with Greenlots. I'm vice president of market developments. Greenlots is a Los Angeles-based electric vehicle charging software and hardware company. I happen to live and be a neighbor of Mike Hornsby in West Windsor. I'm really, really glad to be here to talk about the opportunity to build significantly advanced charging infrastructure and electric vehicles in my state.

A couple of points I just want to make, partly based on what we've been hearing

today. So one thing is we're clearly, as an industry, past the point where this is just a California, or based on what Zach Kahn was

saying, China project. We are seeing -- Greenlots is starting significant mass-scale build-outs of charging infrastructure in many states that are near New Jersey. Greenlots, for example, announced today that we're participating in a program with the University of Ohio, where the -- has gotten funding from the utility commission there and we're making a significant investment now with states helping build that network.

Slowly we're doing projects with significant growth with rate payer approval in Florida, Massachusetts, New York, and we're hoping to be close to doing something in Maryland, not to mention all the Pacific Coast states, and Hawaii is also a place we're doing a lot of work right now. So we're clearly past the point where this is just kind of a west coast or Californian-type activity.

Greenlots employs 50 people in Los Angeles, another 10 people in San Francisco,

so clearly it's a place where we've made investment now. Of course, we'd love to

resurface elsewhere in the northeast to -- where we have five or six people now, and certainly New Jersey as well with this initiative.

So I think another thing that we've heard in the past is that when we make a significant investment, you're not -- it's a cost, it's not an investment and there's not great benefits. And I'll take Pam Frank's comments from kicking off today and excited to be a part of it since the beginning.

And the study that ChargEVC did on electric vehicle benefits, I think, was very consistent with studies we've seen done for other states around the overall payback of investments that utilities and states made in charging infrastructure, specifically the electric vehicle market overall.

And really the basis for that is that in the case of rate payer benefits utilities will sell more electricity, and if you plan the infrastructure correctly, there's not a

corresponding incremental decrease in the

distribution structure needed to support that infrastructure. So yes, it's an investment in infrastructure, but if you can plan when you are charging and have some interaction with the consumers so not everybody's charging at 5 p.m. on a hot summer day, you'll need to know that peak capacity and be smart about the investment. And part of what we do at Greenlots is work with utilities to make those investments smarter.

Another point I'd like to make, which is related to this concept of making sure we get the ratepayer benefits of charging is that -- you know, I've heard a lot today of the idea of competitive markets and in certain places maybe utility doesn't need to play a role in the competitive marked is there.

A couple points I'd like to make with that. The market right now is fully funded by venture capitalists, and that's great when you're looking forward to venture capitalists seeing the opportunity to be (inaudible) growth in this market. But it doesn't

necessarily mean we've yet seen a viable competitive model in place that's not being subsidized by investors. So part of what we've worked with and others have worked with on ChargEVC and the legislation and what we're promoting is making sure that we're not just relying on the fact that (inaudible) in a competitive market, but we're actually looking at what is -- what have we always required to make a sustainable business and not just resting on the fact that 2018 there has to be capital interest in charging stations or this market.

The second point is, when you talk about, let's say, 1,000 flowers blooming within a market, that's all well and good. It looks to me sometimes that goes counter to the idea of a utility having some degree of control over the network.

And so what we see happen in other states that have gone ahead of New Jersey, and I'll take California as an example, is that in just letting the competitive market it's very difficult to corral all those different players from a utility standpoint

to then actually realize or reap the benefits of the investments that I talked about earlier it's pretty much just the utility having to give up.

And so while we're very supportive of the competitive market and the utilities not necessarily doing everything here, I think we need to keep in mind that, to me, sometimes just saying, give it to the market, we'll do it all, is not necessarily realizing full ratepayer benefits of this infrastructure.

So I'd like just to repeat that for folks to keep that in mind. I think there is a good mix in, for example, what we're doing in -- with the Ohio AEP. I think we've worked with them and others on checkpoints and part of that program. We're working with them to make sure that those benefits are realized. But be clear, this is not -- it's not a complete free-for-all, and then sometimes I worry that competitive market's code for that.

So I think I'll just end my comments there and maybe just echoing what Zach was saying, you know, last comments, is that I

also worry a little bit about the incrementalism and what we see from other states, New Jersey, and around the world, is that we're really past the time when we want to talk about a few charging stations here, a few charging stations there.

Greenlots right now is managing -- we're the software provider for Electrify America's nationwide charging network and there's going to be, you know, at the end of this, 3,000 charging stations across the U.S. That's clearly not enough in terms of thinking about New Jersey, but I was making the point that we are, as am industry, absolutely ready to be scaling down based on some experience we've gained over the last several years. So thank you very much.

MR. HORNSBY: Thank you, Mr. Fisher.

Up now, Richard Lawton from New Jersey Sustainable Business Council. On deck, Paul Boudreau from Mercer County Chamber of Commerce, followed by Kevin Miller from ChargePoint.

Paul Boudreau?

(No response.)

Going once, going twice?

Richard Lawton?

(No response.)

Richard Lawton? No?

Paul Boudreau?

(No response.)

Kevin Miller? I saw Kevin.

On deck, Willett Kempton from the University of Delaware, followed by Joe Abbate from Princeton Student Climate Initiative.

MR. KEVIN MILLER: Hello. My name is Kevin Miller, M-I-L-L-E-R. I'm the director of public policy at ChargePoint. I want to thank the committee for their attention to this greatly important issue, for the opportunity to provide our persepective.

ChargePoint is the nation's largest EV charging network. We've got charging solutions for every charging need, wherever we need chargers. We can go anywhere you can drive to, at home, at work, around town, and on the road for long distance travels as well

as for heavy-duty and medium-duty transportation. Anything that can be charged

should be charged.

We've got more than 53,000 independently owned and operated charging spots, and drivers on our network have completed more than 42 million charging sessions, which saved upwards of 44 million gallons of gasoline and supported EV drivers to go more than a billion gas-free miles. Over 850 of our charging spots are deployed throughout New Jersey.

Transportation electrification is an unprecedented opportunity for New Jersey to achieve statewide environmental economic development, energy transportation, and environmental justice goals. By supporting deployment of EVs, buses, and trucks we can make transportation cheaper and cleaner, create jobs, and support the state's innovation economy. EVs can make New Jersey's electric and its horizontal transportation infrastructure more resilient at a time of decreasingly accelerated climate

change.

Electric vehicles in general are creating a paradigm shift in mobility and in

refueling. Unlike drivers of traditional gas cars, who refuel on their way to a destination, EV drivers tend to charge their vehicles when they arrive at their destination. In fact, over 90 percent of charging for light-duty vehicles takes place at home and at work.

However, that remaining 10 percent is incredibly important to support longer-distance travel, taxi and ride-share electrification, heavier-duty charging buses and trucks, ports, non-road vehicles, and even (inaudible) landing crafts.

EV charging may be incentivized to take place at a time that benefits the greatest -- in prior comments, which include downward pressure on electricity rates to create benefits for all ratepayers, regardless of whether they're participating in a program or even driving an EV or not.

So I just want to briefly

characterize the EV charging market in New Jersey and provide a couple of examples of approaches that have been taken in other states that can -- for the committee to

consider and then provide a brief recommendation.

The EV charging market in New Jersey is growing. It's dynamic. And there is no one static business case or operating model for the EV charging industry. So charge lot manufacturers themselves, along with vehicle-charging equipment independent owner operators, we call site hosts.

And we also provide software solutions for network services that site hosts then use to operate and manage their smart charging stations on our network -- which actually utilities can use and be granted access or suspending managing that new load without actually owning the equipment itself. So ensuring that load managing capability is there is critical and underscores the need to ensure that the networks and infrastructure is supported

throughout New Jersey.

Publicly available EV charging stations are primarily owned and operated by site hosts that participate in the competitive charging market. Site hosts can

provide EV charging for a variety of reasons. They might be offering a valuable innovation to employees, attracting new tenants and customers, or electrifying public transit needs, etc.

By offering EV charging as an amenity, as I just spoke to, site hosts can augment their existing business operating or policy models. For example, a grocery store can offer 3-hour charging to attract customers who come in and they can set a price to get them to leave and open up that charging station for further use. There is no one-size-fits-all approach to EV charging.

States across the country are considering the appropriate roles for regulated electric utilities and the EV charging market. There are many, many important and essential roles for utilities

and transportation electrification.

First and foremost, utilities are ideally situated to ensure that this associated new load is incorporated in a safe, reliable, and efficient manner. So when a company questions if, considering

whether to expand their role for utilities in a competitive EV charging market, we recommend looking to key examples in other states.

Successful states like California, Massachusetts have established cleaner consistent criteria for evaluating electrification proposals by utilities, which will minimize costs and maximize benefits to ratepayers, ensure equitable access to electric transportation, and avoid unfair competition between regulated utility and non-utility third parties by providing customer choice in equipment and in network services, which are real drivers of innovation in EV charging.

So as with most complex issues, and this is a complex issue, the critical

question for New Jersey isn't whether we're going to provide transportation, it's how we do it. So there's plenty of examples of great programs across the country where we can see the individual points such as the AEP Ohio program that Scott mentioned. Massachusetts has a $45 million mainframe

program. We can see lots of individual instances of programs that compliment the competitive market and rapidly accelerate deployment of critical EV infrastructure wherever we need it.

So the question is how do we make sure that we have the right process in place to get this done quickly and consistently as possible.

So the recommendation that I make in addition to the great work that has been put for the by ChargeEVC, of which we're a founding member, is to first set high level and flexible transportation electrification goals for New Jersey and to avoid proscriptive mandates.

It's essential to establish a clear

criteria or to evaluate utility proposals to make sure they're being supported innovation and competition in site host customer choice for EV charging equipment and services so that we avoid pushing our one-size-fits-all solution in an industry that's rapidly changing. We critically need to increase equitable access to electric transportation

itself, and focus on fleet and heavier-duty electrification.

It would be valuable to the extent the EV sales tax exemptions to EV charging stations and explore further vehicle incentives that Jim spoke of before. Additionally supporting the additional funding to DEP successful workplace charging program will support increased adoption of EVs.

As has been mentioned several times before, and I'm pleased, thrilled to not being the only one in the weeds issues, is it's essential that we update statewide building codes to ensure that new parking spaces have the necessary kind of wiring in

place at the time of construction so that we don't have to go back and retrofit new buildings as we move forward, which will dramatically increase installation costs.

It's also essential to make sure that residents in multi-family buildings aren't unjustifiably prevented from installing charging at home, which is referred to as a right-to-charge.

And the last point that I'll make is that it's critical that New Jersey needs to stop treating individual EV charging site hosts as though they were regulated electric utilities. This is a step that 24 states around the country have done and is critical to allowing drivers and site hosts to set pricing for EV charging in a way that's fair, understandable, and reasonable.

Thank you very much for your time and for your votes again with this issue. I really appreciate it and I'm looking forward to continuing to serve as a resource for you.

MR. HORNSBY: Thank you, Mr. Miller. I'd like to remind the audience that we will

be looking at your comments very closely, so a summary of the comments on-going here is fine, you don't necessarily have to read your entire testimony

Now we have Willett Kempton, University of Delaware, followed by Joe Abbate, Princeton Student Climate Initiative, followed by Joseph Accardo from PSE&G.

MR. WILLETT KEMPTON: Thank you very much, Mr. Chairman. I'm here representing

the University of Delaware EV Research and Development group with my colleague Sara Parkinson (ph).

So who are we? Just to introduce we have 20-plus years experience in researching and promoting EV market penetration. We invented, demonstrated, and now license the vehicle grid technology, which was developed at the University of Delaware. That is using EVs for storage to stabilize the grid and earn revenue for the owners. So we speak about that one particular technology. Although I agree with most of the speakers on the general comments about desirable policies

for EV promotion and (inaudible).

So EVs with controls to help the grid are referred to as grid-integrated electric vehicles, GIVs, etc. Integrated grids, it's not just a separate appliance that comes in and charges when it wants to. So this technology was -- first sort of became widely known publically when we developed a complete -- with BMW E's, which are registered as a resource. So the cars were plugged and became part of the PJM grid

(inaudible) control office here in New Jersey, of course. And these cars are $1,200 dollars per EV per year, so it's a non-trivial value. So you won't hear me say that we need subsidies to move this forward, when you get to the policy part.

Other existing commercial applications now are running in Denmark, the Netherlands, France, State of California. For example, right now there's about 50 EVs in Denmark running on their systems that are going to be developed, but commercialized (inaudible) about $1,500 per year per car.

So there are many countries which have grid markets that pay per EVs to make themselves available as assets.

We also have OEMs with public announcements that we're talking with. The public announcement from OEMs include Nissan, Mitsubishi, Honda -- so these are all OEMs that have vehicles that can do this.

So when we make statements, it's not just saying, you can use EVs for controlling the grid, or aiding the grid, or reducing costs of infrastructure, but we're doing that

and getting paid for it. So that's a market validation that already makes sense and has been tested. Only took about 20 years to get that right.

So one of the benefits of grid-integrated vehicles just, first, you know, greater renewable energy integration and generally a tool for achieving the Energy Master Plan goals put forth in Governor Murphy's Executive Order 28. So just several of those grid storage integrations. Another is lowering the cost of storage and, of

course, subject to this hearing, clean and reliable transportation.

So let's dig into that a little bit. The following points are from the discussion points recommended us to cover here. One, new technology, infrastructure investment, global utilities.

Our points here are, as more of these are adopted, as greater demand for electricity, this could increase the need for infrastructure investments, however grid-integrated vehicles and other similar managed charging methods allowing -- should

higher demand to find some other guys that are using it. Therefore, the rate-reducing costs of infrastructure upgrades, not completely eliminated. So there's going to be an increase in electric energy and luckily New Jersey's building many gigawatts of off shore wind so we're going to have clean electricity coming in. It will be more kilowatt hours, but we can shift it to hours that we're not overloading the wires. So that's one of the goals here.

Affordability, accessibility, income from GIV services has demonstrated our income for commercial operations, as I mentioned, with some portion of that going to the EV owner. That reduces the overall costs of vehicle ownership while rewarding Jerseyans to draw on EVs.

New Jersey Transit strategy is another possible topic for discussion. High investment costs, electrifying transit buses and school buses can be mitigated by making the vehicle VEG enabled and thus able turn revenue.

So if you have, say, a hundred

kilowatt charging system for an E-vehicle at 100 -- say, 120-kilowatt hour battery, the revenue for year-end PJM services can be in the $10,000 dollars per year range. So non-trivial assistance to the owner of the vehicle.

A pilot for EV bus programs has been filed by the Delmarva Power and Light in Delaware, and similar pilot programs are operating in California. VG school buses

will be available for such programs, and we'd like to see some such programs in New Jersey. We'd be glad to advise energies that are doing this.

So generally policy recommendations, which are specific to VEG. It doesn't need a big subsidy, but it fits the regulatory and statutory barriers in the State of New Jersey, which will inhibit market penetration.

Four -- sorry, five recommendations in our written comments: One, allow for interconnection of distributed storage resources using the industry safety standard for grid-integrated electric vehicles created

by the Society of Automotive Engineers, namely SAVJ3072. So it's out there, it's a standard, it's not recognized in any way by New Jersey Administrative Code.

That allows the charging station EVSC to act as a protective gatekeeper so that only approved EV can export electricity. Not really different from a solar panel. It stays in one place, a building inspector

checks it out, checks off the list, it's done. With EVs, you have a global battery that plugs into different places. How do you make sure that's safe? There's already a standard for that. We would recommend that New Jersey evaluates it and adopt that as a way to assure safety of this method.

Second, allow retail credit for export of the utility tariffs in the State of New Jersey. There's a need for a model utility tariff that ensures EV owners are billed for consumption and credited for grid services. There's always going to be net consumption. It's not like generating power. You're drawing, putting back, drawing, but there's not a good way to ensure that

crediting for putting back on the grid is fair for both parties, the utility and the consumer owning the electric vehicle.

Third, raise the fast-track interconnection limit from 10 to 25 kilowatts as recommended by the Interstate Renewable Energy Council, IREC. That's apparently something that needs to be reviewed and

evaluated, and we hope it will be passed.

Four, address accounting issues put forth by third-quarter 841 fairly and deep in the policy area there. I'm not going to elaborate on that, but just calling out for the subcommittee third-quarter 841 is coming and we'd like for you to be thinking about it and ready for it.

And the last, policy recommendations include grid-integrated vehicles in New Jersey definition of storage. What's electric storage? Well, it includes electric vehicles with these saving measures and some controls that I've described. And why do we want to do that, because it's many times less expensive. Somebody else bought the battery, they use it an hour or two per

day for transportation. We'd like to see the state of New Jersey or the utilities in New Jersey or PJM use the other 22 hours a day for grid storage.

So summary. For New Jersey to achieve Energy Master Plan goals the state and BPU in particular take advantage of all

existing and emerging technologies, and incorporating low-cost storage from grid-integrated vehicles can make New Jersey's EO-28 goals more attainable and more cost effective.

However, these benefits can only be taken advantage of once the barriers described here are removed through BPU code and for allowing utilities to make actions like this ebb and flow.

Thank you very much for your attention.

MR. HORNSBY: Thank you, Professor Kempton. Up now, Joe Abbate from Princeton Student Climate Initiative, on deck Joe Accardo from PSE&G, followed by Debra Coyle McFadden from New Jersey Work Environment Council.

MR. JOE ABBATE: Thank you for the opportunity to speak. My name is Joe Abbate, A-B-B-A-T-E. I'm with the Princeton Student Climate Initiative, a student group working on a strong equitable and considerate policy passed at the state level.

This past Saturday we had a stakeholder forum, not like this one we have here, which focused on six stakeholder small discussion groups on different topics, all about the policies that may be passed in the next ten years or greenhouse gas emissions and air quality improvements. Many of the stakeholders who attended are here today. We thank them, and others who advise us.

I won't reiterate what was said. There were many strong voices for EV rebates in the room. But I will note that there was strong agreement during our forum, that like many people, electric vehicle rebates would be an extremely effective way to reduce emissions. But for our part, our student group's primarily focused on getting (inaudible) carbon (inaudible) policy passed in New Jersey. We think that carbon pricing

mechanisms are not only fair to market, but they provide much-needed investments for all of the ambitious rebate programs already discussed today in our cash-strapped state.

And so we wrote a 94-page white paper

with our assemblyman, and our -- it's continually getting feedback from the people we're talking to.

And, of course, as I mentioned, we're not married to this idea, and in particular, during the forum we learned about more transportation-focused programs like low carbon fuel standard or the cap and trade program, the transportation carbon emissions and Zach commented on this briefly.

But even before, our primary take-away was that there is kind of a lack of general knowledge, both from the stakeholders, also from officials, about the types of carbon pricing programs and there needs to be more modeling done at the state level so we can better understand what the impacts of these policies would be.

Although these policies, of course, are hard to get passed in NJ we have

ambitious reduction -- emissions reduction goals and we need ambitious policies if we want to actually meet those.

So our recommendation is increase

coordination with TCI and more research and market based strategies, and we will continue our own on this front. Thank you.

MR. HORNSBY: Thank you, Mr. Abbate. Up now, Joseph Accardo, PSE&G, followed by Debra Coyle McFadden, followed by Connor Dolan.

MR. JOSEPH ACCARDO: Good afternoon. My name is Joseph Accardo, Deputy General Counsel and Chief Regulatory Officer at PSE&G. I want to take the opportunity to provide these initial thoughts and comments with respect to Governor Murphy's proposed 2019 Energy Master Plan at today's Clean and Reliable Transportation Stakeholders meeting.

PSE&G, the state's largest electric and gas utility, applauds Governor Murphy's bold commitments to both clean and reliable transportation. Greening transportation centers is essential if we are to meet the requirements in New Jersey's global warming

Response Act, which mandates a reduction by 2020 in greenhouse gas emissions from 1990s level of emissions, and by 2050 a further

reduction of 80 percent below 2006 levels.

Recent legislative and executive action in New Jersey demonstrates state policy supporting clean energy, electric vehicles, and clean energy storage projects.

On May 23rd the state set forth clean energy goals that include the objective of achieving 600 megawatts of clean energy storage by 2021 and 2000 megawatts of storage by 2030. In addition, the Energy Master Plan is expected to provide a blueprint for the conversion of New Jersey's energy production profile to 100 percent clean energy sources by 2050.

That includes exploring methods that incentivize the use of clean, efficient energy and electric technology alternatives in New Jersey's transportation sector and at New Jersey's ports. We must do all we can to remove barriers, both real and perceived, that prevent and discourage New Jersey residents from purchasing electric vehicles.

To that end, New Jersey's a partner in California's zero-emission vehicle

program, which requires a large volume of automobile manufacturers to achieve a certain percentage of new vehicle sales from zero-emission vehicles. As a result, New Jersey consumers will be offered an even greater selection of electric vehicles than years past. PSE&G is determined to do all we can to help the state meet these ambitious goals.

Electric vehicles can be instrumental in cleaning our air and reducing the cost of driving. If there's any obstacle that might keep millions of climate-conscious car buyers from making the switch to plug-in vehicles, it's not in price, performance, nor the availability of a suitable electric vehicle. Rather, the hurdle, which must be overcome, is convenient access to electricity for fuel.

Before consumers will consider electric vehicles in great numbers, they'll need ready access to charging infrastructure. But before investors will deploy millions of dollars towards charging infrastructure they

will need to know that consumer demand will

materialize.

In New Jersey, PSE&G is preparing to submit a plan to New Jersey Board of Public Utilities that calls for significant investment in the state's charging infrastructure. The PSE&G proposal also will provide incentives for the owners of gas and diesel burning trucks, transit, and school buses to curb emissions by electrifying their fleets.

The utility's part in the adoption of electric vehicles in a natural fit beginning with the utility's historic mission of providing universal access to energy. The need to electrify New Jersey's transportation sector is growing increasingly urgent no matter who leads the effort. PSE&G has spent more than a century constructing electric grid that delivers around-the-clock power to every community and every customer regardless of geography or income.

Utilities built the electric grid and today they share responsibility for managing its operations as well. As electric vehicles

become more popular and the charging infrastructure grows, utilities can play an important role in brand diversion by ensuring that charging takes place during optimal times to avoid increased grid costs. For example, a utility could encourage cost-effective charging by offering incentives to drivers who charge during lower-cost, off-peak hours.

As we know, New Jersey is the most densely populated state in the nation and a key northeast highway corridor. As a result, more than half of the state's greenhouse gas emissions come from our vehicles. That means that converting our state's massive fleet of combustion engines to battery power will help us achieve our clean air and climate goals. This is particularly important in urban areas where electric vehicles can significantly improve public health by reducing gas and diesel smog.

As one of the most heavily traveled states in the nation, New Jersey can have the greatest impact on its air quality and public health by making electric vehicles a

priority. To do so we must recognize that consumer demand for electric vehicles can grow only as fast as our charging infrastructure permits.

In conclusion, PSE&G welcomes and supports the Governor's clean and reliable transportation initiative and offers its commitment to the successful implementation of the initiative. Thank you for the opportunity to provide these comments today.

MR. HORNSBY: Thank you, Mr. Accardo.

Up now, Debra Coyle McFadden with New Jersey Work Environment Council, on deck Connor Dolan, Fuel Cell and Hydrogen Energy Association, followed by David Pringle.

MS. DEBRA COYLE MCFADDEN: Good afternoon. So seeing as I'm testifying so late in the day, my testimony is only about ten pages. Two pages I will be submitting as comments, so I will be brief. My name is Debra Coyle McFadden, M-C-F-A-D-D-E-N. I'm the acting executive director of the New Jersey Work Environment Council. We're a coalition of 80 labor and community environmental organizations. We work for

safe, secure jobs in a healthy, sustainable environment. I'm here today to talk about healthy, sustainable environment. I'd also like to say that WEC is a proud partner in Jersey Renews.

So most of my points have been covered. We know 50 percent of greenhouse gas emissions come from the transportation sector. So the Energy Master Plan is a unique opportunity to improve our air quality and public health. And make no mistake about it, transportation is a public health issue. So the Energy Master Plan needs to take a holistic approach.

We need to electrify mass transit, which my colleagues have spoken on earlier today, Norah Langweiler. We need to invest in EV infrastructure, which was covered by Pam Frank. We need to seize our opportunities to make communities biking- and walking-friendly, and we must significantly reduce greenhouse gas emissions from the ports, which Amy Goldsmith from Clean Water Action talked about, she covered earlier.

25 And this could significantly improve air

1 quality in both Camden and Newark.
2 And by the Port Authority, which Amy
3 spoke about, the Port Authority breaking its
4 promise to implement the 2009 clean truck
5 program, it will take 15 years to achieve
6 what the original truck ban could achieve in
7 one year. So that's another -- almost
8 another generation of kids that are going to
9 be breathing dirty air. Kids breathe -- they
10 take more breaths per minute, so they're a
11 more vulnerable population.
12 This is where the Energy Master Plan
13 is a chance to right this wrong, and I don't
14 know that anybody who's witnessed a child
15 having an asthma attack or, for that matter,
16 anyone having an asthma attack, it's really a
17 horrific and helpless experience. So the
18 Energy Master Plan must ensure reductions in
19 environmental justice communities.
20 And, finally, I'll end with the
21 steps -- we need to take steps to ensure as
22 we transition to a lower- or zero-emission
23 transportation system that workers are

assured better, family-sustaining jobs.

Thank you.

MR. HORNSBY: Thank you, Ms. Coyle McFadden. We'll take two or three more speakers before we get to lunch. We'll probably have lunch at 1:00 to 1:30. So right now Connor Dolan, New Jersey Fuel Cell Association, on deck David Pringle, followed by Kurt Lewandowski.

Connor Dolan?

(No response.)

David Pringle? And Doug O'Malley will -- so after David Pringle will be Curt Lewandowski, Doug O'Malley, and then we'll break for lunch.

MR. DAVID PRINGLE: Thank you. My name is David Pringle. I'm representing Clean Water Action today, and this testimony is supplementing her testimony and focusing more on the electric vehicles' part of this discussion.

Getting automobiles off carbon as soon as possible is obviously critical to reaching the Governor's clean energy goals,

and in doing so will promote economic growth and critical public health goals, and it's totally doable. It will be easier to

transition to electric cars than it was going from horse-and-buggy to the internal combustion engine, and we did that in a few decades. And that was also -- we had something called the Great Depression happening during that time. It will have tremendous benefits

So we strongly support the Governor's goals of 330,000 zero-emission vehicles by 2025. That has been repeated throughout today's testimony. We're in support of the ChargEVC testimony and Sierra Club. And not knowing what Doug's about to say I'm confident we'll be supporting his testimony, too. And like Jeff I'm glad to be with Jim Appleton on the same side on something that we were very contentious during the 2002/2003 California car discussions in this building.

To assist in this effort we really need to get going fast. The legislature keeps talking about it, but nothing has

really happened in terms of really cranking up charging stations. Former Senator Eustice has an electric car, and even though there are charging stations at the State House and

he was a legislator, he was prevented from plugging in. So that shows you how far we have to go and the kind of bureaucracy we have to deal with.

But we support the charge of 300 fast chargers by 2020, 500 public charges by 2025, and much, much more. And we need to go much beyond the -- those goals for 2025 in keeping with the goals to get to where we need to go for 2050 and more specific goals for 2030.

We want 2 million zero-emission vehicles on the road by 2035 and 90 percent of the new car sales should be ZEVs by 2040. It's going to require leadership and mandates, but we can get it done.

And finally in conclusion, all of these policies have to bend again towards environmental justice. Overburdened communities have suffered disproportionally economically and environmentally from this

pollution. There's been incredible research done. I think it's more confirmed science than tobacco causing lung cancer or global warming happening.

The ties between the transportation

sector and increased asthma and cancer and emphysema, many folks have done incredible work on that. Here in New Jersey Dr. (Inaudible) have done a lot of work documenting those problems.

And I just wanted to highlight a couple stats from 2008 to 2012. According to the State Department of Health, what we're talking about here,in terms of environmental justice. Newark and the surrounding area is -- 86 percent of the emergency room visits for Essex County, but only 55 percent of the population. Newark itself is 59 percent of the emergency room visits for asthma, only 36 percent of the population.

Blacks statewide are 3.9 times more likely to be hospitalized for -- related to asthma than white and non-Hispanic whites and Hispanics are 2.3 times more likely to be

hospitalized due to asthma attacks than whites.

Newark, if you look at the graphics -- I just Googled something while waiting to testify and I'll submit it in my written testimony, it's a chart, Essex

County, color-coded for the greatest amount of emergency room visits. Newark is 150 percent above the state average, and basically every town, you go west of Newark in Essex County the air gets cleaner and the emergency room visits go down. So this is an environmental justice issue. All of the reductions have to happen and they have to happen disproportionately in environmentally justice over-burdened communities. Thank you.

MR. HORNSBY: Thank you, Mr. Pringle. Kurt Lewandowski from New Jersey Division of Rate Counsel, and we'll end with Doug O'Malley from Environment New Jersey.

MR. KURT LEWANDOWSKI: My name is Kurt Lewandowski. I'm Assistant Deputy Rate

Counsel for New Jersey Division of Rate Counsel. Our office represents the interests of the utility ratepayers, public utility matters, and consolidated central services, such as electric, natural gas, water, waste water, and telecommunications.

Our comments today are more general

in nature, but focused on providing effective utility ratepayers. We'll provide more detailed about this at a later date, pursuant to the schedule circulated by the BPU staff.

With respect to electric public utility service, as well as other services, a major concern is affordability for residential, commercial, and industrial customers.

When it comes to climate change, New Jersey's electric public utility ratepayers are already contributing their share of funding through their utility bills, energy efficiency, and available energy programs designed to reduce the carbon footprint of the public utility sector of our state's economy.

Reducing the carbon footprint of the transportation sector is also an essential part of reducing our state's carbon footprint. That said,steps can be taken by the public utility sector to support electrifying the transportation sector without resorting to funding by other utility ratepayers.

Two principles should guide the role of future electric distribution utilities known as EDCs, and support the electrification of the transportation sector.

First, much like the pricing of other public utility services, electric vehicle, or EV, users should bear the cost of charging EVs, With the infrastructure and energy costs, with limited -- very limited, exceptions, as set forth here in our comments.

Second, the role of New Jersey EDCs and community charging market place should be limited, recognizing its potential as a competitive market and, in fact, competitors who are in that area. That's not to say that

an unregulated affiliate of New Jersey can enter the EV charging market supported exclusively by its shareholders.

However, any involvement in EV recharging by regulated EDC in that marketplace should be limited to activities such as grid support, administrative, tariff rate development, grid information technology, construction necessary for

upgrades, and perhaps managing an RFP-type process for selecting competitive suppliers to develop infrastructure in severely uneconomic EV locations.

The keystone of an effective utility support structure for promotion of EVs is the establishment of a separate tariff and rate schedule for EV charging for level 2 and above charging encompassing separate residential and commercial sub-classes.

An EV charging rate structure would support an integration of EVs and the electric grid and accelerate the build-out of the associated utility infrastructure all without burdening other utility ratepayers

with additional costs. For example, time of use, or TOU, pricing under EV charging tariff, would help prevent EVs from adding costly peak-period demand, direct charging off-peak periods, optimize grid utilization, and in turn foster a market for new energy technologies such as battery storage.

Battery storage and EV charging is seen as an important tool to smooth the load of EVs on the grid and avoid surges in peak

demand. Cost base demand charges would provide an incentive for electric vehicle service equipment, operators, an area referred to electric vehicle service operators, EVSE operators, to adopt battery storage and other technologies, that's, in general, parts of charging infrastructure.

Commercial EV tariffs subclasses company conceivably resell electricity as competitive markets set retail rates. As a class, retail stores, including convenience stores and automobile retailer facilities and commercial offices and others, have already done much to improve the energy efficiency of

facility and reduce their carbon footprint.

Recognizing unique load profiles of these traditional customers as compared to EV charging, an EV commercial tariff subclass would permit commercial establishments hosting EVSE onsite to preserve and advance their own building energy efficiency goals while also simultaneously supporting EV adoption.

An EV tariff would also empower EV operators by providing them with direct

control of the energy use and supply. For example, EVS operators to employ battery storage to reduce their demand charges, secure your energy supplies directly, whether it's 100 percent green energy supply or other rates, with greater ease of administration, since their energy use would be independent of the site host by design.

An EV tariff would also incorporate special EV-specific clauses to support the development of infrastructure and severely uneconomic charge locations. (Inaudible) range anxiety and expand hardware for EVs,

including inner-city areas. Overtime is charged from infrastructure build-out, EV-only clauses would be effective to strengthen size.

In addition to cost base demand charges an EV tariff can also incorporate (inaudible) much like an extension policy to support construction of any necessary grid upgrades and reduce the possibility of any future stranded cost.

Finally, a separate EV tariff would generate critical data for system plans so

they can effectively integrate EVs to the electric grid and supply free services. An establishment of an EV charging tariff is a step the BPU can take now to foster EV adoption unleashing all benefits mentioned before.

And realizing we're running a little bit short on time, I realize that next point to make is only so much we can do in New Jersey, much of it relies on vehicle manufacturers to deliver an EV which meets the needs all of EV customers by lowering

prices and increasing range. And I think those points were made earlier by other speakers.

I'd like to close by saying these positive steps that New Jersey can take right now through electric tariff design to pave the road ahead for greater EV adoption without burdening our state's (inaudible) funds. And thank you for the opportunity to provide comments today.

MR. HORNSBY: Thank you, Mr. Lewandowski. Our final speaker before lunch, Doug O'Malley from Environment New

Jersey.

MR. DOUG O'MALLEY: Good afternoon. My name is Doug O'Malley. I'm the director of Environment New Jersey. I know I'm in a sucker spot right now because between everyone in this room and lunch. So I will I will work to wrap up my comments by one o'clock. So trust me, I'm as hungry as all of you are.

First, I just wanted to thank you, Mike, for chairing, not only this meeting,

but also this entire process, and for the participation in all the agencies that are part of the EMP here today, including EDA, DEP, New Jersey Transit, as well as NJDOT, and any other agency I may have missed.

And specifically I want to thank the involvement of Peg Hanna from the DEP. Peg has been working on vehicles for a very long time and has had the ability to see the transition from diesel vehicles, to going to retrofits, to going to electrification.

And that's ultimately why we're here today, is because, as was referenced before, we had a knock-down drag-out fight more than

14 years ago on whether New Jersey should become a clean car state. And I'm honored to say that 14 years ago Jim Appleton, the car dealers, and the environmental community including our organization, were opposite sides. Today, we serve as vice-officers in charge of EVC, Electric Vehicle Coalition, and I'm also proud to represent Jersey Renews, which represents one of the state's more than 60 faith labor environmental

community organizations.

So from the testimony you've already heard this morning and this afternoon, the landscape has changed drastically on electrification and on clean cars. What also has changed drastically, of course, is the attacks coming from Washington. And I'd be remiss without commenting that it's imperative that New Jersey act because the Trump administration, the president has taken a hammer to our clean cars program and directly attacked Cathy Sanders working with the EPA, and now acting Administrator Wheeler, to roll back (inaudible) standards and to go after California labor, which

allows New Jersey and 14 other states to have a clean cars program that's stronger than the federal government.

We strongly believe that it is a legal argument, that it is, you know, infallible, and will be rejected. But it is a real and present danger to us here in New Jersey, and it's imperative that we have a process like this, not only to stand up

against it, but to say what we're going to do about it. And I wanted to put a fine point on the challenges that we're facing.

We've heard again and again over the last few hours that our transportation sector is the largest source of global warming pollution in the state. A week ago I testified in front of this committee regarding the impact of Hurricane Florence. It was just coming around in North Carolina. Over the course of the last seven days it has dumped more than eight trillion gallons of water on North Carolina. We have communities that are cut off from the mainland right now. There are dozens of people who have died. That is the future of climate change and

extreme weather in this country, and I think for all of us when we think about what are the states that are most vulnerable to climate change, based on property evaluation, it is Florida and then it is us.

And so this is not just a question about vehicles and electrification, this is a question about how are we going to meet the

needs of the Global Warmers Response Act and listen to the scientists to take all the steps necessary to take action on climate.

In terms of questions that have been provided as part of the topics, I know a lot of this part hasn't necessarily referred to all of them, I wanted to say clearly that the charging EV roadmap is not going to go through into about two-thirds of these questions. And, you know, there's no need for the state to kind of reinvent the wheel ChargeEVC has done. There's a lot of great research on the -- for this committee and the administration to adopt.

I also just wanted to talk a little briefly on kind of the half board on a zero-carbon emission future. We strongly

believe that PAC should be adopting electrification. We obviously have vehicles on the road right now with compressed natural gas. We've heard on -- we've heard in the past from voters on hydrogen technology. There's obviously a place for those vehicles, but in terms of the fleet that is ready to go

right now certainly on private vehicles and increasing on heavy-duty vehicles that is an electric fleet, and that should be the clear focus for this committee.

I also just wanted to come back to some of the comments of Jim Appleton from NJCAR because Jim was correct to say that New Jersey's already in a hole. We have our clean cars, we need to be selling roughly 40,000 electric vehicles a year. We obviously are nowhere near that. We need a spec to see an exponential growth curve, but we obviously need to be juicing the market in every way possible.

And so to kind of quickly reiterate the importance of having both direct ship -- DCFC high-speed chargers on our major roadways as well as having chargers

in our downtown areas, is critical. Especially at our transit stations. We need more visibility; we need more places for chargers to go.

We also need to ensure that we are creating more incentives because when the

average driver goes and gets a new car, they're looking it a sticker price, and we need to ensure that, obviously, they understand that there's long-term savings of driving an electric vehicle. And having a cash-on-the-hood incentive can really make people take a second look, get in a car for the first time. And I think one of the things that we have not emphasized enough is that the world changes very quickly when technology catches up.

You know, How many people have these in their pockets? How many people have one of these in their pockets from 15 years ago? If it was, it was a little box, right, and you couldn't really -- texting was for the Blackberry set.

That's a world we're going to see in the future of electric vehicles because it's

superior technology, it's superior experience. Too many people haven't even driven an electric car. We're obviously very excited to have an electric -- drive electric week earlier this month, but really every

week should be drive electric.

And we're going to be working with our partners at Jersey Renews and ChargeEVC to having more drives around this city, including one right here in Trenton on October 15th, where we hope to have an omnibus legislation that will accomplish a lot of the goals that we've heard this morning.

But part of it is consumer education, getting people in those cars, because EVs are incredibly fun to drive. They have a massive pickup, they have wicked acceleration, and you can charge them at home, you have control over that. They are fewer emissions, and they are the car of the future. And so this is obviously why we see the dealers support the effort to sell clean cars, because the dealers themselves realize that this is what -- once consumers get in the car or see

cars, they realize, hey, this is what I could be driving.

Now, obviously we are not at that point. We still have clear issues with range

anxiety. That's what policy charging infrastructure can do, that's what incentives and cash-on-the-hood can do.

I also just wanted to spend a little bit of time talking about the 10 percent of the state population that doesn't drive a car, that takes public transit. As we all know, New Jersey Transit has been starved for resources, and that is a legacy from the Christie administration, that continues to hurt our commuters every single day. And a lot of attention is obviously focused on our rails because that's where we have the PGC deadline by December, which we are all familiar with.

But we also need to ensure that we're focusing on buses because more people in the state take buses than take trains. And too many of our buses in our urban communities are obviously diesel buses that are exacerbating the air pollution issues in our

urban centers. And there are a number of -- more than a number, there's a large number of states that have started to go electric and

they are pretty diverse. They're in Minnesota, down in Texas, obviously a lot in California, but also in places that you wouldn't expect. These are buses that work in all kinds of conditions, including in Toronto, so cold weather.

One huge obstacle of electric buses is the initial cost is more expensive than the traditional diesel vehicle. We're looking at the long-term trajectory of the maintenance. Electric buses, you know, can have reduced maintenance costs, and then we are also seeing the cost of electric buses continue to decrease.

So we are not saying that New Jersey Transit should transition to electric buses overnight or even in five years or ten years, but we are saying that as transit is working to come up with a procurement calendar, that it should be working to adopt goals for electrified transportation.

And, finally, I just want to conclude

by saying that, you know, all of these incentives are based upon money and making

sure that the decision is not only in this room, at this EMP hearing, the decision by our senate and assembly budget committees and also by the Murphy administration are being to invest in an electrification future, because that is where the market is going. We need to make sure that New Jersey is a leader and not rider.

We're excited to work with the Energy Master Plan committee to make that happen. Thank you.

MR. HORNSBY: Thank you, Doug. We're going to break for lunch now. We'll return at 1:00 -- on deck -- we'll return at 1:30, rather.

Up after lunch Robert Wimmer, Clifford Gladstein, Imelda Foley, and Ed Potosnak. Then we have about 20 more people signed plus walk-ins, and we'll continue until everyone that wants to speak will be heard from. Thank you.

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(The proceedings adjourned at 1:00 p.m.)

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C E R T I F I C A T E

State of New Jersey)

) ss.

COUNTY OF BURLINGTON)

I, LAURA P. REAM, a Shorthand (Stenotype) Reporter and Notary Public of the State of New Jersey, do hereby certify that the foregoing hearing, taken at the time and place aforesaid, is a true and correct transcription of said deposition.

I further certify that I am neither counsel for nor related to any party to said action, nor in any way interested in the result of outcome thereof.

IN WITNESS WHEREOF, I have hereunto set my hand this 9th day of October, 2018.

_____

LAURA P. REAM

STATE OF NEW JERSEY
BOARD OF PUBLIC UTILITIES
THURSDAY, SEPTEMBER 20, 2018

ENERGY MASTER PLAN
STAKEHOLDER MEETING

CLEAN AND RELIABLE TRANSPORTATION

(AFTERNOON SESSION)

HELD AT:
STATE HOUSE ANNEX
COMMITTEE ROOM 4
131-137 WEST STATE STREET
TRENTON, NEW JERSEY
1:40 P.M.

BEFORE:
MICHAEL L. HORNSBY
Chief Project Development Officer

COMMITTEE MEMBERS:

LORIEANNE WILKERSON-LECONTE - DOH
VINN WHITE - Governor's Office
NOREEN GIBLIN - Chief Counsel - BPU

BPU:	EDA:
BENJAMIN GOLDSTEIN	JONATHAN RATNER
	KEVIN DeSMEDT
DEP:	NJ TRANSIT:
PEG HANNA	STEVE JENKS
RYAN GERGELY	JOHN GEITNER

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(Whereupon a short recess was held.)

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

MR. HORNSBY: Welcome back everybody. We're going to get going now. So, the first up will be Chris Santucci from Toyota.

Followed by Clifford Gladstein from Gladstein, Neandross and Associates. Followed by Ed Potosnak from New Jersey League of Conservation Voters.

So, Chris, please go ahead.

MR. SANTUCCI: Thank you. Good afternoon. My name is Chris Santucci. S-a-n-t-u-c-c-i. And, I'm a Program Manager at Toyota's Energy Environmental Research Group based in Washington D.C. Thank you for the opportunity to speak in support of your hydrogen infrastructure development, and zero emission fuel cell electric vehicles, as part of New Jersey's Energy Master Plan.

Start year impossible. Start year impossible is Toyota's long-term commitment to support the creation of a more inclusive and sustainable society. One where our associates and our partners continue to challenge the goals that

most would see as impossible. Not unlike New Jersey, Toyota established aggressive goals in support of its corporate 2015 environmental challenge. This challenge includes efforts to reduce our vehicle CO2 emissions by ninety percent when compared to levels from 2010. By 2020, more than fifteen percent of our U.S. models will be hybrid, plug-in hybrid, and fuel cell electric vehicles. By 2025, every model in the Lexus and Toyota line will be either zero emissions, battery, or fuel cell electric, or have an electrified option. By 2030, fifty percent of global sales -- roughly five and a half million vehicles per year -- will be electrified, including one million zero emission vehicles.

All clean vehicle technologies can have a role to play in clean and reliable transportation, good movement, and economic growth, depending on the needs of the customer. Toyota and other model makers have developed a portfolio of technologies to meet these needs. A portfolio is needed because not one technology alone will satisfy all the needs of our customer base. Not one technology alone will satisfy the various CO2 emissions and the fuel economy regulations across

the globe. It is our responsibility that challenges us to meet and exceed all of these varying, sometimes conflicting, customer needs, and will help and enable the transportation in a safe and sustainable manner.

Today Toyota's portfolio consists of highly-efficient gasoline vehicles, electrified alternatives. These vehicles come in various from small hatches to mid-size sedans, to sport utility vehicles and Ford pickup trucks. Hybridization was the first big step to increase vehicle fuel economy and greenhouse gas reduction through electrification. More than twenty years ago Toyota introduced the Prius, a gasoline engine and electric mother tied together with a small battery that recharges itself regenerative braking showed our customers a new technology that will reduce their fuel consumption and carbon footprint in a significant way. More than twelve million hybrids have been sold worldwide, and continuing to save our customer's money at the gas pumps.

Hybridization and electrification remain essential to Toyota's portfolio technologies. To the Prius we added the ability to plug in and recharge a larger battery, today

allowing approximately twenty-five all-electric models to be driven before switching over to gasoline power. Over the years we've offered electrified versions of many of our vehicles. And in the early 2020s we will again producing a battery electric vehicle for sale in the U.S.

But, notably, in late 2015 California will begin selling our current zero emissions vehicle, the fuel cell electric hybrid Toyota Mirai. We believe it is the most advanced electric vehicle on the market. And, let me explain why. Why? Hydrogen fuel cell electric vehicles. Well, for starters, they offer a no-comprise driving experience. Fuel cell electric vehicles have a range of 300 to 400 miles. They can be refueled in three to five minutes. They provide a zero emission driving experience. Fuel cell electric vehicles only emit water. The hydrogen fuel that they use can be made from domestic and renewable sources. They can scale up to the products our customers demand. Everything from passenger cars to Class A semi-trucks can be powered by fuel cells.

Well, what are hydrogen fuel cells? A fuel cell device generates electricity through an

electric chemical reaction. In a hydrogen fuel cell, hydrogen and oxygen are combined to create heat, electricity and water. Hydrogen is stored on board in and specialized fuel tank, and used as the fuel to generate the electricity that powers the vehicle. It is not combusted. The hydrogen reacts to the oxygen in the air, and is released as water.

Hydrogen fuel cell electric vehicles are here today. Toyota, Honda, Hyundai all have vehicles for sale right now in California. These vehicles take advantage of a growing network of hydrogen refueling stations across the state. Toyota fuel cells are hybrids. Each Mirai has a small battery, boost efficiency, regenerative braking. But, they do not get their energy from being plugged into the grid. I'll pause at this point to let that sink in. Fuel cell electric vehicles do not get plugged into the grid, because they make their own electricity.

So, why is it important that fuel cell electric vehicles be part of your plan? Why is it important that you consider them? Because hydrogen is just another form of energy storage. It's an alternative to pump storage, lithium ion batteries.

And, it has a place in your renewable portfolios. It's a fuel. It can be a clean fuel. Can be a renewable fuel. It's scalable. Can be used across the transportation of power generation sectors. We call this thinking outside of the plug. Hydrogen fuel cells can be installed in vehicles of varying sizes. They can be installed in buildings, factories. They can power neighborhoods. They can provide heat. They can provide electricity back to the grid. They can power society, a hydrogen society.

So, where do we get the hydrogen? Well, hydrogen is the most abundant element in the universe. It's just sitting around by itself ready to be pumped into a fuel cell. It has to be synthesized. This can be done -- as it is in most cases today, by the steam reformation of natural gas or bio-gas. It can be generated via electrolysis of water -- which is essentially a fuel cell in reverse -- by splitting the water molecules back into hydrogen and oxygen. Hydrogen can be clean. For example, Toyota will begin reforming renewable methane freeze in the tri-generation facility in the port of Long Beach in early 2020. Agricultural bio-gas captured from

California's central dairy farms will be used to create hydrogen for fueling the new fuel cell electric vehicles arriving at the port. As well as the medium and heavy-duty trucks and forklifts that will work there. This facility will also produce heat for the building, and 1.7 megawatts for the grid.

By using other renewable energy sources, such as wind or solar or hydro-electric or geo-thermal, utilities can produce clean hydrogen directly from water. They can do this at a time when intermittent sources of renewable power might need to be curtailed, they can do it at night when the demand is low. When demand is high, they can send that hydrogen back into a fuel cell for use with the grid.

We've had success in California. Toyota has sold nearly 4,000 Mirai. Honda has sold over 1100 Clarity's. California has now over 5,000 fuel cells on the road. And, there are 35 hydrogen fueling stations currently operating today. The expectation is there are to be 40 stations in California by the end of this year. And, 60 by the end of next. And they've established a goal of 200 stations by 2025.

California has positioned itself to support all forms of clean and reliable transportation in the years to come, by including a robust hydrogen fueling infrastructure and the various programs and partnerships that make up their transportation portfolio.

So, what can we do for New Jersey? Today in the northeast Toyota offers the Prius Prime for sale to customers. These vehicles provide a way for New Jersey drivers to leverage the electrical grid, reduce their emissions and their fuel consumption. Toyota expects to launch the Mirai in select northeast markets in 2019. Toyota's partnered with AeroHeat to facilitate development of an initial set of hydrogen stations in a stretch from New Jersey to Massachusetts to support the launch of the Toyota Mirai and other fuel cell electric vehicles. Five hydrogen stations, one in New York, are ready to open or are under construction. And about a dozen are under development.

New Jersey is a critical market for Toyota. In order for the Garden State to be successful of the deployment of clean and reliable transportation, and to help to meet Executive Order

28, the state and auto makers must work together. Auto makers like Toyota need to provide vehicles that meet the needs and expectations of the consumers in the Garden State.

Hydrogen fuel cells will give the auto makers the flexibility to power the vehicle sizes and capabilities that consumers want to drive today and in the future. Fuel cell electric vehicles get their fuel from a districted network of refueling stations, like gasoline vehicles do today. Drivers can fill up and go three to 400 miles on a full tank. This exceeds current battery technology on volt range for refueling time, and provides zero emissions driving access to more consumers like those that do not have access or the ability to install a home-base battery electric vehicle charging system -- such as apartment dwellers or those in disadvantaged neighborhoods. Despite the higher cost of construction, hydrogen fueling stations provide significantly more refueling per hour than a Level Three recharging station. And, they can easily be built to refuel multiple vehicles at one time.

There are a number of opportunities the state should consider.

MR. HORNSBY: One more minute, Mr. Santucci.

MR. SANTUCCI: Well, I'll skip the targeted incentives. But, I'd like to tell you about just last week -- directing efforts toward the New Jersey ports. Just this week, the California Research Board announced a preliminary award of $41,000,000.00 to the port of Los Angeles for the zero emissions and near zero emissions trade facility project. This 82 million dollar project proposed to support Toyota, Kemron, and Shell, provide a large-scale shore-to-store plan in a hydrogen fuel cell technology framework for freight facilities to structure operations for future goods. This will help reduce emissions by 465 metric tons of greenhouse gas, and .72 weighted tons of criterion glutens such as NOx and MPM 10.

The project is part of the California Climate Initiatives, a statewide initiative that puts billions of cap and trade dollars in reducing greenhouse gas emissions, strengthening the economy and improving public health and the environment.

So, we'll be putting ten zero emission type fuel cell electric Class A trucks on Kenworth platforms as a collaboration to move cargo from the

Los Angeles ports throughout the Los Angeles basin, and it sounds a lot like the programs you're interested for your ports.

MR. HORNSBY: Thank you, Mr. Santucci.

MR. SANTUCCI: Thank you.

MR. HORNSBY: Next up, Ed Potosnak from New Jersey League of Conservation Voters. On deck, Veer Patel. Followed by Sal Risalvato.

MR. GLADSTEIN: You skipped over me.

MR. HORNSBY: So I did. Clifford Gladstein, Gladstein, Neandross and Associates. You have the floor, sir.

MR. GLADSTEIN: Thank you for this opportunity to submit testimony on the clean and reliable transportation element of New Jersey's 2019 Energy Master Plan. Gladstein, Neandross and Associates is one of the nation's leading consultancies on clean alternative fuel and electric transportation technologies. Our clients are primarily operators of heavy-duty vehicles and equipment, including trucks, buses, ocean-going vessels, locomotives, and equipment used in cargo handling, construction, mining, and exploration production. We operate all over North America with offices and personnel in California, Arizona,

Texas, Louisiana, New Jersey, and New York.

New Jersey has undertaken the development of the new Energy Master Plan, that focuses on putting New Jersey on a path to achieve a hundred percent clean energy by 2050 -- growing New Jersey's clean energy economy, and ensuring reliability and affordability for all customers, reducing the state's carbon footprint, and advancing new technologies for all New Jersey residents.

In addition to these general objectives, the transportation element of the revised EMP is to explore how to optimize the use of clean transportation technologies in freight movement, promote clean transportation solutions that minimize adverse impacts on the movement of goods, and maximize opportunities for economic growth. And, to ensure that disproportionally impacted communities receive both the opportunities and the benefits through the expansion of below and zero emission vehicles. It is with this last objection in mind that it is important to remember that clean energy does not just mean reducing greenhouse gases. Although it is critically important to reduce emission of GHG's from all

sectors of New Jersey's energy economy, it is essential to also stay focused on reducing emissions of the pollutants and toxic air contaminants that currently negatively impact the health and well-being of New Jersey residents.

Although carbon dioxide and other greenhouse gases are slowly and inexorably changing the planet's climate, these pollutants do not have the immediate impact of causing asthma, lung and heart disease, cancer and other terrible human malidies that adversely burden tens of thousands of New Jersey residents right now. Particularly in low-income neighborhoods and communities of color adjacent to ports, distribution facilities, and major roadways that are disproportionally impacted by environmental insults.

To maximize immediate benefit, particularly to New Jersey's breathers, the transportation element of the revised EMP should emphasize the immediate and rapid transition of the heavy-duty sector vehicle to cleaner technology. Although likely the vehicles are the sources of plurality of the state's GHG emissions, the state's four million automobiles produce as much smog-forming NOx as the state's 52,000 heavy-duty

trucks, and virtually none of the deadly diesel particulates that are among the most dangerous contaminants in the state's atmosphere. This requires that state policy makers focus on promoting transportation technologies that quickly transition the transit and goods movement sectors away from diesel, to cleaner non-petroleum based technologies.

Eventually there will be many battery electric and fuel cell options to replace the heavy-duty vehicles that are the backbone of commerce in New Jersey today. However, these options are available only at very low-scale production volumes and in specific applications, and therefore are unlikely to be competitive at scale with existing trucks until the next decade -- until end of the next decade. Thus, at this moment in time the electric trucks have a limited but important role to play in New Jersey's transition to a cleaner goods movement future. Near zero emission natural gas trucks, however, are available today and are replacing dirty diesel trucks and buses all of the country. Trucks equipped with these existing natural gas engines can deliver lower than electric NOx emissions,

virtually eliminate toxic diesel exhaust, and when fueled by readily available renewable natural gas and deliver greenhouse gas emissions at levels that will meet New Jersey's carbon reduction goals.

New near zero emission medium and heavy-duty engines fueled by natural gas are certified by EPA and the California Resources Board to emit ninety percent less smog-forming gases than the current emission standard. They are so clean that they emit less NOx at the tail pipe than an electric truck of a comparable size that would be charged by today's New Jersey electric grid, if that truck was commercially available. But, these near zero emission NGVs are available today, and could deliver immediate reduction benefits to New Jersey residents. To facilitate the benefits that can be delivered by near zero emission NGVs, New Jersey should include in the revised EMP a commitment to develop and implement a California-style low carbon and fuel standard broker.

The LCFS would help New Jersey accomplish several key goals.

First; it provides a market base program to reduce the carbon content of all

transportation fuels.

Second; it is fuel neutral, and thus would encourage the development of all low to zero carbon fuels, including renewable electricity, non-fossil hydrogen, and renewable natural gas.

Third; if structured appropriately, it will enable New Jersey to participate in low carbon fuel markets in California, Oregon, Quebec, and other progressive jurisdictions, which will help provide the resources for New Jersey developers to produce RNG, and for New Jersey fleets to adopt this green technology.

Fourth; you will encourage the development of renewable resources in the state, including the sustainable and beneficial recovery, reuse, and recycling of organic waster. Which will not only help reduce emissions of greenhouse gases and criterion pollutants, but also mitigate the state's solid waste disposal challenges, and encourage economic development.

For the heavy-duty sector, near zero emission heavy-duty NGVs represent the most efficient cost-effective and immediate pathway to meet the EMP's clean transportation goals. This technology, and this technology alone, presents the

state's ability to virtually eliminate the public health risks of port drayage and the other heavy-duty technologies by dramatically reducing NOx emissions, eliminating diesel particulates, and when fueled by RNG, bring GHG emissions down to levels called for in the EMP.

Thank you for this opportunity.

MR. HORNSBY: Thank you, Mr. Gladstein. Up now, Ed Potosnak. Is Ed here? No? Veer Patel.

Sal Risalvato from New Jersey Gasoline Convenience Automotive Association. Followed by Robert DeDomenico and James Sherman.

MR. RISALVATO: Good afternoon. Sal Risalvato, Executive Director, NJGCA -- New Jersey Gasoline, Convenience Store, and Automotive Association. We serve the small businesses that serve the motorists. At one point or another today, each of the sectors of business that I represent had been mentioned here today in one capacity other another.

This is an Energy Master Plan. And, we have talked an awful lot about environment -- which is understandable. And, the debate has switched in the last fifteen or twenty years as

we've discussed energy, and it has a very strong environmental component. I'm going to speak to you today about energy and that environmental component, as well.

There is an evolution that is taking place in our nation and in New Jersey. We've been trying to direct our members to understand that they are going to see what we call a huge disruption. And that's a word that's going to be appearing more and more as we move on into a lot of different aspects. Not just in energy, but in transportation and industry and business and retail in general.

The autonomous vehicle is going to change our lives in huge ways. And one of the things I'm trying to prepare my members for with regard to autonomous vehicles is the face that they will all be electric. And, I was very pleased that the gentleman before me just talked a little bit about hydrogen. I feel that we have not discussed hydrogen enough today. Hydrogen vehicles are electric vehicles. The difference is they produce their own electricity. The great thing about it is that hydrogen is so plentiful and bountiful and renewable that that issue of where we

get the fuel goes away -- which we can't say about the fossil fuels we rely on today.

The other great thing about hydrogen is the zero emissions factor. So, we are encompassing a lot of things into the hydrogen vehicle. And, there will be limitations with electric vehicles regardless of how much a battery can hold and the miles we can get out of that battery, because it still will need to be recharged in some capacity. And if we're relying on home charging -- and I suspect a large portion of that will be at home -- we're going to still be out somewhere and need to be recharged.

I want to speak to you because this body, as it's putting its report together, must make use of the existing infrastructure that has fueled the motorists' vehicles for a hundred years. I have tried to get my members to think differently in the last ten years. Many of them say "why do you keep talking to us about electric vehicles, hydrogen vehicles, natural gas vehicles? Why do you keep talking. We sell gasoline and diesel fuel". And, I keep asking them to stop thinking as if they are in the gasoline and diesel fuel business, and begin thinking as if they are in the

transportation energy business. They must continue to supply the motorists -- who are their customers -- in every aspect of what the motorist needs.

Right now a motorist comes into our location, fuels up, goes in and gets a cup of coffee. Those convenience stores are going to still be there. They're a great place -- as we've heard a number of times today -- to put charging stations. Those motorists are going to come in and fuel up, and they need to have their cars repaired. Most of my members still have gasoline/auto repair shops. That is the tradition that we have migrated from. So, those aspects are not going away. That infrastructure is there.

We need -- and again, I'm surprised I haven't heard this phrase used all day -- and, that is the chicken and egg. We've talked a lot about people not buying an electric vehicle or a hydrogen vehicle. And I am going to tell you, I believe that we should move more heavily into hydrogen. People aren't going to buy those vehicles if they can't fuel them up. And, nobody is going to sell the fuel if there isn't anybody to buy it. So, the manufacturers, they have really showed their hand in a good way. They are manufacturing these

vehicles -- and they're beautiful, I've been in some of them, I've seen them, they do perform brilliantly -- I think people will like them. But who is going to buy it if you can't refuel it, whether it's battery electric or hydrogen. So the manufacturers, they're at the beginning of this change. And then the car dealers -- and I listened to my friend Jim Appleton earlier today -- the car dealers, they're not going to invest in inventory even if the manufacturers are going to make them, if the customers aren't going to buy them. And the customer aren't going to buy if they don't have someplace to fuel them. And the people that sell fuel, whether it's electric in a charging station or hydrogen in a hydrogen fueling station, they're not going to sell fuel. They're not going to invest in the infrastructure. They're not going to invest in the inventory. And they're not going to exist if they don't have customers to buy it.

What we need is a way to put these things together. I believe that if reasonable people get in a room, we can identify who the chickens are, who the eggs are, start making more chickens which will make more eggs, and start making more eggs which will make more chickens, and

this problem will go away. I believe that this body needs to address that. And once it is addressed -- one of the things on the electrification side, the rules must be changed in terms of how we charge for the charge. We can't continue to sell time. We have to actually sell the electricity. And, I know that that's been a hurdle in the past. We have to find a way to get past that. Because different vehicles take different amounts of time, and take different amounts of electricity, in the period of time that they're charging. We can't charge for the time, we must charge for the electricity. This body needs to deal with that.

My organization, myself personally, we're available to help work out these details. I do have some ideas. I want to be a dating service. I want to help put my members together that have locations that would be more than suitable for us to incentivize to get into the hydrogen refueling or large scale quick-charging business. And, I believe we can target customers, motorists, that we can encourage to purchase electric or hydrogen vehicles, and utilize the products and services that are at the locations we identified. And as

we do those, one by one they will all start coming together. And one of the keys that's going to make this speed up is going to be the autonomous vehicle. They will all be electric, and they are going to be more prevalent then you can possibly imagine. And, we must brace ourselves for them.

I thank you. I hope this body deals with the things that I just identified.

MR. HORNSBY: Thank you very much, sir.

Robert DeDomenico from CargoFish is up now. Followed by James Sherman, then Jeanne Fox, then Benjamin Mandel.

MR. DeDOMENICO: Good afternoon. My name is Robert DeDomenico with CargoFish. Thank you for the opportunity, Mr. Hornsby, other members of the task force.

A little about my background first. I have three years in nuclear power. Twenty-five years in commercial nuclear power, ten which was in operations including license control and operations, Salem I and II, each a 1.2 gigawatt unit.

Prior to that, I was six years in the U.S. Navy as a submarine drop operator, and

electronics technician. Prior to which I did drop out of college. And I grew up on a farm where I had ample opportunity to help assist in the rebuild of diesels, maintain farm equipment including combines. Had hobbies of building my own bicycles, recumbent streamline, copies of something called a vector human-powered vehicle that I read about in Readers Digest at age of fourteen.

Prior to that I used to build slot cars, which were hand-me-downs. And if you didn't repair them, they didn't run. So, I got kind of good at that. And, I was an avid model railroader. I used to build my own track.

So, that being my background, about eight years ago I came upon what I'd like to bring to you today, which is a new perspective on freight distribution. And, rhetorically speaking, which vehicle, which vehicle, moves the most miles to transport freight? Is that ships? Planes? Trucks? Or trains? And, the answer is cars. Cars are used to carry freight over more miles than all of the other freight vehicles together. And, unfortunately, when a car is moved to carry freight, it's usually being driven home from a convenience store or a supermarket, with a payload

from two pounds to twenty pounds on average.

This is a lower capacity utilization factor than any car that's being used to take the single occupant who needs to get somewhere. Because a car only has five seats, and at least one seat is occupied. But when you're using a car to move freight, this is a machine that weighs three to 5,000 pounds that can carry one to 2,000 pounds more if you have a hitch. And your payload might just been an envelope you're taking to the post office. And the last model freight distribution is widely acknowledged to be the most expensive and most energy intensive.

Except when it comes to utilities. And the greatest eye-opener for a comparison is water. And, you can get your water through the fast-moving consumer goods system dollars per gallon. If this bottle is a dollar, seven of these is almost a gallon. Or, you can get your water through a capital-intensive municipal water system. There's a million miles of water mains in America serving 85 percent of U.S. households. And, we get our water from the tap gallons per penny.

And, so, it's unusual to think that these things are cheap, these utilities, because

they're expensive. But, in reality, they're the best in delivering what they deliver. And, we live in a world today that has a handful of utilities; water, gas, electricity, and sewer. Each of which does the absolute best job of moving what it moves.

But, in the future we're going to have one more utility. I call it CarbonFish. All it is is a utility which is a pipe, a network, a freeway, of enclosed slot car tracks. And autonomous vehicles are going to run through these tracks. These tracks are going to be energized. And I've already built several generations of these prototypes. Proof of concept is done. I've tested it. I love math. I love physics. I love what I'm doing, and I've been doing it for eight years. And if there's any interest, my interest is that the work that I've done lead to something useful. Thirty years ago when I joined the navy I made a contribution to the country, I think. I served six years. But, I think the last eight years I've been working on a far greater contribution. As I know each of you are in the work that you're doing on this committee.

So, I haven't written my comments yet. I have until the 12th of October. And, I

appreciate greatly that you will be reading in detail, and I will provide great detail. And, if I may, I will just show you a little demonstrator called a zip pipes or zoom tubes -- it's a toy that came on the market two years ago. And, to my knowledge, it's the first example of a toy that precedes its technology. Unlike model trains and model cars, both of which you're very familiar with.

So, I'll turn on one of these little vehicles that is capable of moving a thousand miles on a kilowatt hour. Now, an electric car typically goes from two to four miles on a kilowatt hour. This is a very small scale compared to what I'm building, but -- it doesn't have any problem other than me remembering which direction to throw it. Now, that's only six miles an hour. My system can move at thirty miles an hour, can carry a payload of twenty pounds. That's more than two gallon jugs of milk.

Imagine a world where you don't have to get into a 4,000 pound car -- electric or otherwise -- because you needed a one pound loaf of bread, or you child needed a one ounce prescription.

This system I designed can carry a payload one mile on the energy it takes you just to start your engine. Or, fifty miles on the energy you burn idling for one minute. And, New Jersey is a great place to start because I live here and I can make it easy for us. And, because we only have about 40,000 miles of roads, which is about one percent of the national road system. And, we have about five percent of the population. So, we have a good customer density.

The economics, I'll go into greater detail. But, just another rhetorical. What percentage of the material consumables of every day living, do you suppose, get to residences over the road? And many people would say well most, most everything comes by road. But the answer is one percent. Because 99 percent of the materials that come to our homes that we use is actually water. We use about a hundred gallons a day, and that weighs about 800 pounds, and then we flush it down the sewer the other way. Very effectively, very econonically, and environmentally friendly. And we only eat about five pounds of food a day, five pounds of consumer goods, your amortized consumption, and then we generate about five pounds

of trash. So, we move things effectively.

So, the road that we're on today is that the roads and the vehicles that occupy them are at de facto utility system, the roads are publicly owned and shared and the vehicle is private. But it's one size fits all, there's nothing smaller. Unless it's a fluid, it's not moved by utility. So, it's calling the physical internet for reason.

I've given presentations in Canada, an international freight conference in Long Beach, The Annual World Geographic Society Conference in Exeter, England that I attended remotely. I've given presentations in DC and Albany. I've applied for grants, competitions everywhere. The success is limited, but you know what they say, smooth seas have never made skilled sailors. I won't give up. I know you won't give up. I encourage any questions down the road. And, I will provide the best documentation for what I've given here today to the committee for your best use. Thank you all very much.

MR. HORNSBY: Thank you, Mr. DeDomenico.

Up now James Sherman, Climate Change

Mitigation Technologies. Followed by Jeanne Fox and Benjamin Mandel.

MR. SHERMAN: Good afternoon. My thanks to the committee for holding this most important hearing. Thanks to Mr. Hornsby for running the meeting. I'm going to condense my remarks because of all the speakers that have come before me, and I'm just going to try to get right to the chase.

Let me just say something about Climate Change Mitigation Technologies. We are an independent developer of renewable energy and energy efficiency projects right here in New Jersey. We pioneered the heavy-duty electric trucks base going back a decade with Proterra -- before it was called Proterra -- and with Transtar, which is the first company to build the heavy-duty Class A yard tractor. We've been in this business for about ten years, and have perspective in that time.

It's been stated several times that New Jersey's transportation sector counts for 45 percent of carbon dioxide emissions. The Rutgers Georgetown climate center study says that half of these emissions come from the heavy-duty truck

sector. So, somewhere 22 or 23 percent of the 45 percent come from heavy-duty diesel trucks.

In addition to the climate change impacts of heavy-duty diesel trucks and their public health impacts in terms of asthma in various communities around the ports, for the first time this year there's a study out now linking diesel with childhood autism spectrum behavior. That's the first of this kind of report we've seen. As I think most people in committee may be aware of, New Jersey has the highest childhood autism rate in the nation. So, it comes as no surprise that you have now three concentric circles all built around diesel. You have climate change impacts. You have human health impacts. And you have autistic spectrum behavior impacts. All attributed to diesel exhaust.

That is where we believe the Board of Public Utilities and the Energy Master Plan has to focus its attention and create its resources in the coming Energy Master Plan rewrite. We said earlier that heavy-duty battery electric trucks aren't available yet. That is incorrect. There are many companies that now are making them and beginning mass production. BYD makes them.

Mitsubishi Fuso is starting serial production of a Class IV truck in Portugal. Freightliner has twenty trucks already out in California in the west that are already on the road. And all the CatCar brand trucks, Kenworth and PeterBuilt are also coming out. These trucks will all be here in the course of about two years. And, I forgot to mention Volvo. So, the manufacturers have responded to the need. They are coming. We expect them in about two years.

With regard to what the Board of Public Utilities itself can do. The Board has to do what it did with the solar industry. Back about fifteen or twenty years ago they saw that California had invested 500, 600 -- however many millions of dollars -- and then solar technology was ready for prime time. New Jersey walked on to the moving train and co-opted the solar industry to New Jersey with very significant benefits. In the first year of the solar program, there was a sixty percent rebate given to people who were the first movers in solar. That was eventually ratcheted down to the 50 percent, and then we went over to the SREC program. And now we're weaning off any kind of subsidies, and we'll be a private

market-based system.

That needs to be recreated with the heavy-duty truck segment. The Board of Public Utilities should give serious consideration to devoting societal benefit charge money to providing the same kinds of incentives that were given to the solar industry. And by doing so, you can launch the heavy-duty electric truck industry in this state. It's called the societal benefit charge, we're rapidly approaching the point where I think it's going to have to be named the societal survival charge, because that's really what we're looking at here. We've all seen what's happening around the world. As they say, every day you turn on the news and it's the book of revelations.

So, the Board should not just see the societal benefit charge in a limited way. It should use that and its rate-making base abilities and the tariffs to bring on what is necessary to end diesel pollution, the asthma problems, the autism problems, everything else, as quickly as possible.

My final comment is, with regard to the rate-making, I think it's been said a couple of times that all the utilities should be able to rate

base the infrastructure improvements from the pole to the fence line. I think you have to go further than that. I think you have to let the utility rate base the infrastructure improvements not only from the pole to the fence line, but right to the charger. You're looking at commercial fleet operators are looking at enormous loss to electrify their fleet. It's a close call. But if they then have the added infrastructure costs on top of it, a decision may go the wrong way. I think it's probably within the Board's ability, and certainly the right thing to do, to let them rate base the upgraded infrastructure costs on both sides of the fence line -- you're talking about charging fleets of ten, twenty, thirty, a hundred commercial trucks. Fleet owners will do it, but they're going to need some support from the utility in terms of a rate basing on these infrastructure costs.

We will deliver more specific remarks about the utility and the tariffs, and what's necessary to mobilize the heavy-duty commercial fleet sector. I thank the committee for its attention today. And, we look forward to working with you.

MR. HORNSBY: Thank you, Mr. Sherman.

Now Jeanne Fox from Columbia. Followed by Benjamin Mandel, and Janna Chernetz.

MS. FOX: Thank you for having this long-winded board meeting. I'm very happy that the Board and the state under Governor Murphy's leadership is going along in the direction that they should be heading. I just have some very brief remarks. I'm just going to go and just list this all -- and I'm not working for anybody or getting paid from anybody on this, regarding this. It's very important to me. I've been 24 years with the BPU, and environmental agencies in between.

So, this is a good process. There's a lot of information, the major role of the Energy Management Plan, which is chaired by the Board of Public Utilities's president, is really -- it's important to have all the other agencies active in this.

When we did the Energy Master Plan in '08, it was a good plan. DEP helped out with it, and that -- Jackson; however, I can honestly say the Department of Transportation did not participate. Did not want to participate in it. DOT has to do their job, and they have to do it now. I'm tired of the DOT -- you build great

roads and great plans, but with all honesty, you got to get on the stick with this stuff. Where 42, 44 percent of our carbon emissions are now coming from transportation, twenty plus from energy. It's not the BPU's responsibility, it's DOT's responsibility to do their job now. You haven't done it for twenty years regarding carbon emissions. That's what you have to do. So, I would like to ask that the DOT people take a back from the commissioners and the other top people, and tell them they got to get their act together on this stuff.

I just heard -- I don't know if it's true -- that another thousand diesel buses were just ordered by transportation. If that's true, it's an embarrassment. It should not be done. There are other ways to do it. Electric vehicles cost more, sure. But, at least in the urban areas where we have -- as health people all know -- serious problems with asthma. And these numbers have been brought out. That has to be done, and you have to concentrated in the cities where you have people with horrible health problems -- not just asthma, but others -- where they're walking in the streets because they don't have vehicles, we

owe that to our residents in those cities that are impacted by health.

Also the issue of the Port Authority of New York and New Jersey, it's something we should be doing. The port should be spending their resources on this to a large degree. They should have their requirements in place, and there's been talk about that by several people. And because the port is right by Elizabeth and Newark, it really needs to be done, and it is a high priority for the Port Authority of New York/New Jersey, as well as for the Department of Transportation. The fleets that are in cities, the fleets that go into the ports, have to concentrated on the diesel fleets. As you've heard -- and I did environmental for ten years -- diesel is just horrible. The emissions from diesel is the worse. The city should not have any diesel vehicles. The fleets that go into the cities, whether it's Federal Express, the post office, whoever the heck it is, or Amazon with their deliveries. They need to be not diesel fuel. And that has to be a major part of the Energy Master Plan, with a pretty strict time level about how to do that.

And really, it's based on the health

impacts of people, but also it will help -- as some people talked about -- reduce congestion and traffic, wall-to-wall communities, smart growth -- which we saw -- which was done away with under Governor Christie -- smart growth, walkable, bikable communities where the people or many -- made a lot of sense because they don't have to -- and New Jersey has fallen away from that over the last eight or so years.

So, this is a lot of good information here. I'm happy about it in general, took a lot of notes. One of many concerns regulated by working class people and have families working class. There should be as little as possible additional cost to utility ratepayers. The bills are already going up with the nuclear subsidy with the base infrastructure in the state, gas infrastructure from the OREC that they're going to be paying for statewide. As little additional cost to utility customers as possible. I would not take any money from the clean energy funds, because that should be going for energy efficiency, for low-income people, back to abatement that kind of thing. It should not be done for something like this, unless it's in an area that's particular and competition on. We

should have much private investment as possible. And there are ways to do that.

Utilities do have a role, but I think it should be as limited a role as possible. They will go where some competition won't go. So, it might be in some inner cities or other areas. But, competition is very -- and you heard it from the people who participate here -- and put information in. I suggest tax credits, other incentives, that come from other places other than the ratepayers and societal benefit charge -- tax money because the Department of Transportation, that's one of the biggest issues the DOT has in addition to the infrastructure falling apart, because we didn't have money for you guys to fix that. You really need to look at that -- like the Volkswagen money, or whatever. But it really should, again, come as little as possible from other ratepayers.

And then finally. When I came in president of BPU in 2002, there were six solar installations in the state. There are now the Board has counts over 90,000 solar installations in the state. All of those people want storage. Putting the storage together with the batteries that are left over is very doable. People know how

to do it. They're doing it elsewhere in the country. There's a lot of research on that. But also, we started out like sixty percent. We knew, we planned for -- we planned for ratcheting down the rebates, and redevelop the SRECS -- the first in the world to do that -- and SREC only. Now, the Board has to walk away from SRECs to something else because SRECs are paid for by the ratepayers, and it's too much money now. It really should have been ratcheted down five or six years ago.

So, finally -- and, so, you should work from that. Plan out, the incentives go away. So, I look forward to the work that you continue to do. I'm very happy that the other departments are here -- I'm thrilled with that. And then really ask you to take it up to your bosses. Not just you guys who are working hard on this, your staff are working hard. But, also that your bosses know the importance of this. And it's also very important to the Governor. When the Governor was here -- actually it was candidate before the election -- Al Gore came in, and the governor said there were three priorities that he had. One of those three priorities was climate change. Which is why Kathleen Frangioni, the chief policy officer --

she's a climate change expert, she's in charge of all policy. That shows where the Governor is coming from. I also am thrilled you guys are working and the other departments are actually involved in this. And, I want thank you for everything you've done. Thank you.

MR. HORNSBY: Thank you, Jeanne. And we know that Jeanne was co-chair of the Governor's energy and environmental transition report. Appreciate that.

Next up, right now. Benjamin Mandel from CALSTART. Followed by Janna Chernetz, and Tim Evans. Benjamin? No Benjamin? Janna Chernetz? No.

Tim Evans, New Jersey Future? Michael Krauthamer. I don't think he's here. Andy Kern, KVA Power Management. Jonathan Bombardieri. Joanne Pannone. David Edwards. Bill Wolfe. JoAnn Milliken.

MS. MILLIKEN: Right here.

MR. HORNSBY: JoAnn Milliken from the New Jersey Fuel Cell Coalition. Followed by Pat Sonti and Dr. Kuran.

MS. MILLIKEN: Good afternoon. JoAnn Milliken, New Jersey Fuel Cell Coalition. The

Coalition is a group of industry, small business government academic organizations that are engaged in education outreach activities to promote the adoption of hydrogen and fuel cell technologies in an effort to meet the clean energy goals.

Prior to my role with the Coalition, I was with the U.S. Department of Energy designing and directing clean energy programs for 22 years. I'm a New Jersey native. Currently I'm a part-time resident in New Jersey. So, I'm excited at the prospect of helping the state to adopt technologies that I had a hand in developing over the years.

So, previous speakers from Toyota and other organizations have talked about the environmental benefits of fuel cell technology. So, I'm just going to focus on a few other points very briefly. And, then the Coalition will provide written comments to go into more detail and address the discussion points for the EMP.

So, I have four points, that some of them reinforce Toyota's points. First; hydrogen and fuel cell technologies compliment other clean energy technologies. Fuel cell vehicles compliment battery electric vehicles by providing an alternative zero emission vehicle to customers who

desire longer driving ranges and quicker refueling times. I'm one of those customers. I routinely drive once a month from Virginia to New Jersey, and I love seeing the charging stations at the rest stops across the way. But, I'm one of those people who stops for five minutes to use the restroom and need to grab something to eat, and I am not going to hang out there for a half hour while charging my car. So, I prefer a vehicle with longer range and faster refueling.

And, hydrogen production via electrolysis offers opportunities synergy with variable renewable power generation and energy storage. For example, in times of excess electricity production from wind farms. Instead of curtailing the electricity, the excess electricity could be used to produce hydrogen. There are also synergies with chemical industries in New Jersey that use hydrogen, such as product or refining. And then, as previously mentioned, fuel cells offer unique advantages in tri-generation facilities that can provide transportation fuel to fleets, or to the public, and electric power in an industrial facility, for example. So these approaches can reduce the cost of hydrogen fuel cell systems

during a transition and beyond.

Secondly, the Volkswagon Environmental Mitigation Trust provide the timely opportunity for New Jersey to promote for hydrogen fuel systems. Some of these opportunities are documented in an analysis conducted by Brittany Selective Chemical Energy Storage Cluster, which was supported by the small business administration. This analysis indicates that in the near-term, fuel cell vehicles could replace more than 3,000 conventional fleet vehicles and buses, and thereby reducing fuel emissions by roughly 27,00 metric tons, and NOx emissions by approximately ten metric tons. Fuel cells are already powering forklifts in enclosed warehouse spaces, and can also power vessels in port areas as well as work truck, forklifts and other material handling equipment, and they can replace diesel generators for refrigerated containers, short-power portable back-up, stationary power, et cetera, even harbor crafts in the maritime ports. Replacing existing airport support equipment with fuel cell powered equipment, and installing hydrogen supply equipment at the airport and maritime ports should also be explored.

My third point is about the economic

benefits. The analysis that I referred to earlier indicated that New Jersey's hydrogen and fuel cell supply chain contributed to the state's economy in 2016, by providing about 54 million dollars from revenue and investment, more than 228 -- jobs, over 2.7 million in state and local tax revenue, and labor income of approximately 20 million dollars. These supply chain companies are involved manufacturing, parts distribution, industrial gas supply, coding applications, and capital management. So, the hydrogen and fuel cell industry supply chain in New Jersey are poised for growth.

And, finally, my last point is the hydrogen infrastructure issue is challenging. Not from a technical standpoint, but from a business standpoint. The chicken and egg issue that was mentioned earlier. However, much it to be learned about hydrogen stations from California. And a number of analyses have identified approaches that could improve the economic during the build-out of a hydrogen infrastructure.

The New Jersey Fuel Cell Coalition encourages New Jersey to work with the relevant industries to explore business models and policies

that work in the state. And, to consider approaches to collaborating with the USDOE. I want to be clear that I am not speaking for DOE. But, I want to point out that the agency has launched an initiative called Hydrogen at Scale to explore the synergies that I mentioned earlier, develop projects that use those synergies to reduce the cost of hydrogen, and accelerate progress toward the economy scale only to realize the full benefits of hydrogen and fuel cell system. To be successful, regional approaches and state energy programs must be part of that national strategy. I really think that a partnership between state and the federal government here is important for hydrogen infrastructure build-out.

So, I want to thank you for the opportunity to speak here today. And, I look forward to proving additional written comments that go into more detail.

MR. HORNSBY: Thank you, Ms. Milliken. Is Dr. Kuran here?

Moving along. Gaylord Olson, you're up. Followed by Horatio Nichols, and Debra Coyle.

MR. OLSON: Hello. Thanks everyone for sticking around. I'd like to address two

points. One being Number 19 on the discussion point list today. But before that, I'd like to go into something that is a little bit more into the Sierra Club activity -- which you had a very brief overview of this morning. But, there is a specific issue relating to electric school buses that the Sierra Club is kind of pursuing, pioneering. And the author of much of this is in the audience today, so you have the opportunity to discuss that with someone more directly involved than I am. Oh, by the way, my name is Gaylord Olson, and I'm here as an individual.

But, going into the electric school bus issue a little bit further. And, this is on the internet currently as Page 3 of the latest Sierra Club newsletter, which is called the Sierran. And, I'll just read you a little bit of it. It relates to the Volkswagen Mitigation Trust. A 2.5 billion dollar fund which is allocating 72 million to New Jersey to reduce the nitrogen oxide emissions in New Jersey. While New Jersey has not yet made any specific commitment on how these funds will be allocated, other states have already used sources to purchase electric school buses. So, more specifically, there is some

activity going on to get this through the New Jersey legislature. And here is the specific verbiage related to it.

"Whereas battery powered school buses do not emit harmful tail pipe emissions, thereby improving local air quality and protecting our children's health by reducing their exposure to harmful air pollutants from boarding and riding the school buses, and whereas over the lifecycle of a school bus these buses cost less to own and operate as diesel or natural gas school buses, thereby saving New Jersey taxpayers money, and whereas electric school buses will contribute to the reduction of greenhouse gas emissions, especially if there sufficient renewable energy to charge them. Therefore, the New Jersey Chapter of the Sierra Club strongly supports Senate Bill S2436 and Senate Bill 83830 calling for a trial electric school bus program to be funded by monies from the Board of Public Utilities' societal benefits charge, the VW Mitigation Trust Fund, and/or other available funds".

Now, in the bills it's currently limited to ten million dollars. But that's probably just a drop in the bucket compared to what

could or should really be done to go forward with electric school buses. And, you heard some of the reasons earlier today beyond what I'm saying here now. So, a little thing you all can think about that and try to get this incorporated with as much funding as possible. Because it's really the right the direction to go.

The other issue I'd like to bring up is related to Discussion Point 19 in our list of discussion points. And to refresh your memory, what it says is "how can clean transportation systems assist in ensuring enhanced energy security, reliability, and resiliency?" And, I'll just give you my personal experience with how it relates to transportation. And it should give anybody who does not already own a hybrid vehicle or a plug-in electric vehicle to strongly consider purchasing one.

Prior to Hurricane Sandy, our home was periodically flooded because when the electricity got turned off we had a failure of the sump pump. And, so, the basement was flooded. But prior to Hurricane Sandy, my son and I decided to change the situation. And we happened to have an automobile which was a Toyota Prius -- it's an older model

purchased in 2005. So, we drove over to Harbor Freight here on Roland Avenue in Trenton, and we purchased for $140.00 a 2000 watt power inverter, which converts to twelve volt battery supply in the Prius to 110 volts AC, which would power our house. Sump pumps and everything. And, it turned out it worked quite well. So, we have this permanently installed in the back of our car. And during Hurricane Sandy we had power all the way through. The nice part is, the Prius is smart enough so that the engine turns off most of the time. The energy will periodically turn on to replenish the TRex battery. The TRex batter replenishes the 12 volt battery that supplies power to the house. And, so, it worked quite well, and we were happy with it. It's nice and quiet. This probably will work with many other hybrid and plug-in vehicles. And if you go to internet and type in "power inverter" and the name of your care -- be it Prius or Voltz or -- I'm not sure about Tesla -- but I know that Prius and Voltz have products that are now commercially available. So, you don't even have to do it yourself like we did. But, it works quite well. And, it just sits there and it doesn't bother anything. So I recommend it highly to

incentivize anybody who is on the borderline to not buy a gasoline engine car. Buy a hybrid or a plug-in hybrid, and look into the emergency supply of electricity for your home from your car.

Anyway, thank you for listening. And I hope it provides a positive direction.

MR. HORNSBY: Thank you, Mr. Olson. Next up, Horatio Nichols from Faith Action. Debra Coyle. Next speaker we have lined up is Ashley-Lynn Chrzaszcz.

And If anyone else wants to speak, please give me your card or your name.

MS. CHRZASZCZ: Hello, my name is Ashley-Lynn Chrzaszcz. Most of you may recognize me since I usually speak as a representative Charge EVC. But today I speak as an individual. I speak as myself. Other members of Charge EVC have already spoken. But, I feel the need to voice where I come from and what I've seen. This is something that I am extremely passionate about.

By way of background. I hold a Bachelors of sustainability sciences from Montclair State University. And, I also hold a masters of sustainability sciences also from Montclair State University. I was an intern between the Office of

Economic Analysis and the Division of Air Quality -- I believe it's still called that -- back in 2015. I performed preliminary analysis of the impacts of non-attainment of the ozone in the State of New Jersey. Peg, it is good to see you hear. There's other individuals that I've seen around the room in various other proceedings. I've presented for the New Jersey Clean Air Council. I presented for other organization, and -- obtained by Bachelors. I've been involved in the air quality -- and the many ways that the solution can be found back since I was in high school. This is something that I am extremely passionate about. I've performed analyses for PSE&G, instituted for sustainability sciences, and was one of the pioneering graduate assistants that started the program at Montclair State University. And I've worked with various individuals. So from the public sector and from the private sector, I've seen the various ways that sustainability can be achieved.

As such, in the way of electric vehicles, there's a few comments that I wanted to make. Those that say it cannot be done, are usually interrupted by the ones already doing it.

You have individuals in Europe who are proving in various studies that electric vehicles are as highly utilized in those different countries. There are different countries that have banned internal combustion and diesel vehicles. In countries like Sweden and France electric vehicle sales are up forty percent month-to-month and sometimes year over year. In countries like India and China, you can see the massive electrification of transportation. And as such, I feel that it's very important that people recognize that electrifying transit is one of the most impactful things that we can do as a state.

I think New Jersey residents -- I was born and raised here, and as somebody who has been attempting to keep in touch with everybody that I ever worked with, I've seen the many perspectives that exist, and truly believe that the electrification of this transportation is the way to go. I recognize that it's a very difficult path to walk, and that there is no one answer. But I just wanted to make my comments known that at the end of the day, having each and every one of you sitting at this table with so much to give a young person, because we do inherently learn from our

ancestors, we -- from our children. And that to me, those are my children, my grandchildren that I will have one day. And wanted everyone to know that I appreciate all the work that you go through. So, thank you.

MR. HORNSBY: Thank you Ms. Chrzaszcz. The floor is open, does anyone else wish to speak?

MR. BEREN: Thank you for the opportunity. My name is Bill Beren. I wasn't planning on speaking here today. I came to listen. I was recently appointed chairman of the transportation committee for the Sierra Club, and have had two other representatives. But, I wanted to point out that many years ago I worked for the Department of Energy in New Jersey, BPU, back in the original days 1974, I think -- '74 to '78 -- to '83. And, I was responsible for developing the industrial and residential energy conservation plans. And while a lot of progress has been made in the ensuing forty years, it's discouraging to hear again, at meetings like this, the same topics being discussed. And, I just wanted to point out that in addition to developing an Energy Master Plan, the real focus has to be on implementation. And, we can't let another forty years go to waste.

Thank you.

MR. HORNSBY: Thank you, Mr. Beren. Does anyone else wish to speak? Seeing none, I'll turn it back to Noreen.

MS. GIBLIN: I just wanted to thank everybody here for coming today and participating in the process. We appreciate your feedback.

Just wanted to go over a few things before everyone leaves. We have two additional meetings on the Energy Master Plan. We have one on Monday, September 24th. The topic for that session is building a modern grid. The meeting will take place at Mercer County Community College in the conference center starting at ten a.m. And, our next meeting will be on sustainable and resilient infrastructure on Friday, September 28th, starting at ten a.m. That meeting will also be held at the Mercer County Community College, conference center.

I just wanted to remind everybody that the comment period -- if you wish to provide any written feedback -- the commentary on the rules ends on October 12th at five p.m. And, I just want to reiterate, the timeline, the Governor's timeline on the Energy Master Plan. So, at the conclusion of our stakeholder meetings -- our last

one is in a week from tomorrow -- we're then going to have a period time where we have to take all of your comments and prepare a draft. Sometime in the spring we will be back again to listen to public comments on the draft document, with goal to the deliver the final plan to the Governor in June of 2019. All of that information is also on our website. And, I'll just repeat the website for folks that haven't already subscribed -- you're certainly welcome to do so. And that website is www.nj.gov/emp/get.

And, that concludes our hearing today. Thank you everyone.

MR. HORNSBY: Thanks everybody.

(Whereupon the proceedings were concluded at 3:00 p.m.)

C E R T I F I C A T E

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

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

Notary Public of the State of New Jersey
My Commission expires November 14, 2021

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