Vermont Electric Power Company

presentation to the

House Natural Resources and Energy Committee

January 23, 2015

Our Mission

- VELCO manages the **safe, reliable, cost-effective transmission** of electrical energy throughout Vermont. Our goal is to provide **an optimal system of electric transmission** facilities as part of an **integrated regional network** designed to meet both **current and future energy needs.**

Our Values

- We produce high-quality work and provide honest, accurate judgment and advice.
- We are good stewards of ratepayer dollars, and our environment and historic resources.
- We strive to achieve cost-effective solutions—transmission or non-transmission—to ensure system reliability.
- We create value for our owners, customers, regulators, the public and the region.
- We nurture our employees' professional and personal growth, and foster a culture of safety, integrity, open communication, teamwork and the ability to embrace change.

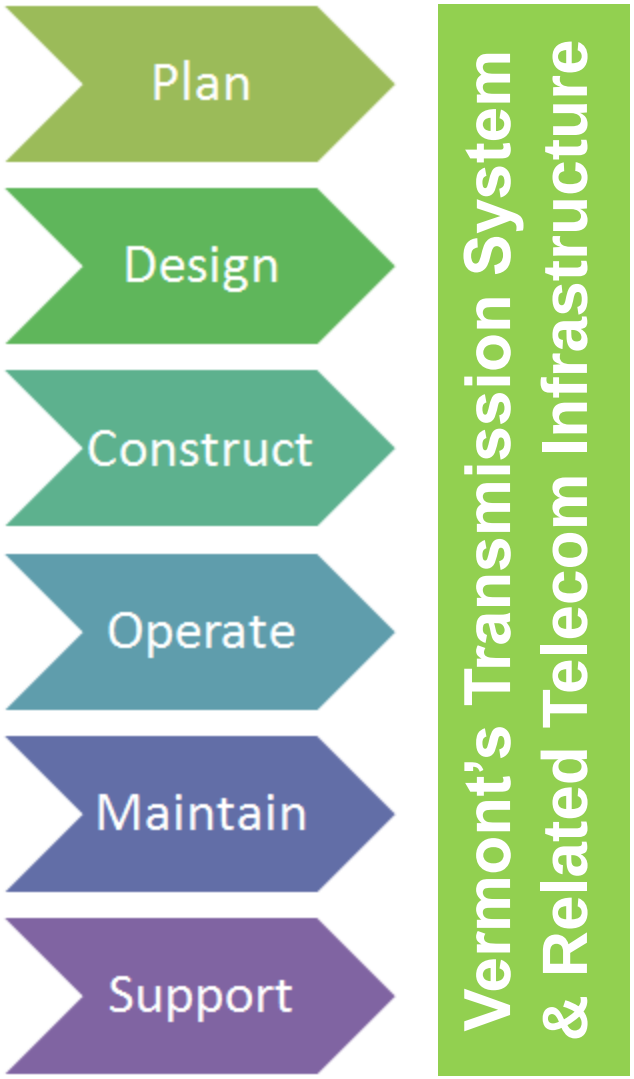
Roles & responsibilities

VELCO's role is to ensure transmission system reliability in Vermont by planning, constructing, operating and maintaining the high-voltage electric grid, advanced fiber optic network and statewide radio system.

Related responsibilities include

- Develop and submit Vermont's Long-Range Transmission Plan to identify needed transmission system improvements as early as possible to enable implementation of more cost-effective, non-transmission alternatives wherever feasible.
- Manage the Vermont System Planning Committee (VSPC).
- Enable utilization of fiber network to advance state telecommunications goals consistent with utility purpose.
- Manage a large capital program including the Vermont Weather Analytics Project.
- Ensure compliance with numerous federal transmission owner/operator standards (e.g., planning, operations, maintenance, cyber-security)
- Advocate owner and state positions at ISO-NE.
- Provide metering and billing services for SPEED projects.

Core business functions & expertise

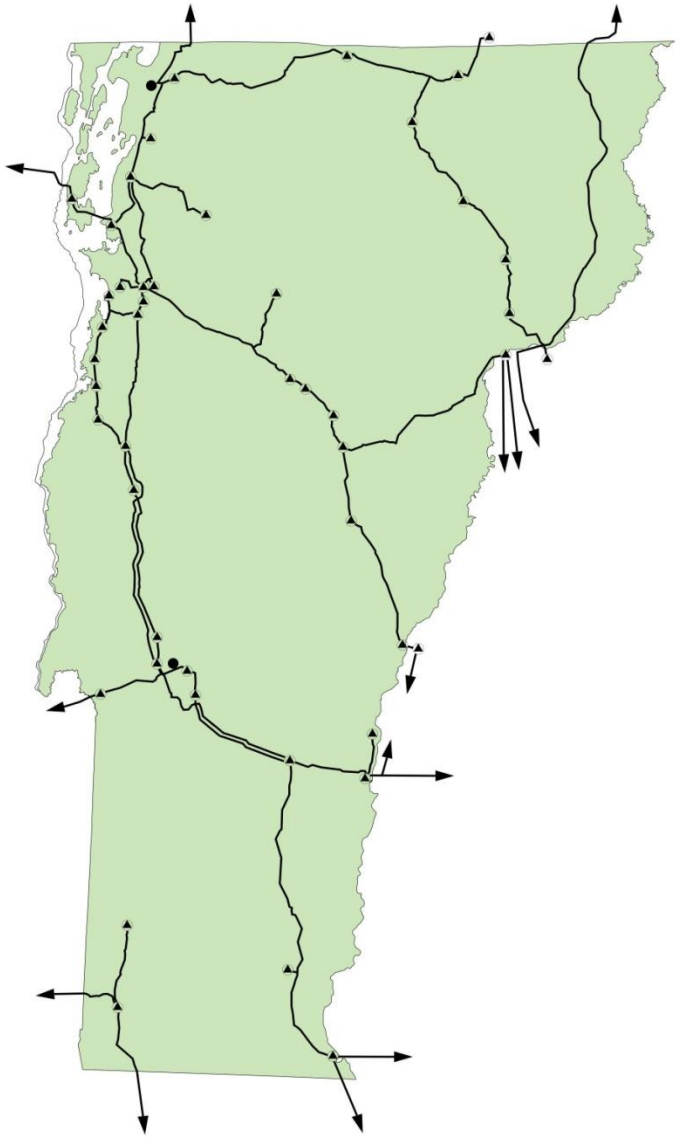


VELCO's core business functions require a variety and depth of technical, legal and policy expertise. The VELCO staff is comprised of 152 employees and several contractors.

Maintaining the system requires a high level of technical expertise including:

- 22 degreed engineers in the electrical and civil disciplines (9 of whom are Professional Engineers).
- 8 system operators.
- 8 relay technicians.
- 8 substation electricians.
- 8 project managers.
- Technically talented resources in environmental, information technology and telecommunication arenas.
- Financial, legal, public engagement and other business professionals.

VELCO-Managed Assets

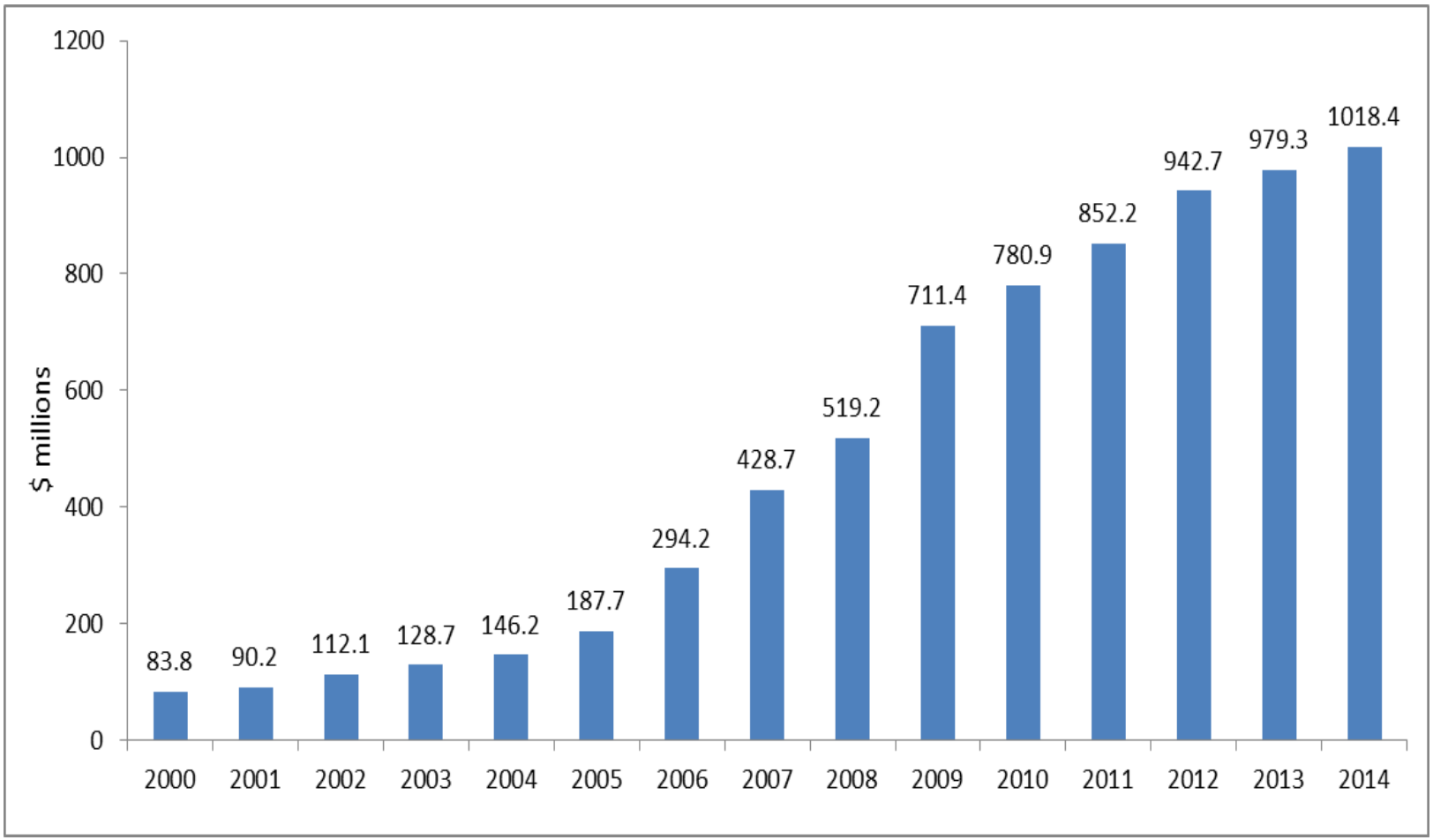


- 738 miles of transmission lines, 115 kV and higher.
- 13,000 acres of rights-of-way.
- 55 substations, switching stations and terminal facilities.
- Equipment that enables interconnected operations with Hydro-Quebec.
- 1,300 fiber optic communication network that monitors and controls the electric grid, enables utilities to talk to each other and to their customers and serves as the backbone for some Vermonters' high-speed data internet access.
- 52-mile high-voltage direct current line through the Northeast Kingdom owned by Vermont Electric Transmission Company (VETCO).

Background

- Formed in 1956 by local utilities to share access to clean hydro power and maintain the state's transmission grid.
- Nation's first statewide, "transmission-only" company.
- Owned by Vermont's 17 local electric utilities and VLITE

VT Transco total asset growth 2000-2014

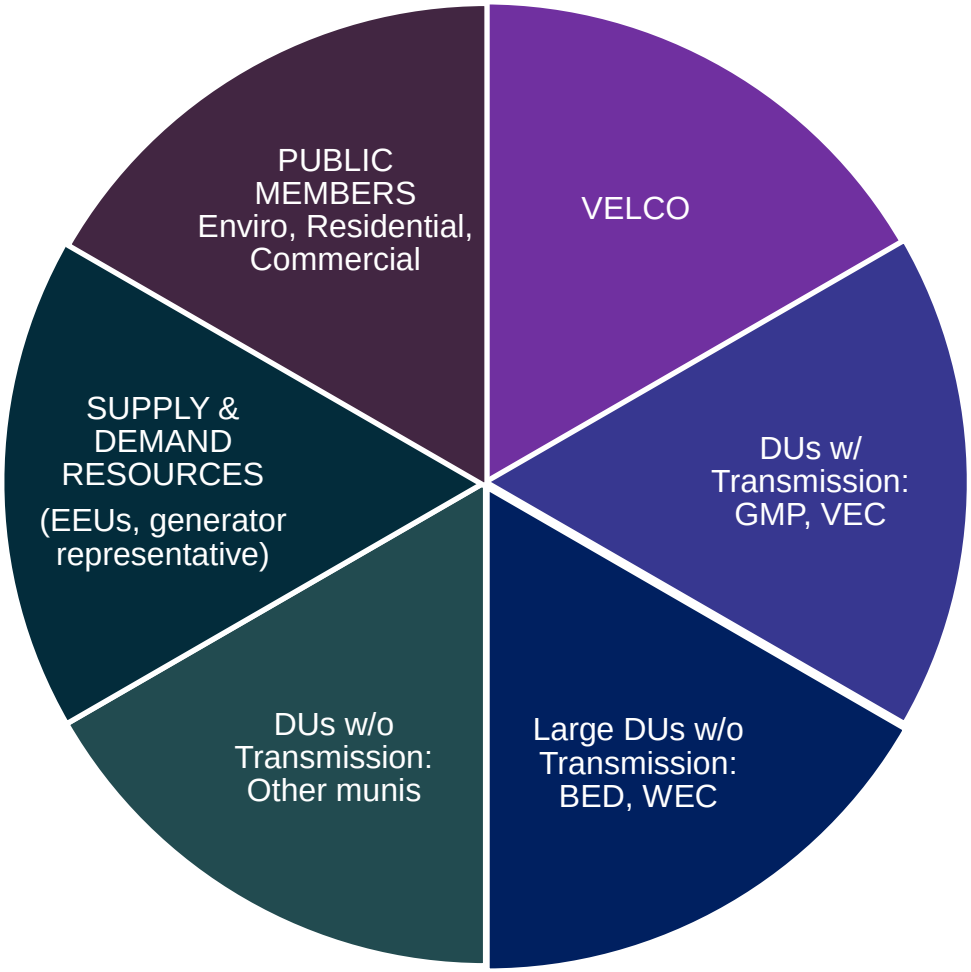


Vermont policy favors non-wires solutions, requires planning & stakeholder engagement

Controversial major transmission project in 2004 led to planning legislation and Public Service Board order

- Legislation (30 V.S.A. § 218c) required prepare a **10-year** transmission plan at least every three years beginning July 1, 2006, including public outreach process
- Purpose of plan: *Identify potential need for transmission system improvements as early as possible, in order to allow sufficient time to plan and implement more cost-effective nontransmission alternatives to meet reliability needs, wherever feasible.*
- PSB Docket 7081 established stakeholder process through negotiated settlement
  - Requires **20-year** long-range transmission plan
  - Goal: *Full, fair and timely consideration of cost-effective non-transmission alternatives*
  - Created Vermont System Planning Committee—statewide reliability planning stakeholder body

Vermont System Planning Committee structure



Six sectors with equally weighted votes

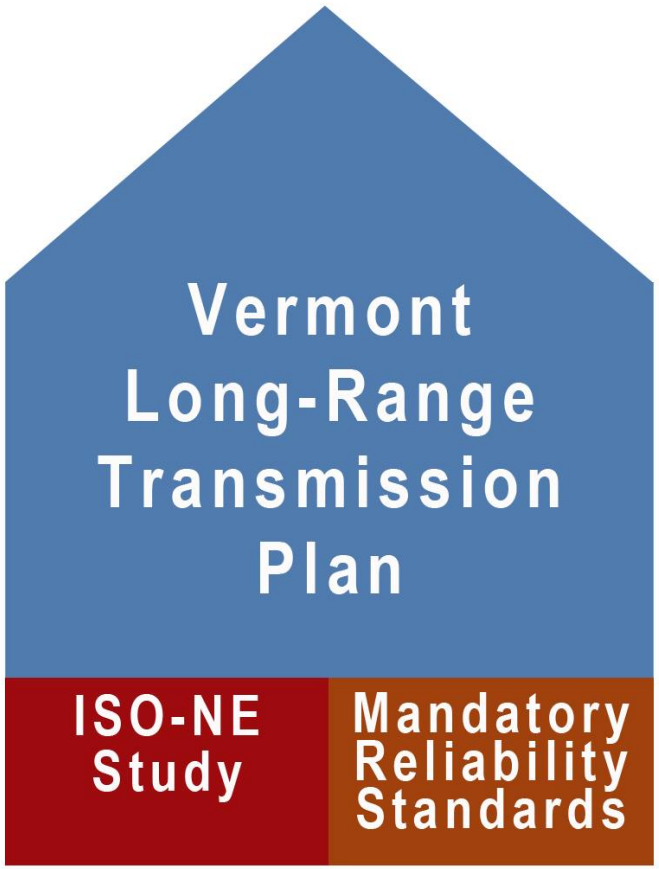
Advisory votes on…

- Affected utilities
- Solution selection
- Cost allocation
- Implementation strategy

Binding votes: (where utilities disagree)

- System level (bulk vs sub)
- Lead utility assignment

Vermont Long-Range Transmission Plan



Plan: identifies system reliability issues on 20-yr horizon, updated every three

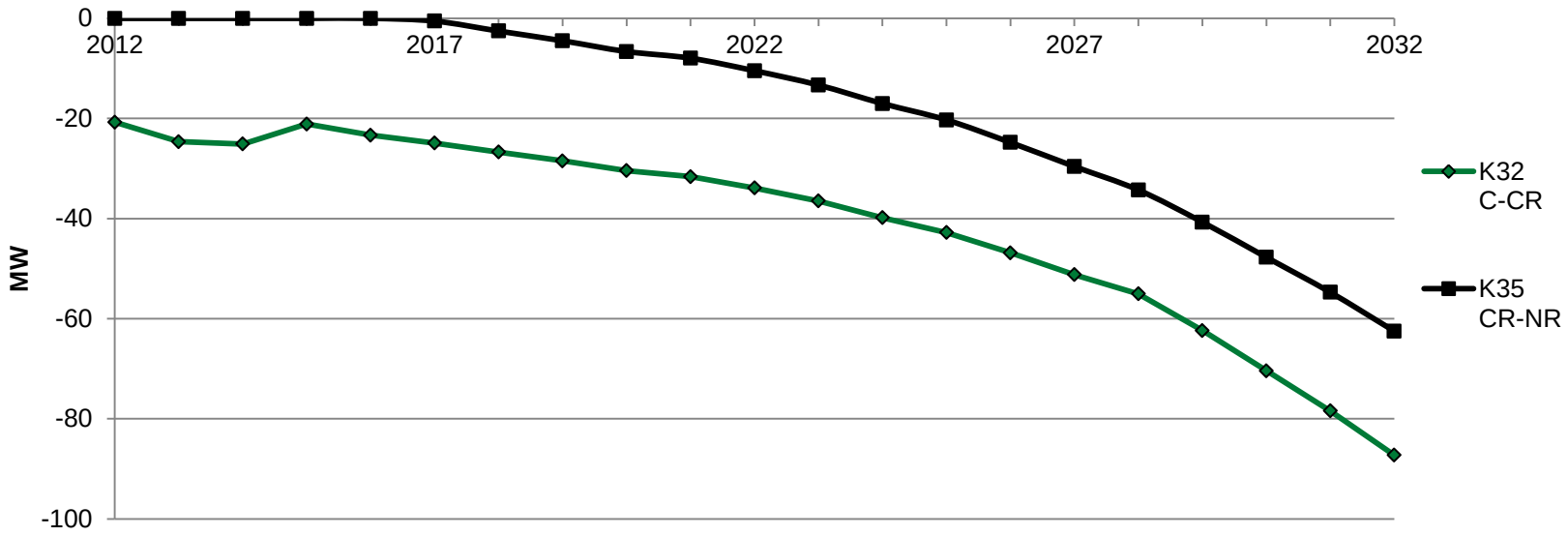
ISO-New England: Independent system operator for the New England regional grid.

Mandatory reliability standards: Federally enforceable performance requirements administered by the North American Reliability Corporation Northeast Power Coordinating Council.

Reliability requirements increasingly rigorous.

Potential fines of $1M per violation per day for failure to meet standards.

Process works: $157 M Central VT project deferred



Reliability Gap graphed as a negative margin – MW under zero are the necessary solutions

What happened?

Vermont

Late 2011: ISO-NE publishes preliminary study showing system concerns in Central VT

Late 2011: DUs & VELCO form study group per Docket 7081 MOU to assess potential for non-transmission alternatives (NTA) to resolve Central VT concerns

Regional

April 2012: ISO-NE Solutions Study proposes transmission upgrades to resolve Central VT concerns

At this point, without VT NTA study requirement, a transmission solution would likely have been implemented.

Nov 2012: GMP & VELCO present study group results to ISO-NE showing potential for NTA to postpone Central VT upgrades

Early 2013: ISO-NE reassesses need for Central VT upgrades

Summer 2013: ISO-NE study confirms $157 million Central VT upgrade deferral

Observations about VT example and process

- EE plays a big role but fills the gap *in combination* with other resources, which are growing rapidly
- Integrated look at DG & EE is critical: no one element caused the result
- Project need is based on *forecast*, which has many assumptions; could change rapidly in volatile times; regular reassessment needed
- Benefits of a robust stakeholder process:
  - Regulatory certainty
  - Stakeholder buy-in
  - A little more certainty of the need
- Biggest policy issue: no level playing field for NTA vs transmission funding

VSPC as “Vermont’s Grid Operating Committee”

- Docket 7873 (standard offer program changes) requires utilities to create “reliability plans” for any transmission or distribution reliability issue. Plans address:
  - Reliability plan requirements (Docket 7081).
  - Energy efficiency geographic targeting.
  - Standard offer geographic targeting (7873) where “sufficient benefit” to the grid.
- VSPC now charged with recommending both supply side and demand side geographic targeting to PSB annually.
- VSPC enables transmission project vetting, one-stop, multi-stakeholder engagement.
- Evolving toward a forum to help harmonize federal/regional/state electricity policies.

VELCO Smart Grid/Broadband Work Summary

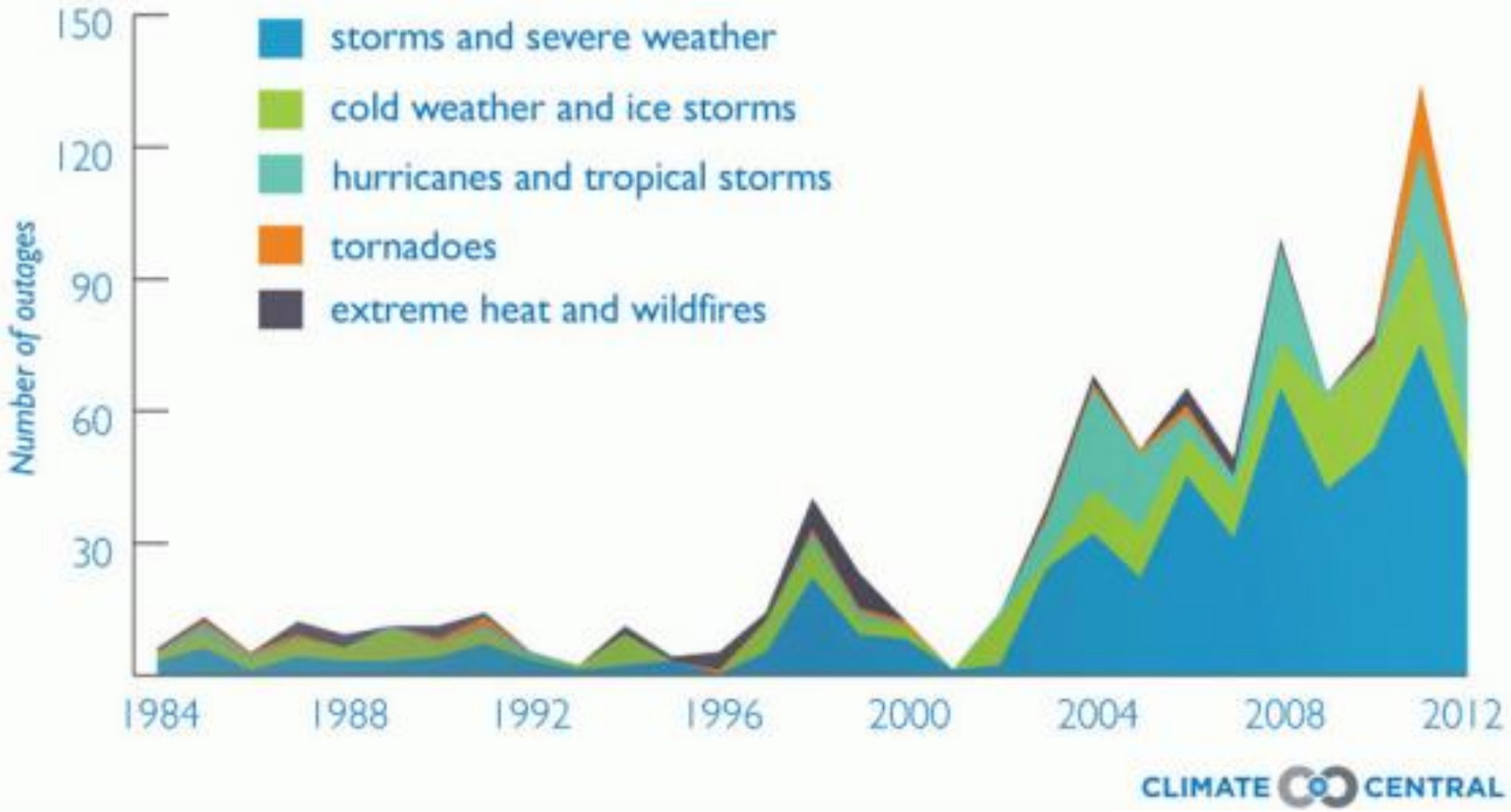
- **VELCO role:** Project Manager for $138m eEnergy VT smart grid work; separate but related $53m Fiber Optic Project

- **$53m ($8.3m VT) Fiber Optic Project:** Approximately 1000-mile, 72-strand fiber cable; utilizes existing utility corridors, connects over 250 substations/access to 172 communities
    - Improves transmission grid reliability – instantaneous information
    - Serves as distribution utility communications backbone
    - Facilitates delivery of broadband services
    - Approximately 150 miles value/value swap w/ Sovernet, VTel to save electric customers $5m; potential Waitsfield Valley Telecom value swap under discussion

- **Benefits:** reliable, flexible & resilient; lowers cost, improves service; foundational investment for emerging renewable, distributed generation grid – and microgrids
  – Our network is capable of moving data equivalent to streaming 281,600 movies simultaneously.
  – Advantages to our network: lower latency which we control. Our traffic doesn't need to go to Boston and then back to VT.
  – No congestion: we never oversubscribe. Our network will not contend with "other" non-utility traffic.

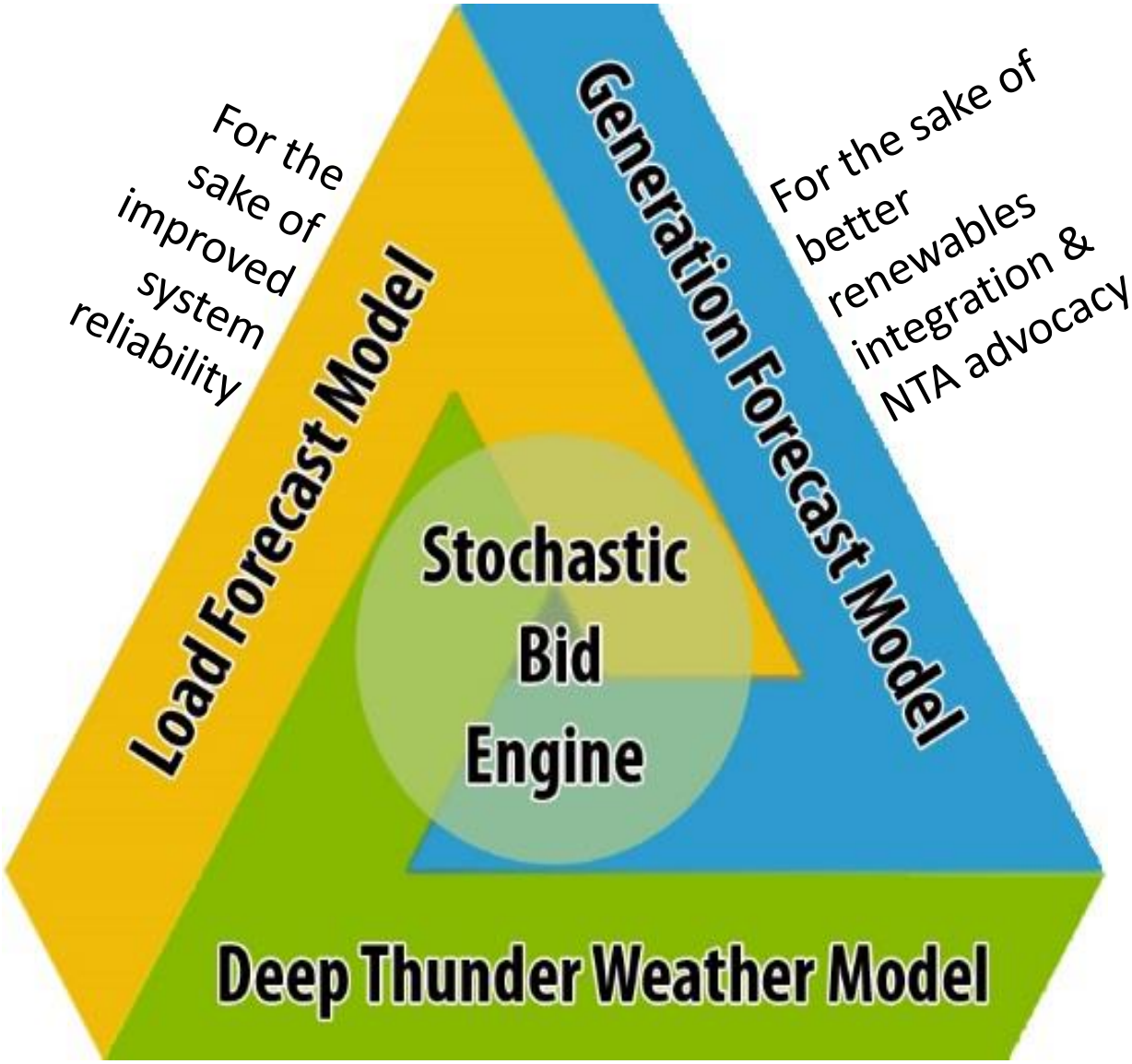
Extreme Weather Is Causing More Major Power Outages

(major = at least 50,000 customers affected)



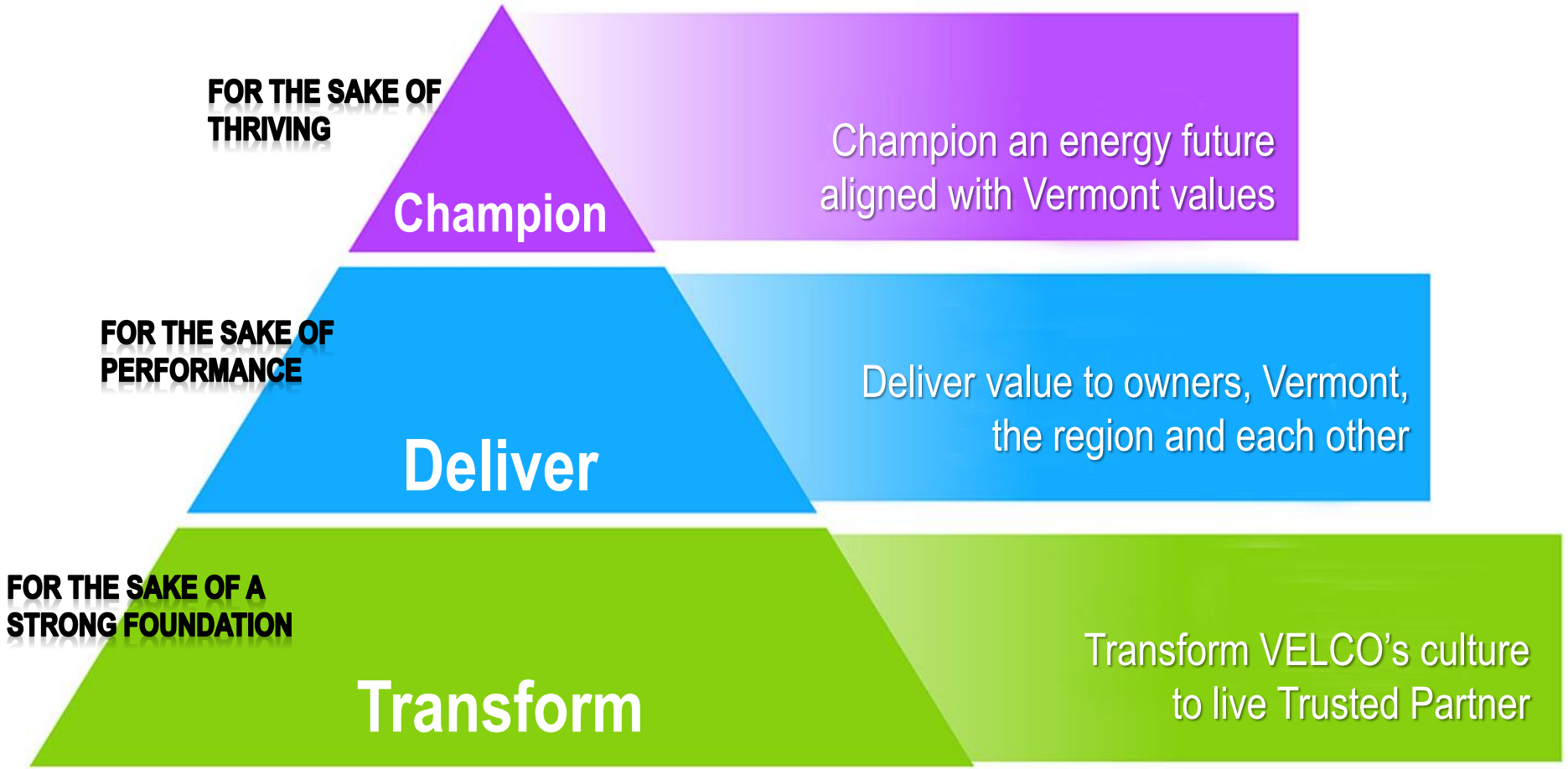
VELCO – IBM Partnership Research Framework

The project will develop a renewable integration stochastic engine to optimize Vermont's generation, demand response and transmission resources.




And now as we embrace change:
"Our great new adventure."
2014 Day of Conversation

Strategic Initiatives



Our ongoing work toward Trusted Partner

CHAMPION Vermont's interests…what we seek to do

- Champion an energy future aligned with Vermont values
- Infuse critical decisions with Vermont values and interests.
- Define success in local and regional terms.
- Recognize the essential importance of stakeholders' understanding and reflect their input as far as possible at all stages.
- Drive solutions that move the region forward in policy and practice.

Political Solution failed; Market Solutions advance

- New England Governors' Infrastructure Initiative — large gas and electric transmission — died with failure of MA legislation in July
- Fundamental drivers remain in region
  - Electricity price volatility
  - Unmet renewable and low-carbon power supply needs in southern New England
  - Eager Canadian and New York power suppliers
  - Vermont shortest, i.e. least expensive, route to connect supply with demand
- Transmission projects proceed in response…and may proliferate
- Imminent FERC Order 1000 ruling will enable regional cost sharing for transmission projects built in order to meet public policy goals
- SO… merchant transmission developers continue to seek VELCO's support and involvement for their projects.

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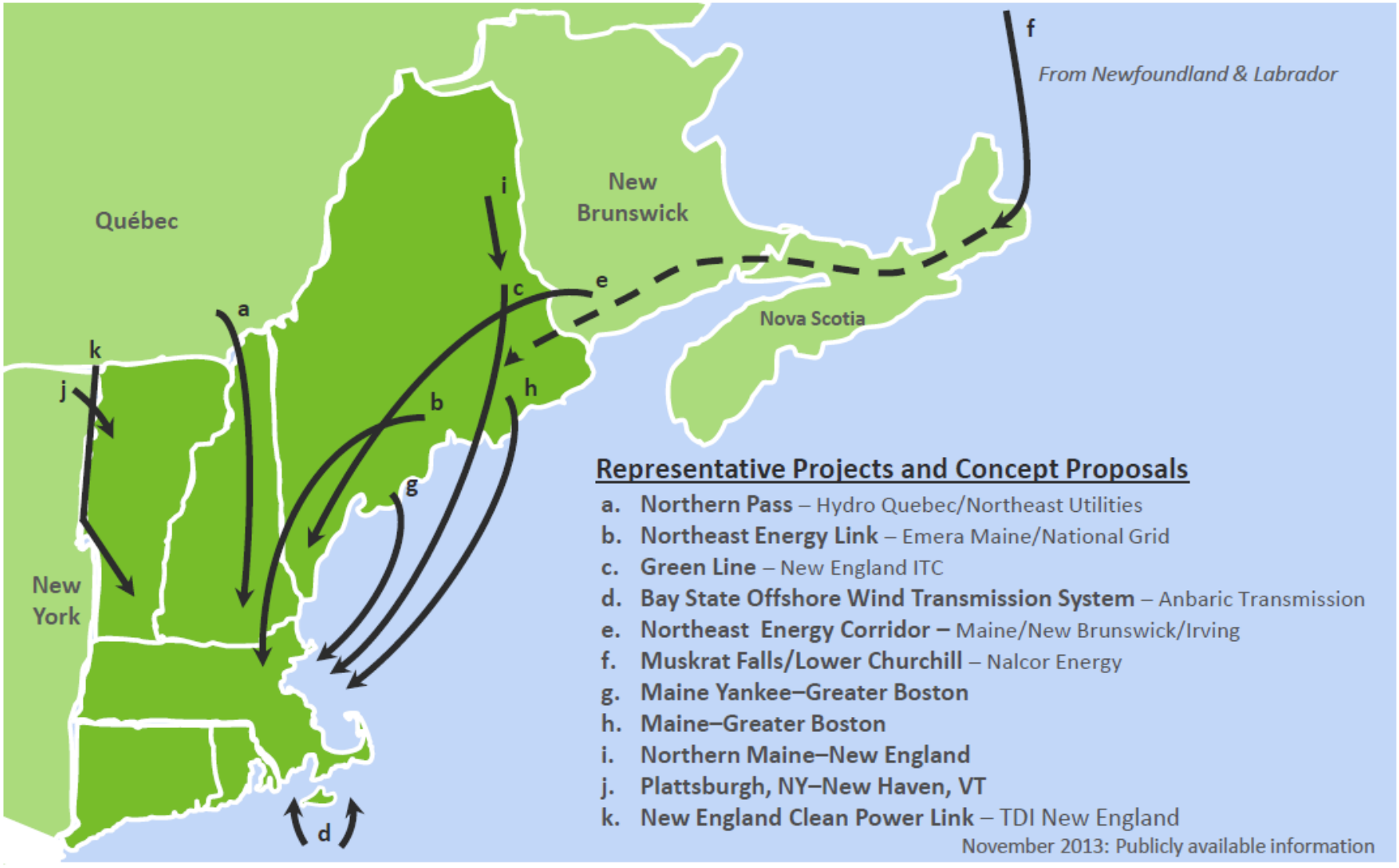
VELCO's objective with potential merchant partners: secure maximum risk-adjusted value for our owners and Vermont

Onshore and Offshore Transmission Proposals are Vying to Move Renewable Energy to New England Load Centers



Representative Projects and Concept Proposals

a. **Northern Pass** – Hydro Quebec/Northeast Utilities
b. **Northeast Energy Link** – Emera Maine/National Grid
c. **Green Line** – New England ITC
d. **Bay State Offshore Wind Transmission System** – Anbaric Transmission
e. **Northeast Energy Corridor –** Maine/New Brunswick/Irving
f. **Muskrat Falls/Lower Churchill** – Nalcor Energy
g. **Maine Yankee–Greater Boston**
h. **Maine–Greater Boston**
i. **Northern Maine–New England**
j. **Plattsburgh, NY–New Haven, VT**
k. **New England Clean Power Link** – TDI New England

November 2013: Publicly available information

Note: These projects are NOT reliability projects, but ISO New England's role is to ensure the reliable interconnection of these types of projects.

VELCO Agreement with TDI: Cost reduction opportunity

- Agreement with TDI, contingent on TDI-NE's successfully completing its New England Clean Power Link Project, that could reduce transmission costs paid by Vermont ratepayers.

- The company's ownership and tariffs are designed to achieve cooperative objectives through a for-profit corporate structure, and this agreement leverages VELCO's ability to serve as the most cost-effective mechanism for efficiently delivering greatest economic benefit to every ratepayer in VT.

Provisions include:

- Does not obligate the company to support the Project in regulatory processes or public forums.
- Is non-exclusive and thus ensures VELCO's ability to enter into agreements with other transmission developers.
- Provides that the Company's costs of developing and administering the agreement will be paid for by TDI-NE.

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VELCO's ask of NE regulators: optimize and accelerate adoption of proposed policies with cost control potential

As NESCOE has said: ***Think locally, act regionally…the issues are too big for any one state.*** Advancing cost-control policies are logical, evolutionary steps that build on existing work

- **At ISO-NE:**
  - Support ISO-NE changes to Planning Procedure 4 to require earlier TCA filing and more detailed cost estimates in meaningful time frames for planning estimates
  - Standardize ISO-NE MRA analysis with focused stakeholder input on methodology
  - Raise priority of ISO-NE strategic initiative to align markets and planning
- **In states:**
  - Fully adopt NESCOE NTA framework to ensure early, effective consideration of alternatives to transmission for reliability (not GII)

In conclusion…

- VELCO's unique structure helps ensure cost effective transmission system reliability even as federal regulatory performance requirements increase.

- New England has been successful in building transmission by effectively allocating costs – but region's grid is a "system in transition"

- Flat load growth coupled with the success of state small-scale generation, net metering and regional demand response programs mean new transmission planning challenges/opportunities.

- Statewide Smart Grid platform, fiber optic network and Vermont Weather Analytics Center project deliver significant customer benefits with potential to generate substantial additional value