Comments to the NJ Board of Public Utilities (NJBPU) to Support Development of the 2019 N.J. Energy Master Plan (EMP)

Camden, New Jersey

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I am Matt Polsky; no particular formal affiliation today other than long time sustainability change-agent in state and local government, business, academia, environmental groups, and as a citizen. I came here today from Warren County. I will be discussing climate change, a clear theme within the stated direction of the EMP. I will, though, be going way beyond just its presence there to speak to you and your audience about this subject, offering both the cutting edge and the mundane. After 40 years, this will likely be the last time I speak at a public forum or to a state body about a New Jersey issue.

You may have caught the release of the latest UNIPPC report earlier this week. That report, called Global Warming of 1.5 degrees Celsius (IPPC 2018), found that some of the intense damage of droughts, floods, and everything that goes with that, anticipated to occur at 2 degrees Celsius above preindustrial levels, will occur at this lower concentration, and earlier, by 2040.

It mentions the term “transformation,” saying “avoiding the damage requires transforming the world economy at a speed and scale that has ‘no documented historic precedent” “within just a few years (Davenport 2018A).” I’ll mention that term a little later. But a major implication is that we’re going to have to extend our reach, the required speed of getting there, and fundamentally question business-as-usual assumptions which usually justify seeking much smaller, incremental levels of change.

The report says levels of greenhouse gas emissions would have to drop to zero by 2050 (which sounds to me like a close cousin of New Jersey’s 100% renewable energy goal).

While “affordability” is always rightfully a big concern in energy policy, the report discusses magnitudes of carbon tax than much higher than anyone has ever conceived as one way to reach such a goal (i.e. up to $27,000 a ton by 2100 in one scenario) (Davenport 2018). So even at levels well below that, we’ll probably have to re-think what affordability means, including weighing it against damage to GNP, and coming up with more ways to mitigate and offset the pain they would bring. It should also put any criticism about the size of solar or wind subsidies in perspective.

I have the unique experience of having been involved with climate change in New Jersey for 40 years, including 12 at the New Jersey Department of Environmental Protection (NJDEP), from the end of the Governor Kean-era to the early Governor McGreevy period. I was one of two staffers trying from the inside to get the department interested, before almost anyone in environmental circles cared about the issue. And once DEP started narrowly focused non-ambitious initiatives, I tried to get them to

stretch to do more. Those years provided another set of experiences that need to be passed on, especially as the decades are passing.

I tend to say things no one else does, and will be doing so now. I will be publishing the first of a Series on climate change in New Jersey later this week, under the theme "What is Being Missed." I have been phasing out of New Jersey things in order to study sustainability transformation at the global level for a Ph.D. So that Series will also be my final written contribution.

New Jersey is finally taking climate change seriously. The Murphy Administration has several policy initiatives on or directly related to it, including some with atypically ambitious goals. You of all people certainly know of these, so there is no reason here to mention them. It is refreshing. So "Thank you." However, we must go much further.

What isn't being noticed at several climate change forums held over the years is that we're still missing a lot of opportunities to do more. I have attended many of them. While important information is always presented, both the analyses, recommendations, and even perspectives are invariably incomplete. They emphasize advocacy and activism on voter registration, protesting pipelines, supporting certain bills in the Legislature, advocating certain actions universities could take, like disinvestment from fossil fuel. They identify "bad guy" companies. Certainly these are important, but they do not mention the companies that have stepped up to support staying in the Paris Agreement, which hints at larger possibilities. They do not usually offer other creative ideas, which students of all people really need to hear. They do not say that it will be anything but easy or relatively easy to tackle climate change, or that the usually narrow paths provided will be far from sufficient. Indeed, addressing climate change will likely be the challenge of current students' generation!

These conferences reveal mindset traps that inhibit transformational change, such as we can either do mitigation **or** resiliency. This particularly misleading either/or has gotten better as we now hear more of "both." Another void is that there is no purpose given or recognition of the need to talk to conservatives or Trump voters about addressing climate change. They're not part of the picture; or worse, are seen as unchangeable "deniers." Even though we're now saying we need huge carbon emission reductions, somehow we'll work around the need for behavioral changes from them, as well, to reduce carbon emissions.

At these conferences no one is saying the very blunt: "We **don't know how** to get to 80-100% carbon reductions!" How are we going to figure out the answers if we don't recognize the challenge?

Also, no one at forums is recognizing that climate change is what is called a "Wicked Problem." According to Wikipedia, "a wicked problem is a problem that is difficult or impossible to solve because of incomplete, contradictory, and changing requirements that are often difficult to recognize." The "wicked" part does not mean it is evil; it means

it is “resistant to resolution (Australian Public Service Commission 2007).” Some of a wicked problem’s properties are:

- “…effort to solve one aspect…may reveal or create other problems (Wikipedia 2018A)”
- “time is running out (Levin 2009),” actually making it a “super wicked problem.”

One reason climate change qualifies, at least at the plain wicked problem level, is because it “requires a great number of people to change their mindsets and behaviors… (Wikipedia 2018A).” It also requires “tending to our longer term interests (Lazarus 2009),” something not known to be our strength.

So humility is going to be necessary and it is preferable if the need for it is at least modeled, if not explicit. We’re eventually going to need more comprehensiveness, at least in part because not all current policies will work as planned; much more creativity and innovation, and awareness of when conditions are not truly conducive to that; intergenerational determination; and to be constant learners. This applies no matter what sector we are in, not something we’ve been asked to do before.

We just cannot leave audiences with the impression that the materials covered at any particular conference are sufficient. Most likely, no one conference could ever be sufficient by itself!

Here are 26 major and less major recommendations for policies and actions, some of which directly apply to the NJBPU and the EMP and others more indirectly. These were developed over 40 years, and nearly all of them are very unique.

Recommendations for Policies and Actions

Recommendation 1: Monitor the Organizational Culture of the Two Most Relevant Agencies

Historically, at DEP, there were shifting rationales offered for, first, not doing anything; and then, framing unambitious initiatives. They may not be totally gone even during the more promising present. This might be true, too, at the BPU. Audiences need to be alerted to look for such things, which can easily be missed.

Over time, at DEP these included:

- an Assistant Commissioner telling us “global warming is not our issue in New Jersey,” although the department did agree to accept federal funding to perform a carbon emissions inventory. This became useful years later
- we can take measures to reduce carbon emissions, but only within the government itself, not outside of it
- we can propose measures for the public to take, but only if these measures pay for themselves economically
- we can hold a climate change forum at the shore, but staff must say “sea level rise,” not “global warming,” and definitely don’t mention the “retreat” option. That

was a measure offered around that time by a Rutgers geologist who said it was inevitable that people would have to move away from parts of the shore (Even an environmentalists' climate change forum last year, held with local citizens who had and were still suffering from Sandy, was cautious about implying "retreat")
- we can set a policy goal of 3½ per cent below our inventoried historical 1990 levels (the justification being it was half of the then-Kyoto goal, a kind of compromise that was actually state of the art for a State at that time).

After leaving the department, but checking back occasionally:

- when we finally gotten bold (temporarily, it turned out) with the passage of the Global Warming Response Act (GWRA), and its call for an 80% reduction in carbon emissions by 2050, the next Administration never mentioned it, staff said they couldn't talk about it, and the department's Scientific Advisory Board (SAB) had a dedicated hearing on climate change at which no one mentioned the GWRA, until I did. At that point, with the exception of one member, the SAB said they had never heard of it and requested more information about it. So much for the passing of a bold law being the be-all-and-end-all (something still assumed today at some conferences).

We can't be sure internal cultural constraints are entirely gone. A meta-lesson from that time are the artificially of the internally defined management constraints on ambition. Even their lifting, sometimes but not always in the right direction, show how superficial and arbitrary they were. That could be instructive going forward even during the more progressive era we're now in.

Recommendation 2: Set an explicit goal of Zero Greenhouse Gas Emissions by 2050 or Soon Afterwards

This could be on a "net" zero basis as long as sequestration (see below) and trading are legitimate and safe.

Recommendation 3: Seek a Green Economy on Steroids

While certainly the concept of "green" or clean jobs is often heard at these forums, with their obvious benefits to both the environment and the economy, it is possible to take this much further over time, nearly economy-wide. It could go beyond solar, wind, efficiency to nearly every sector, and to most companies. This has never been done, and the topic of a much-extended green economy never comes up.

A report was issued by my Ramapo College class earlier this year that covers much of the ground for how this could be done in New Jersey. At 123 pages and over 40 recommendations (Polsky 2018A), there is no need to discuss it at length here. It is directly related to climate change, as the major goal is to develop creative new ways to address severe environmental problems. In part, this would be through New Jersey companies buying clean power and adopting zero carbon emission goals.

The report has sections on a number of topics rarely discussed in New Jersey, either at forums or elsewhere, such as “B” Corps, social entrepreneurship, quite a bit on the potential of corporate social responsibility and the Triple Bottom Line, green design, regeneration, ecosystem services, the circular economy, the presence of a relatively new green business alliance built around environmental protection and supportive of pro-climate change policies. It discusses a philosophy, ecological modernization, which brings together the economy and the environment, productively, totally different from the adversarial nature of how the federal government sees them.

It also traces the history of earlier attempts in New Jersey along more limited lines, and how these were given up on. A major recommendation is to start by building on some remaining solid, but very modest, existing state sustainable business initiatives, but adding vision to what they can accomplish.

However, based on a just-announced several-part economic development plan for the state, while covering some welcome aspects of social equity, focusing on innovation, and the state partnering with venture capital firms to promote new businesses, it says nothing about any of the above (Corasaniti 2018). So it appears the “Green Economy on Steroids” vision is currently not in our future.

This report was sent to high levels within State Government in June, including to the BPU President and one Commissioner, but I have not received an official response from anyone. It should still be closely considered by State Government and others.

<u>Recommendation 4: Follow California More Consistently</u>

New Jersey has joined California at times, the state leader in accelerating its climate change policies, the direct opposite of the federal direction. However, New Jersey should go further than doing that from time to time, such as with their Clean Car standards or “bolstering the sale of zero-emission vehicles (Johnson 2018).” As long as Governor Brown is in office, and if, hopefully, his successor follows the same direction, it should be a rebuttable presumption that New Jersey will automatically strongly consider any new, relevant California policy and, if appropriate after a review, replicate it here. This includes the latter’s international presence, which at one time New Jersey had, including in the climate change area. Another is their consideration of amending their cap-&-trade program to allow for protection of tropical rainforests, as long as protection measures are legitimate (Oppenheimer and Schwarzman 2018). And certainly endorse the Paris Climate Change Agreement, as recommended by Rutgers Climate Institute (Rutgers Climate Institute 2018).

The attention to other states’ leadership should also include, at a lower level, New York and Massachusetts.

However, while New Jersey should certainly support California if their ability to set environmental standards tougher than federal standards is threatened, as it appears it will be, we should be selective with our active political opposition. Take the big or necessary fights, by our Attorney General and state political figures, but don't seek to make it routine or it risks becoming distracting to our own efforts, as well as making it even more difficult to bring in conservatives.

Recommendation 5: Don't Give Up on Contributions from Conservatives and Trump Voters and Don't Be Overly "Political"

As mentioned above, conferences ignore the potential contributions from conservatives and Trump Voters, while not infrequently criticizing the President's climate change policies. While the latter is understandable, it makes the challenging task of persuading conservatives to pick up on the need to address climate change even more difficult.

(The topic has come up at only one forum in the nine years I have been living in Warren County. Even local environmental groups don't talk about it. Predictions that Hurricane Sandy would make such discussions much easier proved to be wrong.)

Still it is not as impossible as it often is made out to be. Boven and Sherman found through two surveys that "most Republicans agreed that climate change is happening, threatens humans and is caused by human activity—and that reducing carbon emissions would mitigate the problem." They state: "…most Republicans were in basic agreement with most Democrats and independents on this issue (Boven and Sherman 2018)."

What is stopping them, as is now being increasingly recognized, is the tribalism of our times, and not "wanting to break ranks." They quote Bob Inglis, a Republican former Congressman, who turned around on climate change from anti to very pro: "All I knew was that Al Gore was for it, and therefore I was against it (Boven and Sherman 2018)."

Feeding the tribal dynamic only makes such conversions harder, so we should try not to do so unnecessarily--which does not mean (as it has sometimes been interpreted) neglecting the "Get Out and Vote" argument. Nor does it contradict, as Sobin-Rosen urged in a letter to The New York Times: "that every candidate," "in every election," "be asked about global warming (Sobin-Rosen 2018)."

But what we haven't seemed to realize if climate change is as urgent as we think it is, we're going to need major carbon emission reductions from Trump voters, as well. They shouldn't get a bye, so we should try to pursue these.

In an article I wrote (Polsky 2017), I discussed several ways some have tried to approach conservatives and Trump voters with some success, including joint field trips;

the solar jobs argument; bi-partisan policy development, both at the regional level on flood control; and at the Congressional level, the Carbon Dividend (see below).

Recommendation 6: Become Acquainted with and Follow the Transformation Field
How do we encourage, catalyze, at least quasi-plan big societal change, such as the one we're going to need to address climate change? But "transform" is not just a verb. There is a European-oriented field which studies it, as well a closely related also European-oriented field called Transition. As mentioned in some other Comments, New Jersey could benefit from more international contacts.

A few of these fields' concepts are:

- use of pilots to encourage super-innovative ideas. It is good that the BPU's Guidelines for the EMP ask about pilots. So, yes, BPU staff should encourage and participate in these. It should try to shield these as much as possible from unnecessary and counter-productive regulations and practices. When successful pilots are ready, BPU should facilitate their introduction and acceleration into mainstream circles
- resistance to big change from existing players. So if Tesler still wants to distribute its electric vehicles in New Jersey without the use of dealers, let it compete that way. In the past, they were prevented from doing so
- studying historical or current cases of transformation.

Relatedly, the Transformation field sometimes looks at Germany's electric utility restructuring initiative, called the Energiewende. This is an explicit, very unique, extremely bold, and unusually mainstream initiative to move the country out of both coal and nuclear. It is highly controversial, with strong arguments both for its success and failures.

For instance, regarding the former, renewables generation has increased significantly in a not overly-sunny country (making up 32% of consumption in 2016). The country has shown that, with ingenuity, it is possible, so far, to handle the intermittent energy from renewables. Reliability has been maintained.

On the other hand, both energy surcharges to support the feed-in tariff to generators of solar power are high (e.g. it rose by 50% between 2016 and 2007) and, as expected, are not universally accepted. Political battles about the value of the initiative and its costs continue, and the country, like many others, still struggles to meet their carbon reduction goals. They also might have "to pay big sums to the utilities to close (nuclear and coal) plants early…"

It is also prompting a major re-structuring of the conventional electric utility industry, but it looks like at least some companies have been able to evolve and adjust to a new role (Ball 2017).

The Governor may be somewhat familiar with the Energiewende from his time as U.S. Ambassador to Germany, and its use of prosumers—part electric energy producers/part consumer, and their role in helping drive this transformation.

In so many aspects then, Germany's experience as a leader is worth studying. Explore both sides of the policy, especially as it adjusts to new economic, technological, and political challenges, and seek to bring back from it both what is working and relevant, as well as the applicable lessons learned from the adjustments it has or will make.

Recommendation 7: Less Known Aspects of Efficiency: Keep an Open Mind About the Jevons Paradox and Seek to Address it Where it is Valid

While the state's attention now to energy efficiency is welcome, one can ask what took us so long? Amory Lovins' classic, contrarian article, "Energy Strategy: The Road Not Taken" in Foreign Affairs was written in 1976. Our response time to new ideas has to be much better than that.

A possible negative aspect of efficiency, though, has to be faced and addressed. The Jevons Paradox is the social science finding that, at times, certain measures or technological progress that improve efficiency, and the promotion of these, lead to blowback, also called "The Rebound Effect." That is, for reasons of saving money or unanticipated behavioral actions by people, overall energy use actually increases. Academics would call this a non-linear property (Wikipedia 2018B).

These can include, with cars, improving gas mileage so much that the consumer decides to buy a car with a more powerful, and gas-consuming engine; or with refrigerators, after buying a new, more energy-efficient model, deciding to move the older, inefficient one to the basement to store beer instead of, as what would have been assumed, discarding it.

It is unclear how extensive or serious this problem really is, and academics and others who have studied it disagree. But where it is found to exist, educational or policy measures might be able to reduce or eliminate it—preserving the benefits of efficiency.

A problem is that this subject almost never comes up. When it did once, most had appeared never to have heard of it. One respondent liked it as it would result in selling more energy to his customers; while another cited one article that criticized the Paradox, which actually offered only partial refutation, and was not interested in taking the debate further.

As energy efficiency is so important, which we're finally realizing, the existence or not of the Paradox is too important to let pre-existing interests dominate its assessment. So be open to the arguments on both sides.

Recommendation 8: Take Customer Concerns and Stakeholder Input Seriously and Define Its Success on Their Terms, not on Whether an Existing Policy or Process is Being Met

This has a number of elements, and cuts across a number of relevant departments to meeting the climate change challenge, not just BPU.

I input to three prior EMP cycles and an older Ramapo College class I taught had a term project to comment on a fourth. We never heard back on how our comments were received, or whether any of our ideas were implemented.

The same was true for the recommendations of a BPU Education Committee I was on.

Which begs the questions: What happens to stakeholders' ideas, and how does the BPU decide on their fate? It would be nice to know, including for stakeholders to decide whether it is worthwhile to continue to provide comments.

When a couple of times I wrote to New Jersey Transit about my disagreements with their policies, which I felt neglected valid customer concerns, I either never got a response or was told they had to "follow policy." Their lack of listening and responsiveness showed they don't really understand customer service. If this is happening at any larger scale, the result could be less-than-otherwise use of their trains, and that much more unnecessary greenhouse gas emissions.

They need to understand, and build their culture and practice, around: "The customer is the customer."

Recommendation 9: Encourage Many More New Jersey Municipalities to Pursue the "Gold Star" Standard in Energy from Sustainable Jersey

More municipalities need to take the next steps beyond "Bronze" and "Silver" Certification by Sustainable Jersey, and consider the much more ambitious—and needed—levels of carbon-reducing activities involved at the "Gold" level. This standard is explicitly linked to the 80% reduction target of the GWRA. Gold Standard municipalities are expected to reduce carbon emissions from their own operations by 3.6% each year, while businesses and residents in their towns, less under their control, would have to reduce them by 1% per year.

This will not be easy for any municipality, but they should be encouraged to try. If successful, this would open up an almost entirely new front (Sustainable Jersey n.d.).

Sustainable Jersey should integrate their “Gold Standard” activities with an evolving set of activities in their “Green Business Recognition” and “Green Jobs/Economic Development” areas.

Recommendation 10: Unless it is Already Known, Use Market Surveys to Determine Why People Don’t Use More BPU programs

If owners of homes or buildings have a formal energy audit, but don’t follow through with implementing it, does the agency know why? What factors are stopping them?

Same thing with solar or any other relevant program. I recently had to wait 7 months after receiving and accepting a proposal for a solar system, and biting the bullet on accepting the need to have a few trees removed, to try to find a reliable tree company to give a reasonable estimate and actually come on-site when promised. We went through several of them and still haven’t found one. This wasn’t anything I anticipated as I had assumed this was the easy part of the process. In part for this reason, this solar transaction now may never happen.

Having this understanding should facilitate BPU’s understanding of how to address unexpected issues blocking use of renewable energy and efficiency programs.

Recommendation 11: Adjust the State’s Estimates of Carbon Inventories to Count Emissions from Products Manufactured Outside of the U.S. that are Imported to New Jersey

Inventories are, of course, necessary to track our progress, or lack of it, towards goals. So while they should be as accurate as possible, there is the definitional issue of which emissions to track. Currently and conventionally, emissions estimates only count in-state emissions.

Arguably, if New Jersey uses products made from outside the country, we ought to count them as part of ours—or, if not, at least track them in a separate account. Otherwise, while it might make our performance look worse (the country’s emissions level would be 14% larger if it did that), we are vulnerable to the response to any claim we make of “progress” that we have simply “exported” our pollution somewhere else (Plumer 2018).

Recommendation 12: Start to Bring Bicycling to European Standards

There is so much that could be done to encourage not only a bit more bicycling—but a lot more. Mass biking in certain European cities like Rotterdam almost has to be seen to actually be able to process how many people, of many ages, for a number of purposes—just bike to get from here to there.

They have much to teach us about how to encourage it, and safely (Mohn 2018) with innovative physical infrastructure, culture, serious education, and multi-modal accommodation.

Even New York City has shown a partial transformation over a fairly short period of time on what can be done to encourage bicycling, although they still need to improve safety.

Just making people aware of what is really possible could go a long way.

Recommendation 13: Take Education Seriously. Explore and Take More Advantage of the Relatively Untapped Fields of Social Marketing, Behavior Science, Behavioral Economics, and Climate Communications

Consistent with lifelong learning and an attitude of humbleness, take education, both narrowly and broadly defined, seriously. Some of the ways to do this involve becoming more familiar with, and better utilizing subfields within marketing, communications, psychology; as well as utilize certain themes and practices.

Keep up with, and take the best from, the evolving climate communications field.

Also, consider utilizing more of the social marketing field, which focuses on "changing…how people behave" "for the benefit of individuals and society as a whole (NSMC n.d.)." A BPU education committee I was once on recommended this a couple of Plan cycles ago.

At a September forum on "Green Restaurants," although speaking more of recycling than climate change, the mayor of Princeton discussed their "behavior science-motivation" strategy. They do such things as favor "opt-out" strategies, rather than opt-in, to improve participation; conduct "empathy interviews;" practice segmentation, with different strategies for each segment; and consider "what can go wrong," before implementing strategies, a major component of social marketing.

STEM needs to continue to expand into the humanities as it has begun to.

Experiment with the argument that New Jersians through their carbon emissions are partially responsible for the plight of drowning Pacific Islands, who have done nothing to us. Perhaps that knowledge, which might be new to many people, could catalyze more support for actions to address climate change.

Be aware of when people find key concepts confusing, such as SRECs, the pros and cons of bioenergy, and composting versus biodigestors; and try to clarify these. Check to see whether the better explanations are working.

The farming community needs to become engaged on this issue, and the NJDOA needs to become involved.

Pick a key theme for an education/communications theme each year; such as leaf blowers, vampire energy drain, or some obstacle revealed by the market research discussed above.

Recommendation 14: Develop a Payment for Ecosystem Services System

Payment for Ecosystem Services (PES) is based on the idea that, as increasingly recognized, nature provides us with a host of free services, such as pollination by bees, the breakdown of toxins and purification of water by soils, oxygen generation and carbon sequestration by trees, and many others, these ought to be protected. What's more, as they are usually free, they're bound to be over-used and under-funded. They're also essential, both to our survival and even to our economy. To facilitate their protection, those who benefit from these services ought to pay something for them. That money could then go towards their preservation.

There are a host of practical challenges to be resolved in order to do this. Artigas addressed some of them and developed some calculations about how such a system could work in The Meadowlands. It would provide a revenue source for preserving this this area, which could better compete against alternative uses that would degrade the ecosystem services it provides.

He calculated that while most carbon entering into the peat of the Meadowlands would eventually leak out, 22% remained. So that is what we would have to work with, the economic benefit of which would increase as the value of carbon credits increase. That would further increase the economic value of keeping the Meadowlands as wetlands.

He says that "there is little doubt in my mind that in the long term we will need to involve financial markets to regulate carbon emissions (Artigas 2018)."

This idea could be applied more broadly to other environmental assets in New Jersey, starting perhaps by working them into New Jersey's carbon trading system, as well as bringing the idea to the other participating northeast states in RGGI. Polluters could buy carbon credits, the money for which would be used to protect wetlands and other carbon-sequestering natural systems.

Recommendation 15: Develop and Utilize Accounting of the Social Costs/Externalities of Carbon Emissions as Support for Subsidies for Renewables

As also recommended in the Rutgers Climate Institute report, we need to know the approximate social costs of carbon and begin to use them in public policy-making (Rutgers Climate Institute 2018). As discussed in introductory economics classes at least briefly, and sustainability courses more frequently, conventional energy "costs"

and “prices” are misleading as they leave out pollution and other damages imposed on unwilling third parties. The prices for goods are just so powerful in influencing behavior that identifying and overcoming the hidden subsidies for polluting sources will become increasingly necessary. We would also need this if we ever adopt a real carbon tax.

Therefore, we must begin a social process to setting, using, and getting adjusted to much more accurate prices that reflect the actual costs of production, both on the manufacturer and on society. We need pricing which works with us, instead of making the tasks of addressing climate change much more difficult, particularly as we set our emission reduction targets higher.

(Of course, this politically difficult task becomes a bit easier if neighboring states do this at the same time; and even better if the federal government ever did it. But you have to start somewhere.)

It also is a rebuttal to the charge that solar subsidies are too high and unjustified (Shahan 2018), often made in the context of an argument for a “free market.” Shahan urges journalists who write about solar power subsidies to be cognizant of some of these points.

It is also necessary to ensure managers and staff are aware of the concept. A former BPU President was not when I asked about its use.

Recommendation 16: Allow DEP and BPU Staff to Attend Key In-State Events so They Can Keep Learning and Educating Others.

Key government staff need to be in the room when important and relevant ideas are being discussed. They have an important role to play, as both fellow-learners and contributors. Unnecessarily rigid travel guidelines and processes makes this more difficult than it needs to be.

Recommendation 17: Aggregate and Utilize What we Have Learned from Decades of Tree-planting

For years, even before the current concern about climate change, tree-planting has been a popular way for citizens to show their environmental sensitivity as it has so many benefits. The State has encouraged this through education and even giving away free saplings.

However, trees planted don’t necessary thrive. And in the climate change era, it is important to consider both survivability, resilience, sequestration potential, and other characteristics in selecting which species to promote and how to take care of saplings. There might be factors which formerly would not have been applicable.

This accumulation of knowledge should guide state efforts to educate citizens and possibly even the species of saplings distributed.

It is also important to encourage more efforts by municipalities to protect the trees they already have as environmentally concerned citizens often get frustrated at the low priority publicly owned trees get (as well as sometimes privately owned ones) when seen as conflicting with some supposedly higher objective.

Recommendation 18: International Monitoring

Relevant international progress should be monitored and promising ideas brought forth for New Jersey to consider. An ethic should be developed of asking: "What might be happening elsewhere that we don't know about and which could be helpful?"

State employees should also occasionally attend conferences in other countries, visit relevant foreign ministries, as well as host foreign visitors from time to time, and provide input to international policy bodies (as Governor Brown has done).

The major objective is to learn and bring back ideas. Others are to help those with similar challenges in foreign countries learn from New Jersey's progress (or even from our instructive failures), as well as keep an eye on promising business opportunities for the state's green businesses (to then pass on, such as to EDA).

Recommendation 19: Promote More Use of White or Green Roofs

These seem either very cheap to do and/or have secondary environmental benefits. The option to do these needs to be better known and practiced.

Recommendation 20: While Promoting Innovation, Keep an Eye Out for Innovation-Killers

Innovation initiatives are not uncommon and the Governor, as mentioned above, announced a new economic development one last week which included some aspects of social equity.

However innovation has several barriers which can kill it. Some are well known and some are not. These include:

- overly bureaucratic climates and processes
- organizational cultures which are not as open as they think they are
- in an environment that has not accepted or truly understands sustainability, missing the need to integrate conventional profit potential with environmental and social concerns, or to do so in a less-than-meaningful ways
- similarly, not "get," or even be open to social innovation. Initiatives are into technology, which tends to be high-tech, often glamourous, with established financial infrastructure and culture. (My students to this day have typically never

heard of it, even though the social innovation/entrepreneurship field is not so new anymore, with journals and a parallel set of conferences.)
- similarly, little awareness or openness to integrating profit potential with corporate social responsibility (CSR), even within the renewable energy sector, where CSR is assumed by the nature of the product to be sufficient
- not open to innovation that does not look like innovation is supposed to look, even within innovation-touting organizations
- not open to low tech, such as bicycle-powered phone charging, lighting, appliances
- too much emphasis on what is "verifiable and measurable," discouraging ideas with transformative possibilities as they are still too uncertain to meet that standard, or even fit that way of thinking.

Instead, try to develop an ethic within government, as well as elsewhere, as innovation-killers are not unique to them, that asks: "Are we missing something which might be important?" "Who has the beginnings of an idea, even if not-yet-well-developed, we might need to hear?" "Are we inadvertently driving out new ideas and even ways of thinking?"

We could use this kind of ethic within other sectors such as higher education, business, journalism, and by those who administer award programs.

<u>Recommendation 21: Use Art as a Medium to Explore Other Ways to Communicate Aspects of, and Addressing, Climate Change</u>

In New York City, the non-profit, the Human Impacts Institute, has had a series of events, sometimes partnering with the countries of China and Germany, to use various types of art to communicate the threat of climate change.

At their event called "Collaboration Across Borders Salon," speakers and artists discussed some of what art can do (perhaps better than other fields):

- bridge divides
- inspire
- raise consciousness
- demonstrate imagination
- "create sparks we can't see"
- show that "generations before us people worked on this," creating a sense of continuity.

I'm not aware of similar forums in New Jersey. So BPU might want to sponsor one or partner with another group to hold one.

Recommendation 22: Keep an Open Mind About and Encourage Environmentally Benign and Tolerable Forms of Carbon Sequestration

Sequestration can mean a number of things; from tree-planting; to enhancing the soil with compost, cattle dung (under certain circumstances), biochar; to extracting carbon from the air or from industrial processes, and putting the carbon into stable geological formations or reusing it in the same or other industrial processes. Sequestration is even seen by some as covered by geo-engineering. All of this can make it harder to communicate.

It seems unavoidable that at least some of these are going to be necessary—we may not be able to get to 100% reduction of greenhouse gases in time, or even if we can, we may still need lower ambient carbon levels.

As the first set of these are environmentally benign, or better (enhancing the soil is getting more attention recently in farming circles for its favorable properties under certain conditions), we should more proactively encourage them. The Rutgers report recommended “sequestering carbon dioxide through forests, soils, and carbon dioxide removal technologies,” and “restoring natural carbon sinks such as forests and wetlands (Rutgers Climate Institute 2018).”

But perhaps we shouldn’t fully rule out any of them. We may very well need them at some point. Certainly, the latter batch need some special protective measures, and the fear that some have about promoting any sequestration; i.e. “It provides an excuse not to mitigate,” cannot be allowed to happen.

So keep an eye on this overall area and promote at least the first set of them.

Recommendation 23: Make Up for the Unmentioned Loss of Funds for Basic Research in any Eventual Carbon Dividend Policy

The carbon dividend form of a carbon tax is getting strange bedfellow support from both some environmentalists, a few very prominent Republicans, and now even Exxon. Also this past week, one of the two Nobel Prizes in economics went to William Nordhaus for this (Davenport 2018B).

This most prominent feature of this form of it is it would rebate the entire revenue received from payments of the tax back to the public. This component is counted on to overcome the traditional substantial opposition to “tax increases” that was a major part of the reason that carbon taxes, while often seen as the closest thing to a silver bullet to address climate change, has been so politically unfeasible.

However, it has some negatives, which seem to have gone unnoticed. Without revenue, there is no dedicated money to pay government to administer it. So counter-productive

things could happen, and not be noticed or fixed in time, thus damaging the idea. Plus, there is nothing to fund research and development.

To the degree that addressing climate change requires a transformation that will very likely include a need for new technologies. Some of these may be very early in the research process, or even not yet much beyond an idea, not yet candidates for private investment. Their inventors/developers might need some financial support to get them started to the point where they could better compete for private capital. Or it might be pure basic research, with difficult to predict, but possibly widely positively disruptive consequences.

If New Jersey ever does a carbon dividend, something akin to restoring the discarded Kean-era R&D-oriented Science & Technology Commission should be considered to fund investors with worthwhile ideas.

It should be realized, though, from the start, that these would be risky investments, with conventional success never assured. The size and scope of potential pay-offs to addressing climate change would have to be a heavy factor in determining what and with whom to invest these carbon emitting-generated dollars.

Recommendation 24: Prepare for and Begin to Plan for an Era of Climate Refugees
This very likely will be coming, if not during the Trump Administration then in the next one. And as a society, we're at a low point in even being able to talk about immigration. Nevertheless, people living in low-lying, now-perpetually flooding parts of the world are going to need to go somewhere. Some of those people needing to re-locate are New Jersey residents.

So it would say a lot for New Jersey if we can contribute both thought and progressive action on this issue. New Jersey will have to figure out our fair share, and how to do this competently, humanely, fairly, and, of course, where in the state they would go.

One possibility would be those parts of the state concerned about losing their population base, as well as, of course, with the physical and social infrastructure to most easily absorb new residents.

Recommendation 25: Contribute to Evolving Thinking About How to Improve Social Equity and How To Integrate that with other Important Goals
As a society, we need to improve our fairness. It's not always fully clear how to do that, particularly when that appears to conflict with other goals. BPU staff could join with many others to contribute new ideas for this challenge.

Recommendation 26: Figure Out How the Physically and Intellectually Disabled Can Fit Into All This

These groups rarely come up in these type of discussions. This needs to change, too. We will need ideas to start with.

Thank you for giving me the floor, I hope you've found my remarks useful, and good luck with your task.

I still maintain my belief in the value of public service—even now. I hope there are pockets of quiet, or not-so-quiet, change-agents within the management, Board, and staff of BPU; and that you recruit more of them.

References

Artigas, Francisco. (2018, Summer) Turning Carbon into Cash. Hackensack Tidelines. https://www.hackensackriverkeeper.org/wp-content/uploads/2018/08/news_Summer_18.pdf

Australian Public Service Commission. (2007, October 25) Tackling Wicked Problems: A Public Policy Perspective. in Wikipedia. (2018A, September 14) Wicked Problem. https://en.wikipedia.org/wiki/Wicked_problem

Ball, Jeffrey. (2017, March 14). Germany's High-Priced Energy Revolution. Fortune.

http://fortune.com/2017/03/14/germany-renewable-clean-energy-solar/

Boven, Leaf Van and David Sherman. (2018, July 28) Gray Matter: Actually, Republicans Do Believe in Climate Change. The New York Times. https://www.nytimes.com/2018/07/28/opinion/sunday/republicans-climate-

Davenport, Coral. (2018A, October 7) Major Climate Report Describes a Strong Risk of Crisis as Early as 2040. The New York Times. https://www.nytimes.com/2018/10/07/climate/ipcc-climate-report-2040.html

Davenport, Coral. (2018B, October 13) After Nobel in Economics, William Nordhaus Talks About Who's Getting His Pollution-Tax Ideas Right. The New York Times. https://www.nytimes.com/2018/10/13/climate/nordhaus-carbon-tax-interview.html?action=click&module=In%20Other%20News&pgtype=Homepage&action=click&module=News&pgtype=Homepage

Governor Murphy Signs Measures to Advance New Jersey's Clean Energy Economy. (n.d.). Retrieved from https://www.nj.gov/governor/news/news/562018/approved/20180523a_cleanEnergy.shtml

IPPC. (2018, October 8) Global Warming at 1.5 Degrees Celsius. http://www.ipcc.ch/report/sr15/

Johnson, Tom. (2018A April 4). New Jersey to Join Clean Car Initiative, as EPA Eases Fuel-Economy Standards. NJ Spotlight. http://www.njspotlight.com/stories/18/04/03/nj-joins-electric-vehicle-initiative-as-epa-eases-fuel-economy-standards/

Lazarus, Richard (2009, July). Super Wicked Problems and Climate Change: Restraining the Present to Liberate the Future. Cornell Law Review. 94 (5): 1153–1233. in Wikipedia. (2018A, September 14). Wicked Problem. https://en.wikipedia.org/wiki/Wicked_problem

Levin, Kelly; Cashore, Benjamin; Bernstein, Steven; & Auld, Graeme (2012, May 23). Overcoming the Tragedy of Super Wicked Problems: Constraining our Future Selves to Ameliorate Global Climate Change". Policy Sciences. 45 (2): 123–152. doi:10.1007/s11077-012-9151-0. in Wikipedia. (2018A, September 14). Wicked Problem. https://en.wikipedia.org/wiki/Wicked_problem

Mohn, Tanya. (2018, October 5) The Dutch Reach: A No-Tech Way to Save Bicyclists' Lives. The New York Times. https://www.nytimes.com/2018/10/05/smarter-living/the-dutch-reach-save-bicyclists-lives-bicycle-safety-drivers.html

NSMC. (n.d.) What is Social Marketing? https://www.hackensackriverkeeper.org/wp-content/uploads/2018/08/news_Summer_18.pdf

Oppeheimer, Michael and Steve Schwartzman. (2018, August 29) How California Can Save the Amazon. The New York Times. https://www.nytimes.com/2018/08/29/opinion/california-climate-save-amazon.html

Plumer, Brad. (2018, September 4) You've Heard of Outsourced Jobs, but Outsourced Pollution? It's Real, and Tough to Tally Up. The New York Times. https://www.nytimes.com/2018/09/04/climate/outsourcing-carbon-emissions.html

Polsky, Matt; O'Brien, Stephanie; Montgomery, Caitlyn; Eveigan, Christopher; Passmore, Kiernan; Glans, Willem; & Plungis, William. (2018A, June). A Green Economy for New Jersey: A Proposal to the New New Jersey Governor Phil Murphy. Ramapo College. https://www.ramapo.edu/mass/files/2018/06/PolskyA_Green_Economy_for_NJ.pdf

Polsky, Matt. (2018B, July 23). We Can Grow a Robust Green Economy. New Jersey Environment. https://njenvironmentnews.com/2018/07/23/opinion-we-can-grow-a-robust-green-economy/

Polsky, Matt (2017, August 19). Seven Projects with Potential to Talk To the Trump Voter: Part 4. The Medium. https://medium.com/@innovator3/seven-projects-with-potential-to-talk-to-the-trump-voter-part-4-e172ee80f4c

Rittel, Horst W. J.; Webber, Melvin M. (1973) Dilemmas in a General Theory of Planning. Policy Sciences. 4: 155–169. doi:10.1007/bf01405730. Archived from the original (PDF) on September 30 2007. in Wikipedia. (2018A, September 14) Wicked Problem. https://en.wikipedia.org/wiki/Wicked_problem

Rutgers Climate Institute and Georgetown Climate Center. (2017, September) An Examination of Policy Options for Achieving Greenhouse Gas Emissions Reductions in New Jersey. New Brunswick, N.J.

Shahan, Zachary. (2018, August 31) New Jersey Solar Subsidy Stories Miss 4 Steps. Clean Technica. https://cleantechnica.com/2018/08/31/new-jersey-solar-subsidy-stories-miss-4-steps/

Sobin-Rosen, Barbara. (2018, August 24). Make Climate an Election Issue. The New York Times. https://www.nytimes.com/2018/08/24/opinion/letters/climate-election-issue.html

Sustainable Jersey. (n.d.) Overview of a Gold Star Standard in Energy. http://www.sustainablejersey.com/fileadmin/media/Actions_and_Certification/Gold_Star_Standard/Overview_of_Gold_Star_Standard_In_Energy_FINAL_12-4-17_.pdf

Wikipedia. (2018A, September 14). Wicked Problem. https://en.wikipedia.org/wiki/Wicked_problem

Wikipedia. (2018B, August 31). Jevons Paradox. https://en.wikipedia.org/wiki/Jevons_paradox