Discussion Points

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General

1. For the purposes of the Energy Master Plan (EMP) and reaching Governor Murphy's goal of 100% clean energy usage in New Jersey by 2050, how should clean energy be defined?

Energy sources that have no carbon footprint during their operation are clean energy sources. Examples include Solar, Wind and Hydro power. While nuclear energy has no carbon footprint, it is not environmentally clean and poses a health risk in the event of an accident. However, Nuclear Power is a good transitional source of energy which should be incorporated in the NJ EMP.

2. Should the definition of clean energy contain flexibility between now and 2050 to allow for transitional fuels to be used and phased out over time? What intervening steps should be taken to complete the transition?

Yes. Steps taken to complete the transition include i) long term certainty of carbon goals, ii) periodic review of cost and risk of various generation sources carried out (say every three years) to assess the viability of the transition and iii) mechanisms for disincentivizing carbon fuels.

3. What is the most significant obstacle to getting to 100% clean energy by 2050? How can the state address it?

Most significant obstacle is the intermittency of renewable energy. This can be addressed through a transitional period of phasing out existing dispatchable power and phasing in dispatchable clean energy. During the transition period, the state should incentivise various energy storage solutions to increase in scale and decrease in cost. The state can also incentivise the transition from a load following grid to a generation following grid through smart grid and smart load applications. Infrastructure and solutions for dynamic and real time pricing at the industrial, commercial and consumer level are key to enabling loads to respond to pricing signals.

Transition and Technology

4. How can the State immediately begin to transition to clean energy production and distribution? What intervening steps should be considered to clean existing technology? How should stranded costs be addressed?

1- Streamline the process for renewable generation; siting, permitting, financing ...etc.
2- Make state goals binding to load serving entities
3- Introduce new business models for the regulated utilities to monetize stranded assets. Allow for returns on OpEx that enable distributed generation.

5. How should the state analyze the construction of additional fossil fuel infrastructure during the transition? How can the state plan to accommodate this infrastructure in both its short-term and long-term clean energy goals? What statutory or regulatory changes will be needed for the state to make and implement these determinations?

1- Prioritize modular fossil infrastructure that can be repurposed to other geographies. Power plants have been disassembled and relocated in many places around the world.
2. Consider power ships or barge mounted power plants that are relocatable

6. How should the state invest in and encourage innovative technologies for renewable energy and energy efficiency?

1- The state should have various incentive programs for innovative technologies for renewable energy, energy storage and energy efficiency. Those programs not only reduce our carbon footprint but spur economic development and job creation.
2- Create or fund a green bank
3- Increase support for R&D programs.

State Policy

7. Evaluate existing clean energy policies and programs: where are they most/least effective, and are they aligned with the 100% clean energy by 2050 goal? If not, what modifications can be made, if any?

In general, promote modular, mobile solutions (energy storage, fossil generation ...etc.) that can respond to grid needs and stresses which happen to be seasonal and geographically dynamic.

8. How should the state integrate low use property, such as brownfields and blighted zones, into new clean energy economy development?

9. How should the state address the baseload needs v. intermittent elements of clean energy generation? What is the role of energy storage in the conversion to 100% clean energy?

1- Energy storage is considered the holy grail of the power sector. By bringing down cost and increasing scale of deployment we would unlock renewable energy to become the main source of generation.
2- Energy storage should be supported and incentivized throughout the full value chain from legislation and policy, to R&D and manufacturing all the way to development and

deployment. The complex nature of energy storage (chemistry or otherwise) makes its research, development and manufacturing suited to be localized in the state of New Jersey. Energy storage solutions are technologically intensive and require an ecosystem similar to what New Jersey already has in terms of talent and business in chemistry, electronics, engineering ...etc.
3- Modular and mobile energy storage solutions are advantageous to stationary storage due to their ability to be repurposed to multiple sites over the years. This would increase utilization and enhance the economic returns.

Planning and Zoning

10.How can clean and reliable power support the expansion of clean transportation?

11. Is there a role for communities in local energy planning and, if yes, what should it be? Are there opportunities for public-private partnerships to aide communities undertaking this planning?

12.What portfolio mixtures can the state utilize in achieving its 100% clean energy goal? What can a transition portfolio mixture resemble in 2030 and what portfolio mixtures can the state utilize in 2050?

13.Should changes be made to zoning and planning laws and requirements to allow for the development of clean energy generation?

Clean transportation will experience technological advances including autonomous driving. Special attention need to be paid to avoiding permanent charging infrastructure that might become obsolete in few years. Cars in the future will be able to drive themselves to a charging depot freeing up valuable parking space. Zoning and planning laws should prioritize the development of modular and mobile charging infrastructure. Parking lots in valuable locations will be a relic of the past.

Economic Growth and Workforce Development

14.How should the state address the workforce development needs associated with the transformation to 100% clean energy?

The state should pick a sector and double down on it so that it can grow and have a critical. The sector should be able to compete globally and have sustained differentiation through workforce development and through technical innovation. Solar R&D and manufacturing took root already in other countries and wind manufacturing is well underway in other states. The remaining sector is energy storage. Given its complex nature and high depency on advanced technology it can be the best sector to focus on. New Jersey has a highly trained and educated workforce in chemical engineering, semiconductors, electronics, software engineering, information technology and others. These are the key disciplines in developing the ecosystem.

Additionally, New Jersey has advanced research centers focused on energy storage at various academic institutions including Rutgers and Princeton universities. The state can build on its heritage in battery manufacturing started by Thomas Edison in West Orange in 1903. We propose convening a special committee to examine creating an energy storage sector in the state as one of the pillars of enabling the transition to 100% clean energy. Energy storage is the missing ingredient today due to cost. Innovation is still required to solve this challenge.

15.How can the transition to 100% clean energy grow New Jersey's economy and create new innovative and high paying careers for New Jersey residents?

The transition requires scale and many new skill sets be developed. A major component of the transition is a more dynamic and intelligent grid which is dependent on technological solutions. NJ is well suited to take on a technological challenge given its highly educated workforce.

16.How can the State encourage, require, or otherwise develop a robust supply chain for all clean energy industries?

The state should announce and support the creation of sectors to fulfil the transition to a clean energy economy. This is a multi billion dollar opportunity that should not be left to out of state companies and workforce. We need to localize the workforce that will undertake the transition. That should not be limited to installation jobs that might be low paying and temporary in nature, but go deeper into tech-centric jobs. Start with R&D in sectors that are not well served today; energy storage, smart grid, internet of things ...etc.

Environmental Justice

17.How will the State consider and integrate overburdened communities into clean energy advancements?
18.What efforts are most successful towards making clean energy and energy efficiency measures affordable and accessible to all?
19.How can the state play a role in ensuring that disproportionately impacted communities receive opportunities and benefits connected to the clean energy economy?