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This document of written comments is being formally submitted by e-mail in response to the Notice on Energy Master Plan Stakeholder Meetings to be conducted via public hearings to gather key information

- Event: New Jersey Energy Master Plan Stakeholder Meetings
- Work Group: **Clean and Reliable Transportation**
- Date: September 20, 2019

Based on the Executive Order No. 28 dated May 23, 2018, the State of New Jersey is preparing the 2019 Energy Master Plan (EMP). New Jersey has already set ambitious goals for renewable transportation fuels and other energy sources to curtail greenhouse gases (GHGs, including CO_2), and other pollutants in the state. In particular, the Bureau of Energy and Sustainability (BES) is working to reduce the state's GHG and criteria air pollutant emissions in transportation by partnering with the DEP, other New Jersey agencies, other states, the U.S. federal government and its different departments and agencies, and other stakeholders to leverage existing resources and attract private sector investment in energy sources. New Jersey aims to facilitate widespread use of low- and zero-emission vehicles, including electric vehicles (EVs) and natural-gas vehicles (NGVs), and with the development of biofuels. BES is working with the New Jersey Clean Cities Coalition and the regional Transportation and Climate Initiative (TCI), together with ten (10) other Northeast and Mid-Atlantic States and the District of Columbia and three (3) State Metropolitan Planning Organizations (MPOs) in furtherance of the goals of the 2015 EMP update. Based on Nexant's experience in EVs, NGVs, biofuels, and overall renewable energy sector, for the tangible benefit of various stakeholders (technology developers, governments, regulators, project sponsors, investors, lenders, insurers, manufacturers, licensors etc.), it is suggested and recommended that the following key issues and areas be addressed in the scope and contents of the 2019 EMP:

Key Issues and Market Drivers

- It is creditably estimated that driving a BEV (battery electric vehicle) today in New Jersey is about equivalent to driving a gasoline car getting 79 miles per gallon (mpg) in terms of GHG emissions, mainly due to solar, wind, and hydro power supplying the New Jersey and regional grid
- Based on Nexant's estimates that 23 to 24 million EVs will be on the road globally in 2020, including BEVs, and also plug-in hybrid (PHEVs) and hybrids (HEVs), the latter two with fossil-fueled internal combustion engines
- A major challenge to electric-only BEV adoption is the availability of charging stations, risking "range anxiety" for BEV drivers, as with any alternative fuel introduction, the so-called "chicken-egg" effect; also, the future for utility rate design for EV charging stations is uncertain, especially around demand charges for high voltage ones; the business case for investing in charging infrastructure is evolving as utilities, charging station manufacturers, retail businesses, and others consider their opportunities
- Other feasible lower-carbon alternative fuel options for New Jersey are CNG, LNG, and DME (dimethyl ether) for passenger cars, trucks, buses, and off-road machinery, variously replacing gasoline and diesel fuels
- Biofuels are an important "drop-in" and blending option to reduce carbon and other emissions from vehicles, including ethanol blending in gasoline, and biodiesel (fatty acid methyl ester) and renewable diesel (hydrogenated natural oils) for compression-ignited engines; New Jersey has academic and commercial resources working to develop and implement these fuels
- A potential crisis is developing, apparently "under the radar", in the upcoming reduction of allowable sulfur levels in fuels for ships ("bunkers") starting in 2020, promulgated by the International Maritime Organization (IMO) of the UN. This rule, aka "IMO 2020", will apply to all ocean-going vessels, with sulfur in bunkers lowered from 3 percent to 0.5 percent, and for all vessels within 200 miles of shore lowered to 0.1 percent. It is expected that this will create a global fly-up in diesel fuel prices, with diesel competing with low sulfur bunkers supply. New Jersey, a trucking crossroads, major port state, and home to two major refineries, will be in the nexus of this potential multi-faceted crisis. Further, the IMO has also committed shipping to a zero carbon footprint by 2050, so replacing high sulfur fuels with low-sulfur hydrocarbons would be strategically "playing checkers instead of chess"
- These issues are related in various ways to the other four key areas in the NJ BPU Master Plan solicitation, including renewable energy, resiliency, energy efficiency, and grid modernization

Key Recommendations

The EMP should:

- Clearly state the various key issues and market drivers mentioned above and especially the "under the radar" IMO 2020 crisis. Further, the EMP must outline key action items to be implemented, within a finite timeline, in addressing each of the key issues with various stakeholders through a collaborative, interactive and results-oriented workshop(s) process
- Provide comprehensive guidelines and an overarching framework for a phased transition up to 2030 from existing internal combustion engine (ICE) vehicles using hydrocarbon fuels (gasoline, diesel, etc.), to clean and reliable transportation fuels and vehicle types. This includes regulatory and legal policy, fiscal and financial incentives, tax incentives, rebates and credits, carbon pricing mechanisms, and related policy directives for developing, constructing, operating and maintaining clean and reliable transportation. Further, the policy guidelines must articulate a framework of penalties for non-compliance to enacted State-level policy, enacted legislation and mandates, with regular intrastate emissions testing and certification, specific categories of vehicles banned - if any, and other related influencing factors which would impact effective displacement of hydrocarbon fuels and related vehicles in New Jersey
- Provide the following:
  - Current and forecast (up to 2030) optimal vehicle mix for EVs (BEVs, PHEVs, HEVs), NGVs, biofuels, CNG, LNG, DME and other lower-carbon alternative fuel options for passenger cars, trucks, buses, and off-road machinery
  - Historical (from 2014) and forecast (up to 2030) projections for curtailing GHGs, CO_2, and other key pollutants (on the basis three scenarios; worst case, base case, and optimistic)
  - Historical (from 2014) and forecast (up to 2030) of supply-demand for EVs (BEVs, PHEVs, HEVs), NGVs, biofuels, CNG, LNG, DME and other lower-carbon alternative fuel options – *also any potential impact of price elasticity of demand*
  - Historical (from 2014) and forecast (up to 2030) of pricing (with indexing) of electricity (cents/kWh) and fuels ($/MMBTU) across the value/supply chain (from supply source to point of sale; provide on a price build-up or netback basis)
  - Existing and proposed infrastructure strategy and plans for each type of EV (BEVs, PHEVs, HEVs), NGVs, biofuels, CNG, LNG, DME and other lower-carbon alternative fuel options across the value/supply chain (from supply source to point of sale)
  - Shortlist of vehicle technologies at advanced stages of commercialization that support EVs (BEVs, PHEVs, HEVs), NGVs, biofuels, CNG, LNG, DME and other lower-carbon alternative fuel options for passenger cars, trucks, buses, and off-road machinery
  - Techno-economics, with capital costs (CAPEX) and operating costs (OPEX), for each type of shortlisted vehicle technology at advanced stages of commercialization
- Provide a master list of guidelines with specific steps that potential project developers, sponsors and lenders must undertake for participation in clean and reliable transportation projects:
  - Conducting technical and commercial due diligences phases
  - Undertaking subsequent phases, starting with feasibility, and next permits, contracts, project financing, and execution (engineering, procurement, construction, startup, commissioning and commercial operations)
  - List of mandatory studies, evaluations, assessments, and other technical reports that must be undertaken and provided as part of the permitting and approval process
  - Strategies and implementation plans for private-public-partnerships (PPPs), viable tolling structures, equity funding and debt financing mechanisms with loan guarantees (if any) and payment plans for developing, constructing, operating and maintaining clean and reliable transportation infrastructure. In case project developers ***opt*** for project financing (non-recourse basis), clarity in bankable funding mechanisms and payment plans. Further a listing of the typical project contracts and agreements which will be required for project financing (pre-close and post-close activities)