

Upgrade list from 2006 Long Range Plan
Modified for 2nd VSPC meeting

Reliability problem identified	Transmission solution examined in analysis	Load level need (estimated)	Year of need (estimate based on forecast)	Affected System	Corresponding Planning Study/project	Address in VSPC	Responsible Entities	Status Update	Priority
Loss of St. Johnsbury 115/34.5 kV transformer results in loss of all load at St. Johnsbury	Install second 115/34.5 kV transformer at St. Johnsbury with requisite station expansion	400	2006	Sub-system	Lyndonville	Yes	CVPS	Proposed load growth at Burke Mountain, fed off Lyndonville Electric, has resulted in a first draft (November 2007) of a Transmission Alternative Analysis.	4
Loss of the New Haven 115/46 kV transformer results in unacceptable low voltages (loss of all load following completion of NRP)	Install second 115/46 kV transformer at New Haven with requisite station expansion (or build Middlebury to New Haven 46 kV line)	700	2006	Sub-system	Middlebury	Yes	CVPS	In Appendix F	3
Loss of 115/46 kV transformers into Bennington or Brattleboro area causes loss of significant load in Southern Vermont	Add West Dummerston substation on new line between Vermont Yankee to Coolidge. CVPS adds reactive supply in 46 kV system between Bennington to Brattleboro	760	2006	Sub-system	Southern Loop	Yes	CVPS	In Appendix F	2
Loss of Middlebury 115/46 kV transformer causes unacceptable low voltages locally	Install second 115/46 kV transformer at Middlebury with requisite station expansion (or build Middlebury to New Haven 46 kV line)	760	2006	Sub-system	Middlebury	Yes	CVPS	In Appendix F	3
Loss of Vermont Yankee 345/115 kV auto transformer places Brattleboro area load at high risk until replacement transformer installed	Install second Vermont Yankee 345 / 115 kV transformer with requisite station expansion	800	2006	Bulk system	Southern Loop	Yes	VELCO	In Appendix F	2
Loss of one St. Albans 115/34.5 kV transformer overloads the other	Install two 50 MVA 115 / 34.5 kV transformers at St. Albans	850	2006	Sub-system	St. Albans	Yes	CVPS	In Appendix F	5
Loss of West Rutland - Blissville 115 kV line causes unacceptable low voltages locally	Install 16.2 MVAR of capacitor banks at Blissville	920	2006	Sub-system	Not started	No	CVPS	Will apply screening tool to determine if not applicable for VSPC since Capacitor Bank Installation	7
Loss of one Essex 115/34.5 kV transformer may overload the other (with McNeil unavailable), with consequent load shedding	Install larger transformers at Essex, or pursue other local solution to address transformer load distribution	920	2006	Sub-system	East Ave Loop	No	GMP	Previous ASC, 248 Permit Filed	1
Loss of either the North Rutland or Cold River 115/46 kV transformer overloads the other unit with unacceptable low voltages locally	Install second 115/46 kV transformer at North Rutland with requisite station expansion	930	2006	Sub-system	Not started	Yes	CVPS	In Appendix F	6
Loss of the St. Albans transformers with loss of the 115 kV line or the East Fairfax transformer causes local voltage collapse	Install old St. Albans transformers at new Milton station	950	2006	Sub-system	St. Albans	Yes	CVPS	In Appendix F	5
Loss of the Hartford 115/46 kV transformer causes unacceptable low voltages locally	Install second 115/46 kV transformer at Hartford with requisite station expansion	950	2006	Sub-system	Not started	Yes	CVPS	Will revisit in 2009 Study Cycle	8
Low voltage or voltage collapse in northern Vermont for loss of transmission at either end	Install reactive power device at Irasburg substation with requisite station expansion	1000	2006	Primarily Bulk system	Not started	Yes	VELCO/ CVPS	May be addressed as part of Lyndonville Study	4
Breaker failure at Georgia substation results in unacceptable voltage / thermal performance locally	Rebuild Georgia station to 6 breaker ring bus	1100	2006	Primarily Bulk system	Georgia	Yes	VELCO/ CVPS	Will be reviewed in relation to the St Albans project	5
Long term loss of PV20 underground causeway cable with many other outages can cause severe & widespread voltage / thermal concerns	Install 2nd parallel PV20 causeway underground cable	1100	2006	Bulk system	Not started	Yes	VELCO	Will revisit in 2009 Study Cycle	9
Loss of the Vermont Yankee to Coolidge 345 kV line causes significant voltage / thermal concerns	Four alternatives considered - least cost option builds line parallel to Vermont Yankee - Coolidge line in same right of way (ROW) with expansions to two existing substations (Coolidge and Vermont Yankee) and addition of reactive power device at Coolidge	1200	2011	Bulk system	Southern Loop	No	VELCO	In Appendix F	2
Overload of the Coolidge to Cold River 115 kV line	Rebuild Coolidge to Cold River 115 kV line	1200	2011	Bulk system	Not started	Yes	VELCO	In Appendix F	12
Breaker failure at Acutney substation results in unacceptable voltage / thermal performance locally	Improve Acutney station from current radial bus configuration with 115 kV cap bank and 2nd 115 /46 kV transformer	1200	2011	Primarily Bulk system	Not started	Yes	VELCO/ CVPS	Will revisit in 2009 Study Cycle	10
Loss of one Bennington 115/46 kV transformer overloads the other	Install two 75 MVA 115 / 46 kV transformers at Bennington	1200	2011	Sub-system	Southern Loop	No	CVPS	In Appendix F	2
Loss of the Williston to Tafts Corners 115 kV line, with heavy flows from south to north, overloads the Queen City 115/34.5 kV transformer	Install second 115/34.5 kV transformer at Queen City with requisite station expansion (or automatically sectionalize the underlying subtransmission network)	1200	2011	Primarily Bulk system	Not needed	No	VELCO/GMP	These constraints have been addressed by an application to automatically sectionalize the 34.5 kV system. No additional upgrades needed at this time.	N/A
Loss of the Barre to Berlin 115 kV line section, when heavily loaded from east to west, overloads the Barre transformer	Install either a larger transformer or a second 115/34.5 kV transformer at Barre with any requisite station expansion (or automatically sectionalize the underlying network)	1200	2011	Primarily Bulk system	Not needed	No	VELCO/GMP		N/A
Loss of the Berlin to Middlesex 115 kV line section, when heavily loaded from east to west, overloads the Berlin transformer	Install a second 115/34.5 kV transformer at Berlin with any requisite station expansion (or automatically sectionalize the underlying subtransmission network)	1200	2011	Primarily Bulk system	Not needed	No	VELCO/GMP		N/A
Long term loss of Coolidge 345/115 kV transformer causes voltage / thermal concerns in central VT	Install second Coolidge 345 / 115 kV transformer with requisite station expansion	1250	2013	Bulk system	Southern Loop	Yes	VELCO	In Appendix F	11
Overload of the Barre to Berlin 115 kV line	Rebuild Barre to Berlin 115 kV line	1300	2016	Bulk system	Not started	Yes	VELCO	Will revisit in 2009 Study Cycle	12
Overload of the Florence to West Rutland 115 kV line	Rebuild the Florence to West Rutland 115 kV line	1300	2016	Bulk system	Not started	Yes	VELCO	Will revisit in 2009 Study Cycle	12
Overload of the Cold River to North Rutland 115 kV line	Rebuild Cold River to North Rutland 115 kV line	1300	2016	Bulk system	Not started	Yes	VELCO	Will revisit in 2009 Study Cycle	12
Overload of New Haven to Williston 115 kV line	Rebuild New Haven to Williston 115 kV line	1325	2017	Bulk system	Not started	Yes	VELCO	In Appendix F	13

Priorities 1 to 4 were based on the actual and expected 248 filing dates

The East Avenue Loop project was filed first

The Southern Loop project was filed second. Deficiencies that are affected by the Southern Loop project were given the same priority level.

It is expected that the Middlebury project will be filed next. It will also address the New Haven deficiency, which was given the same priority level as Middlebury.

The St Johnsbury priority level depends on the Burke Mountain proposed expansion plan

Other priority levels were assigned based on the status of studies, the load level where the deficiency is identified, and the amount of load that may be affected.

The Saint Albans area study is about to start. Projects that affect the Saint Albans area were given the same priority level.

The Rutland area study is expected to start in the first quarter of 2008.

The Hartford deficiency was given the next priority level due to the load level at which the deficiency occurs.

The transmission projects were prioritized based on the load level at which they occur, and whether there are operational actions that can remove the concerns.

The PV20 concern, although it emerges at the 1100 MW load level, it can be re-evaluated at the same time as the other transmission concerns.

It is expected that the solution to the other transmission deficiencies will likely be a common one.

These transmission concerns are far enough in the future, that it makes sense to re-evaluate them to account for a new load forecast to be completed in Q1 2008, and projected generation additions.

For the Coolidge 345/115 kV transformer, the Southern loop project includes a Coolidge station upgrade that makes provisions for the 2nd transformer to be installed at a later date