VSPC Load Forecast Subcommittee
April 12, 2022
Draft Meeting Minutes
Agenda

Attendees: Philip Picotte (DPS), Bill Powell (WEC), Shana Louiselle (VELCO), Hantz Presume (VELCO), Kris Smith (VEC), Shawn Enterline (VPPSA), Leigh Seddon (EAN), Jay Pilliod (EVT), Marc Allen (VELCO), Andrew Quint (GMP), Tom Lyle (BED), Michael Wickenden (public member)

Demand Resource Plan Model Review request

Jay Pilliod shared that Efficiency Vermont has started work on their 2024-2026 and 2027-2029 Demand Resource Plans (DRP) which they expect to file with the PUC in December 2022. In the previous DRP development process (for the current 2021-2023 performance period), EVT engaged with the VSPC Load Forecasting Subcommittee as a way to review valuable technical input and feedback that helped inform the DRP proposal and efficiency forecast model. EVT requested to engage with the LFS again at the June and September meetings. EVT will provide a short preliminary DRP overview and first draft modeling inputs/outputs at the June meeting, followed by a second draft review at the September meeting to inform the development of the next DRP. The subcommittee agreed to include the DRP review into the 2022 schedule.

ISO-NE draft load forecast review

Hantz Présumé reviewed the ISO-NE forecast process, sharing that it began load forecasting work in September 2021 to discuss the forecast methodology and process changes to the forecast. In May 2022, ISO-NE issued their 2022-2031 Forecast Report of Capacity, Energy, Loads and Transmission (CELT). In addition, ISO-NE published the Peak Demand Forecast, a Heating Electrification Forecast, and a Transportation Electrification Forecast.

Different from prior years, ISO-NE forecasted EV fleets and medium-duty vehicles for the 2022 forecast. The VSPC LFS should consider forecasting fleet vehicles as part of the LRTP and to what extent can we use the ISO forecast approach. Hantz noted that ISO-NE does not forecast cooling load growth in the summer for Vermont and VELCO does not agree with that approach. The following observations, questions and comments were made during the discussion:

- ISO-NE is using data provided to them from EVT's 2020 DRP. The next DRP will be able to provide an update on the efficiency forecast and the cold-climate heat pump forecast.
- ISO-NE is using data sent to them by states. VT DPS submitted a blend of previous DRP numbers for heat pumps with Low Emission Analysis Platform (LEAP) forecasts. The methodology varies by state.
- Do smart meters have the ability to understand the loading characteristics from a heat pump? (without direct metering, utilities won't have a good view of what is going on in a household. One way (imperfect) would be a before and after view to see what the effects are generally, but it introduces a lot of different questions. There's more work to be done to discover what is happening on the heating side. It would be interesting to do more research in that area.

- The DPS hired Demand Side Analytics to look at how much evaluation could be conducted through AMI data. The results of the study show that it is imperfect to find individual load across AMI data, especially with small sample sizes. The full study can be viewed here.
- The DPS mentioned the Residential Market Characterization Study that will be available later this summer which will provide more data on heat pump cooling being added to Vermont homes (950 household survey, onsite visits to 170 households in 2021).

Vermont Long-Range forecast discussion

The Forecasting Subcommittee is meeting earlier than normal in the planning cycle to be able to have a final forecast ready by June 2023. In order to meet that June deadline, the Subcommittee will need to finalize the forecast approach with Itron by the end of 2022 and provide VELCO and Itron six months to finalize the analysis.

BED and VPPSA commented that they are working with Itron to develop their Integrated Resource Plans (IRPs) and questioned whether there will be any major shifts in assumptions. Hantz responded with the observation that there may be impacts related to the Comprehensive Energy Plan and the Climate Action Plan. The Subcommittee needs to discuss what changes need to be accounted for based on statewide plans. In addition, the Clean Heat Standard has the potential to impact heating load. GMP added that they took Itron's forecast and changed the assumption around new technologies and adoption rates to be more aligned with the Pathways Study.

What are the key inputs for the 2023 forecast?

Heat pumps forecast

- DRP process was the main source for the last Long-Range Plan. The final draft of EVT's medium-range heat pump adoption (single source and whole house heat pumps) should be ready in the next few weeks. BED's numbers will need to be added to it to provide a state forecast, and serve as a medium forecast.
- DPS asked EVT to produce a low, medium and high forecast. EVT will follow a similar approach from the last LRTP. The medium is developed with known resources, the high forecast will demonstrate a policy shift such as the Clean Heat Standard in effect, and the low forecast will demonstrate if major funding was lost. Once the DPS is comfortable with data, EVT could come back to this committee or Itron.
- For long-range planning, how do we translate the number of units into load? There's three different categories of units – in program new units (eligible for incentives); replacement units, and baseline units (out of program but they add load). Itron took the data and turned into load data.

Electric vehicles forecast

- Drive Electric Vermont developed high, medium, low scenarios for the last forecast, and will reach out to Drive Electric Vermont to see if they have the information. If that's not sufficient VELCO will rely on Itron for other sources of data.
- EVT didn't include medium-duty trucks in last forecast, only light vehicles. Fleet vehicles and trucks could be significant. This would be a new technology for this forecast. Drive Electric Vermont may not have the data on medium-duty trucks. Need to understand the market and

how much adoption to expect. If the manufacturers can deliver, there may be high demand and adoption.

- Should we take into account EV load control? What about fleet vehicles?
- When do we need to make the decision about how to address medium/heavy duty? We have time to think about what is possible and what is feasible. VELCO will have preliminary discussion with Drive Electric and Itron to gather more information.
- Charging patterns of electric buses would be valuable data. Green Mountain Transit has two electric buses in service. VEIC is working with GMT to monitor the use of the two electric buses They are on BED's time-of-use program and charge at night the majority of the time. BED will provide data if GMT approves.
- Federal Infrastructure funding may be available for medium-duty EVSE. VELCO will check with Drive Electric Vermont about the federal funding scope.

Energy Efficiency:

- Itron looks at historical loads and does a regression analysis to capture the effects of energy efficiency on the load to avoid double-counting. The last two forecasts, they captured a significant amount (~80%) in the model. We can ask Itron to speak to how their models are capturing existing energy efficiency. If you assume the programs are going to remain the same, you can forecast the effects of energy efficiency programs going forward. The main concern is double counting the energy efficiency effects going forward.
- DRP alignment will be important. EVT is working to have a preliminary draft modeled for the Load Forecasting subcommittee by June 2022. The final DRP proposal will be filed with PUC in early December with the goal of receiving a final order by June 2023.
- The Load Forecasting subcommittee could have a revised, unapproved forecast to use for the long-range plan by April/May of 2023.
- GDS will have a preliminary potential study by July/August 2022.
- BED IRP will have preliminary forecast by end of the calendar year.

Load Control:

- During 2021 analysis, VELCO did not take into account load control or storage in the medium forecast (expected load). Instead, load control and storage were used as solutions. In the high forecast, because the forecast was so high (80% growth in 20 year forecast) VELCO did take load control into account, and assumed utilities would continue to deploy load control (75% EV load could be controlled). The subcommittee will need to talk about this, and agree on what makes sense for the 2023 forecast. *Does the number vary based on the type of vehicles? Is there a point where load control is no longer as effective?*
- Need to be able to control load – if you move load at 10pm you could create a peak at 11pm. More analysis is needed. VELCO will talk to Itron about a break even analysis (at what penetration rate does the load flatten out, and what controls are needed to keep it there?).

Distributed Generation:

- Solar PV tends to stress the system in the middle of the day. The system has been studied with very high amounts of solar PV combined with lower loads followed by another model that represent a spring, mid-day load.

- Two separate studies (load serving study that models EVs & heat pumps, and then a DER generation integration study that models light load and high generation.
- Test other scenarios – EV growth based on economics, and models a very high amount of solar (1200 MW) and see what would happen to the system.

What data sources will be required?

1. *PSD Potential Study (20-year outlook) coming in July*
2. *VDU historical data – load shapes, heat pump shapes, AMI***
3. *Moody's economic forecast*
4. *Saturation Survey Results*
5. *State economic outlook*
6. *Others?*
    a. *Housing needs*

**VELCO will send a data request for VDUs for historical data. AMI customer-level data would be helpful to understand customer behavior. It would be difficult to work with AMI data dumps. GMP has studies done on small subsets of meters. Hantz will ask Itron what they would like to see for information.

Comprehensive Energy Plan and Climate Action Plan

The Clean Heat Standard will be difficult to factor in as it will take two years for the PUC to write the program rules if the bill is enacted into law. CHS is a performance standard, if it stays on track, by 2030 fossil fuel for combustion heat will have to drop by 40% (EAN modeling). It may give us a window for what would be the 2030 actual build out of heat pumps. However, there are other clean heat measures, biomass, wood pellet stoves, biofuels.

Timeline:

VELCO's Planning Team did not have a lot of time to conduct analysis at the last planning cycle, and would like to do the preparation for the forecast a year before – beginning in 2022. VELCO proposed the following schedule to finalize the forecast scope:

- June 2022 – meet with Itron to discuss forecast approach.
- September 2022 – review draft proposal with Itron, and get input from LFS.
- December 2022 – finalize forecast approach.
- January 2023 – begin forecast preparation work.
- June/July 2023- begin planning work in early summer

Next steps:

The next meeting will be held in June.