

Basis for setting priorities

The solutions are prioritized based on the planning stage of the project, the load exposure, and the expected need date. A priority of 1 signifies that the proposed solution is likely to be the first project to be filed with the Public Service Board. A high priority, e.g. 1, does not mean that the solution is the most important solution. The priority order is not synonymous with implementation order. Some of the proposed reinforcements may not go forward following additional studies. Proposed reinforcements may be implemented at the same time because every effort will be made to resolve as many of the criteria violations as quickly as possible to comply with regional reliability standards.

Transmission deficiencies and proposed conceptual solutions

<i>Location</i>	<i>Upgrade</i>	<i>Need</i>	<i>Category</i>	<i>Affected Systems</i>	<i>Year Needed</i>	<i>Load MW Needed</i>	<i>Estimated Cost (Millions)</i>	<i>Affected DUs</i>	<i>Lead DU</i>	<i>Priority</i>	<i>Severity</i>	<i>NTA Screened IN?</i>
St. Johnsbury	Construct new station with 115/34.5 kV transformer. Install capacitor banks.	Loss of transformer causes loss of load	Predominantly Bulk	Subsystem for transformer Bulk for capacitor banks	2009	400	\$22	CVPS and Lyndonville (LED) for station. CVPS, Lyndonville and VEC for capacitor banks	LED	1	High	See Screening for Lyndonville project on the VSPC web site http://www.vermontspc.com
Middlebury	Install 2 nd 115/46 kV transformer & rebuild to ring station – Can be postponed by CVPS proposed 46 kV line	Loss of transformer and breaker failures cause voltage collapse. Timing depends on CVPS 46 kV line project.	Predominantly Bulk	Subsystem	2009	700	\$10 to \$20	CVPS	CVPS	2	High	NO
St. Albans	Construct new ring station with two 115/34.5 kV transformers	Loss of line causes voltage collapse. Transformers overload for loss of transformer	Predominantly Bulk	Subsystem	2009	900	\$25 to \$50	CVPS, VEC	CVPS	3	High	NO
Georgia	Rebuild to ring station	Breaker failures cause voltage collapse	Predominantly Bulk	Primarily Bulk	2009	1100	\$20 to \$40	All Vermont DUs	CVPS	3	High	NO
Georgia-St. Albans	Construct new Georgia-St. Albans 115 kV line	Voltage instability	Bulk	Primarily Bulk	Before 2018	Lower than 1275	\$15 to \$30	All Vermont DUs	VEC	3	High	YES
South Rutland	Construct new station with a 115/46 kV transformer	Loss of transformer causes sub-transmission and transformer overloads, which will result in loss of load	Predominantly Bulk	Subsystem	2009	1000	\$15 to \$30	CVPS	CVPS	4	High	NO
Blissville	Install 2 nd 115/46 kV transformer & Rebuild to ring station. Install capacitor bank	Loss of transformer causes low voltages and overloads, which will result in loss of load. Loss of line causes low 115 kV voltage	Predominantly Bulk	Subsystem	2009	800	\$15 to \$30	CVPS	CVPS	5	High	NO

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Hartford	Install 2 nd 115/46 kV transformer & Rebuild to ring station	Loss of transformer causes low voltages and overloads, which will result in loss of load. Breaker failures cause voltage collapse.	Predominantly Bulk	Subsystem	2009	1000	\$15 to \$30	CVPS, GMP	CVPS	6	Medium	NO
Ascutney	Rebuild to breaker-and-a-half station	Breaker failures cause voltage collapse.	Predominantly Bulk	Bulk	2009	Lower than 1170	\$14 to \$28	All Vermont DUs, NU and NGRID	CVPS	7	High	NO
Newport	Install capacitor bank	Loss of line causes voltage collapse	Bulk	Bulk	2009	1000	\$1 to \$2	All Vermont DUs	VEC	8	High	NO
Queen City	Install capacitor bank	Loss of line causes low voltage	Bulk	Bulk	2009	Lower than 1170	\$2 to \$4	All Vermont DUs and NGRID	GMP	8	Very high	NO
West Rutland	Install capacitor banks and shunt reactor	Loss of line causes low voltage. High voltages during low load levels.	Bulk	Bulk	2009	Lower than 1170	\$6 to \$12	All Vermont DUs and NGRID	CVPS	8	Very high	NO
Ascutney	Install capacitor banks	Loss of line causes low voltage	Predominantly Bulk	Bulk	2009	Lower than 1170	\$2 to \$4	All Vermont DUs, NU and NGRID	CVPS	8	Very high	NO
Coolidge	Install shunt reactor.	High voltages during low load levels.	Bulk	Bulk	2011	1200	\$4 to \$8	All Vermont DUs, NU, NGRID, NY	CVPS	8	High	NO
Coolidge-Ascutney 115 kV K-31 line	Rebuild to higher rating	Line overloaded with a line out of service and for loss of a line	Bulk	Bulk	2009	Vermont load generally not relevant	\$25 to \$50	All Vermont DUs, NGRID and NU	GMP	9	High	NO
VY to Vernon Road 115 kV K-186 line	Rebuild to higher rating	Line overloaded for loss of a transformer	Bulk	Bulk	2009	Lower than 1170 NH and Brattleboro load mostly	\$5 to \$10	All Vermont DUs, NU, NGRID	CVPS	10	High	NO
Vernon	Install 2 nd 345/115 kV transformer	Loss of a transformer overloads a line with a transformer out of service	Bulk	Bulk	2010	1185	\$15 to \$30	All Vermont DUs, NU, NGRID	CVPS	11	High	NO

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Ascutney-Ascutney Tap 115kV K-149 line	Rebuild to higher rating	Line overloaded with a line out of service and for loss of a line	Bulk	Bulk	2013	1210	\$5 to \$10	All Vermont DUs, NU, NGRID	CVPS	12	High	YES
Coolidge-Cold River 115 kV K-32 line	Rebuild to higher rating	Line overloaded with a line out of service and for loss of a line	Bulk	Bulk	2013	1210	\$35 to \$70	All Vermont DUs and NY	CVPS	13	High	YES
Bennington	Rebuild to Ring station Install cap banks	Breaker failures cause voltage collapse Low voltage.	Bulk	Primarily Bulk	2009	Lower than 1170	\$10 to \$20	All Vermont DUs and NGRID	CVPS	14	High	NO
Ascutney	Install 2 nd 115/46 kV transformer	Loss of transformer causes low voltages and overloads, which will result in loss of load.	Predominantly Bulk	Subsystem	2013	1210	\$6 to \$12	CVPS, Ludlow, GMP	CVPS	15	High	YES
Coolidge	Install 2 nd 345/115 kV transformer.	Loss of transformer causes low voltages and overloads.	Bulk	Bulk	2016	1245	\$20 to \$40	All Vermont DUs, NU, NGRID, NY	CVPS	16	High	YES
Barre	Install 2 nd 115/34.5 kV transformer & rebuild to ring station	Loss of transformer causes low voltages and overloads, which will result in loss of load.	Predominantly Bulk	Subsystem	2018 assuming 34.5 kV upgrades	1275	\$10 to \$20	GMP, WEC	GMP	17	Low	YES
Chelsea	Install 2 nd 115/46 kV transformer & Rebuild to ring station	Loss of transformer causes low voltages. Loss of line causes voltage collapse.	Predominantly Bulk	Subsystem	2018	1275	\$15 to \$30	CVPS, WEC	CVPS	18	Low	YES
Plattsburgh to Essex	Construct 230 kV line from Plattsburgh to Essex in parallel with 115 kV line	Severe voltage concerns and multiple overloads beyond 10-yr horizon. Severe voltage concerns and multiple overloads with Highgate removed within 10-yr horizon.	Bulk	Bulk	Depends on multiple factors as noted below	See note below	\$200 to \$300 Vermont portion	All Vermont DUs	GMP	See note below	Extremely high	YES

Note: The timing of the PV-20 230 kV upgrade depends on multiple factors, including the remaining life of existing facilities, recent operating events, ISO-NE interests, as well as regional coordinated planning between New England and New York. For example, if Highgate remains available for dispatch even if the contracts are not renewed, the year of need would be approximately 2021. If Highgate is unavailable, the timing is 2016. However, if the condition of the underwater cables is such that they need to be replaced, the upgrade may be needed sooner.