Energy Efficiency in Regional Electric System Planning

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Introduction

- Regulatory Assistance Project
  - RAP is a non-profit organization, formed in 1992, that provides workshops and education assistance to state government officials on electric utility regulation. RAP is funded by the Energy Foundation and the US DOE.

- Richard Sedano was Commissioner of the Vermont Department of Public Service 1991-2001

Outline

- NEDRI and the recommendations
- Energy Efficiency attributes
- System Planning
- New England Regional State Committee

New England Demand Response Initiative

- Demand Response in Context
- Valuing demand response means having a planning process that fully integrates it as a solution to emerging and current system needs
- Other demand resources have similar values and benefit in investment evaluation from a similar system planning regime

NEDRI Recommendations

- Regional Programs
- Pricing and Metering
- **Energy Efficiency**
- Contingency Reserves
- **Power Delivery**

NEDRI Energy Efficiency Recommendations

- **Ratepayer support** for energy efficiency
- **Principles** for energy efficiency programs
- Appliance and Equipment energy **standards**
- Building energy **codes**
- **Regional coordination** of demand side resources
- **Synergies** between energy efficiency and ISO demand response programs

NEDRI Power Delivery Recommendations -1

- Market Foundations
  - Competitive markets with locational values
  - Incentive regulation for wires companies
- Regional System Planning
  - Transparent, open, continuing process
  - Resource parity

NEDRI Power Delivery Recommendations -2

- Regional Power System Investments
  - Market-based responses preferred
  - Cost allocation issues
    - Very contentious issue
    - Market failure leads to transmission solution
    - Market failure leads to any solution
    - No need to wait for market failures, any solution
- Distribution System Planning

Energy Efficiency and System Planning

- Energy efficiency has system value
  - Avoids capital cost by lightening load
  - Avoids energy use during all hours, or during peak (high value) hours
  - Slows growth
  - Dampens volatility in supply and price
  - Avoids environmental effects of G&T
- How to reflect these values in EE investment decisions?

Electric Growth is Chaos - Investment

- What does the electric industry need right now? **STABILITY**
- Sales growth leads to risk (and controversy)
  - New power lines, new pipelines, natural gas dependence, new coal, new nuclear, new market rules, big bet capital needs, wear on everything
- Risk that stalemate on supply side options may compromise reliability

Electric Growth is Chaos - Operations

- Sales growth leads to changes for system operators
  - More congestion, changed ratings on lines
- This in a context of increased need to track transactions over greater distances, involving coordination by more grid operators than before

2003 Blackout: Are Grid Operators able to maintain reliability standards under these conditions?

Memo from US EIA

- Growth rate of electric sales through 2020: forecast nearly 2% annually
- 2020 US Electric Sales will be **42% more** than in 2002

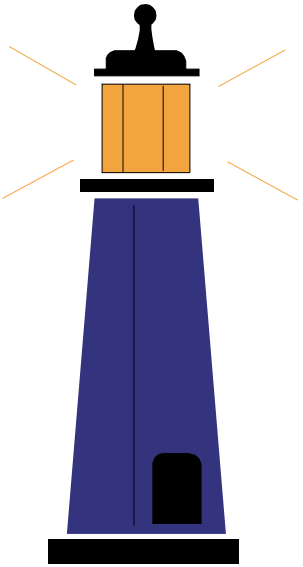
- Where will this added energy come from?
- What are the implications of producing and transmitting that much more energy?

The Case for Energy Efficiency: Alternative to

- Intrusive/speculative investments in G&T
- Complex adjustments to system operations
- Accelerated dependence on natural gas price volatility
- Market power opportunities
- Increased dependence on foreign energy sources
- Increased climate change mitigation challenge
- A stiff grid too dependent on large facilities (generation and transmission) which cause big problems when not available

Efficiency as Insurance

- Carbon reductions mandate
  - Or other environmental imperative
- Natural gas price increases
- Slim capacity margins
- Fuel Supply shortages
- Capital market constraints



Resilience as a design principle means efficiency

Energy Efficiency as a Resource

- Many states partition EE off to the side, as a social program, with a budget, regardless of resource value
- California is looking at EE more as a resource to solve its problems.
  - Reliably measured, targeted
  - Important peak demand reducer
  - Is a lot needed? Or just a little? Adjustable
- Portfolio Management integrates resources as utilities and regulators weigh risks

Engage Customers and Their Resources

- Energy Efficiency and
  - Demand Response
  - Distributed Generation
- It is about serving the needs of the service territory
  - Investment in communities
  - How to avoid conflict with utility fiduciary interests?
- Distributed Utility Planning

Regional System Planning

- Province of regional transmission organizations or regional transmission cos.
- Regional State Committees add gov't role
- How are system needs identified?
  - What is the time horizon? Contingencies?
  - Are all resources considered for solutions?
  - Can all resources be funded similarly?

Efficient Reliability Standard

- Assure that energy efficiency is part of the solutions set with **no resource bias** for or against investments in energy efficiency for reliability purposes
- Where transmission and generation are supported by transmission tariff for their reliability benefits, efficiency for the same purpose should also receive financial support.

Efficient Reliability Decision Rule

- **Before "socializing" the costs of a proposed reliability-enhancing investment through uplift or tariff, PUCs and FERC should first require a showing:**
  - that the relevant market is fully open to demand-side as well as supply resources;
  - that the proposed investment is the lowest cost, reasonably-available means to correct a remaining market failure; and
  - that benefits from the investment will be widespread, and thus appropriate for broad-based funding.

New England Regional State Committee

- Public interest engagement with regional system planning process of the ISO/RTO
  - Help the ISO/RTO resolve planning assumptions that depend on government actions
  - Encourage the ISO/RTO to consider innovative solutions to system needs
  - Contribute to resolving trade-offs between resource adequacy margins and cost

New England RSC and Energy Efficiency

- **Planning of sufficient horizon** to identify emerging system problems
- Factoring in **existing state EE programs** and their effect to mitigate system problems
- Targeting **incremental customer resources** beyond level of existing state programs to mitigate problems.
- Effective **resource parity** for grid solutions

Energy Efficiency: An Important Part of the Plan

- Reliability and Risk Management Resource
- Measurable
- Competitively priced
- Able to be targeted, managed
- Always on

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