2014 STATE POLICY ACTIVITY WRAPUP

FUEL CELLS & HYDROGEN

January 2015

Fuel Cell &
Hydrogen Energy
Association

ABOUT THE FUEL CELL AND HYDROGEN ENERGY ASSOCIATION

The Fuel Cell and Hydrogen Energy Association is the trade association dedicated to the commercialization of fuel cells and hydrogen energy technologies, representing the full global supply chain, including material component and system manufacturers, hydrogen producers and fuel distributors, government laboratories and agencies, trade associations, utilities, and other end users. *Visit us online at www.fchea.org.*

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INTRODUCTION

This wrap-up profiles state-level legislation, policies, and incentives for fuel cells and hydrogen during calendar year 2014.

Policies for fuel cells and hydrogen continued to draw the attention of legislators in a number of states, particularly related to fuel cell electric vehicles (FCEVs) and hydrogen fueling infrastructure. This has been spurred by the recent introduction of FCEVs by Hyundai and vehicle commercialization plans by Toyota and Honda, as well as the fuel cell activities of Daimler, General Motors, and Volkswagen. There is also growing support for stationary fuel cells for their ability to provide improved power resiliency in the face of storms, increase efficiency of power generation, and lower emissions to help meet state Renewable Portfolio Standard (RPS) goals.

Fuel cell technologies operate today in a range of applications that include power for on-road and industrial vehicles, and primary, backup and portable power for facilities and off-grid sites.

Fuel cells generate power electrochemically, without combustion, and emit only heat and water as byproducts. Electrical efficiency is greater than 45 percent and, when byproduct heat is captured for heating, hot water and cooling, reaches a combined electrical and thermal efficiency of 90 percent. The technology can operate using a range of fuels – including renewables like biogas and hydrogen generated from wind or solar power – and very efficiently utilizes the hydrogen found in natural gas or other hydrocarbon fuels.

As a highly efficient, low-to-zero emission power source, fuel cells generate power today for corporations and municipalities alike. The technology's reliability makes it an attractive energy resource for cell towers, data centers, and buildings. Many end-users report significant savings in electricity costs, as well as lower water use.[1] End-users also report that fuel cells help to achieve emissions reduction goals by reducing thousands (and sometimes tens of thousands) of tons of greenhouse gas pollutants each year.

[1] See annual editions of The Business Case for Fuel Cells for more details - http://energy.gov/eere/fuelcells/market-analysis-reports

MULTI-STATE EFFORTS

Zero Emission Vehicle (ZEV) Action Plan

In October 2013, eight states (**California, Connecticut, Maryland, Massachusetts, New York, Oregon, Rhode Island, and Vermont**) signed a memorandum of understanding (MoU) to take actions that are designed to facilitate the sale of 3.3 million zero emission vehicles (ZEVs) by 2025. The agreement includes battery-electric vehicles (BEVs), plug-in hybrid electric vehicles (PHEVs), and FCEVs.

In May of 2014, MoU signers took additional steps by coordinating their actions to ensure successful implementation of their state SEV programs through publication of the *Multi-State ZEV Action Plan*. The plan identifies priority multi-state actions that will ensure continued growth in sales consistent with the ZEV program requirements. Key actions in the Plan include:

- Increasing ZEVs in state, municipal, and other public fleets;
- Encouraging private fleets to purchase, lease, or rent ZEVs; and
- Providing consumer incentives to enhance the ZEV ownership experience.

Additional actions that may be taken by the states include:

- Promoting ZEV infrastructure planning and investment by public and private entities;
- Removing barriers to ZEV fueling and charging stations; and
- Removing barriers to the retail sale of hydrogen and electricity as transportation fuels.

The states will coordinate with a range of partners to develop and implement effective strategies, an outreach initiative, and a targeted research agenda to support maturation of the ZEV market. The Northeast States for Coordinated Air Use Management (NESCAUM), a nonprofit association of state environmental agencies in the Northeast, is facilitating the work of the ZEV states. On behalf of its members and other states, NESCAUM joined H2USA, a public-private partnership organized by the U.S. Department of Energy to promote the commercial introduction and widespread adoption of fuel cell electric vehicles and hydrogen fueling infrastructure.

Hydrogen and Fuel Cell Roadmaps

Preliminary Hydrogen and Fuel Cell Development roadmaps were published by the Northeast Electrochemical Energy Storage Cluster (NEESC), a network of industry, academic, government and non-governmental leaders working together to help businesses provide energy storage

solutions. The preliminary reports focus on **Connecticut, New York, Massachusetts, Maine, and Rhode Island**, and additional reports are planned for **New Jersey, Vermont, and New Hampshire**. Report development is supported by the U.S. Small Business Administration.

ARIZONA

Credit for Renewable Energy Investment and Production for Self-Consumption by Manufacturers

Arizona passed SB 1484 to provide a tax credit to manufacturers committed to reducing their carbon footprint. The manufacturer must invest at least $300 million in new renewable energy facilities in Arizona, with at least 90% of the energy produced at each renewable energy facility used for self-consumption (primarily for manufacturing) within the state. One million dollars of credit is authorized per year for five years for each renewable energy facility, with a maximum credit of $5 million per taxpayer. Eligible renewable energy resources include fuel cells supplied directly or indirectly with biomass-generated fuels.

CALIFORNIA

ZEV Requirements for Intermediate Volume Manufacturers

California's Air Resources Board (ARB) Chairman Mary Nichols rejected proposed ZEV modifications that would have eased requirements for Intermediate Volume Manufacturers (IVM)[2] for model years 2018-2025. Several IVM companies are expected to move to the Large Volume Manufacturer category – selling more than 20,000 vehicles in California annually – and the proposed changes would have provided these companies with additional production lead time to bring ZEVs to market, lowered the ZEV requirement, allowed pooled compliance obligations in ZEV states, and permitted more time to make up ZEV credit deficits.

Chairman Nichols said that the proposal went too far in providing relief to companies and that, "fairness to these manufacturers does not outweigh the purposes of the program, which is to get the vehicles on the road." ARB staff was directed to rewrite the proposal, maintaining some flexibility in compliance, but ensuring no "measurable loss of momentum or numbers of vehicles that meet our requirements." A modified proposal will likely will not be considered by the Board until the summer of 2015.[3]

[2] IVMs include Jaguar, Land Rover, Mazda, Mitsubishi, Subaru, and Volvo.
[3] Source: Inside Cal/EPA, Vol.25, No. 44, Oct. 31, 2014.

Clean Vehicle Rebate Project

ARB voted to expand incentive funds that help consumers buy zero-emission and plug-in hybrid vehicles. Owners of eligible FCEVs can apply for a $5,000 rebate through the Clean Vehicle Rebate Project. Through the end of 2014, 84 FCEV rebates have been issued or reserved. The Clean Vehicle Rebate Project is administered by the California Center for Sustainable Energy.

Alternative Renewable Fuel and Vehicle Technology Program

The California Energy Commission (CEC) awarded $46.6 million through the Alternative and Renewable Fuel and Vehicle Technology Program (ARFVTP) to develop 28 new hydrogen fueling stations and one mobile refueler:

- FirstElement Fuel, Inc. was awarded $2,902,000 to construct two 100 percent renewable refueling stations in Los Angeles, and $24,667,000 for 17 stations located in Campbell, Coalinga, Costa Mesa, Hayward, Laguna Niguel, Lake Forest, La Canada Flintridge, Long Beach, Mill Valley, San Diego, San Jose, Santa Barbara, Saratoga, South Pasadena, South San Francisco, Redwood City, and Truckee.
- HyGen Industries, LLC was awarded $5,306,814 to construct three 100 percent renewable hydrogen refueling stations located in Orange, Pacific Palisades, and Rohnert Park.
- Linde LLC was awarded $4,250,000 to install two hydrogen refueling stations located in San Ramon and Oakland.
- ITM Power Inc. was awarded $2,125,000 to install a hydrogen refueling station in Riverside.
- Air Liquide Industrial US LP was awarded $2,125,000 to install a hydrogen refueling station in Palo Alto.
- HTEC Hydrogen Technology & Energy Corporation was awarded $2,125,000 to install a hydrogen refueling station in Woodside.
- Ontario CNG Station Inc. was awarded $2,125,000 to install a 100 percent renewable hydrogen refueling station in Ontario.
- Gas Technology Institute was awarded $999,677 to design, fabricate, test and deploy a fully operational, commercial mobile hydrogen refueler with the capability to fill either 350 bar or 700 bar vehicle tanks through onboard metered dispensing hoses.

CEC will also provide another $1.2 million for the operation and maintenance of hydrogen refueling stations in the state. The approved recipients are Air Liquide Industrial, Mebtahi Station Services, CSU Los Angeles University Auxiliary Services, and H2 Frontier.

CEC approved a $300,000 ARFVTP award for Air Products and Chemicals, Inc. for its first of 10 hydrogen fueling stations being funded by the Commission. The award covers operations and maintenance costs for fueling station equipment in Diamond Bar, and the costs of gathering data about the equipment.

Fifty-one stations are expected to be operational statewide by the end of 2015, providing up to 9,400 kg/day of hydrogen.

Medium- and Heavy-Duty Advanced Vehicle Technology Demonstration

In December, ARFVTP announced *Program Opportunity Notice (PON) 14-605 - Medium- and Heavy-Duty Advanced Vehicle Technology Demonstration*, seeking applications for demonstrations that enhance market acceptance of advanced vehicle technologies that will lead to vehicle production and commercialization, reduce greenhouse gas (GHG) emissions and petroleum use. Eligible fuels and technologies include fuel cell electric drive and range extenders using hydrogen, natural gas or other low carbon fuels.

Self-Generation Incentive Program

California reauthorized $415 million in funding for the California Public Utility Commission's (CPUC's) Self-Generation Incentive Program (SGIP) through 2019 ($83 million per year). SGIP provides rebates for qualifying distributed energy systems installed on the customer's side of the utility meter. Fuel cells are eligible for an incentive of $1.83/watt up to 3 megawatts (MW). The most recent SGIP program evaluation reports that, through 2012, 70 MW of fuel cell power (195 projects) had been installed through the program, comprising 24 percent of SGIP's total installed capacity.

Electric Program Investment Charge Program Solicitations

Several solicitations were made under CPUC's Electric Program Investment Charge (EPIC) program for which fuel cells or hydrogen are eligible. EPIC was established by CPUC in 2011 to address policy and funding gaps related to the development, deployment, and commercialization of next generation clean energy technologies that will benefit ratepayers of California's three investor-owned utilities. CEC, Pacific Gas &Electric, San Diego Gas & Electric,

and Southern California Edison each administer a portion of the program's funding, which is sourced from rates charged to electricity customers. Annual program funding is about $162 million through 2020, with CEC administering approximately $130 million per year.

Among the 2014 solicitations:

- *Program Opportunity Notice (PON) 14-301 – Demonstrating Secure, Reliable Microgrids and Grid-Linked Electric Vehicles to Build Resilient, Low-Carbon Facilities and Communities*. Under Group 1, "Demonstration of Low Carbon-Based Microgrids for Critical Facilities" and Group 2, "Demonstration of High-Penetration, Renewable-Based Microgrids," the preferred generation sources are renewable energy sources listed in the "renewable electrical generation facilities" section in California Public Resources Code, which includes fuel cells. Group 3, "Demonstration of Advanced Smart and Bidirectional Vehicle Charging," includes vehicles with hydrogen fuel cells so long as they meet the plug-in battery energy requirement stipulated in the PON.

- *PON 14-302 – Developing Advanced Storage Technology Solutions to Lower Costs and Achieve Policy Goals*. For modeling projects, must include all types of energy storage, including pumped hydro, compressed air, batteries, flywheel, gravity, ultra-capacitors, and others (e.g., hydrogen).

- *PON 14*-307 – *Demonstrating Clean Energy Solutions That Support California's Industries, the Environment, and the Electrical Grid.* Funding for community scale generation and community wide strategies that can provide load shifting or peak load reduction for communities to minimize or control demand fluctuations. Pre-commercial stationary fuel cells using an RPS eligible energy resource or in a CHP configuration may be used to meet the electricity generator aspects of the solicitation requirements. Applicants will need to justify how it is advanced.

Advancing Clean Energy from Biogas, Biomethane, and Natural Gas

CEC's Energy Research and Development Division also issued a solicitation, *PON-14-505 - Advancing Clean Energy from Biogas, Biomethane and Natural Gas*, for which fuel cells are eligible. The solicitation will fund research, development and demonstration projects that address the barriers to increased market penetration of renewable energy, particularly biogas and biomethane (also known as renewable natural gas), natural gas fueled distributed generation, and combined heat and power systems. Possible technologies under the solicitation include fuel cells, organic Rankine cycle, low-emission reciprocating engines, and

microturbines. Technologies should demonstrate a minimum overall efficiency of 80% and minimum power-to-heat ratio of 1.3:1 for fuel cell technologies.

HERO Property Assessed Clean Energy Program

Forty-two cities and counties across California launched the HERO Property Assessed Clean Energy (PACE) Program, which enables homeowners and commercial property owners to pay off energy- and water-efficiency improvements through their property tax bill. Approved energy efficient, water efficient, and renewable energy products are financing at 100% of the cost to purchase and install eligible products. HERO offers low-fixed interest rates and flexible payment terms including 5/10/15/20 years for most products. If the property is sold before the HERO Financing is repaid in full, the remaining payments can be passed on to a new property owner. Stationary fuel cells qualify for the program in both residential and commercial applications.

COLORADO

Alternative Fuel Tax Incentives

HB14-1326, Tax Incentives for Alternative Fuel Trucks, was signed into law creating a tax credit for businesses or individuals that purchase or convert light-weight and commercial trucks that run on hydrogen, electricity, compressed natural gas, or liquefied petroleum gas. In addition, the bill allows an income tax credit for the purchase of clean fuel refrigerated trailers.

CONNECTICUT

Microgrid Program

New microgrid project awards were announced through the second round of Connecticut's Department of Energy and Environmental Protection (DEEP) Microgrid Program. One of the projects, a 1.4-MW fuel cell-powered microgrid, will be located at the University of Bridgeport (UB) and will serve campus buildings including a dining hall, recreation center, student center, police station and two residence halls. The buildings will be available to serve city residents during a power outage or emergency, providing shelter to about 2,700 residents and food service to residents as well as emergency responders. The DEEP microgrid grant will provide almost $2.2 million in funding for eligible design, engineering and interconnection infrastructure costs.

State Loan to Expand Manufacturing and Create Jobs

Connecticut's Department of Economic and Community Development (DECD) is providing a $10 million loan to Danbury-based fuel cell manufacturer FuelCell Energy to begin a two-phase expansion of its Torrington manufacturing facility and to add up to 325 new jobs over the next four years to its existing Connecticut workforce of 538 employees. The loan will be made at 2% interest for a term of 15 years for each phase of the project as certain employment and revenue milestones are achieved.

FuelCell Energy will be eligible for $5 million in forgiveness on the first tranche of funding if the company creates 165 full-time positions and retains 538 full-time positions, for a total of 703 positions, for two consecutive years. The company can earn $5 million in forgiveness on the second tranche of funding if it creates 160 full-time positions and retains 703 full-time positions, for a total of 863 positions, for two consecutive years. This expansion project also qualifies for up to $10 million of Urban and Industrial Sites Reinvestment Tax Credits, which the company can monetize over a 10-year period.

Manufacturing Technical Assistance Program

The Connecticut Center for Advanced Technology (CCAT) announced that it was accepting applications for the 2015 Manufacturing Technical Assistance Program, which offers technical assistance to small- and mid-sized manufacturers with fewer than 100 employees, including startups. Awards of up to $75,000 will be provided on behalf of the winning companies to CCAT's Advanced Manufacturing Center to fund access to specialized resources not typically attainable for small- and mid-sized manufacturers. Ideal projects will seek to solve manufacturing problems impacting a participating company's success utilizing technology solutions or will support a company's ability to begin the manufacturing of new products or services. Emphasis will be placed on how the company's request supports manufacturing operations in Connecticut including retention of revenue, jobs or company growth. Firms from any industry sector may apply. Applications for the 2015 program were accepted through the end of 2014.

Manufacturing Innovation Fund Voucher Program

Connecticut announced a $3.5 million Manufacturing Innovation Fund Voucher Program (MVP), which is part of the new Connecticut Manufacturing Innovation Fund (CMIF) that supports the growth of Connecticut manufacturers while creating jobs for residents. MVP provides matching grants of $5,000 to $50,000 for manufacturers with no more than 300 employees that are

located in Connecticut or are moving operations into the state. The goal is to assist companies in executing projects that are technologically innovative and help them to move ahead in terms of profitability, productivity, and efficiency. Experts in universities, nonprofit organizations, and other organizations will be available to provide specialized expertise to voucher recipients to solve engineering, marketing and other challenges. CMIF can also be used to obtain matching federal grants or otherwise leverage federal grant funds. CMIF is administered by Connecticut's Department of Economic and Community Development.

GEORGIA

Alternative Fuel Vehicle Tax Credit

Georgia code was amended in 2014 to provide a tax credit for purchasers of alternative fuel vehicles. A taxpayer may take a credit not to exceed $20,000 for the amount expended on or after July 1, 2014, and before June 30, 2018, to purchase an alternative fuel heavy-duty vehicle, or a credit of $12,000 for the purchase of an alternative fuel medium-duty vehicle. Alternative fuel is defined as electricity, liquid petroleum gas, natural gas, or hydrogen fuel. The term does not include hybrid electric drives unless the vehicle has a gross weight equal to or greater than 6,001 pounds and less than 26,000 pounds.

MARYLAND

Microgrids Task Force Report

Maryland's governor created a Resiliency Through Microgrids Task Force in February. The Resiliency Through Microgrids Task Force Report, released in June, recommends that Maryland pursue public purpose microgrids in the short term, for uninterrupted electric service to critical community assets such as community centers, commercial hubs, and emergency service complexes. The Task Force concluded that utility-owned and operated microgrids are in the policy interest of the state and practical under current law. In addition, the report provides sample policy outlines to potentially authorize third party public purpose microgrids, operated by local governments and private developers. Fuel cells are mentioned a hypothetical local microgrid operator project scenario. The Task Force recommends the creation of a new Grid Transformation Program to help facilitate these recommendations and the development of three new grant programs for public purpose microgrid projects, advanced controls, and energy storage.

Game Changer Competitive Grant Program

The Maryland Energy Administration (MEA) announced the launch of the third round of its competitive Game Changer Competitive Grant Program, which supports the deployment of innovative, early-commercialization stage electric or thermal energy generation systems that result in the installation of additional renewable energy and innovative transportation-related projects that enable greater use of alternative fuel vehicles in Maryland. Potential projects can include, "cost-competitive fuel cells that can add backup, peak-shaving and/or baseload energy generation capabilities to a variety of stationary or transportation sector end-uses." Applicants may request an amount up to the difference in installed costs between "game changer" technologies or systems being proposed and conventional technologies or systems. Up to $1 million is available, subject to available funding, for awards expected to be in the range of $50,000 to $250,000 per project.

MASSACHUSETTS

Electric Vehicle Rebates

Massachusetts announced the new Massachusetts Offers Rebates for Electric Vehicles (MOR-EV) program that provides rebates of up to $2,500 for the purchase or lease of plug-in hybrid and electric vehicles. Fuel cell electric vehicles are eligible for the program.

InnovateMass

InnovateMass is a competitive grant program offered by the Massachusetts Clean Energy Center (MassCEC) for applicant teams that offer innovative, effective and impactful clean energy solutions to tough energy and environmental problems in Massachusetts. The program helps to accelerate development and deployment of new clean energy technologies and companies, providing targeted, strategic support to companies facing the so called "commercialization valley of death," the funding gap that exists between early-stage and later-stage support. Applicant teams must consist of a technology developer and a demonstration site/host. Funding is available once a year, with teams eligible to receive awards of up to $150,000. The program funds a wide range of clean energy technologies, including fuel cells.

Community Clean Energy Resiliency Initiative Program

The Massachusetts Department of Energy Resources (DOER) awarded $7.4 million in Community Clean Energy Resiliency Initiative grants to municipalities in September 2014. This is the first round of grants through the initiative, which is part of the state's comprehensive climate change preparedness effort. While no fuel cells projects were awarded in this round,

fuel cells are eligible under the program. In the initial solicitation only natural gas combined heat and power (CHP) fuel cells were eligible under the Initiative, but DOER has since amended the solicitation documents in the Eligible Clean Energy Technologies sections to permit CHP and district energy systems utilizing natural gas and renewable energy fuels (CHP or fuel cell systems with waste heat utilization must achieve annual system efficiency of at least 65%); and high efficiency (annual system efficiency of at least 50%) fuel cells.

Massachusetts Clean Energy Industry Report

The 2014 Massachusetts Clean Energy Industry Report was issued by the Massachusetts Clean Energy Center (MassCEC), an organization created by the legislature to accelerate the success of clean energy technologies, companies, and projects in Massachusetts. The report highlights the state's growing renewable energy and energy efficiency markets. In 2014, the number of workers in involved in Massachusetts' hydrogen generation industry numbered 618 and those involved in the fuel cell industry totaled 178.

NEW JERSEY

Energy Resilience Bank Supports Distributed Generation at Critical Facilities

The New Jersey Energy Resilience Bank (ERB) was established in 2014 as the first initiative in the nation to focus on energy recovery and resilience financing. ERB assists eligible facilities with upfront costs to encourage wider adoption of distributed energy resource (DER) technologies at critical facilities impacted by Superstorm Sandy or other eligible disasters. The ERB will use $200 million of federal Housing and Urban Development (HUD) Community Development Block Grant-Disaster Recovery funds to allow critical facilities to invest in either new or retrofitted DER technologies that will operate when the power grid goes down (islanding) and provide electrical start-up capabilities in the absence of a direct connection to the electric grid (blackstart). The Bank is jointly administered by the New Jersey Board of Public Utilities (BPU) and the New Jersey Economic Development Authority (NJEDA). Fuel cells are eligible for funding.[4] Water and wastewater treatment plants – the first group of facilities targeted for the program – can apply for financing, with $65 million allocated by the Bank for this sector to support distributed energy projects. Future funding rounds will focus on other types of facilities, such as schools and hospitals.

[4] CHP systems must achieve an annual system efficiency of at least 65% based on the lower heating value (LHV), and electric only generation fuel cells must achieve at least a 50% electrical efficiency.

Large Energy Users Program for Large Commercial and Industrial Facilities

The NJ Clean Energy Program (NJCEP) Large Energy Users Program (LEUP) is designed to promote self-investment in energy efficiency and combined heat and power projects. The program offers incentives up to $4 million on a first-come, first-served basis for eligible entities in New Jersey's largest commercial and industrial facilities. Eligible entities must have contributed a minimum of $300,000 into the NJCEP fund during the period July 1, 2013 through June 30, 2014. In addition, average billed peak demand of all facilities submitted in the Final Energy Efficiency Plan must meet or exceed 400 kW and/or 4,000 decatherms (DTh). The minimum incentive commitment is $200,000. Maximum incentives for the FY2015 program (October 1, 2014 - June 30, 2015) is the lesser of:

- $4 million
- 75% of total project(s) cost
- 90% of total NJCEP fund contribution in previous year (i.e. from all entity facilities)
- $0.33 per projected kWh saved; $3.75 per projected therm saved annually.

The installation of a CHP or Fuel Cell system can be included as part of the LEUP work scope for incentive consideration; however, incentives for fuel cells will be limited per the LEUP program with no additional incentives offered through other NJCEP programs.

Combined Heat & Power and Fuel Cell Program

In fiscal year 2014, NJCEP combined the small-scale CHP and Fuel Cell (FC) program, managed by TRC, and the large scale CHP and FC program, managed by NJEDA, into a single program. The ongoing Combined Heat & Power and Fuel Cell (CHP-FC) incentives are aimed at reducing existing and new demands on New Jersey's electric power grid. Incentives are available for fuel cell systems with waste heat recovery that are installed on the customer side of the meter. Systems must achieve annual system efficiency of at least 65% lower heating value and operate a minimum of 5,000 full load equivalent hours per year (i.e. run at least 5,000 hours per year at full rated kW output). For critical facilities[5], BPU's Office of Clean Energy may evaluate systems operating as low as 3,500 full load equivalent hours per year for incentives on a case by case basis.

[5] Critical facilities means public facilities, including federal, state, county or municipal facilities, non-profit and/or private facilities, including hospitals and communication centers determined to be Tier I or critical infrastructure facilities by the Office of Emergency Management and/or Office of Homeland Security and Preparedness.

New Jersey Clean Energy's CHP-FC Program - Fuel Cell Incentives					
Eligible Technology	**Size (Installed Rated Capacity)**	**Incentive ($/Watt)**	**P4P Bonus ($/Watt) (cap $250,000)**	**% of Total Cost Cap per project**	**$ Cap per project**
Fuel Cells powered by non-renewable fuel source. Incentives available for systems both with and without waste heat recovery	1 MW w/ waste heat	$4.00	$0.25	60%	$2 million
	≤1 MW	$3.00			
	>1 MW w/ waste heat	$2.00		45%	$3 million
	>1 MW	$1.50			

NEW YORK

Net Energy Metering - Expansion of Fuel Cell Capacity

Senate Bill 6485 was signed into law, changing the combined rated capacity of fuel cell electric generating equipment for net energy metering for non-residential customers from 1.5 MW to 2 MW.

New York RPS Performance Report

The New York State Renewable Portfolio Standard Annual Performance Report Through December 31, 2013 profiles activities by the New York State Energy Research and Development Authority (NYSERDA) and the New York State Department of Public Service (DPS) in implementing the New York State Renewable Portfolio Standard (RPS). Under the Customer-Sited Tier, small fuel cells were installed at 19 sites between 2007 and December 31, 2013, comprising 187 kW of installed capacity, and large fuel cells were installed at two sites comprising 600 kW of installed capacity. Additional fuel cells are planned under the Main Tier component of the program – five fuel cell facilities, totaling 3.2 MW of power, are expected to be in operation by December 31, 2014.

New York RPS Customer-Sited Tier Actual and Expected Installed Capacity (MW) as of December 31, 2013				
Customer-Sited Tier Program	**Actual Installed Capacity**	**Capacity Under Contract but Not Yet Installed**	**Capacity From Accepted Applications with Contracts Pending**	**Total Pending and Installed Capacity**
Fuel Cells	**0.79**	**0.03**	**4.20**	**5.02**

The report notes that, since Superstorm Sandy, there has been a resurgence of applications for large-scale fuel cells, with eight applications for $1 million each on track for implementation. There has also renewed interest in emergency backup power fuel cells – the 19 backup power

fuel cells installed during the program's early years played a role in keeping communications open during Superstorm Sandy for both residents and emergency responders.

New York Green Bank

The New York Green Bank (NY Green Bank), a division of NYSERDA, debuted in February, as a state-sponsored financial entity working in partnership with the private sector to increase investments into New York's clean energy markets. The $1 billion NY Green Bank encourages private sector capital providers and other clean energy industry participants to propose transactions involving partnership with the bank that facilitate the financing of clean energy projects. The bank focuses on projects using proven technologies that are economically viable for which financing barriers exist.

NY Green Bank anticipates that its products will evolve alongside clean energy financing markets as certain gaps and barriers are addressed while others remain or newly emerge. The initial four categories of capital solutions offered by the bank are:

- *Credit Enhancements:* Credit enhancements can be structured to absorb a portion of losses that may be incurred in project-specific loans or leases and alleviate some of the default risks associated with clean energy loans or leases in return for a risk-appropriate fee.
- *Warehousing/Aggregation (Short-Term)*: Many small clean energy projects (in comparison to utility-scale projects) are unable to attract financial interest from the commercial markets. To address this gap, NY Green Bank will work in collaboration with an aggregator tasked with building a portfolio of qualifying clean energy projects. NY Green Bank will serve as a portfolio lender, with the intention of realizing its investment in the portfolio through sale to commercial market participants as new asset classes and liquidity are created.
- *Asset Loans & Investments (Long-Term):* Investments are made along with other private sector capital providers, and involve the provision of longer-term products. These can be advanced to projects through senior, mezzanine or subordinated debt facilities and/or in certain cases, equity.
- *Composite Products*: Complex structured investments involve NY Green Bank potentially playing multiple roles in a single transaction. For example, a NY Green Bank investment could include subordinated debt, an equity investment and a loan loss reserve, all combined to create a tax equity fund to attract senior debt and tax equity investments by one or more private sector entities.

As a prerequisite to NY Green Bank participation, transactions must include private sector financial parties and capital. NY Green Bank considers various transaction sizes and participation levels although generally expects investments to be within the range of $5 million to $50 million. The Bank issued an ongoing request for proposals (RFP 1 – Clean Energy Financing Arrangements). Proposed projects may include fuel cells.

New York RPS Main and Customer-Sited Tier Solicitations

New York announced the availability of $250 million to invest in renewable energy projects under the state's RPS. Fuel cells were eligible for submission under the 9th Main Tier RPS solicitation.

NYSERDA's ongoing RPS Customer-Sited Tier fuel cell program (Program Opportunity Notice [PON] 2157) provides ongoing incentives for both large fuel cells (>25 kW) and small fuel cells (≤25 kW), with funding available on a first-come, first-served basis. The program's budget is $21 million for large fuel cells ($3.5 million annually through 2015) and $600,000 for small fuel cells ($100,000 annually through 2015). The fuel cell program will continue through 2015, or until all funding has been fully committed, whichever comes first.

New York RPS Customer-Sited Tier Program Funding	Total
Standard Offer PV	$372.4
Competitive PV	$229.3
Fuel Cells	**$18.7**
Anaerobic Digester Biogas	$75.9
On-Site Wind	$19.0
Solar Thermal	$15.6
Total	**$730.8**

NYSERDA Solicitations

Fuel cells are also funded through a number of other NYSERDA programs. Under PON 1746 - FlexTech Program, NYSERDA will cost-share up to $1,000,000 on completion of site specific analysis including, but not limited to: energy efficiency feasibility; industrial and process efficiency analysis, data center efficiency analysis; peak-load reduction and load management, energy efficiency retro-commissioning, energy master plans for long-term energy management, and CHP. Fuel cells may be considered among the eligible CHP generating technologies. Energy study funding is available on a first-come, first-served basis through December 31, 2015, or until funds are exhausted.

Approximately $20.4 million RPS funding is also available through 2015 to support the installation and operation of Anaerobic Digester Gas (ADG)-to-Electricity Systems. Funding is available through NYSERDA's PON 2828- Renewable Portfolio Standard Customer-Sited Tier

Anaerobic Digester Gas-to-Electricity on a first-come, first-served basis, with up to $2 million available per project. Residential fuel cells up to 10 kW and commercial fuel cells up to 1.5 MW are eligible for the program (farm waste generating units of any type may not exceed 1.0 MW). Feedstocks can include manure, agricultural residues and biomass, industrial organic wastes (e.g., food wastes), municipal wastewater and municipal organic solids. Electricity generated by landfill biogas is not eligible for the ADG-to-Electricity Program.

NYSERDA's PON 2942 Advanced Clean Power Technologies will provide up to $19.5 million in two rounds (2014 and 2015) to develop and demonstrate innovative renewable and other advanced clean power technologies, develop and demonstrate technologies that improve performance, or address and overcome specific barriers thwarting increased adoption of eligible technologies. Technologies eligible under this solicitation include innovative renewable-electric and other advanced clean power technologies for grid-connected applications, storage technologies for sub-utility-scale stationary applications, or technologies that improve grid power quality and reliability. Potential technologies include fuel cells and related components and subsystems.

New York Battery and Energy Storage Technology Consortium

The New York Battery and Energy Storage Technology Consortium (NY-BEST) was created in 2010 to position New York State as a global leader in energy storage technology, including applications in transportation, grid storage, and power electronics. NY-BEST provided funding in 2014 for several projects involving fuel cells:

- NY-BEST awarded $250,000 to Cornell University to develop and demonstrate a regenerative fuel cell energy storage system, using a Cornell-designed membrane, to produce hydrogen.
- NY-BEST and partner DNV GL (formerly DNV KEMA) opened a $23 million Battery and Energy Storage Technology Test and Commercialization Center at the Eastman Business Park in Rochester. The Center offers product development services that are essential for researchers and companies to test the viability and performance of innovative energy storage technologies, including fuel cells, before they are introduced to the marketplace as new commercial products. The Center received a $5.9 million investment from NYSERDA, $1 million from Empire State Development, with DNV GL investing up to $16 million. As part of its investment, DNV GL also plans to move its existing energy storage testing capabilities from Pennsylvania to New York.

Long Island Power Authority Solicitation

The Long Island Power Authority (LIPA) issued a Request for Proposals (RFP) for up to 280 MW of New, On-Island, Renewable Capacity and Energy or the addition of up to 280 MW of renewable energy, including all associated capacity and environmental attributes. While LIPA does not fall under the jurisdiction of New York State's renewable portfolio standard (RPS), LIPA has adopted a goal to strive toward incorporating a larger percentage of renewable resources in its resource portfolio. The maximum renewable energy generating capacity is 280 MW, with the exception of fuel-based renewables (e.g., biomass and fuel cells) which are limited to a maximum capacity of 40 MW.

Regional Economic Development Awards

Round IV of New York's Regional Economic Development Council (REDC) Initiative Awards were announced and include awards to several fuel cell companies:

- American Fuel Cell, a company created last year by three former General Motors Corp. executives and based at EBP, was awarded $500,000 to further develop membrane electrode assemblies (MEAs), a key component in the manufacture of hydrogen fuel cells.
- Albany-based MICROrganic Technologies, Inc. was awarded $100,000 to commercialize both its Microbial Fuel Cell (MFC) technology — and advance the development of original equipment manufacturer (OEM) production equipment to convert from chemical to electrical energy the organic waste processed at wastewater treatment facilities.

The draft New York State Energy Plan, Shaping the Future of Energy, provides a vision for New York's clean energy economy and laying out 15 key initiatives, policy recommendations, and analyses to guide the State's energy future. Initiative 12, "increasing transportation alternatives and vehicle diversity," includes a recommendation for the NYSERDA to assess and develop potential deployment strategies and infrastructure requirements for the commercialization of hydrogen fuel cell vehicles.

OHIO

Award to Advance Fuel Cell Manufacturing and Regional Supply Chain

Ohio's Controlling Board approved an award of $297,056 to the Ohio Fuel Cell Coalition to further advance the state's fuel cell manufacturing technologies and the regional fuel cell supply chain. Funding is provided through the Edison Advanced Manufacturing Program, a competitive grant program administered by the Ohio Development Services Agency to support work to develop advanced manufacturing technologies for Ohio manufacturers, particularly small and medium-sized firms. The Ohio Fuel Cell Coalition will provide $335,154 in matching funds.

OREGON

Clean Fuels Program Moving Forward

Oregon's governor directed the state's Department of Environmental Quality to draft rules for the next phase of the Clean Fuels Program, which aims to reduce greenhouse gas pollution by lowering the carbon content of transportation fuel by 10% over a 10-year period (representing a reduction of about 280 million metric tons of greenhouse gases through 2025). The new Proposed Rules include both hydrogen and hydrogen blends as examples of clean fuels.

Alternative Fuel Vehicle Loan Fund Extended to Private Fleet Operators

House Bill 4107 provides several amendments to Oregon's Alternative Fuel Vehicle Revolving Loan Fund program, including a provision that extends program applicability private fleet vehicle operators. The amendments apply to tax years beginning in 2015. The Fund, administered by the Oregon Department of Energy, is a continual, revolving pool of funding borrowers use to support expansion of alternative fuel vehicle fleets while helping to reduce carbon emissions. The revolving fund is open to local, state and tribal governments, including school districts. As defined under the program, an alternative fuel vehicle is a vehicle manufactured or modified to use an alternative fuel, including hydrogen.

PENNSYLVANIA

Alternative Fuel Vehicle Rebate Program Extended

Pennsylvania's Department of Environmental Protection has extended its Alternative Fuel Vehicle Rebate Program for the purchase of new plug-in hybrid, plug-in electric, natural gas, propane and hydrogen fuel cell vehicles. The rebates – which are supported by the gross receipts tax on utilities - are available until June 30, 2015, or until 500 vehicle rebates have been awarded (more than 150 rebates remained at the end of 2014). Eligible vehicles must be registered in Pennsylvania and operated primarily in-state. Hydrogen and fuel cell vehicles are eligible for a $1,000 in funding.

RHODE ISLAND

Renewable Energy Growth Program

Rhode Island legislation (H-7727, S-2690) expands a pilot program, the Renewable Energy Growth Program, which facilitates the installation of grid-connected distributed renewable energy generation systems. The initial pilot program allowed small-scale energy producers to attach to the electric grid and sell their energy to electric distribution company, National Grid, with a standard 15-year contract and a set price. The new legislation extends the program, which was to expire at the end of 2014, and gradually expands the total target from 40 MW to 160 MW of distributed generation power over five years.

Potential developers will be able to enter 15- or 20-year standard agreements with National Grid that will provide a guaranteed income to help them obtain financing for building their projects, or they may net meter, receiving a payment at the retail rate for energy they generate in excess of what is used. The program, which is open to both commercial and residential projects, includes fuel cells using renewable fuels. The state's Public Utilities Commission will approve tariffs by March 31, 2015.

SOUTH CAROLINA

Clean Energy Industry Advisory Committee

House Bill 3125 established the Clean Energy Industry Manufacturing Market Development Advisory Commission to assist in the development of clean energy technology, materials, and

products manufactured in South Carolina. The 14-member commission will include members of the advanced vehicle technology, alternative transportation fuels, hydrogen storage or fuel cell, battery manufacturing, biomass energy, efficiency, hydroelectric, solar manufacturing, utility, and wind components manufacturing industries.

By December 31, 2014, the commission will deliver to the governor and general assembly an initial report that will include an analysis of the state's existing clean energy manufacturing industry; analysis of job development and market potential for a South Carolina clean energy industry; categories of clean energy markets that should be developed in the State; and recommendations for marketing and public education programs and incentives for manufacturing or operation of clean energy technology, materials, and products.

Distributed Energy Generation Program

The South Carolina legislature created a Distributed Energy Resource Program to increase the amount of distributed energy generation in the state. Energy utilities may choose to participate in the program, which will include resources up to 20 kW for residential and 1 MW for nonresidential distributed generation. Hydrogen from renewable resources is defined as an eligible renewable generation resource under the program. The state's Public Service Commission will establish new interconnection and net metering rules.

TEXAS

New Technology Implementation Grant Program

The Texas Commission on Environmental Quality (TCEQ) announced that up to $4.6 million in grants would be made available to eligible individuals and businesses to offset incremental costs of emissions reductions of air pollutants from facilities and other stationary sources in Texas. The New Technology Implementation Grant (NTIG) program is part of the Texas Emissions Reduction Plan (TERP) and is offered to eligible entities that intend to build, own, and operate new technologies to reduce emissions from point sources or store electricity related to renewable energy. Fuel cells qualify for grants under the Advanced Clean Energy program category.

UTAH

Emissions/Alternative Fuel Requirements for State Fleet Vehicles

Senate Bill 99 – State Vehicle Efficiency Requirements, effective May 2014, states that, no later than August 30, 2018, 50% or more of new or replacement Division of Fleet Operations-owned state vehicles that are motor vehicles used for the transportation of passengers are motor vehicles with emissions that are equal to or cleaner than the standards established in bin 2 in Table S04-1, of 40 C.F.R. 86.1811-04(c)(6), or any vehicle propelled to a significant extent using one of the following alternative fuels: electricity from an off-board source, natural gas, liquid petroleum gas, hydrogen, or biodiesel.

VIRGINIA

Draft Energy Plan

Virginia's draft 2014 Energy Plan focuses on growing, strengthening, and diversifying the state's economy in four ways: strategically growing the energy sector, reducing greenhouse gas emissions and lowering energy use, investing in reliable and resilient energy infrastructure, and preparing Virginia's workforce to drive the energy economy into the future. The report notes Virginia's strengths in fuel cell and hydrogen R&D through academic research (Virginia Commonwealth University, Virginia Tech, the University of Virginia, James Madison University, and George Mason University), in industry (Gates Fuels, Luna Innovations, and Marz Industries) and at federal laboratories (Jefferson Laboratory , Naval Surface Warfare Center Dahlgren Division, and the NASA Langley Research Center). In addition, the report highlights a Green Jobs Tax Credit that provides qualified employers with a $500 tax credit for each new green job created that offers a salary of at least $50,000. Jobs in hydrogen and fuel cell technology are eligible for this tax credit.

For a comprehensive update on recent state-level fuel cell and hydrogen activities, see the U.S. Department of Energy report, State of the States: Fuel Cells in America 2014.

More information on fuel cells and hydrogen and the Fuel Cell and Hydrogen Energy Association is available on our website at www.fchea.org.