

Regular Meeting, Electric Vehicle Charging Stations Infrastructure Commission

April 26, 2019

Meeting presentations and minutes are available at
<https://www.des.nh.gov/organization/divisions/air/tsb/tps/msp/sb517.htm>

Senator Watters opened the meeting at 11:03 a.m.

Introductions

Commission members present: Senator David Watters; Representative Steven Smith; Representative George Sykes; Rebecca Ohler (NHDES); Peter King (BIA), Richard Bailey, Jr. (NHDOS); Carleton Simpson (Unitil); Brianna Brand (for Gary LeMay, Drive Electric NH); Matthew Mailloux (OSI), David Rodrigue (NHDOT); Chris Nihan (for Kevin Miller, ChargePoint); Charlotte Ancel (Eversource); and Dan Bennett (NHADA).

Public present: Tara Merrifield (NHDAS); Liz Nixon (PUC); Tim White (NHDES); Jessica Wilcox (NHDES); Elizabeth Strachan (NHDES); Donna Gamache (Eversource); Simon Thompson (Sheehan Phinney Capitol Group); Huck Montgomery (Liberty Utilities); Kurt Demmer (PUC); Jon Shaer (NECSEMA); Drew Drummond (Greenlots); Marc Brown (Alliance of Automobile Manufacturers); James Penfold (EV LaunchPad); Barry Woods (Revision Energy); Brad Pernaw (Common Man); Mary Ewell (Monadnock Energy Hub)

Approval of March Minutes

Copies of the minutes were not available so approval of March minutes was postponed to the May meeting.

Legislative Update (order of the agenda was revised)

Senator Watters gave a re-cap of some of the bills related to the Commission's work:

SB 216 - establishing an autonomous vehicle advisory commission, establishing an autonomous vehicle testing pilot program, and providing requirements for automated vehicle deployment. Passed unanimously out of House committee and scheduled for floor vote on May 2nd.

SB 275 - requiring that all of the state's motor vehicles will be zero emissions vehicles by the year 2041. Passed out of committee and scheduled for House vote on 5/8/19.

HB 478 - establishing a road usage fee and making an appropriation therefor. Retained in committee.

SB 221 - establishing a commission to study highway fund revenue for hybrid and electric vehicles. Passed Senate but Inexpedient to Legislate in House.

Senator Watters relayed that he had had good discussions with the electric utilities and the Office of Strategic Initiatives regarding the use of VW funds for EV charging and would have more to report next month.

Senator Watters shared a article from Bloomberg (4/16/19) – *“Plummeting battery prices to make electric cars cheaper than gas cars in 3 years”* that noted that due to the more rapid fall in battery prices than expected, cost parity with gas cars would be reached by 2022 – just three years away.

[Fuel Cell & Hydrogen Transportation Northeast Review](#)

Presentation by Charles Myers from The Massachusetts Hydrogen Coalition

Charles Myers gave an overview of fuel cell vehicle (FCV) technology and the associated fueling infrastructure needs. The presentation reviewed the fuel cell concept and current vehicles available on the market, including light duty passenger cars; medium duty delivery trucks; transit buses; and heavy duty class 8 tractor trailers. FCVs are simply electric vehicles that generate the electricity on board rather than store it in batteries. Charles described the infrastructure needed to provide the hydrogen fuel for FCVs and where the infrastructure is currently located in New England. He concluded with benefits of fuel cell vehicles: does not require grid upgrade; a single station can fuel the same number of vehicles as a current gas station and can support town centers including multi-unit dwellings; FCVs are less impacted by cold weather; and have ranges that exceed 330 miles per fill. Further, hydrogen as a fuel source is renewable, can be generated locally, can be used for transportation, power generation or energy storage, and can be transported easily.

During back and forth discussion the following points were made:

- Hydrogen fuel can be created using an electrolyzer, which splits water molecules to create hydrogen, or via a steam reformation process, which strips the hydrogen from a fossil fuel molecule, typically natural gas.
- All hydrogen in New England right now is made by splitting the hydrogen from water using hydroelectric power from Canada and is, therefore, 100% renewable. There is not enough generation in the Northeast so most is shipped down from Canada.
- Most FCVs have a range greater than 300 miles.
- During fueling the fuel dispenser does a leak test on the vehicles' fuel system to ensure no leaks. Fueling takes 3 to 5 minutes.
- Currently there are three FCV models that each cost about \$58,000. Lease programs include 36 months of free maintenance and use of a conventional vehicle if the FCV is in the shop. Leases cost about \$350/month with \$3,000 down.
- Total cost of ownership is currently greater than an internal combustion engine vehicle. Gas would need to be about \$3.50/gallon to reach parity.
- The same federal tax credit is available for hydrogen vehicles as for electric vehicles.
- GM, Audi and Mercedes are all releasing FCV models within 5 years.

- Toyota and Air Liquide are partnering to fund hydrogen fueling stations in the Northeast.
- In California there are about 64 stations and 6,500 FCVs.
- Hydrogen fuel goes into a vehicle at minus 40 degrees F to avoid the heat of compression and enable storage of more fuel.
- The footprint of a station is small, about 30x50 feet and can fuel 40 vehicles/day, or about 300 per week.
- The cost of a station is \$1.5 – \$2 million and the prices is coming down. At current costs and 300 vehicles/week the station breaks even in about 5 years. It was noted that a multi-charger DC Fast Charge station could be built for \$70,000 and also charge about 300 vehicles per week. Charles pointed out that there is both room and need for both solutions. 300 vehicles per week using a DC Fast Charger could strain the grid. He also noted that it might be wise to put hydrogen along evacuation corridors as you could have fewer stations, and in an emergency a truck could bring in the hydrogen if the grid went down.
- See slide of fueling stations locations in the Northeast, some of which use electrolysis to generate the fuel on site from water.
- Regarding sound impact to neighbors due to the chillers, Charles stated that they have installed them across the street from residences with no complaints.
- Hydrogen delivered to a vehicle is measured in kilograms. Nothing has been done yet about taxing hydrogen as an on-road fuel, but many groups are looking into this.
- A passenger car holds 4.5-5 kilograms of hydrogen.
- A 20 foot tractor trailer could be brought to a site as a mobile refueling option, or potentially smaller trucks could be used for emergency refueling purposes.
- On-site refueling for fleets such as a state agency fleet can be done by bringing in a simplified portable fueling system that could fuel 5-10 vehicles per day.
- Because water is being used to generate the hydrogen there could be a conflicting interest for water use. This is a potential issue that should be evaluated as part of any plans to expand such fueling.
- It was noted that Honda and Toyota were pioneers with the conventional hybrid engine, don't seem to be doing too much with battery electric vehicles, but are becoming pioneers in the hydrogen market. Could this be due to the fueling time issue with electric vehicles versus the short fueling time for hydrogen vehicles? Charles stated that was one issue, but that Japan doesn't have the ability to offset electricity and decided to invest in vehicles that could be used as hydrogen storage to provide electricity if needed in an emergency situation. Shell currently generates hydrogen fuel in Australia and ships it to Japan since there is not enough renewable capacity in Japan to make it on site. A FCV fuel cell is currently limited to 5,000 hours of use, so using them as a generation option will shorten their on-road life span.
- Range anxiety isn't a significant issue for FCVs because Honda, Toyota, and Hyundai have committed to only releasing the vehicles in an area that has adequate supporting infrastructure.
- Charles indicated that there are some plans for hydrogen in New Hampshire that are not yet public.

Alternative fuel corridor nomination update

Senator Watters introduced Tim White from NHDES to discuss recent acceptance of alternative fuel corridor nominations from Federal Highway Administration (FHWA). Tim explained that NHDES worked with NHDOT to put together a nomination for several electric vehicle corridors, with some to be identified as “signage ready” and others as “signage pending” corridors. Signage ready means DC Fast Charging infrastructure currently exists at maximum intervals of 50 miles on that corridor and no more than 5 miles from the highway exit. Signage pending indicates that the corridor does not currently have sufficient stations to be ready for signage. For further information please see https://www.fhwa.dot.gov/environment/alternative_fuel_corridors/. Tim indicated that all the corridors nominated by New Hampshire were accepted by FHWA.

Discussion of the charging infrastructure plan presented by the electric utilities at the March meeting

Senator Watters relayed that follow-up discussions had been held with OSI about where the funding for a utility “make ready” program might come from. There is more discussion needed, but the key principle is that it cannot be “on the backs of” ratepayers.

Matthew Mailloux stated that he looked forward to continued discussion of the plan, but that currently the Office of Strategic Initiatives was busy with other aspects of Volkswagen Funding including a state allocation, a municipal allocation, and a school bus allocation. They would like to see these projects through to completion before starting on another project under the Volkswagen funds.

Public Comment

Chirs Nihan from Chargepoint stated that it would be good to keep in mind the timeframe for developing and implementing an RFP. He gave the example of the State of Maine who released an RFP for charging stations in August of 2018 and likely six months prior to that to develop it. The responses were due October 2nd and it took another six months to determine the outcome. Using Maine as an example, it may take 1-2 years for the whole process.

Charlotte Ancel responded that she had been a part of an RFP process in Maine that was quite a bit faster. She anticipates that they could have shovels in the ground and stations being installed within one year. Chris agreed, but just wanted to emphasize that there could be hurdles that would delay the process.

Brad Pernaw, Common Man, said they will be doubling the Tesla charging capacity at the Hooksett rest areas and will have 20 spaces set aside for universal chargers. They are just waiting to find the funds to do the project and are looking for partners. They have met with several vendors already.

Legislative Update

Senate Bill 275 seems to be moving forward.

Senate Bill 216 (concerning autonomous vehicles) was been amended. Representative Sykes stated that the bill had spent two days in public hearings and then during one workshop had been amended to state

that instead of the transportation council looking into the issues with autonomous vehicles, they would develop a commission to do so. It came out of the committee as ought to pass.

The meeting was then adjourned at 12:40.

The next meeting will be May 24, 2019 at starting at 11:00 a.m.