



# Vermont System Planning Committee

*Ensuring full, fair and timely consideration of non-transmission alternatives to address Vermont electric system reliability challenges.*



**QUARTERLY MEETING  
MARCH 9, 2011  
9:30 A.M. – 4:00 P.M.  
VERMONT TECHNICAL COLLEGE  
RANDOLPH, VERMONT**

# Agenda



- Approval of the minutes of the December 2010 meeting
- Budget Unconstrained Energy Efficiency Potential Study presentation—*John Plunkett, Michael Wickenden, Jim Merriam, VEIC*
- Subcommittee reports
  - Energy Efficiency & Forecasting
  - Procedures
  - Public Participation
  - Technical Coordinating
- Status report on Docket 7081 process reform
- Regional update
- Project updates

# Proposed action plan on regional standards issue



- At Dec meeting and previously, VSPC members sought a way to address the perceived conservatism of the ISO planning assumptions (two elements assumed out, 90-10 weather, N-1-1, etc.).
- Technical Coordinating Subcommittee proposes the following:
  - Frame the questions:
    - ✦ How were the current standards established? Who created them? What was the process for development? What stakeholders were involved?
    - ✦ What is the authority for the standards? Have they been formally adopted, and if so, through what process?
    - ✦ Where/how are the standards documented?
    - ✦ What is the process for reviewing how the standards are working and whether they produce appropriate results?
  - Write to Steve Rourke at ISO-NE requesting a half-day meeting (similar to the meeting held in 2009 regarding NTA funding parity) at which ISO would address and discuss the above questions.
  - Agenda also to include brief status reports on Vermont's proposed project cost estimation methodology and proposed NTA regional funding approach.
  - Target: Meet in June or July 2011.
  - Invite participation of the PSB and DPS, as well as other interested stakeholders (similar to the 2009 funding parity meeting).

# ISO-NE VT/NH 10-yr Study



**VSPC MEETING  
MARCH 9, 2011 MEETING**

# Overview of Study Process



- **Study is performed in two parts**
  - Needs Assessment draft report was posted
    - ✦ Comments needed by March 11
  - Solutions Assessment to be completed by Q2 2011
    - ✦ Evaluate various T&D solution sets
      - Potential transmission solutions and critical load levels presented to PAC on February 17
    - ✦ Results of solutions study to be presented to PAC in April
    - ✦ ISO-NE started the study to determine the amount and location of NTA solutions
      - To be completed 2nd quarter of 2011
    - ✦ Select solutions

# Critical Load Level Study Methodology



- Results based on most limiting system conditions
- Results reported as New England load
  - Load levels reduced in 500 MW increments
    - ✦ All state loads adjusted proportionately (VT load at 4% of total)
  - System conditions held constant as load is reduced
    - ✦ Transfer levels held constant
    - ✦ Transmission system topology held constant
    - ✦ Generation adjustments performed outside of study area

# Solution Study Methodology



- **Transmission analysis**
  - Test selected cases – limiting conditions
  - Test selected contingencies – affecting a sub-area
  - Compare performance of competing transmission solutions
  - Compare estimated costs and other factors
  - Select the preferred transmission solution
- **Sizing of NTAs**
  - Determine location and size of NTAs
  - Provide NTA information to the market for selection and implementation

# Southeast VT & Southwest NH



- **Thermal and voltage violations for loss of 345 kV lines**
  - N-1 critical load level of 18,000 MW (60% of 29,800 MW peak)
  - N-1-1 critical load level of 25,000 MW (84% of 29,800 MW peak)
- **Potential solutions**
  - Additional 345 kV line into Vernon or Coolidge
  - Additional 115 kV line in the Monadnock area
  - Reconfiguration of lines in the Monadnock area
  - Dynamic voltage support



# Vermont Requirements in the Near Term with VY Retired

- Southeast VT/Southwest VT critical load level is approximately 25,000 MW (AKA 1,000 MW in VT)
- ISO-NE determined that the exposure is low enough to not require emergency measures
  - Occurrence of the first contingency during near peak loads
  - The nature of contingencies (specific 345 kV line outages)
  - Actual system conditions may be more favorable
- Potential temporary solutions
  - Seek additional support from neighboring areas, sectionalize lines, run out-of-merit generation, take OP4 actions, implement load shedding, and so on
- Potential permanent solutions described in the previous slide

# Connecticut River



- **Thermal and voltage violations**
  - N-1 critical load level of 26,000 MW (87% of peak)
  - N-1-1 critical load level of 21,500 MW (72% of peak)
- **Potential solutions**
  - Split 115 kV lines
  - Additional 115 kV line in Central VT
  - Additional autotransformer

# Northwest/Central Vermont



- **Thermal and voltage violations**
  - N-1 critical load level of 26,000 MW (87% of peak)
  - N-1-1 critical load level of 24,000 MW (80% of peak)
- **Potential solutions**
  - Additional support from NY (requires DU/NY contract)
    - Will be evaluated as an NTA
  - Additional Canadian imports (requires DU/HQ contract)
    - Will be evaluated as an NTA
  - Additional 345 kV line in Northwest VT
  - Additional 230 kV line in Northwest VT
  - Additional 115 kV line in Northwest VT

# Northern Vermont



- **Thermal and voltage violations**
  - N-1 critical load level of 22,500 MW (75% of peak)
  - N-1-1 critical load level of 20,500 MW (69% of peak)
- **Potential solutions**
  - Additional Canadian imports (requires DU/HQ contract)
    - Will be evaluated as an NTA
  - Additional 115 kV line in Northern VT

# Summary of ISO-NE NTA Approach



- The analysis of NTAs will likely start in Feb or March and is expected to be completed by May
- The analysis will cover the same system conditions as the Needs Assessment
- Utilize DC load flow
  - Security constrained dispatch that optimizes on price to identify needed resources
    - ✦ If a high priced resource is dispatched, it is needed for reliability
- Address thermal concerns only
  - Pick resources that resolve the concerns without creating additional system concerns

# Summary of ISO-NE NTA Approach



- **NTAs will include demand side and supply side resources**
  - Resource blocks of 10 MW, 50 MW and 500 MW
  - Demand reductions will be modeled at the dispatch zone level, proportional to the local load
  - Supply options will be modeled at key substations
- **ISO-NE will not perform an economic assessment of NTAs**

# Advocacy for NTA consideration



- **Some of our concerns with the ISO-NE approach**
  - Absence of economic assessment
  - No consideration to local siting – concerns or benefits
  - Silence on funding mechanisms for NTAs
- **VELCO continues to engage ISO-NE on the issue of financial support for NTAs as a reliability solution**
- **VELCO will provide data to ISO-NE in an effort to make the analysis more practical**
  - Provide examples of where generation can be added based on local knowledge

# Overview of Study Process



- **Desire to coordinate the NH and VT 10-yr studies**
  - Evaluate system performance with a new load forecast and new resources (demand and generation from the FCM)
  - Evaluate system performance with VY retired
- **Study is performed in two parts**
  - Needs Assessment to be completed by Q1 2011
    - ✦ N-1 results presented to PAC in October
    - ✦ N-1-1 results presented to PAC in November
    - ✦ Additional work includes defining critical load levels
  - Solutions Assessment to be completed by Q2 2011
    - ✦ Evaluate various T&D solution sets
    - ✦ Determine amount and location of NTA solutions
    - ✦ Select solutions



**TIMING OF PROJECT STEPS FOR ALL IDENTIFIED RELIABILITY PROJECTS – Updated 6/2010**

Key on following page

	Year Needed *	Load MW Needed	Completed	CALENDAR QUARTERS								
				2010				2011				
				1	2	3	4	1	2	3	4	
Priority 1 : St. Johnsbury	pre 2009	400	T, N, SCI									Permitted
Priority 2 : Middlebury	pre 2009	700	T, N, SCI									Filed for 248.
Priority 3A : St. Albans	pre 2009	850	T, N, SCI									Expected to start Public Process in 2011
Priority 3B : Georgia substation	pre 2009	800			T	SCI						T complete. ISO approval process commenced.
Priority 3C : Georgia - St. Albans	pre 2018	1275	TBD									
Priority 4 : Rutland area	pre 2009	1000			T	N	SCI					
Priority 5 : Blissville - transformer	pre 2009	800	TBD**									
Priority 6 : Hartford - transformer	pre 2009	800							T	N	SCI	
Priority 7 : Ascutney substation	pre 2009	750				T	SCI					T complete. ISO approval process commenced.
Priority 8 : Newport capacitor	pre 2009	1000			T	SCI						T pending for coordination with VEC system reliability assessment.
Priority 8 : Queen City capacitor	pre 2009	<1120			T	SCI				T	SCI	Priority 8 under study. Operational procedure at Essex switch postpones need date for most of the capacitor banks. T analysis date pushed out to 2010 year end for completion of ISO study.
Priority 8 : West Rutland capacitor	pre 2009	<1120			T	SCI				T	SCI	
Priority 8 : Blissville capacitor	pre 2009	<1170			T	SCI				T	SCI	
Priority 9 : Ascutney capacitor	pre 2009	<1170			T	SCI				T	SCI	
Priority 10 : Bennington substation	pre 2009	500				T	SCI					
Priority 11 : reactors @ transmission voltage	pre 2009	400			T	SCI						T complete. ISO approval process to begin in July.

Priority 12 : Coolidge - Ascutney K-31 line	pre 2009	n/a		T	SCI	
						T SCI: 12/31/12. Need to be determined by ISO regional study
Priority 13 : VT - Vernon Road Tap K-186 line	pre 2009	n/a		T	SCI	
						T SCI: 12/31/12. Need to be determined by ISO regional study
Priority 14 : Vernon	2010	1185	TBD			
						T SCI: 12/31/12. Need to be determined by ISO regional study
Priority 15 : Ascutney - Ascutney Tap K-149 line	2013	1210		T	N	SCI
						T SCI: 12/31/12. Need to be determined by ISO regional study
Priority 16 : Coolidge - Cold River K-32 line	2013	1210		T	N	SCI
						T SCI: 12/31/12. Need to be determined by ISO regional study
Priority 17 : Ascutney - transformer	2013	1210			T	N
						SCI
Priority 18 : Coolidge - transformer	2016	1245	TBD			
						T SCI: 12/31/12. Need to be determined by ISO regional study
Priority 19 : Barre	2018	1275	TBD			
Priority 20 : Chelsea	2018	1275	TBD			
Priority 21 : Plattsburgh - Essex	Note ***	n/a	TBD			

Note \* : Based upon 2008 load forecast

Note\*\* : See VSPC annual report for discussion of operational measures to address this deficiency prior to 2012 Plan update.

Note\*\*\* : Timing may be 2016 or earlier depending upon other possible scenarios

Key:

Tan color: milestones in Project Priority List filed 2/2010

Yellow color: projects with changed milestones, 6/2010

N = Non-transmission alternative analysis (priorities with no "N" entry screened out of further NTA analysis in Long-Range Plan

S = Solution selection

C = Cost allocation

I = Implementation strategy

TBD = To Be Determined after the completion of the 2012 Long Range Transmission Plan

n/a = Not applicable

# 2011 schedule



**June 8 – Montpelier**

**September 14 – Rutland**

**December 14 - Burlington**