Comments on New Jersey Integrated Energy Plan
November 15, 2019

The Fuel Cell and Hydrogen Energy Association (FCHEA) appreciates the opportunity to provide comment on the New Jersey "Integrated Energy Plan" (IEP) issued by the New Jersey Board of Public Utilities (BPU) and Rocky Mountain Institute (RMI). FCHEA represents leading companies and organizations that are advancing innovative, clean, safe, and reliable energy technologies. FCHEA's membership includes the full global supply chain of the fuel cell and hydrogen technology landscape.

FCHEA supports the goals of New Jersey's Energy Master Plan (EMP) to electrify the transportation sector and desire to accelerate clean distributed energy resources in the state. We believe that fuel cell and hydrogen technologies will play a critical role in both efforts and should be included in both the IEP and EMP.

Clean and Distributed Power Recommendations

As the BPU and RMI considers the power generation future for New Jersey, they should account for the value of fuel cells in providing resilient and clean electricity at the point of use. As such, FCHEA recommends that a technology-neutral approach should be considered to achieve the goal of decarbonizing buildings and power, to enhance and achieve the recommendations provided by RMI in the IEP.

Fuel cells are extremely efficient as they generate electricity through an electrochemical reaction, not combustion. Many fuel cells can be configured as a combined heat and power system able to utilize waste heat, which can raise overall energy efficiencies to over 90%. Due to these high efficiencies, fuel cell technologies provide dramatic carbon emissions reductions compared to traditional power generation. In addition, stationary fuel cells produce virtually no criteria air pollutants such as NOx, SOx, or particulate matter. There are fuel cell systems being used in buildings today that use renewable hydrogen or biogas to achieve carbon-neutral power generation. Decarbonizing the gas grid will enable fuel cells to generate resilient distributed power to New Jersey customers with zero-carbon.

Today, stationary fuel cells are powering utility substations, hospitals, data centers, office buildings, universities, logistics centers, telecommunications towers, and much more. With more than 550 megawatts of distributed generation fuel cell systems across the United States, including many deployments in New Jersey, fuel cells are a proven commercially viable technology for commercial and industrial end users.

As large-scale fuel cell systems are primarily fueled by pipelines, they are a resilient power source, ensuring that vital operations can continue when the grid is offline due to manmade or natural disasters. Superstorm Sandy demonstrated the need for and benefits of reliable technologies, and we appreciate New Jersey's interest in deploying microgrids to maintain emergency and municipal services. This need for assured power is key for critical facilities such as hospitals, city services, and data centers where every minute without power can put lives at risk or cost thousands of dollars. Fuel cells are able to provide 24/7 power behind the meter and at utility-scale that is clean, resilient, and reliable.

Stationary fuel cells are often deployed in complement with renewable energy resources such as wind and solar. Fuel cells are able to provide distributed, clean primary power for to fill needs when renewable power is intermittent, as well as improve the reliability and stability of an electric grid with a high penetration of renewable power generation. The use of stationary fuel cells to complement and support renewable power

deployment also does not require a need for investments into storage mechanisms or other grid infrastructure such as transmission lines.

Fuel cells systems providing baseload power are able to immediately disconnect from the grid and operate independently in the case of grid outages or disasters. When fuel cell systems are installed, critical backup power loads are identified and able to continue to be powered when the grid is unavailable. Fuel cells are able to smoothly and seamlessly disconnect and reconnect to the utility grid as needed without disruption to the end user. While fuel cells can be deployed with storage resources, this seamless operation demonstrates that storage is not a necessity for system resiliency.

As New Jersey develops its EMP, it should consider the Brooklyn Queens Demand Management Demand Response Program that allows ConEdison to plan for and maintain their infrastructure, while supplying reliable energy during peak periods of high demand. Fuel cell companies have installed multiple projects as part of this program. The program ultimately avoided nearly $1 billion in ratepayer costs through the use of targeted DER installations. The Program projects included one using solar, storage, and fuel cell technologies together at a low-income housing development, to optimize the efficiency, reliability, and affordability of the project. Current New Jersey regulation that prohibits multiple clean energy technologies from being used behind one customer meter should be updated to allow for these multi-technology projects that create broad benefit for local communities.

Due to their low emissions and high resiliency, reliability, and efficiency, stationary fuel cells should play a key role in New Jersey's plan to reduce emissions and support distributed generation.

Clean Transportation Recommendations

FCHEA supports New Jersey's intent to invest in projects that will address the mounting issue of carbon dioxide and other greenhouse gas emissions that stem from the transportation sector. FCHEA hopes that hydrogen infrastructure and zero-emission fuel cell vehicles (FCVs) will be incorporated into the final EMP, as well as the various state and regional plans that are developed and implemented across the Northeast and Mid-Atlantic states for the Transportation and Climate Initiative and other efforts. Hydrogen infrastructure and FCVs will be critical components to addressing the future environmental and economic needs of the not only New Jersey, but the broader region as a whole.

FCVs are electric vehicles. Rather than storing electricity from the grid in a battery, FCVs combine oxygen from the air with hydrogen fuel to generate electricity on board the vehicle to power an electric motor, with the only tailpipe emission being water vapor. FCVs are the only zero-emissions vehicle (ZEV) platform now, or for the foreseeable future, that replicates today's driver's experience of being able to travel 300-400 miles in between fills, and refuel in 3-5 minutes. In other words, fuel cell vehicles offer New Jersey drivers the option of zero emissions with zero compromise.

In just the few short years of availability, today there are more than 7,700 light-duty FCVs operating in California offered by Toyota, Honda, and Hyundai, with more automakers planning to enter the marketplace in the near-future. Across the country, fuel cells are being used in more than 28,000 forklifts, dozens of buses, and several demonstrations of Class 8 trucks. Due to the scalability of fuel cells, several hard-to-decarbonize markets such as medium- and heavy-duty vehicles, aviation, and maritime applications are looking to fuel cells as a zero-emission alternative for their power needs. To enable deep-decarbonization and emission reduction across the entire transportation sector, it is critical that hydrogen and fuel cells are included among policy options.

Operating an FCV is no different than gasoline vehicles consumers use today, beyond the increased performance and maintenance benefits of electric drive. When fuel is running low, you simply pull into a station with a hydrogen dispenser, swipe a credit card, insert the nozzle, and in a few short minutes, you are back on the road. By giving the option to maintain driver's habits of returning to a central station whenever they need more fuel, FCVs can provide a zero-emission option for consumers that live in multi-family dwellings, have off-street parking, or are without access to recharge their vehicle at work or home. Therefore, fuel cells can expand access to zero-emission electric vehicles to new markets and customers, particularly those who would traditionally not have access to electrified vehicles.

FCVs can play an integral role in achieving the goal of zero-emission electrified transportation. New Jersey adopted the Global Warming Solutions Act, which requires a reduction of greenhouse gas emissions in the state to the 1990 level or below by 2020 and to 80% below 2006 level by 2050. Massachusetts has joined nine other states in signing the ZEV Memorandum of Understanding, agreeing to collectively commit to at least 3.3 million ZEVs on their roadways by 2025. Massachusetts has also adopted California's emissions standards requiring automakers to sell ZEVs and encourages MassDEP to recognize how fundamental FCVs could be in achieving these targets.

The California Air Resources Board, the agency charged with oversight of the state's ZEV program, has stated that "successful market launch and continued growth of both FCVs and California's hydrogen fueling network are essential for the State to meet zero-emission vehicle goals set forth in Governor Brown's Executive Order B-16-2012 as well as greenhouse gas reduction, air quality improvement, and petroleum reduction goals set forth in state and federal laws and programs." To this end, California has provided robust policy, regulatory, and financial support for the deployment of FCVs and related hydrogen refueling infrastructure. This policy and regulatory action can be taken as a model for New Jersey is it develops plans to expand electrified and zero-emission vehicle adoption.

Hydrogen is an environmentally-friendly fuel. Hydrogen-powered fuel cell vehicles generate zero carbon, NOx, SOx, or particulate matter emissions from the tailpipe. On a well-to-wheels basis, no matter the source of hydrogen, FCVs dramatically reduce emissions compared to combustion vehicles and are on par in reductions with battery electric vehicles (BEVs). When hydrogen is generated from renewable or zero-carbon sources – such as wind, solar, biomethane, or natural gas with carbon capture and sequestration – carbon emissions are nearly eliminated.

Just as battery electric vehicles are getting cleaner as the utility grid adopts more renewable power generation, so too is hydrogen production. In fact, in September 2018 the Hydrogen Council, a global CEO coalition of fuel cell and hydrogen companies, announced an ambitious goal of fully decarbonizing hydrogen fuel for transport by 2030.[1] This goal would set the stage for a significant environmental impact and put hydrogen-fueled transport on a much faster path to zero-carbon intensity than the one charted by utilities for the grid. However, accomplishing this task will require the collaboration of local and state governments. By supporting FCV deployment, New Jersey can significantly reduce the transportation sector's environmental impact and reduce local air pollution.

Hydrogen systems are as safe, if not safer, than conventional fuel systems, including gasoline and natural gas. Hydrogen has been safely used by many different industrial sectors for more than fifty years. In fact, ten million metric tons of hydrogen is produced every year for use in a range of industrial applications such as chemical, refining, electronics, and pharmaceuticals. In the transportation section, hydrogen is used safely

[1] http://hydrogencouncil.com/our-2030-goal/

each day as fuel for cars in California, as well as trucks, buses, and forklifts nationwide. Furthermore, FCVs meet the strictest safety and quality standards set by both the United States National Highway and Transpiration Administration (NHTSA) and the United Nations Global Technical Regulations (GTR).

As New Jersey looks to incorporate ZEVs as part of this EMP, the Volkswagen Settlement Beneficiary Mitigation Plan, the Transportation and Climate Initiative (TCI), or any other clean transportation initiative, we ask that any program be inclusive of all ZEVs, including FCVs. We ask that you provide a level playing field and provide parity for all ZEVs in the state's tax policy and vehicle incentives, consideration for government fleets, inclusion in consumer awareness campaigns, as well as support for infrastructure development. In addition, for any program in New Jersey that may fund ZEV infrastructure, we encourage the state to set aside a portion of that funding specifically for development of hydrogen fueling infrastructure. Implementing a ZEV technology neutral approach will be simple, fair, and allow consumers more choice.

As planning for the New Jersey's energy future continues, state agencies and policymakers have ready access to hydrogen network planning expertise. Station developers with real world experience gained from planning and building California's hydrogen station network, as well as the early network underway in the Northeast, are available to share best practices. Developers have significant expertise regarding fuel cell application and infrastructure design, planning, and implementation. FCHEA member companies look forward to collaborating with stakeholders as projects are designed, planned, and implemented. The U.S. Department of Energy-affiliated research laboratories provide sophisticated technical services, such as network planning tools that model preferred station locations, hydrogen production, and fuel cell vehicle costs.

Hydrogen Enables Broad Decarbonization Across Sectors

Some energy services and industrial processes—such as long-distance freight transport, air travel, highly reliable electricity, and steel and cement manufacturing—are particularly difficult to provide without adding carbon dioxide (CO2) to the atmosphere. Rapidly growing demand for these services, combined with long lead times for technology development and long lifetimes of energy infrastructure, make decarbonization of these services both essential and urgent. The Executive Summary for a report by McKinsey & Company was recently published that discusses a variety of ways that hydrogen can help decarbonize these sectors and others over the coming years. The Executive Summary of the report is available online at www.ushydrogenstudy.org and the full report will be made available in early 2020. We urge the BPU and RMI to take strong consideration of this report as it develops its policies for the coming years.

In addition, the Department of Energy (DOE) H2@Scale Initiative is that explores the potential for wide-scale hydrogen production and utilization in the United States to enable resiliency of the power generation and transmission sectors, while also aligning diverse multibillion-dollar domestic industries, domestic competitiveness, and job creation. A wide range of resources are available on the H2@Scale website at https://www.energy.gov/eere/fuelcells/h2scale.

FCHEA and its members are available as a resource to BPU officials and RMI representatives. As the state continues to develop its plans, we stand ready to provide information to assist in the incorporation of this valuable technology. Should you have any questions or wish to discuss further, I can be reached at any time by email at mmarkowitz@fchea.org or by phone at 202-261-1331.