

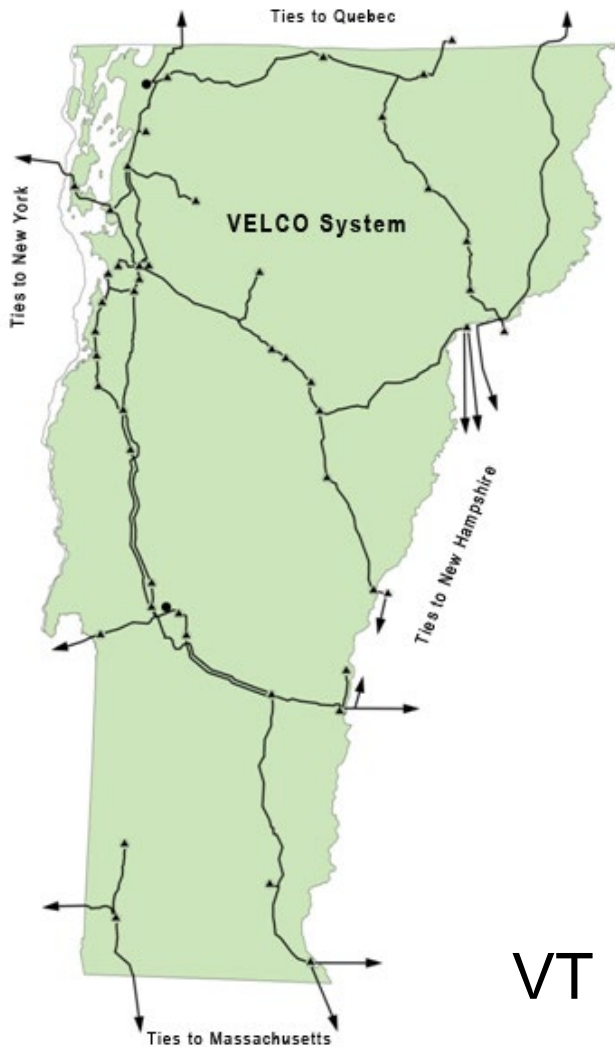
VT's Transmission Grid Reliability and Future Capability

VT House Energy and
Technology Committee –
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Generation mostly renewable and intermittent



Type		MW
Fossil (fast start units)	Winter	188
	Summer	138
Hydro		152
Wind		151
Landfill gas		9
Biomass (wood)		72
Utility scale solar PV		20
Small scale solar PV		400 and growing
Small scale farm methane, wind, hydro		63 and growing
TOTAL IN-STATE GENERATION SUMMER NAMEPLATE CAPACITY		~ 1005

VT Peak load 1000 MW (winter and summer)

2021 VT Long-Range Transmission Plan

- Plan and associated public outreach required by Vermont statute and Public Utility Commission order
- To support full, fair and timely consideration of all cost-effective non-wires solutions to growth-related issues
- To inform utilities, regulators, generation/storage developers and other stakeholders in development of projects and policy



What's important to remember

- System reliability will be maintained
- Vermont is a transmission-dependent state
- Significant load growth expected – winter peaking
- No major upgrades needed to serve load within the 10-year horizon
 - Presumes additional load management capability
 - Does not resolve all local concerns
- Incremental solar does not reduce load at peak hour
 - Efficiency and solar PV have provided great value
- VT utilities continue to implement innovative programs
- Further collaboration and innovation needed to achieve renewable and climate-driven requirements

No major upgrades needed to serve load within the 10-year horizon

Bulk system

- No peak load concerns. Issues addressed with tie line adjustments

Predominantly bulk system

- No peak load concerns. Issues addressed by tie line adjustments and operator actions
- Acceptable loss of load (5-150 MW). As a direct consequence of outage and operator actions.

Subtransmission issues

- Flagged some issues to be evaluated by distribution utilities

High-load scenario

- Minimal effect within 10 years
- After 10 years, requires non-transmission solutions to avoid transmission upgrades: load management, energy efficiency, storage, generation, ...

Recommendations

- Give greater weight to grid impacts when siting generation
- Bring to scale flexible load management
 - Enable inverter grid support functionality, i.e., voltage control and ride through capability
 - Enable utility management of distributed generation
 - Continue to evolve with storage
 - Establish data organizational architecture
 - Deepen/broaden fiber communications network
- Grid reinforcements – reliability, resilience & clean energy
 - Transmission and subtransmission
 - Flexible load management
 - Utility-scale and customer-located storage