

# NJ 2019 EMP Final Draft – Maxwood Solutions Comments

## Maxwood Solutions General Comments

Overall, the EMP plan contains detailed substance for some topics, while completely lacking with others. The most significant lack of consideration within the document is with regard to weather, climate and road conditions common to New Jersey.

## Weather Considerations not addressed or considered within the plan

- EMP cites California six times but does not take into consideration the vast difference in climate, weather, and year-round road conditions between the five highest populated California cities and the five most populated New Jersey cities. In the winter, New Jersey is bombarded with snow and ice storms responsible for frequent power outages across the state.
- Cold weather outages leave home occupants in the dark without heat and without the use of any electric appliance.
- While batteries can be a useful solution in storing or providing back-up power, two items must be taken into consideration
  1. Distribution or Utility Battery Back-up Systems would not prevent a customer outage when overhead power lines are knocked down by wind, ice or fallen trees
  2. Batteries are highly affected by cold weather conditions that tend to create a less-than-normal available charge. This could significantly impact EV and hybrid vehicle operation especially for police and emergency vehicles even with access to rapid charging. Snow removal could also be impacted.

Recommendation: Study the use of EV and Hybrid vehicles with high daily mileage demands for a small number of vehicles over a two year span. Should cold weather or other conditions partially or permanently impede their performance, the state could plan accordingly.

## Strategy 1: Reduce Energy Consumption and Emissions from the Transportation Sector

- Section 1.1 - While the plan seeks to move the public towards EV mostly based on encouragement and motivation as stated in the Executive Summary and within the plan, encouragement and motivation seem to be the only primary methods that are proposed.
- While the plan in Goal 1.1.7 has a provision to provide additional rebates to entice residents of low and moderate income to buy an EV, only one mention of a rebate (page 31) is mentioned to move the rest of the market to buy an EV.

Recommendation: To create incentives, other states have introduced the full-time use of HOV lanes for EVs even for single occupants.

- The plan does not address the issue to remove and replace much older vehicles that either have extremely poor emissions or are low-mileage vehicles.

Solution: Apply stricter emission testing standards for older cars used on a daily basis.

- **Goal 1.1.2: Deploy EV charging infrastructure throughout the state.**
  - Although New Jersey is committed to leveraging a combination of funds from the Volkswagen Settlement Fund (page 30), as of February 2019, of the \$141 million awarded only \$3.2 million has been set aside to build 827 EV charging stations throughout the state.
  - To date, New Jersey has designed EV charging locations based on the geographical density of existing EV's, rather than choosing to expand the range that an EV can travel between charging stations.

- Based upon the EMP target to deploy 330,000 EV on the road by 2025, EV ownership would have to increase by 170 vehicles per day between now and Jan 1, 2025. This would mandate an EV charging station infrastructure throughout the state ahead of this deployment.

## **Strategy 2: Accelerate Deployment of Renewable Energy and Distributed Energy Resources**

- While wind energy is an alternative resource for renewable energy, these common problems have been associated with wind energy.
  - Disruption to flight paths of migratory birds and bats, that could require area monitoring and shutdown (stop rotor) capabilities to prevent rotor strikes.
  - On land, higher incidents of rotor strikes kill common raptors seeking prey. These birds find safe haven at the base of wind generator towers.
  - The inability to operate properly in all wind gusts conditions, especially during harsh weather conditions.
  - Harmonic frequency noise can create damage to equipment if not properly detected or filtered.
- The electric grid is a complicated system that requires a spinning reserve (such as generation) replacement, in order to maintain a stable electric transmission grid system. Solutions to this problem include the installation and the use on the grid of:
  - Alternate fuel generation plants
  - Nuclear Power Generators
  - Synchronous Condensers
  - Other possible stabilization systems

### **Additional Maxwood Solutions Comments:**

- The modeling study will also juxtapose the pathways, costs and benefits of action against the costs of a sub-optimal “business as usual” pathway. The scenarios that result from the modeling study will quantify these differences and help NJBPU prioritize pathways to reach the state’s clean energy goals. (Page 22)
  - This type of study will not account for when the system is operating in extreme conditions
  - This type of study will not account for advancement in microelectronics technology, such as LED lighting, TV, and other devices that will use much less power than today
- The state’s highest energy consumption and largest emissions come from the transportation and building sectors (Page 23).
  - According to Figure 2 above, Electricity Generation is the second highest
  - According to the figure 2 on page 16, Electricity Generation was second to Transportation. Building sectors were not clearly identified. Residential and commercial do not define the energy used for the buildings heating and cooling, and the total amount for the two would still be less than Electricity Generation
- Electrified resources are responsive to load shifting, demand response, and other energy efficiency measures that are necessary to shave peak energy demand, reduce energy consumption, and better utilize the distribution grid.
  - Typically, EV’s are either in use for commuting and other transportation purposes or add load (for end of commute recharging) at the end of business day peak energy demand time

- Existing distribution transformers are not capable of handling multiple cars charging at the same time, and the use of “Smart” transformers is still being developed to handle simultaneous charging of EV’s.
- The **Integrated Energy Plan** study will model a “Reference Case” from 2020 through 2050 in which it **will assume a business-as-usual approach to energy consumption** over the next three decades. ...against the status quo, **including rising consumption...** (Page 25)
  - Continued changes in technology will constantly change energy consumption, so that using a "business-as-usual approach" will underestimate future electric energy requirements as electric power consumption from EV and other migrations take place
- **Providing power back to the grid** (Page 27)
  - Only during periods that EV’s are connected and charged, which typically would be late-evening to early morning and mid to late-morning/early afternoon periods, in which most times of the year are typically non-peak energy demand times