Mid-Atlantic Solar & Storage Industries Association
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September 13, 2019

Ms. Aida Camacho-Welch
Secretary
and
Energy Master Plan Team
New Jersey Board of Public Utilities
44 South Clinton Avenue
3rd Floor, Suite 314
CN 350
Trenton, New Jersey 08625

Via email

Re: IEP Feedback

Dear Ms. Camacho-Welch and Energy Master Plan Team:

The Mid-Atlantic Solar & Storage Industries Association (MSSIA) is pleased to present these comments in regard to the above-referenced matter.

MSSIA is a trade organization that has represented solar energy companies in New Jersey, Pennsylvania, and Delaware since 1997. During that 22-year period, the organization has spearheaded efforts in the Mid-Atlantic region to make solar energy a major contributor to the region's energy future.

During these 20 years, MSSIA has adopted and followed three fundamental policy principles, which in short can be stated as: (1) Grow solar energy in our states as quickly as practicable; (2) do so at the lowest possible cost to ratepayers, while delivering the greatest possible benefit as a public good; and (3) preserve diversity in the market, including opportunity for Jersey companies to grow and create local jobs (see MSEIA's fundamental policy principles at https://mseia.net/fundamental-principles/).

Our comments regarding the information released so far about the IEP follow:

Lack of Meaningful Stakeholder Engagement

We are sorely disappointed that there was **no** engagement with New Jersey's solar industry association in the planning of IEP process, or the process itself, and we object to that fact.

The third slide in the presentation that was released states,

"Modeling and interpretation has been informed by two workshops, in June and October. The Board of Public Utilities invited stakeholders that represent NJ's diverse interests."
That statement is belied by the fact that even though solar energy plays the largest role of any renewable resource in the IEP's reported path to 2050, MSSIA was not invited, or even informed, of the stakeholder meetings.

In the field of solar energy, people within MSSIA member companies have the direct, on-the-ground knowledge of practitioners of the art, and direct involvement in the economics of the

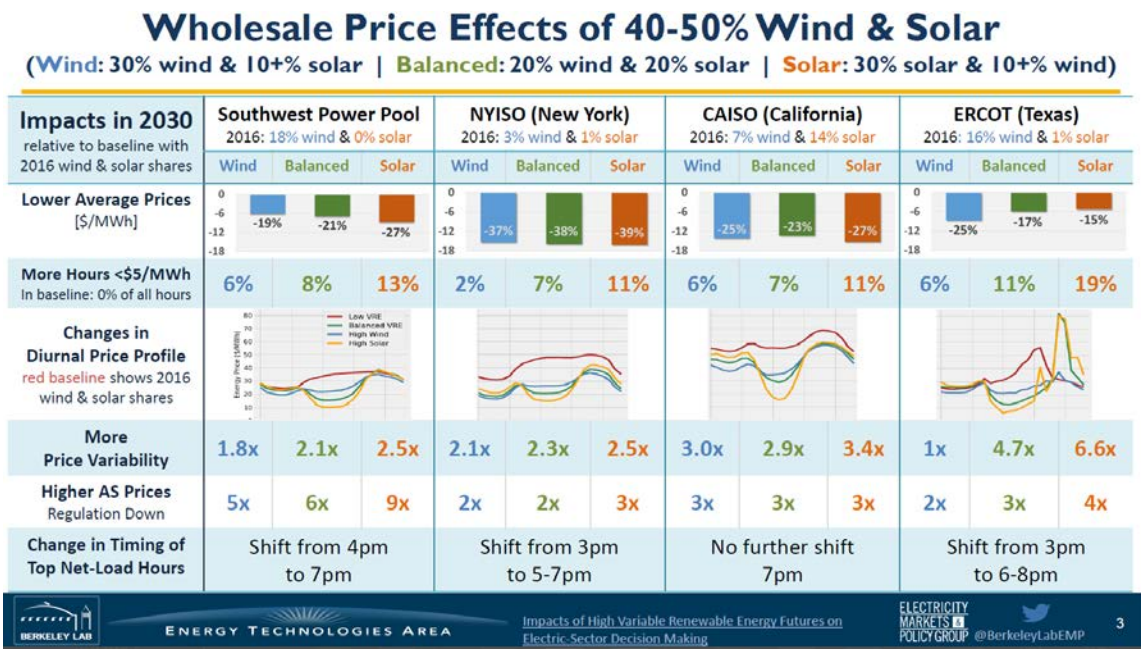
trade. There is no one with greater technical expertise or expertise in cost and economic performance than these professionals. Furthermore, beyond the real-world expertise, MSSIA leaders have been intimately involved in solar industry and academic research into the optimum, low-cost pathways to 100% renewables. Its connections with leading academic experts provide the capability to provide substantial guidance in describing the least-cost path to 80% carbon reduction and 100% renewable electricity. As an example, MSSIA's collaboration with the authors and experts behind the Minnesota Solar Pathways Study, perhaps the most comprehensive study in this field to date, give it access to cutting-edge theories, models, and methodologies addressing the very topic being studied in the IEP. MSSIA stands ready to deploy these resources to enrich the IEP process, but has been ignored and shut out.

Besides just modeling costs (and hopefully benefits, as discussed below), it is extremely urgent that the ***how*** regarding the achievement of 100% renewables be addressed on an accelerated schedule. Improving the delivery of incentives; rationalizing the interplay between renewable energy incentives and energy compensation; addressing infrastructure development issues and the most efficient way to pay for them; and detailing the needed changes in regulation to enable the lowest-cost pathways, are fast becoming issues that threaten soon to confound and delay efforts to deploy renewables in accordance with current law. MSSIA believes it has the ability to contribute to the solutions to these challenges, and urges the EMP Team to make use of its resources in a substantial way.

Economic Benefits of Clean Energy

The presentation reports the costs of the lowest-cost alternative without consideration of the economic benefits of the clean energy economy. The presentation does include a slide showing some of those benefits, but does not include them in the bottom line. Furthermore, important benefits like the economic growth, job creation, and federal funding created by in-state renewable energy, or the wholesale cost reductions stemming from renewable energy's contribution to the electric grid, were not considered at all. The importance of the latter can be seen in the chart below from a USDOE study by Lawrence Berkeley National Laboratory, showing that in NYISO (New York), 40% to 50% wind and solar (mostly solar) by 2030 would drive wholesale electric prices down by 39%.

Fig. 1: Chart from "Impacts of High Variable Renewable Energy Futures on Wholesale Electricity Prices"



Quantification of Renewable Energy Amounts and Costs

Although there is very limited information in the slides presented regarding the IEP, MSSIA has begun analysis to compare the IEP modeling results so far to MSSIA's own modeling. More

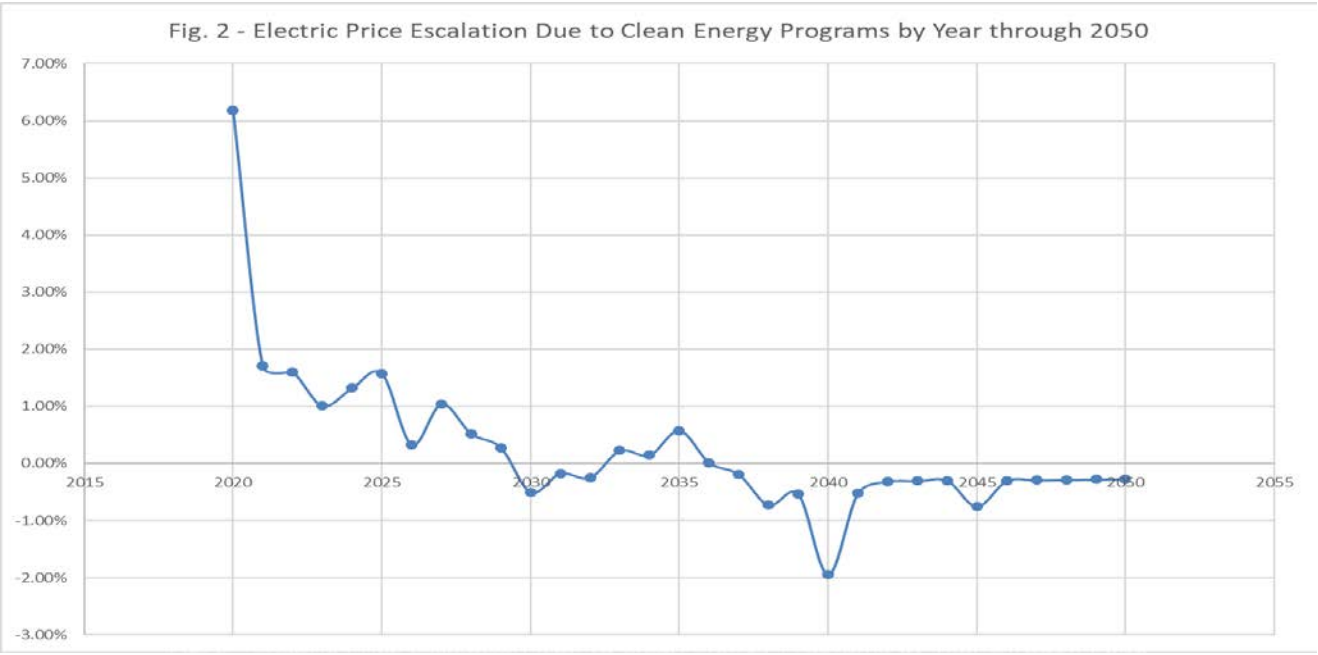
detail is needed regarding the assumptions and methods used in the modeling, but MSSIA offers the following preliminary comments. The comments are informed by four simplified analyses performed by MSSIA:
1. Analysis of the electricity demand created by the deployment of electric vehicles, and total electricity demand (using Federal Highway Administration data and electric vehicle usage, with estimates of efficiency improvement).
2. Rough analysis of the electricity demand created by electrification of residential, commercial, and industrial buildings (using U.S.E.I.A. data, with estimates of efficiency improvement).
3. Analysis of the amount of solar and wind energy required to achieve the solar and wind percentages reported in the presentation.
3. MSSIA's ongoing analysis of the total cost of New Jersey clean energy programs, and related costs, to achieve renewable electricity goals through 2050.

The results show that with strong gains through energy conservation and technological advancement, but also with added usage to to electrification of transportation and buildings, electric usage can be expected to grow from the current ~74 million MWH per year to about 143 million MWH per year. In order for solar power to make the contribution anticipated in the IEP, the pace of solar construction would have to ramp up quickly to the level of about 1,060 MW of construction per year. Offshore wind would have to grow at an average rate of about 485 MW per year.

MSSIA analyzed the costs of clean energy including:

- solar (legacy, transition, and successor programs);
- offshore wind;
- Out of state renewables;
- ZECs (nuclear subsidies);
- Electric vehicle infrastructure;
- Battery storage;
- Storm hardening and resiliency;
- Efficiency and demand-side management programs;
- Grid infrastructure upgrades for high-penetration renewables;

Some these costs caused significant near-term escalation in electric prices, but when some incentive programs sunset, or decrease over time, there will be some years that actually see negative escalation. Below a year-by-year estimate of electric price escalation (only the escalation due to the clean energy measures listed above – not including any escalation due to other factors) is presented.



The average yearly electric price escalation through 2050 that is attributable to clean energy programs is estimated to be about 0.3%.

Miscellaneous comments:

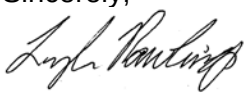
The presentation states that the modeling incorporates costs for the purchase of electric vehicles, contributing to the reported cost of the move to 80% reduction in GHGs. This is unrealistic, since even at this early stage, electric vehicles have already achieved a lower cost of ownership than the typical fossil-fueled vehicle. For instance, a study by Loup Ventures compared the cost of ownership of a Tesla Model 3, a luxury car, with a $24,600 Toyota Camry. The study's findings were that the Tesla Model 3 had a lower total cost of ownership than the Toyota Camry. The cost savings were even greater when the Model 3 was compared to a comparable luxury car.

The average selling price of a car in America is about $37,500. Currently there are several long-range electric vehicles with selling prices well below that. Thus, even before considering cost of ownership over time, those vehicles are cheaper to buy. This trend is likely to accelerate. Therefore, if anything the IEP cost modeling should show a negative cost assumption (e.g., a cost credit) associated with the purchase of electric vehicles.

In the least-cost scenario, diesel fuel is shown as decreasing only to a relatively small extent. This is unnecessarily conservative, considering the recent but rapid development of heavy-duty electric trucks - and the market acceptance of them is already taking off (witness the recent Amazon order for 100,000 electric delivery trucks). If electric trucks make the rapid progress that electric passenger vehicles have, they will soon have a lower cost of ownership than fossil-fueled trucks. In the cost-obsessed world of commercial trucking and delivery, once this happens the switch to electric trucking is likely to be rapid.

We thank you for considering these comments, and look forward to exploring these matters further.

Sincerely,



Lyle K. Rawlings, P.E.
President