

# NTA ANALYSIS

2024 Vermont Long-Range Transmission Plan –  
Frequency and Duration Analysis Update



VSPC Meeting  
January, 2025



# 2024 LRP Result Summary

SUMMARY OF BULK SYSTEM REGIONAL GROUPING & TRANSMISSION SOLUTIONS	ESTIMATED TRANSMISSION PROJECT COST	LEAD & AFFECTED DISTRIBUTION UTILITIES	SCREENED IN OR OUT OF FULL NTA ANALYSIS
<b>Northern area</b> <ul style="list-style-type: none"> <li>N-1-1 contingencies causing overload &amp; voltage collapse exposure</li> <li>Install a new 115 kV line between Essex and Williston</li> <li>Affected transformers: Queen City, Tafts Corner, Barre</li> <li>Need date is 2032 based on winter expected forecast</li> </ul>	\$120M Three X \$11M	<i>Lead:</i> GMP <i>Affected:</i> All VT	In 75 MW of load reduction in northern area by 2033 Grows over time
<b>Northwest area – includes northern area</b> <ul style="list-style-type: none"> <li>N-1-1 contingencies causing thermal overload</li> <li>Rebuild West Rutland to Middlebury 115 kV line</li> <li>Affected transformer: Middlebury</li> <li>Need date is 2029 based on summer expected forecast</li> </ul>	\$215M \$13M	<i>Lead:</i> GMP <i>Affected:</i> All VT	In 80 MW of load reduction in northwest area by 2033 Grows over time
<b>Central area – includes northwest area</b> <ul style="list-style-type: none"> <li>N-1-1 contingencies causing thermal overload</li> <li>Rebuild Coolidge - Cold River - North Rutland 115 kV line</li> <li>Affected transformers: North Rutland, Cold River, Windsor</li> <li>Need date is 2034 based on summer expected forecast</li> </ul>	\$185M Three X \$13M	<i>Lead:</i> GMP <i>Affected:</i> All VT	In Keep load below 2033 load level in central area Grows over time
<b>Southern area – includes central area</b> <ul style="list-style-type: none"> <li>Rebuild NGRID Bellows Falls-Ascutney Tap 115 kV line and GMP Vernon Road to Newfane 46 kV</li> <li>N-1-1 contingency causing thermal overload</li> <li>Affected transformer: GMP Vernon Road 115/46 kV</li> <li>Need date is 2034 based on summer expected forecast</li> </ul>	No VELCO estimate	<i>Lead:</i> GMP <i>Affected:</i> All VT, NGRID	In Keep load below 2033 load level in southern area Grows over time
<b>State of Vermont</b> <ul style="list-style-type: none"> <li>N-1-1 contingency causing thermal overload</li> <li>Install new 345 kV line between Vernon &amp; Eversource Northfield, MA</li> <li>Affected transformers: Bennington</li> <li>Need date is 2034 based on summer expected forecast</li> </ul>	\$5M for VELCO portion \$13M	<i>Lead:</i> GMP <i>Affected:</i> All VT, Eversource	In Keep load below 2033 load level in Vermont Grows over time

## Step 8: NTA Analysis

- **Reliability Exposure:**
  - How often will the NTA be needed and for how long
  - Area focused: Northern area, Northeast etc
  - Identify the frequency and duration of the issues identified in the LRP
  - Identify the critical load for summer and winter
  - Use sectionalizing of the subtransmission system

# Step 8: NTA Analysis

- Frequency

- How many days of the year will show an overload at the peak hour

Velco Load	Date
1388.95	1/18/33 6:00 PM
1365.73	1/19/33 6:00 PM
1344.83	1/12/33 6:00 PM
1337.73	1/20/33 6:00 PM
1327.33	1/13/33 6:00 PM
1316.82	1/14/33 6:00 PM
1304.44	1/21/33 6:00 PM
1302.55	1/24/33 6:00 PM
1294.45	1/28/33 6:00 PM
1293.33	1/17/33 6:00 PM
1291.74	1/25/33 6:00 PM

- Re-run the LRP simulations until finding the critical load

# Step 8: NTA Analysis

- Duration

Case Scenario	Monitored facility	Maximum Load %
Jan 18 2033 00:00	QUEEN CITY 115/34.5kV Trsf	109.33
Jan 18 2033 01:00	QUEEN CITY 115/34.5kV Trsf	116.88
Jan 18 2033 02:00	QUEEN CITY 115/34.5kV Trsf	109.75
Jan 18 2033 03:00	QUEEN CITY 115/34.5kV Trsf	106.18
Jan 18 2033 04:00	QUEEN CITY 115/34.5kV Trsf	108.25
Jan 18 2033 05:00	QUEEN CITY 115/34.5kV Trsf	113.56
Jan 18 2033 06:00	QUEEN CITY 115/34.5kV Trsf	107.59
Jan 18 2033 07:00	QUEEN CITY 115/34.5kV Trsf	117.01
Jan 18 2033 08:00	QUEEN CITY 115/34.5kV Trsf	119.12
Jan 18 2033 09:00	QUEEN CITY 115/34.5kV Trsf	121.45
Jan 18 2033 10:00	QUEEN CITY 115/34.5kV Trsf	118.15
Jan 18 2033 11:00	QUEEN CITY 115/34.5kV Trsf	112.06
Jan 18 2033 12:00	QUEEN CITY 115/34.5kV Trsf	108.34
Jan 18 2033 13:00	QUEEN CITY 115/34.5kV Trsf	104.66
Jan 18 2033 14:00	QUEEN CITY 115/34.5kV Trsf	116.49
Jan 18 2033 15:00	QUEEN CITY 115/34.5kV Trsf	105.43
Jan 18 2033 16:00	QUEEN CITY 115/34.5kV Trsf	114.74
Jan 18 2033 17:00	QUEEN CITY 115/34.5kV Trsf	121.94
Jan 18 2033 18:00	QUEEN CITY 115/34.5kV Trsf	127.8
Jan 18 2033 19:00	QUEEN CITY 115/34.5kV Trsf	122.19
Jan 18 2033 20:00	QUEEN CITY 115/34.5kV Trsf	118.29
Jan 18 2033 21:00	QUEEN CITY 115/34.5kV Trsf	119.29
Jan 18 2033 22:00	QUEEN CITY 115/34.5kV Trsf	116.57
Jan 18 2033 23:00	QUEEN CITY 115/34.5kV Trsf	118.3

- For the summer and winter peak days used in the LRP, how many additional hours of the day continue to show the overload
- Build additional cases to look at the remaining 23 hours for the summer and winter days studies in the LRP