

Tuesday, January 12, 2021 @ 6:00 PM – ORHS Auditorium

Attendees: Al Howland, Brian Cisneros, Michael Williams, James Morse, Sue Caswell, Josh Olstad, Jim Rozycki

Visitors: John Anderson-Anderson Blue Bird Bus Sales, Jason Raposa

Visitors via Remote Access: Bill Johnston-NH Coop, NuVve: Ted Smith, Russel Vare, Eric Zimmerman, Gregory from Denmark.

Al Howland welcomed everyone and asked everyone to introduce themselves and informed NuVve that they had 30 minutes to present their presentation along with a question and answer session.

### Electric bus/Vehicle to Grid Presentation

Jim Anderson began the presentation by recalling a past meeting with Sue Caswell and Dr. Morse three years ago.

Jim then read the mission statement for his company, along with a brief profile about the company, the services that they provide, as well as that they are authorized Blue Bird & Micro Bus dealers for Massachusetts, Rhode Island, New Hampshire and Vermont. At this point John turned the meeting over to Gregory from Denmark to continue the presentation. As there were audio difficulties, John resumed the presentation with the following slide information:

#### Why Blue Bird?

Blue Bird is an iconic brand synonymous with school bus with a rich legacy focused on delivering safety, quality, durability, serviceability, innovation and value for over 90 years....

Founded in 1927, only OEM 100% dedicated to school bus, exclusive purpose-built chassis, #1 in North America for alternative fuel, engineered and tested to the highest safety standards, only OEM to offer complete product line with CO Rack and KY Pole tests as standard.

#### What is Nuvve?

Our founders invented the concept of V2G at the University of Delaware in 1996. Nuvve has been in operation for 10 years, HQ in San Diego. V2G Projects and Operations in multiple countries. Longest V2G operation: 4 years of operation in Denmark. Corporate investors: EDF Renewable Energy, Toyota Tsusho. Joint Venture.

#### Nuvve's Mission:

To lower the cost of electric vehicle (EV) ownership while supporting the integration of renewable energy for scalable and sustainable green society.

#### What V2G Means for You

Your vehicles are charged and ready when you need them. Your battery is safe with Nuvve V2G {V2G service certification by OEM and warranty coverage}. You're in control.

#### Benefits:

Turnkey solution, includes maintenance and warranty, cost neutral yet all the benefits of going electric, fast charging ensures vehicles are ready.

#### Charging Stations

Free DC Fast Charging with V2G Service Agreement. 60kW DC charging station. Charge in less than 3hrs. Includes up to \$20,000 installation cost per unit. 10-year worry-free maintenance and warranty. Software, data monitoring and reporting

## SPV Brings Financing and Turnkey Solution

Charging Consultation & Installation: With network of installation partners.

Financing: Assets owned by a Special Purpose Vehicle (SPV). V2G revenues incorporated to reduce the total cost to the customer. Bus, charging station and installation costs can be included in SPV.

Finance equipment, including vehicle by leveraging V2G revenue.

Vehicle/EVSE Charging Station/BTM (Behind the Meter {installation}) Cost/TTM (To the Meter {grid updates}) Cost

A Partnership Designed for Long-Term Success

Cost-neutral to promote adoption: EV total annual cost same as diesel when including bus, diesel, maintenance, and V2G revenue

Benchmark project price would be \$27,000 per year for 10 years

Discounted offer for Oyster River:

1 Bus with routine maintenance: \$25,500 ~ without routine maintenance: \$23,500

2 Buses with routine maintenance: \$25,000 ~ without routine maintenance: \$23,000

3 Buses with routine maintenance: \$24,500 ~ without routine maintenance: \$22,500

Turnkey solution includes:

Electric school bus, charge station and installation cost (up to \$20,000 per unit), warranty and maintenance.

This concluded the power point presentation and John asked the committee if they had any questions.

Note: In summary, the proposal is an agreement between ORCSD, Anderson Bus (regional distributor for Blue Bird buses), Nuvve (an electric vehicle to grid electricity storage startup), and the New Hampshire Electric Coop (NHEC). ORCSD would lease one or more electric buses for 10 years at the prices shown above, with Anderson/Blue Bird providing the bus and the maintenance, Nuvve installing the charger(s) at Mast Way and arranging the financing, and NHEC benefitting from using the buses to balance the electric grid while they are plugged in.

Dr. Morse clarified that NH Coop is at the Mast Way School only, so installation would only be a Mast Way.

Brian Cisneros asked what the expense versus savings would be?

We would need to review our total lease/purchase, maintenance, and fuel costs to compare. Jim Anderson estimated that the electric buses would be approximately the same cost as a new bus in terms of total cost of ownership over 10 years.

Al Howland asked how many miles can be completed on a single charge?

120 miles under ideal conditions, likely 20% less given colder weather, use of energy for heaters, etc. and depending on driving conditions.

Brian asked that with the current pandemic situation and possible buses sitting inactive for a while, what is the long-term effect.

For power train and batteries, the V2G configuration, where batteries in the buses are being constantly charged and discharged to balance grid demand is better for the battery life and power train than sitting idle. Other mechanical components are the same on electric buses as conventional buses.

Dr. Morse asked how many buses can be attached to a charger. If the cost to maintain electric buses is compatible to the current cost to maintain diesel buses.

One charging station would be installed for each bus.

Michael Williams asked what happens after ten years.

Nuueve would own the bus and would either take it back or sell it to ORCSD for \$1. Likely technology will have evolved by then and we would want to adopt the latest technology.

If the charger was behind the meter, on the building side of the meter, how does it impact the building electric use?

A separate meter would be installed just for the charging stations. The metering and electricity use for Mast Way School would not be affected. The cost of energy is included in the cost of the lease and ORCSD would not be billed directly for energy based on the meter. The cost of energy is part of the lease agreement and ORCSD would not be billed separately for electricity use.

Does operating electric buses require a special license?

No. There is a recommended orientation which the Anderson (the local bus distributor) would provide to drivers. No separate driver's license or endorsement would be required for current bus drivers.

Brian asked what the vehicle weight was and if inclement weather, large hills or starting and stopping frequently diminishes stopping capacity, and that the usage of air brakes does require special licensure.

The weight is slightly higher than a diesel bus but distributed more evenly along the frame and with a lower center of gravity due to placement of battery packs. This makes the bus more stable.

There was no additional questions or comments.

Dr. Morse apologized for the audio difficulties and appreciated everyone taking the time to discuss this presentation and thanked everyone for participating.

Due to the length of the presentation, the remaining agenda items will be carried over to the next meeting to also include a technology item.

Michael Williams left the meeting at 6:45 PM.

Respectfully submitted,  
Wendy L. DiFruscio