



NECPUC Retail Demand & Flexible Load
Management Working Group

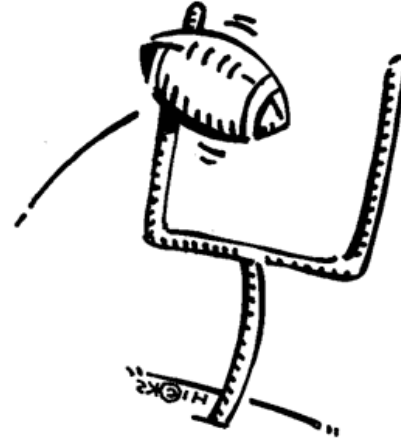
Vermont's Long-Range Planning Process
March 29, 2024

Hantz Pr sum , Director of Transmission Planning

Vermont's innovative approach to transmission planning

Our goal...

To design, operate and maintain Vermont's electric transmission system in the **least costly manner** that will meet Vermont's need for **reliable electricity**, whether those needs can best be met through **transmission upgrades**, or by working with others to **reduce demand** through energy efficiency, demand response, load management, storage, **generation**, or other resources.



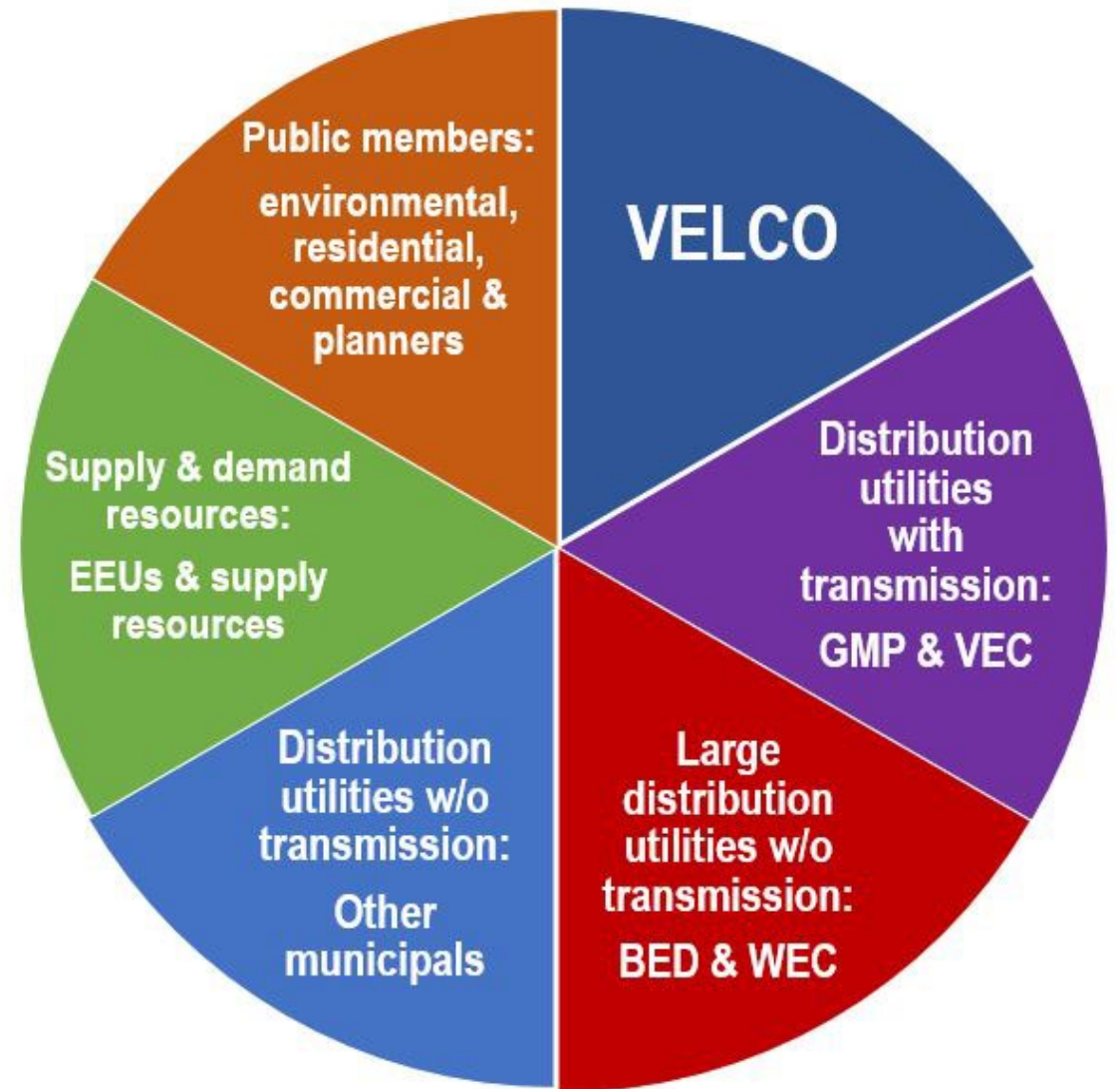
The purpose of this process...

To provide **information as early as possible** about the potential need for transmission system improvements to **allow sufficient time to plan and implement more cost-effective non-transmission alternatives** to meet reliability needs **wherever feasible**.

Vermont System Planning Committee

Full, fair & timely consideration of cost-effective non-transmission solutions

- **Act 61 of 2005 Legislature (30 V.S.A. § 218c):**
 - Prepare a 10-year transmission plan at least every three years beginning July 1, 2006.
- **Public Utility Commission Docket 7081 established VSPC in 2007**
 - Participants: VELCO, distribution utilities, 4 public reps named by PUC, generation developer, Energy Efficiency Utilities, Public Service Department
 - Requires 20-year long-range transmission plan
 - Public outreach
 - Required contents:
 - Identify location of projected reliability deficiencies
 - Estimate timing and conditions of need
 - Describe transmission solutions and their cost
 - Identify potential obstacles
 - Describe criteria for non-transmission solutions



Studies underlying the plan



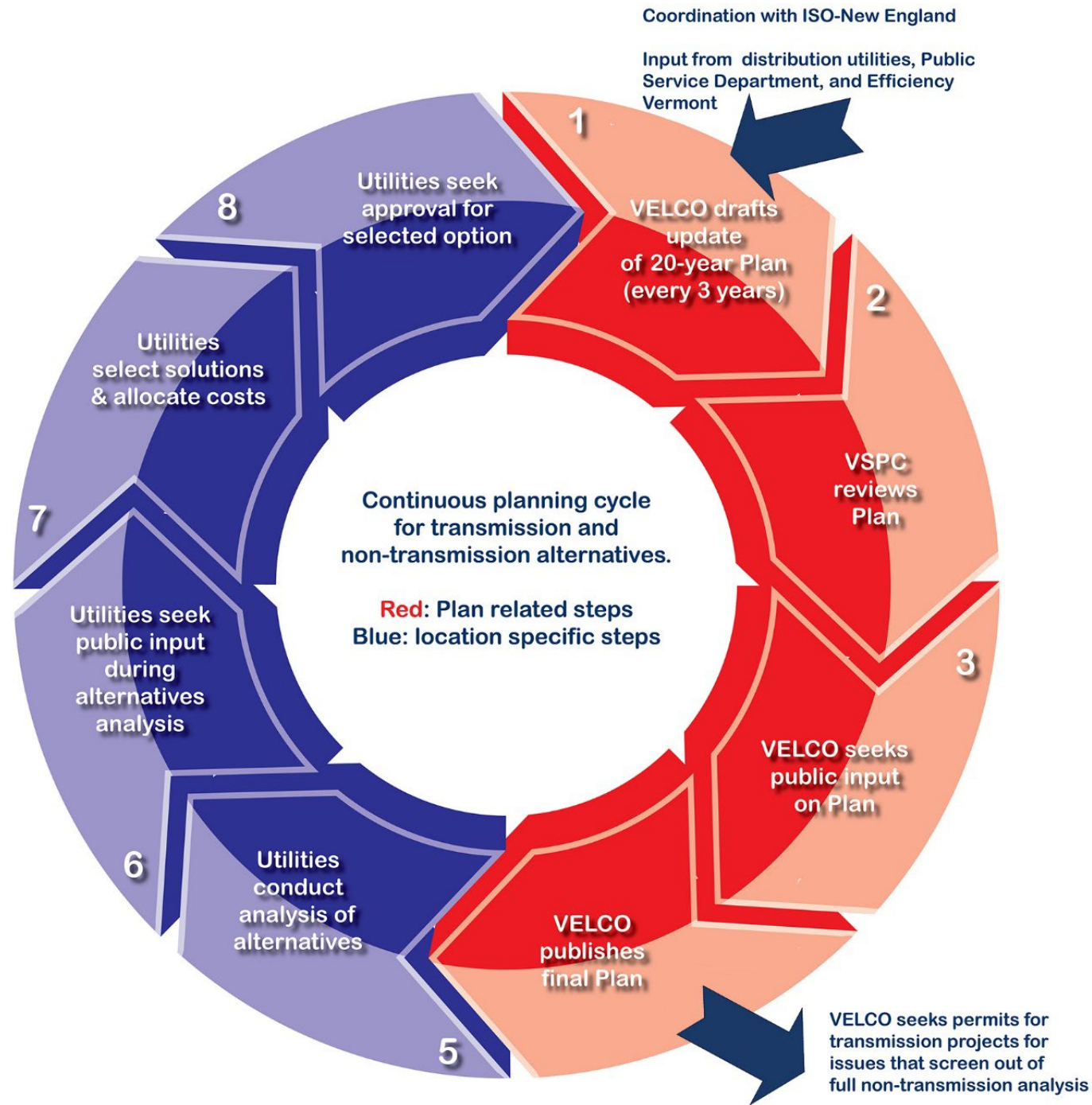
Analyses use mandatory NERC, NPCC, ISO-NE reliability/planning standards enforceable by fines



Provides input to forecast and overall plan






Vermont planning cycle



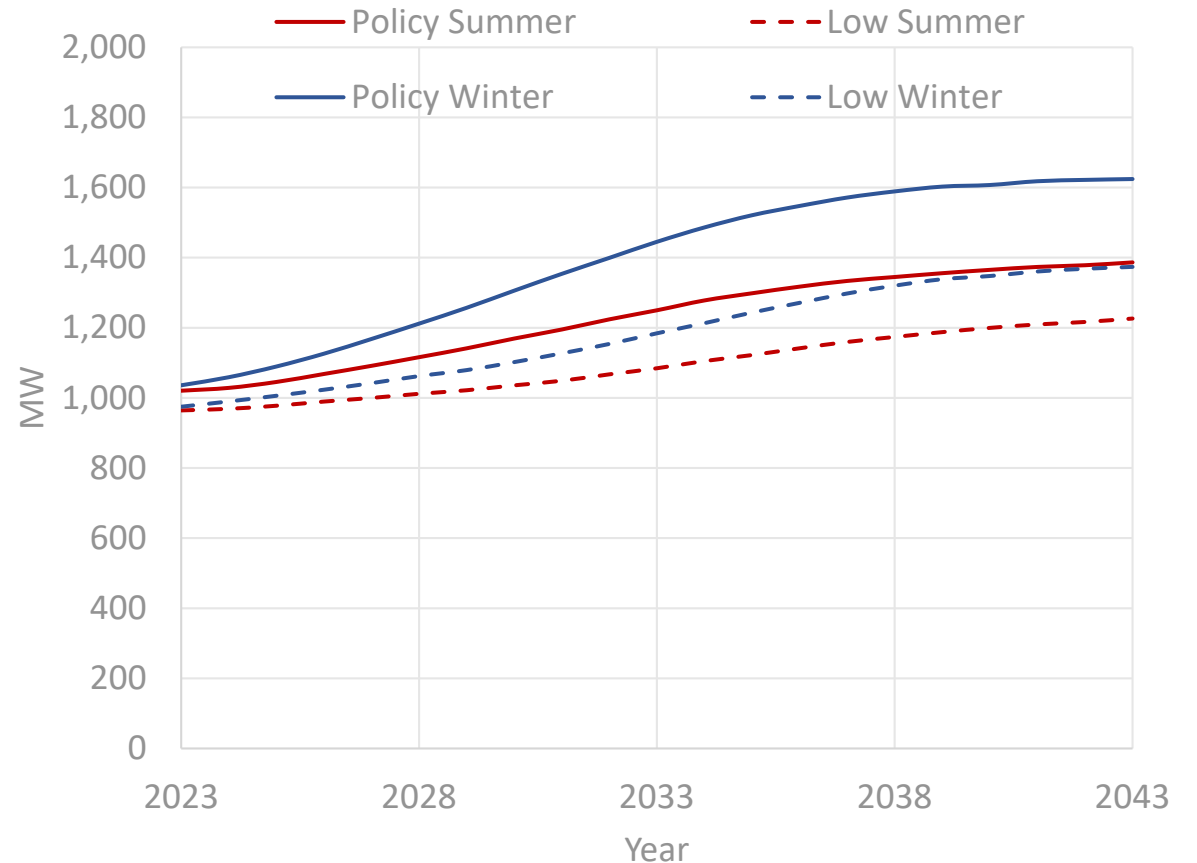
VSPC charter

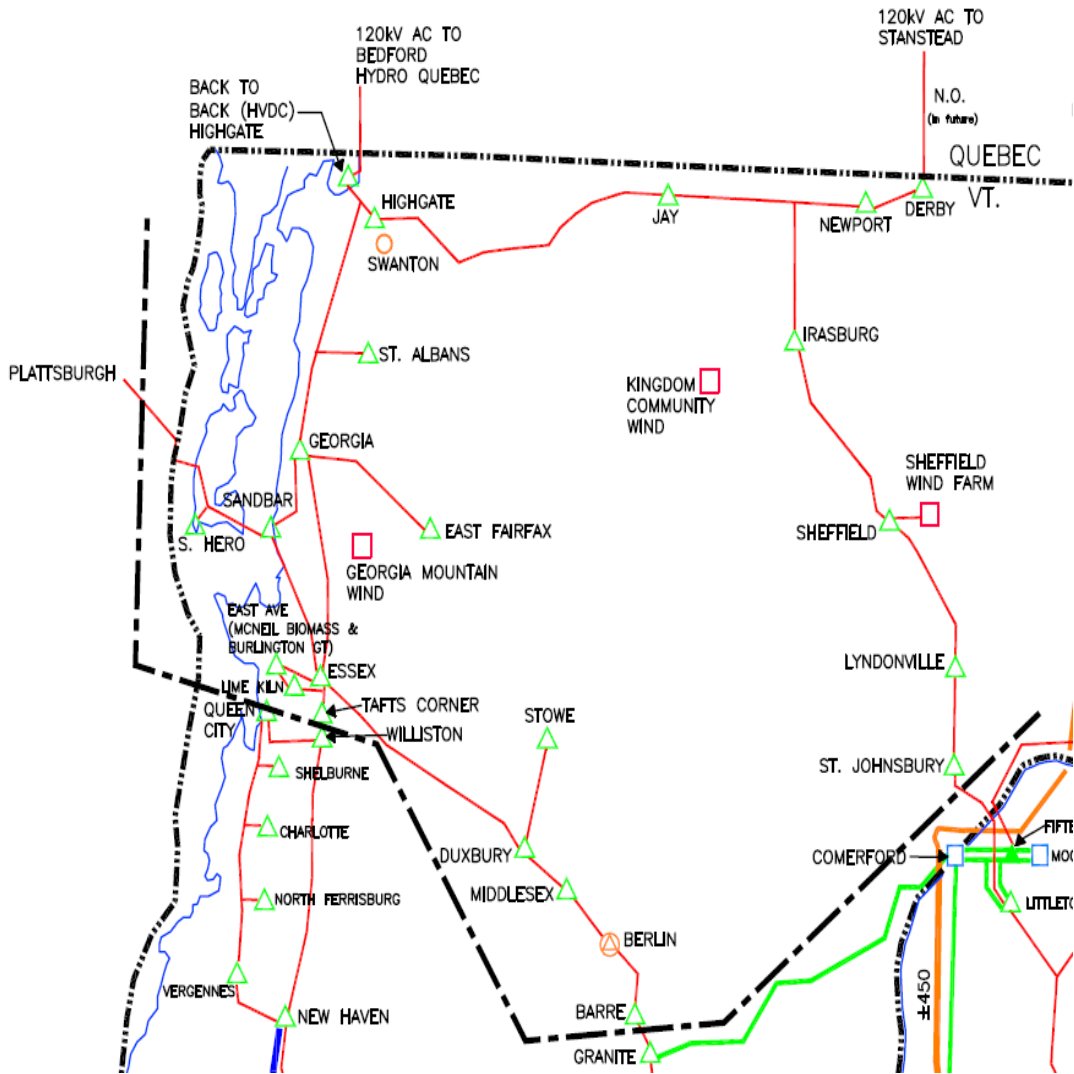
In fulfilling its purpose, the VSPC undertakes the following objectives:

1. Collaborate and provide formal input to VT LRTP
2. Review reliability issues annually to encourage shared insight
-  3. Review NTA screening and analysis
4. Enhance transparency and public engagement in electric system planning
5. Forum for discussion of impacts of emerging trends on the behavior of VT's electric energy load
-  6. Seek consensus on VT load forecast to support LRTP development
6.  Monitor Distributed Energy Resources (DER) impacts to provide broadly shared insight about DER integration and support the development of tools and processes needed to plan and maintain reliability
7. Forum for utilities and partners to share plans for managing load and infrastructure, and allow for peer-to-peer learning through discussion of shared experiences
8. Maintain regular communications with ISO-New England to increase understanding of mutually relevant issues

VT Peak Load Forecasts

- VT Roadmap (Policy)
 - Annual sales of HP increase to 18k by 2029
 - Non-fleet EVs grow to 90% of vehicles by 2043
 - Fleet EVs 100% electrification between 2038 and 2045
- Continued Growth (Low)
 - Annual sales of HP remain at 10.5k
 - Non-fleet EVs grow to 60% of vehicles by 2043
 - Fleet EVs constant at 2032 level through 2043



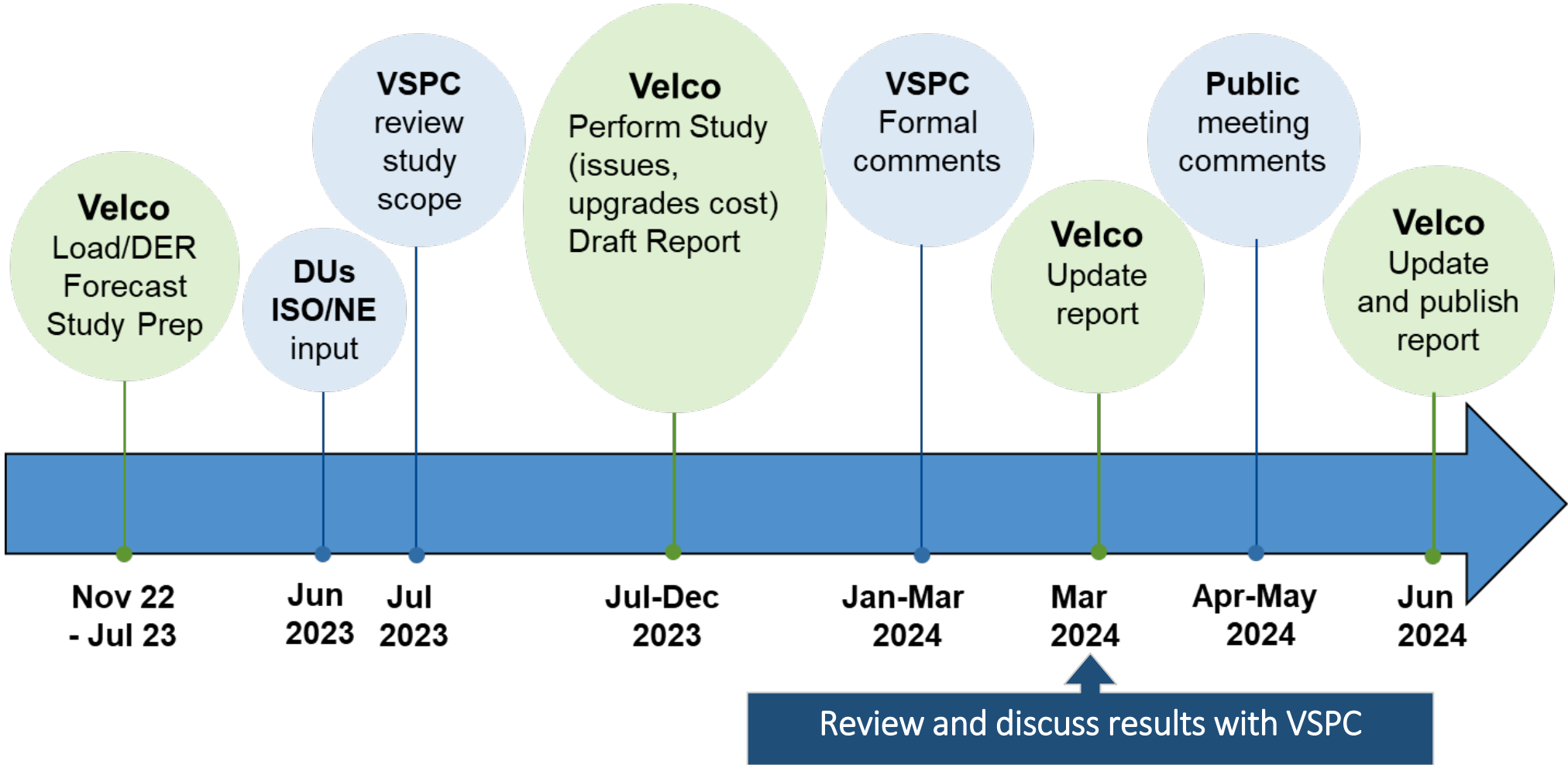


Northern Vermont area of concern



- N-1-1 contingencies causing thermal overloads and voltage collapse exposure
- Affected transformers: Queen City, Tafts Corner, Barre
- New 115 kV line between Essex and Williston
- Timing: 2032 based on winter forecast
- NTA: 75 MW of load reduction in the northern area by 2033. Grows over time.

Long-Range Plan Milestones



New guidance from VTPUC on Vermont transmission planning

- August 21, 2023 PUC memorandum requests VELCO to include the following considerations into its planning process and the Vermont Long-Range Transmission Plan:
 - Right sizing – is new transmission infrastructure appropriately sized to address future electrification and supply-side resources
 - Microgrids as a potential non-transmission alternative
 - New technologies to increase the capacity of the existing transmission infrastructure (e.g. GETS)
 - Extreme weather trends and resilience investments
 - Visibility of asset condition projects (5-to-15 year forecasts)
 - Alignment with Environmental Justice Act’s broader objectives

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MEMORANDUM

To: Mark Sciarrotta, VELCO
From: Chair Anthony Z. Roisman, Commissioner Margaret Cheney, Commissioner Riley Allen
Re: Next Long-Range Transmission Plan
Date: August 21, 2023

The purpose of this memorandum is to provide guidance to Vermont Electric Power Company Inc.'s ("VELCO") planning process, including the development of the Long-Range Transmission Plan. The Vermont Public Utility Commission ("Commission") has been providing similar guidance to electric distribution utilities in the context of those utilities' integrated resource plans.¹ Given the interaction of the distribution and transmission systems and the fact that the existing VELCO planning process is a collaborative process involving all Vermont utilities and other stakeholders, it is important for the relevant guidance to be presented to the transmission system operator as well.

For example, the Commission is looking forward to future plans providing more information related to the impact of beneficial electrification, distributed energy resources, and resources that are increasingly weather-reliant and distant from loads. At the transmission level, this would include VELCO addressing:

- whether potential new transmission infrastructure is appropriately sized to address longer-term challenges associated with both electrification and new supply-side resources that could be remote or distributed in nature;
- how the potential expanded use of microgrids might affect the need for transmission modifications and additions;
- whether new technologies could be used to increase the capacity of existing transmission infrastructure rather than building new infrastructure; and
- how projected extreme weather trends affect the need for storm-hardening transmission investments.

¹ See, for example, the Commission discussion in the August 2, 2023, order in Case No. 22-4301-PET, *Petition of Village of Swanton, Inc., Electric Department for approval of its 2022 Integrated Resource Plan*.



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