

Energy Efficiency as a Supply Resource in Vermont



NARUC Energy Regulatory Partnership Program

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by

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May 23, 2005



Overview

- ❖ Brief history of energy efficiency in Vermont
- ❖ State legislation
- ❖ Federal Efforts
- ❖ Societal benefits
- ❖ Planning



Terminology

- ❖ Demand side management – three major components
 - Energy efficiency
 - Load management
 - Conservation
- ❖ Conservation versus efficiency
 - Behavioral changes versus installed technology



History of Energy Efficiency in Vermont

- ❖ The impetus
 - Promotion of electric heat
 - 1973 oil embargo
 - Peak growing faster than consumption
 - ◆ Vermont was winter peaking until late 1990's
- ❖ Early attempts at a solution
 - Load management
 - Weatherization
 - Inconsistent policies among Vermont's 22 electric utilities



Early utility programs

- ❖ Most programs targeted to homes with electric heat
 - Conducted energy audits
 - Electric hot water heater jackets
 - weatherization
- ❖ Load control devices on electric hot water heaters



Rate design

- ❖ Attempt to achieve better load factors
- ❖ Send correct price signals to customers
- ❖ Demand rate for homes with electric heat
- ❖ Seasonal rates
- ❖ Time of use rates



Docket 5270

- ❖ 1990, Board issued an order finding:
 - Energy efficiency programs could meet a significant portion of present and future load
 - Utilities needed to take energy efficiency programs seriously and treat on the same level as supply options
 - Energy efficiency programs could be improved to produce better results
 - A comprehensive energy efficiency program was needed
- ❖ Solution – least cost integrated resource planning



Formation of State-Wide Energy Efficiency Utility

- ❖ Each utility had different idea of appropriate comprehensive energy efficiency program
- ❖ The Power to Save: A Plan to Transform Vermont's Energy Efficiency Markets
- ❖ Docket 5980 MOU
 - Creation of state-wide energy efficiency utility
 - Negated individual utilities obligation to perform energy efficiency programs
 - Geographic equity



30 V.S.A. § 209

- ❖ Amended in 1999 to allow for the creation of a state-wide energy efficiency utility
- ❖ Allowed for one statewide entity to provide energy efficiency measures
- ❖ Established a \$17.5 million cap
- ❖ Requires that all customers have access to efficiency programs
- ❖ Requires independent evaluation



Vermont's Energy Efficiency Utility

- ❖ One entity providing energy efficiency services in Vermont
- ❖ Volumetric charge paid by all electric customers
- ❖ Direct financial incentives for energy efficiency resources acquired



State Legislation

- ❖ Act 250 – Vermont’s state land use law
 - Applies to most commercial developments
 - Planning and design “must reflect the principles of energy conservation”
 - “Best available technology for efficient use and recovery of energy” must be utilized
 - Utilities must certify that they can serve the proposed development



State Legislation

- ❖ 30 V.S.A. § 248 - Board's siting authority
- ❖ Before approving generation or transmission facilities, the Board must find that the proposed project "is required to meet the need for present and future demand for service which could not otherwise be provided in a more cost effective manner through energy conservation programs and measures and energy-efficiency and load management measures . . ."



Federal Efforts

- ❖ Grant money
- ❖ Energy Star appliance standards
- ❖ Low Income Home Energy Assistance Program



Societal Benefits - Economic

- ❖ Lower customer bills
 - 746 business and 39,177 residential customers served
 - Total of 32,678 MWh saved for business customers
 - Total of 24,731 MWh saved for residential customers
- ❖ Bills versus rates
 - Concern over the impact on economic development (large industrial customers who are concerned with rates rather than bills)
 - Majority of Vermont customers more concerned with bills than rates



Societal Benefits - Environmental

- ❖ Fossil fuel generation
 - CO₂, SO₂, NO_x, Mercury, Particulates
 - Global climate change, acid rain, ground level ozone
- ❖ Wind generation
 - Intermittent, aesthetics, land use, limited number of sites
- ❖ Hydroelectric generation
 - Fisheries, limited number of sites
- ❖ Siting and building infrastructure
- ❖ Fuel diversity



Avoided Costs

- ❖ Societal test
- ❖ Examine
 - Generation costs
 - ◆ Fuel
 - ◆ Operating and maintenance
 - ◆ Heat rate
 - Line losses
 - Transmission and distribution costs
 - Externalities



Integrated Resource Planning

- Requirements -

- ❖ 30 V.S.A. § 218c – passed in 1991
- ❖ Requires utilities to develop least cost plan
- ❖ Plans must address
 - Resource supply
 - Transmission and distribution capacity and efficiency
 - Comprehensive energy efficiency programs
- ❖ Plans must be approved by the Board
- ❖ Plans must be updated every three years



Integrated Resource Planning

- What Approval Means -

- ❖ Board approves decision-making process, not specific actions
- ❖ Not a prudence determination
- ❖ Utility has continuing obligation to
 - Monitor accuracy of assumptions and data
 - Reevaluate merits of its decision-making processes



Distributed Utility Planning

- ❖ Applies to transmission and distribution planning activities
- ❖ Capacity constrained areas
- ❖ Area specific collaboratives
- ❖ Purpose – determine whether transmission upgrade can be deferred by targeted energy efficiency and / or distributed generation



Conclusions

- ❖ Utilities need to recognize the value of energy efficiency and fund and / or implement efficiency programs
- ❖ Customers do not always make economic decisions
- ❖ Planning requirements are instrumental in keeping regulators up to date with energy efficiency potential