



VERMONT ENERGY
INVESTMENT CORPORATION

Making It Permanent: Institutionalizing Investments in Energy Efficiency

Atlantic Energy Efficiency Conference
International Energy Agency
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Consulting Division Director

Organizational Overview

Vermont Energy Investment Corporation (VEIC)

- Private, nonprofit corporation founded in 1986
- Mission: Reduce the economic and environmental costs of energy use
- Provides energy efficiency and renewable energy consulting and implementation services, nationally and internationally
 - ~200 employees
 - \$60 million annual revenue
 - Offices in Vermont; Massachusetts; Washington, DC; New Jersey; Ohio

VEIC Consulting and Implementation

Areas of Expertise

- Policy development & regulatory support
- Program delivery structure
- Market research & analysis
- Program design & implementation
- Project feasibility & technology support
- Transportation research & policy

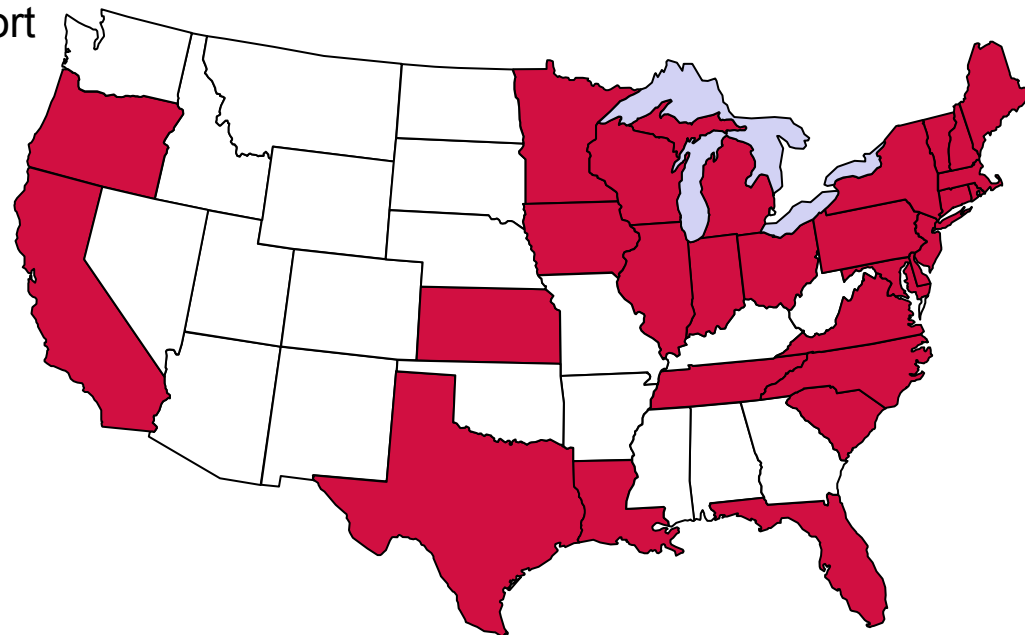
Range of Clients

- Regulators
- Government agencies
- Advocates
- Utilities – IOUs, Munis, Co-ops
- Foundations

Range of Jurisdictions

- 28 states, 6 Canadian provinces
- China, Vietnam, Mexico, Ireland, United Kingdom, others

VEIC work in the U.S., 1995 – 2010



Efficiency Vermont

- **U.S. regulatory approach easiest to understand as “regulated monopoly utilities”**
- **Efficiency Vermont—the leading efficiency program in the U.S.**
 - Competitive contract 2000 – 2010; now the nation’s first official Efficiency Utility (2010+)
 - Broad state policy
 - Strong regulation
 - Market-focused consumer approach
 - Primarily electric efficiency, limited thermal efficiency; partially funded through regional Forward Capacity Market



The Leading Efficiency Program in the United States



First efficiency program to turn underlying electrical load growth negative

- Efficiency savings exceeded projected load growth in 2007, 2008, 2009, and 2010
- Savings in 2008 provided 2.5% of Vermont's electric supply requirements
- “Buying” efficiency for just over 4.1cents per kWh vs. supply at 14.4 cents.
- 718,000 tons of CO₂ emissions avoided

The Leading Efficiency Program in the United States



Efficiency Vermont

- **Provides innovative research & development, and implements projects**
 - Cutting-edge efficiency resource technologies
 - Innovative program strategies and delivery
 - Trans-utility and targeted efficiency issues at transmission / distribution level
 - Financing mechanisms at community level
 - Research on Smart Grid and customer interface
 - Upstream marketing and managing large accounts

Exporting the Model

- **Efficiency Vermont performance-based model and Customer Service approach for efficiency savings—exported:**
 -  Launched January 2011
Serves customers in 47 municipal utilities (Ohio +)
 -  Launched April, 2011
Integrating efficiency and renewables
- Program design & consulting support for Efficiency New Brunswick, Efficiency Nova Scotia, etc.



Promoting, Rewarding Efficiency— What Does It Look Like in the US?

- **Political will (with no national GHG mandate)**
 - **Policy**
This is WHAT we are going to do
 - **Structure**
This is HOW we are going to do it
 - **Money**
This is how we will PAY for it
 - **Continuity**
This is us, NOT CHANGING OUR MINDS EVERY TWO YEARS

The Principles Can Apply Everywhere

1. Goals

- Clear and specific
- Policy stated
- Objectives specified



2. Mission Alignment: New Self-Definition

- Remove disincentives
- Strengthen incentives



The Principles Can Apply Everywhere

3. Motivation

- Well-designed, performance-based compensation

4. Accountability for results

- Focus on success, not on compliance with pre-approved programs; reward for taking risks

5. Flexibility

- Implementer must be allowed to change poorly performing programs, to respond to changing markets

6. Stability and sustained effort

- Long-term goals and budgets; good performance = longevity

The Principles Can Apply Everywhere

7. Robust information technology systems

- Database of all energy efficiency measures installed
- Central database of all electric ratepayer data
- Tracking results by market
- Customer contact database
- Business linkage—corporations and divisions
- Supply chain relationships
- Customer complaint tracking
- Activity reminder for users (deadlines, etc.)
- Accurate and timely reporting



It's a Public / Private Partnership Guiding and Responding to Markets





Lessons for Other

“Deep Efficiency Acquisition Systems”

- 1. Focus on customers, don't run “programs”**
 - Services, responsiveness, partnerships
- 2. Human assistance vs. financial assistance**
 - The value of trust and relationships
- 3. Create a vibrant institutional culture**
 - Expect and reward staff innovation
- 4. Don't fear complexity**
 - Customers want more help, not less
- 5. Expect to pay up to avoided cost**
 - 2-cent savings means there's more to buy



Lessons for Other “Deep Efficiency Acquisition Systems”

6. Leverage market partners

- You need allies everywhere

7. Look for more market-driven opportunities

- Relationships will make these real

8. Learn new things

- All-fuels; renewables, combined heat & power (CHP)

9. Change the rules / change the laws

- Partner on codes & standards, financing, tax changes

The Mandate and the Legal Framework



Vermont's Energy Policy

30 V.S.A. § 202a

It is the general policy of the state of Vermont:

(1) To assure...that Vermont can meet its energy service needs in a manner that is adequate, reliable, secure and sustainable; that assures...**the efficient use of energy resources and cost-effective demand side management; and that is environmentally sound.**

(2) To identify and evaluate...resources that will meet Vermont's energy service needs in accordance with the principles of *least cost integrated planning*; **including efficiency, conservation, and load management alternatives; wise use of renewable resources; and environmentally sound energy supply.**

Least Cost Integrated Planning: 30 V.S.A. § 218c

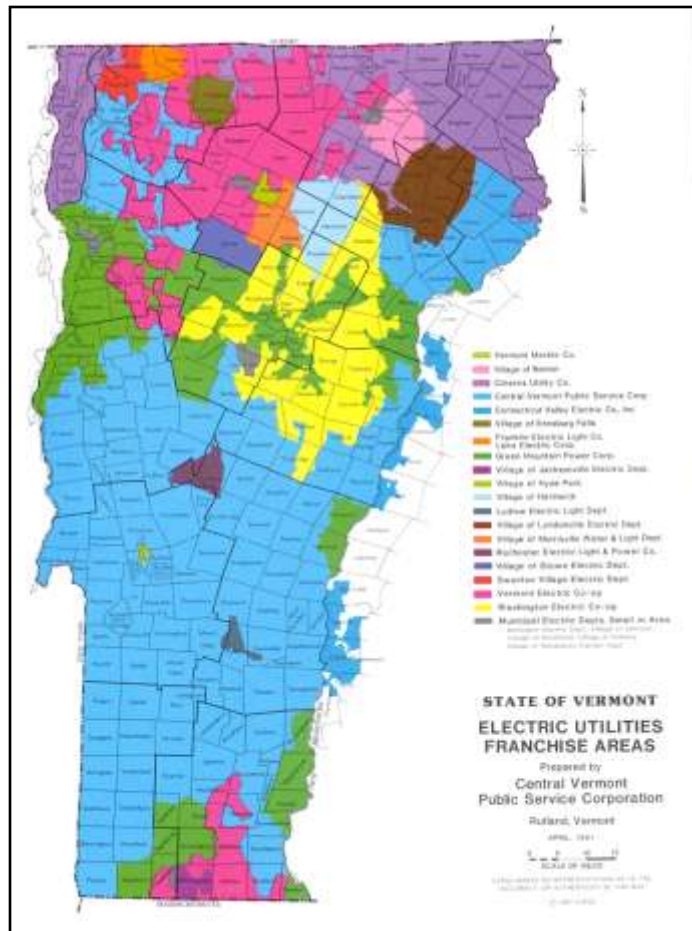


- (a)(1) ... a plan for meeting the public's need for energy services ... at the **lowest present value life cycle cost** ... through a strategy combining investments and expenditures on energy supply ... and **comprehensive energy efficiency programs**.
- (2) *Comprehensive energy efficiency programs* shall mean ... investments or program expenditures made by a regulated electric or gas utility ... to meet the public's need for energy services through efficiency, conservation, or load management ... to acquire the full amount of cost-effective savings from such investments or programs.

Jurisdiction, General Scope: 30 V.S.A. § 209

- ... all gas and electric utility companies ... are encouraged to propose, develop, solicit and monitor energy efficiency and conservation programs and measures ... beneficial to the ratepayers.
- ...In place of utility-specific programs ... the board may.....provide for the development, implementation, and monitoring of gas and electric energy efficiency and conservation programs and measures ... by one or more entities appointed by the board.

What if There Is More than One Utility?



- Lack of capability in small utilities
- Wide variation in spending and program offerings among 22 different utilities
- Confusing to customers
- Confusing to equipment vendors, and to design and engineering professionals
- Conflicting signals to the market
- Relatively high costs for program design and administration
- Lack of systematic, coordinated approach to statewide markets
- High regulatory cost

Vermont's Energy Efficiency Utility Efficiency Vermont



- **Fulfills electric utilities' regulatory obligations to implement system-wide electric efficiency programs as part of a least-cost energy supply portfolio**
- **Implemented through a contract with state regulators. Efficiency Vermont is just a name.**
- **Paid for by, and serves, all retail electric customers.**

Vermont's Energy Efficiency Utility

Efficiency Vermont



Efficiency Vermont

- **Not a “program,” but rather “a component of regulated utility service”**
- **Now 10 years of experience:**
 - 2000-2002: Three-year contract with VEIC
 - 2003-2005: Board opts to renew for three more years, with new budget & energy savings goals
 - 2005: Board opens up contract for bid, again; two strong responses
 - New contract awarded to VEIC for 2005-2008 with Board option to renew
 - Renewed through 2011 (Order of Appointment)

Primary Contract Objective

To acquire all energy efficiency resources that will lower the cost of meeting Vermont's electricity requirements

1. Respond appropriately to markets—to increase services and make them comprehensive
2. Achieve the maximum societal net benefits
3. Effectively capture potential, “lost opportunity” markets
4. Provide a standard level of service statewide
5. Target more services to areas that need to upgrade their transmission and distribution infrastructure



What Is the Basic Mechanism?

A contract to supply energy efficiency resources

- Model is similar to a power supply contract
- kWh and peak KW are “purchased” from the Efficiency Vermont contractor
- Contract contains
 - Minimum performance requirements
 - Measurable performance indicators
 - A significant financial holdback to assure contractor performance

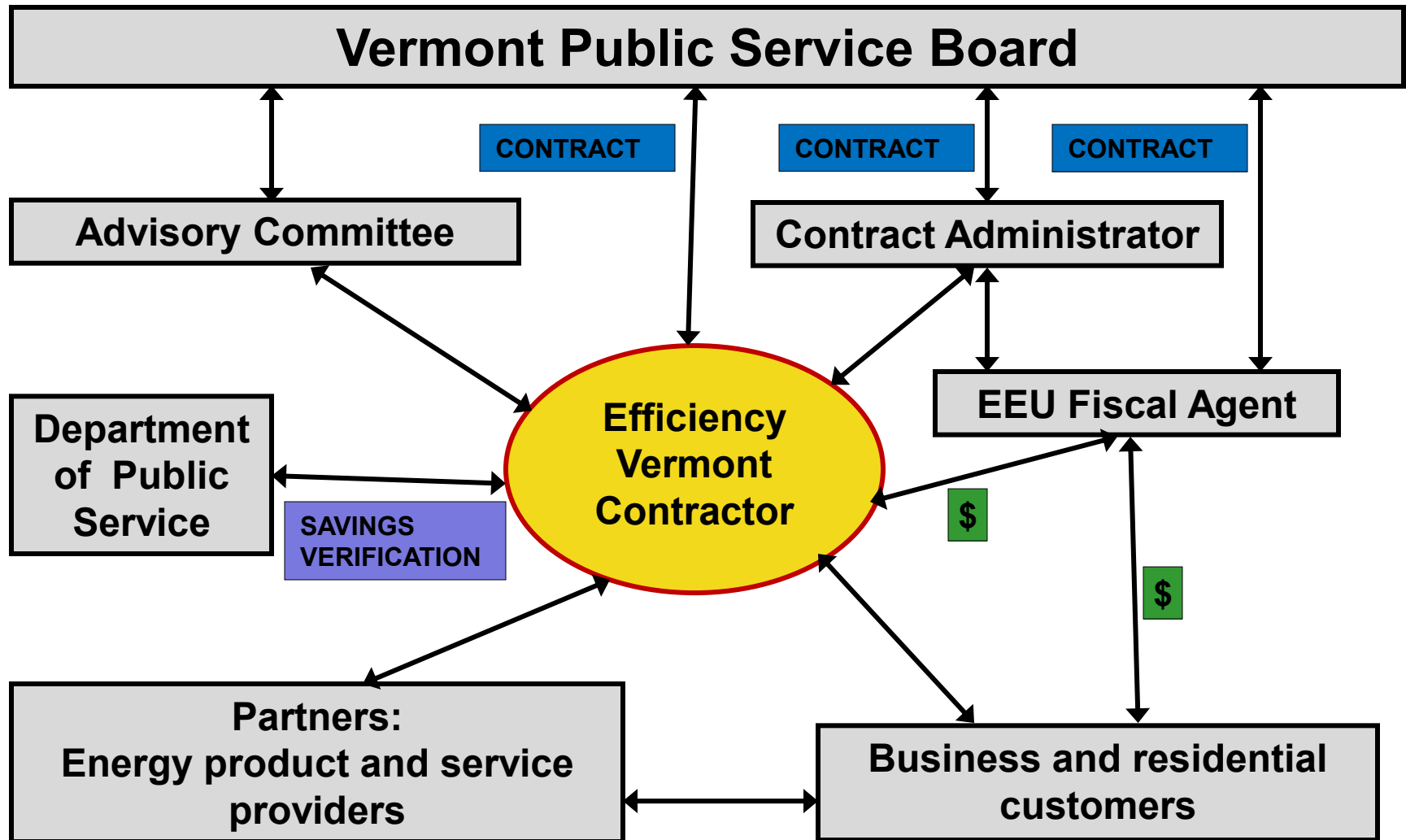
A Contract for Results

2009 – 2011 contract is for \$100 million:

- 360,000 MWh of incremental annual energy savings
- 50 MW of incremental summer and winter peak reduction
- \$342 million in net economic benefits
- and other measurable indicators



Efficiency Vermont Structure



Other Key Contractual Responsibilities



- Maintaining IT system for customer data and tracking service activity
- Reporting to regulators and utilities
- Maintaining technical assumptions system
- Public information and education
- Modify strategies, measures, initiatives, etc., as necessary to achieve objectives
- Increasing role in planning, advocacy and state policy initiatives: Building codes, PACE, Smart Grid, regional capacity markets



Statewide Goals

Secure maximum statewide public benefits from energy efficiency with available resources, while balancing numerous EEU objectives:

- resource acquisition ↔ market transformation
- electricity ↔ total resource savings
- equity of service offerings and savings benefits by:
 - rate class
 - distribution utility
 - geography
 - customer size, income, etc.



Key Tools to Influence Market Decisions

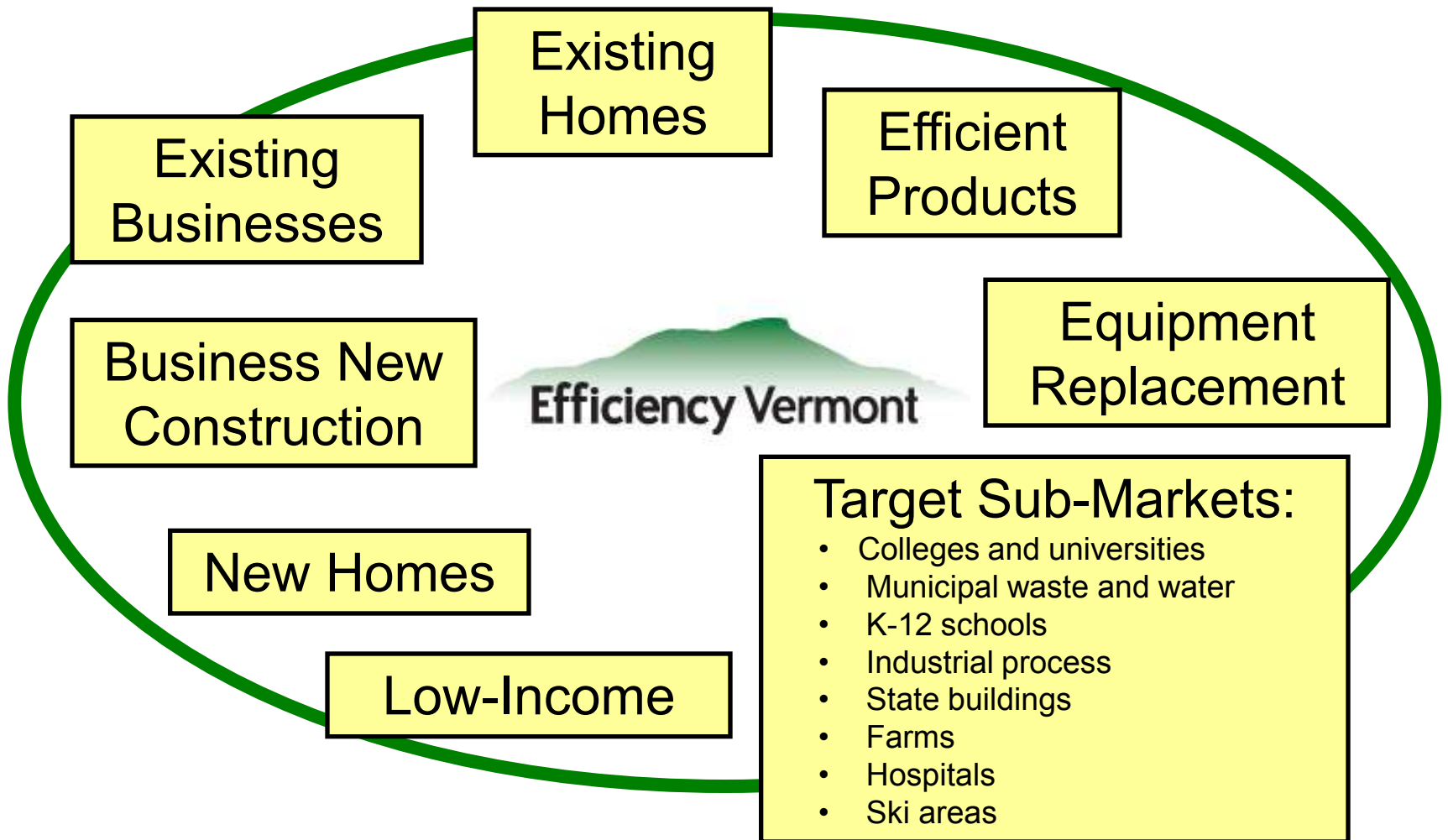
- **Information**
- **Technical assistance**
- **Financial assistance**
 - Financing
 - Direct incentives (cash)
- **How much?**
 - If measures are cost effective, we should be prepared to pay as much as necessary to get the savings, but no more than necessary

How Does Efficiency Vermont Obtain Energy Savings?

- **Technical assistance**
 - Public energy information and education
 - Advice on design, equipment, and technology selection
 - On-site consultation, custom analysis for large users
 - Cash flow and investment analysis
 - Training—suppliers, architects, builders, building operators, contractors
 - Commissioning advice
- **Financial Incentives**
 - Cash incentives and rebates
 - Financing assistance
 - Buy-downs



What Markets Does Efficiency Vermont Work in?



Efficiency Vermont Contract

- **Competitive bidding process** overseen by regulators
- **Performance-based contract** based on energy savings and other quantifiable measures
- Money is spent **only on activity that helps meet performance requirements for energy savings**
- Now operating under a transition period to a 12-year **Order of Appointment** cycle, beginning September 2010

Accountability and Oversight

- Public Service Board establishes **budget, goals, and terms** of the Efficiency Vermont contract
- On behalf of Vermont ratepayers, Vermont Department of Public Service provides:
 - **critical review and oversight of Efficiency Vermont**
 - **program evaluation and verification** of Efficiency Vermont's annual savings claims

Accountability and Oversight

- EEU Advisory Committee, established by the Board, provides **additional review and oversight**
- **Rigorous, independent financial audit every year—OMB A-133**
- **Third-party audit** conducted every three years and reported to Legislature

Performance and Spending

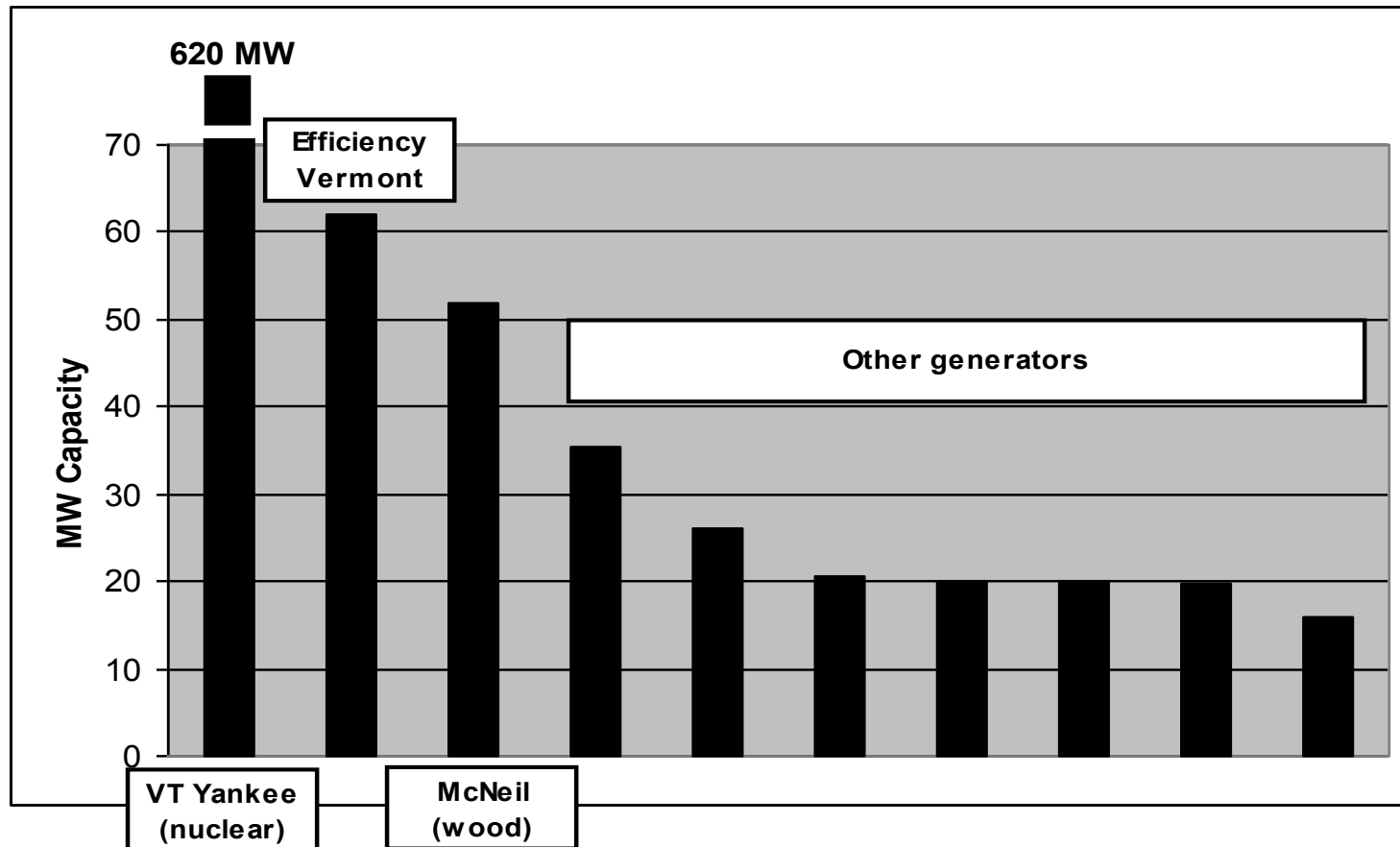
Where Does the Money Come from?

- **System Benefit Charge**
 - Primary source,
 - Protected from Legislature
 - Treated as ratepayer funds
- **Forward Capacity Market**
 - Legislatively directed: Helps offset SBC, involves some heating fuels
- **Regional Greenhouse Gas Initiative funds**
 - Legislatively directed; heating fuels



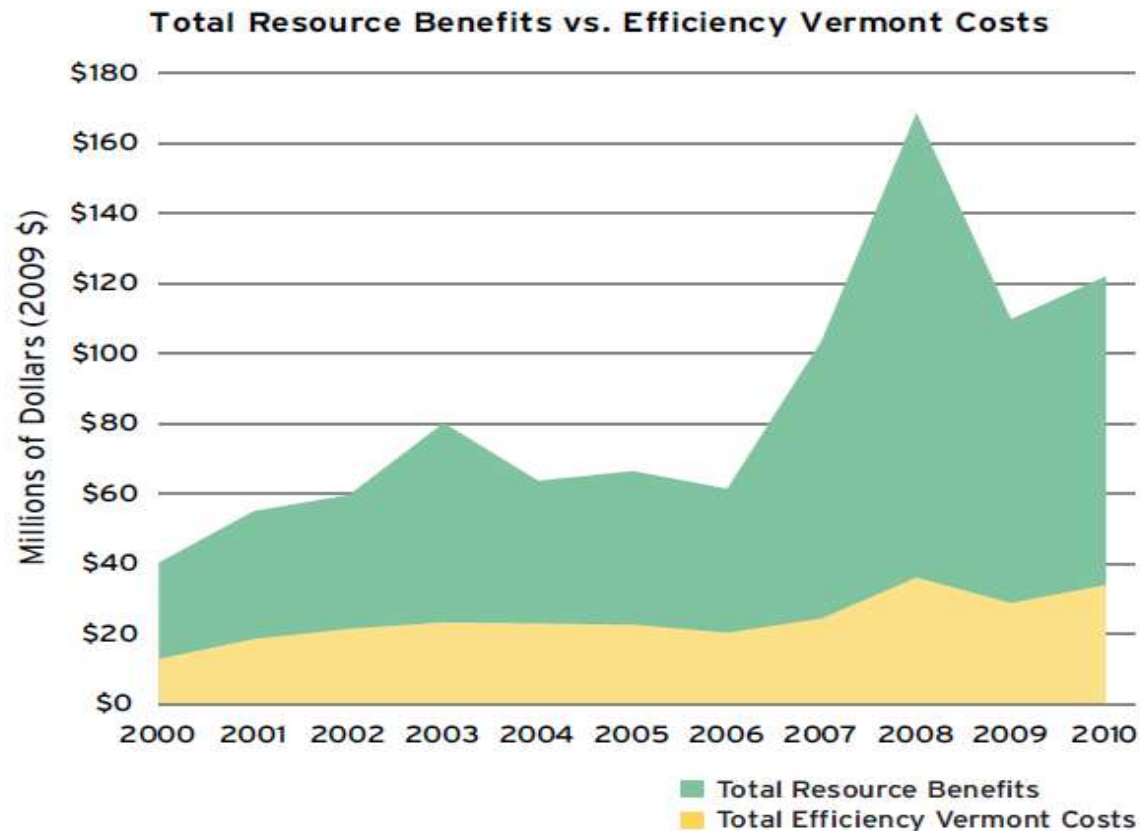
Review of Capacity in Vermont

Top ten FCM capacity providers (as of Auction #2)



Efficiency Vermont

The Leading U.S. Efficiency Program

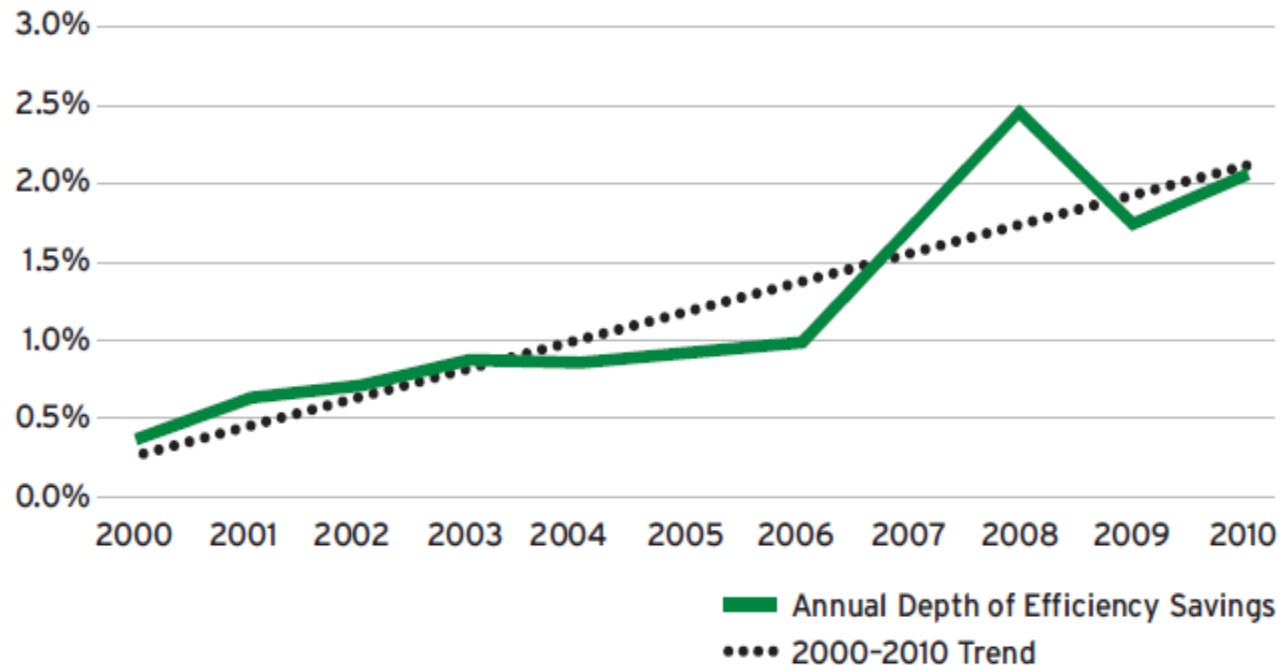




Efficiency Vermont

The Leading U.S. Efficiency Program

Energy Efficiency Savings as a Percentage of Vermont's Electricity Needs

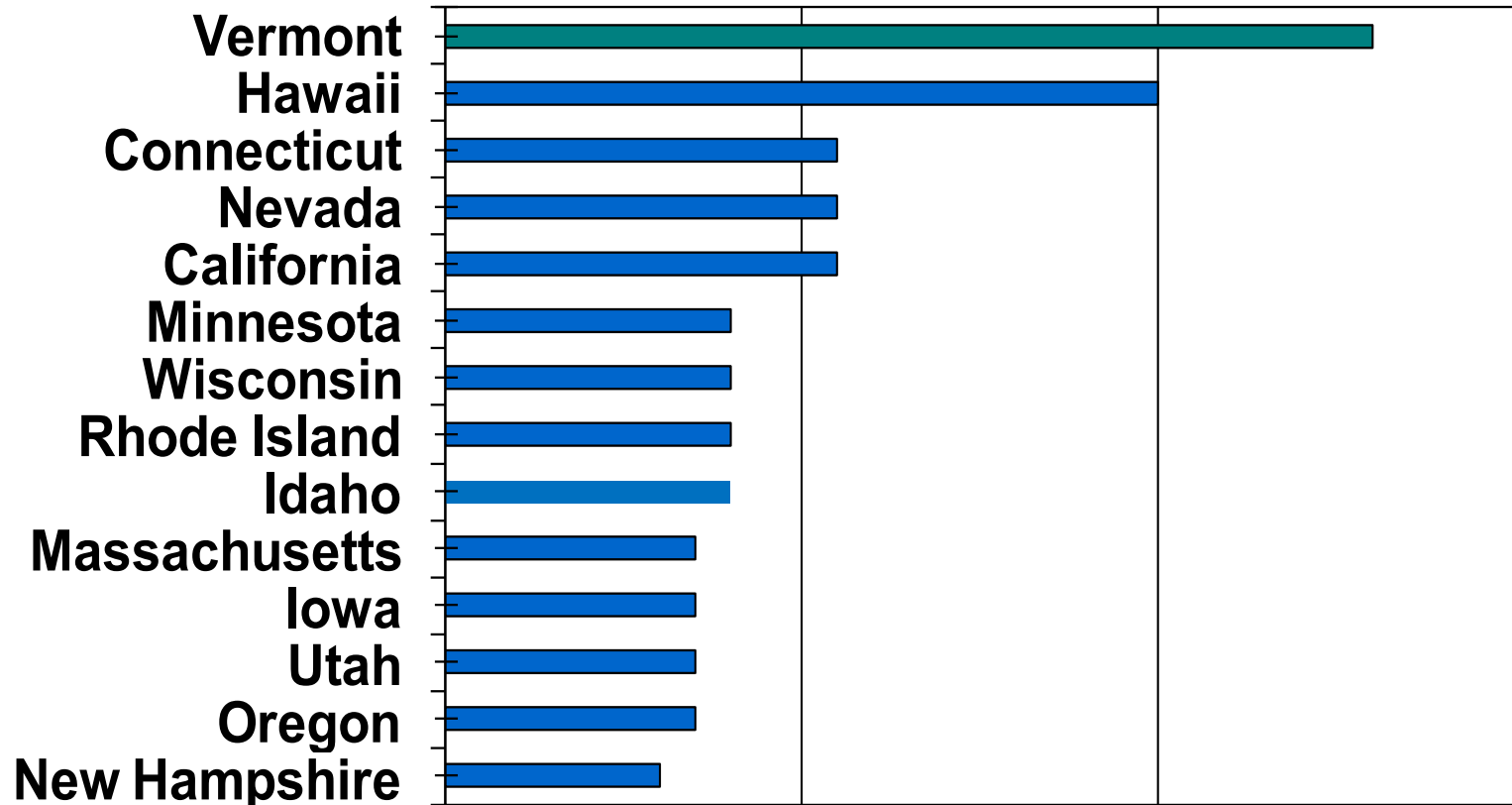




Efficiency Vermont

The Leading U.S. Efficiency Program

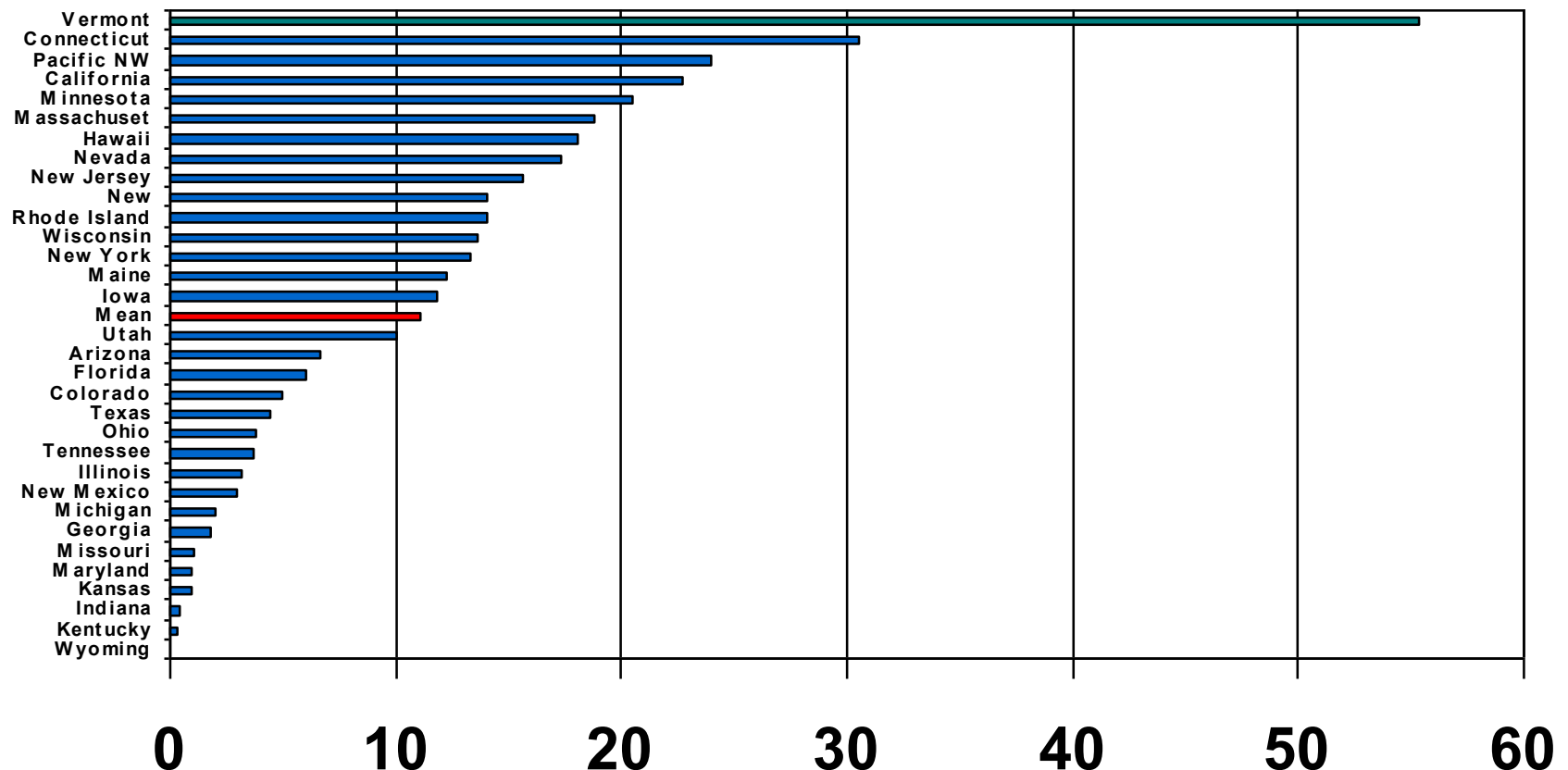
Efficiency Savings as % of total kWh sales (2008)



Vermont Is the U.S. Leader in Energy Efficiency Investment



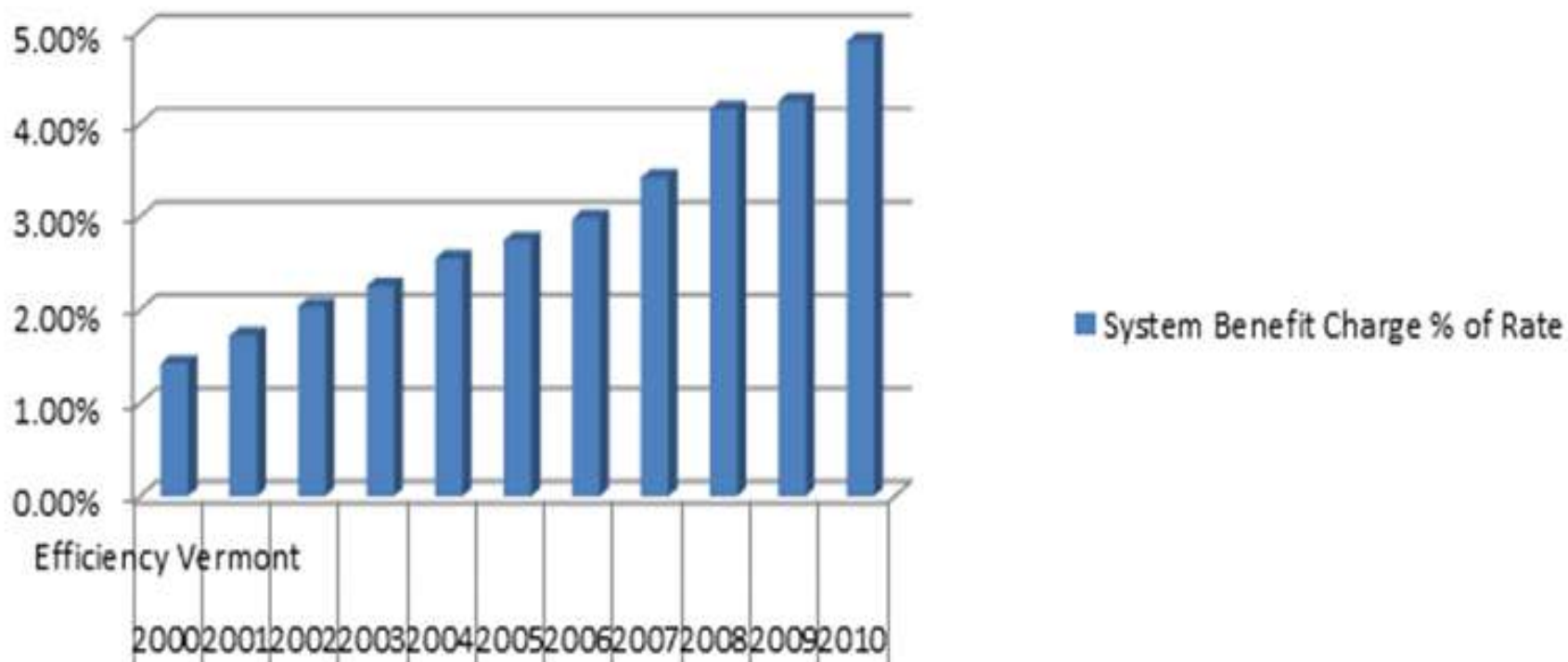
2008 per capita budgets, electric programs
(excluding load management)



"Reaching Higher: Annual Industry Report 2008," Consortium for Energy Efficiency, 2008

Efficiency Vermont's System Benefit Charge

System Benefit Charge % of Rate





2010 and Beyond

Budget Components	2009	2010	2011	2009 – 2011
Systems Benefit Charge	\$ 28,352,953	\$30,751,615	\$ 36,169,436	\$ 95,274,004
Heating Process Fuels	\$ 2,037,801	\$ 3,883,539	\$ 2,984,521	\$ 8,905,861
Performance Award	\$ -0-	\$ -0-	\$ -0-	\$ 2,697,000
TOTAL BUDGETS	\$ 30,390,754	\$ 34,635,154	\$ 39,153,956	\$106,876,865

Preliminary 2010 energy savings were 113,775,000 MWh or 2.5% of Vermont energy use

Projected savings for 2012 – 2014 are likely to be 3% of total energy use in Vermont annually

A Possible Shift

- Vermont's System Benefit Charge for energy efficiency is approaching 8 mills / kWh.
- Programs are deep into markets; high name recognition for Efficiency Vermont
- "If you are not using Efficiency Vermont, you are missing your chance to save"
- If the charge is seen as an opportunity to invest in energy savings, that perception shifts customer away from thinking about short payback periods as the only factor in deciding to spend on efficiency
- Programs have to work well and be marketed effectively

Leveraging Program Funds and Activity



Financing Tools to Leverage New Investment

- **“Financing” was often offered as the ideological and theoretical way to “get efficiency going” ... sometimes in competition with stable energy efficiency program funding**
- **Simplistic approach: It focuses on only one market barrier**
- **As energy efficiency infrastructure matures, financing is a critical component to going “wider and deeper”**

Financing Tools to Leverage New Investment

- **Several lessons:**
 - One size does not fit all ... financing will need to be responsive to—and designed for—market segments
 - It should not be constrained by energy efficiency source limitations
 - It should use program funds or other public funds for leveraging
 - Energy efficiency programs should use the skills of existing lenders



Codes and Standards

- **“Obvious” choice...customers who benefit can fully fund this effort**
- **But in the United States:**
 - Limited political will for standards
 - For Codes, poor enforcement; real savings not there
- **New role for energy efficiency programs**
 - Savings attributed to Code / Standard support and development
 - Training
 - Programs designed to leverage and exceed code
 - Create higher “current practice” that makes code adoption possible
 - “Push” Codes and Standards



Commercial Project Financing

- **Vermont Economic Development Authority (VEDA)**
- **Vermont Business Energy Conservation Loan Program**
 - for projects that improve energy efficiency and conserve energy
 - joint program with Efficiency Vermont
 - loans from \$5,000 to \$150,000
 - maximum loan term of five years
 - loan may fund up to 75% of the cost of a project
 - variable rate as low as **Prime minus 3%**, with a floor of 2%. Rate will apply for the first three years of the loan.

Property Assessed Clean Energy— PACE

- Participation in energy finance programs typically $< 0.5\%$ per year
- Energy financing programs mostly serve those who least need them
- Short-term consumer financing (< 7 years) is not effective unless there are substantial subsidies
- Positive cash flow is key
 - Reduces the risk perceived by lenders
 - Supports loans to those who would be judged unable to meet debt obligations without promised savings

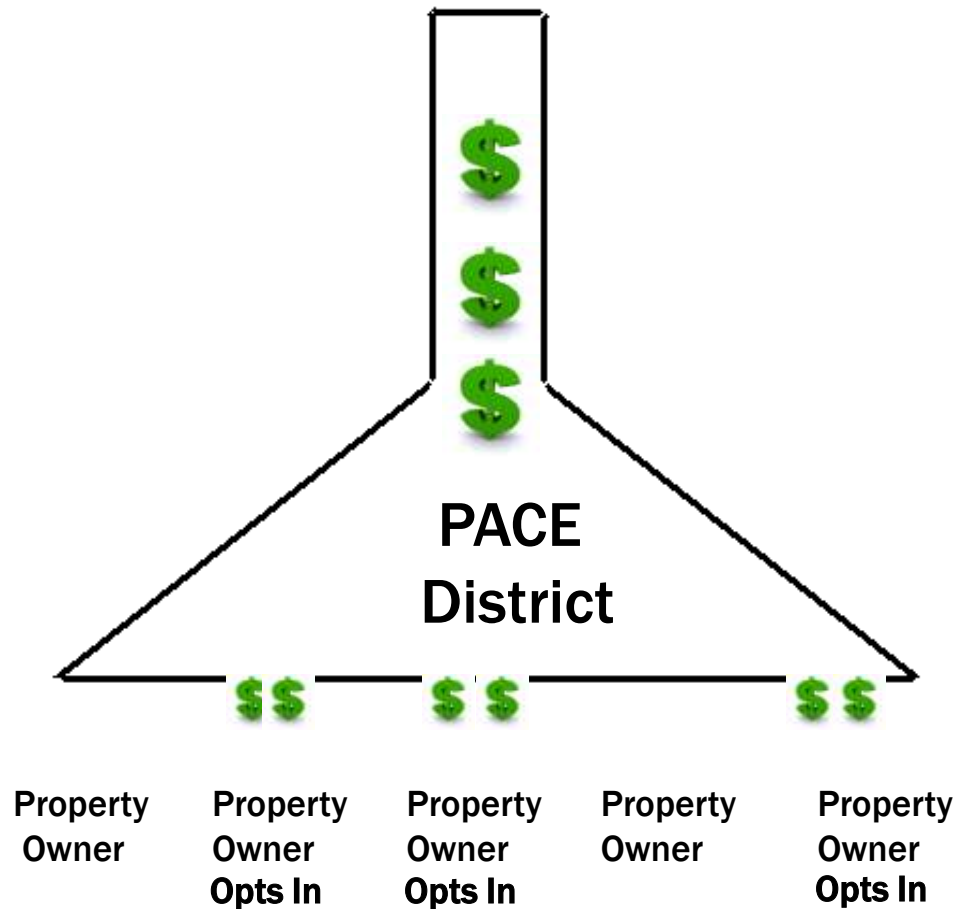
How does PACE work?

- Voluntary mechanism allowing property owners to opt in to a special assessment district created by their municipality
- Eligible energy efficiency and / or renewable energy improvements are funded by municipal debt
- Repayment period up to 20 years
- Special assessment fees transfer to the new owner when the property is sold, just like taxes
- Assessment obligation can be paid off at time of transfer

How the Money Flows



Financing Source



Property
Owner

Property
Owner
Opts In

Property
Owner
Opts In

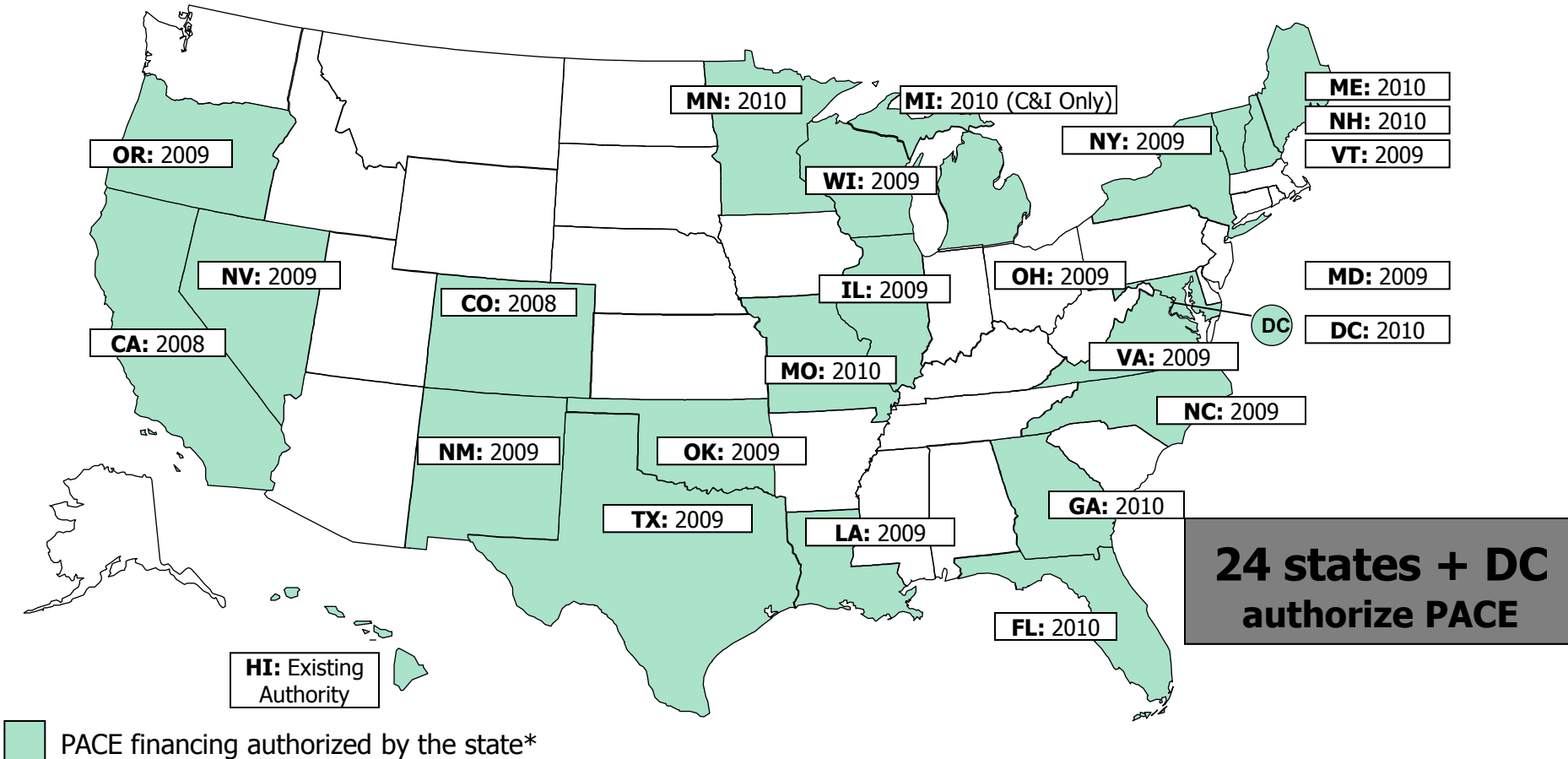
Property
Owner

Property
Owner
Opts In

PACE
District

Where PACE Has Been Authorized

Source: www.dsireusa.org / May 2011



**Federal Housing Financing Agency (FHFA) issued a statement in July 2010 concerning the senior lien status associated with most PACE programs. In response to the FHFA statement, most local PACE programs have been suspended until further clarification is provided.*

National PACE Developments Alternative Programs

- **The “Maine model”**
 - Junior lien status
 - Loan loss reserve is funded by federal grants, so limited applicability as a template for other programs
- **The “Vermont model”**
 - Junior lien status
 - Loan loss reserve is funded by RGGI funds and mandatory participant contributions
 - Credit enhancements allow private investors to provide funds at competitive rates

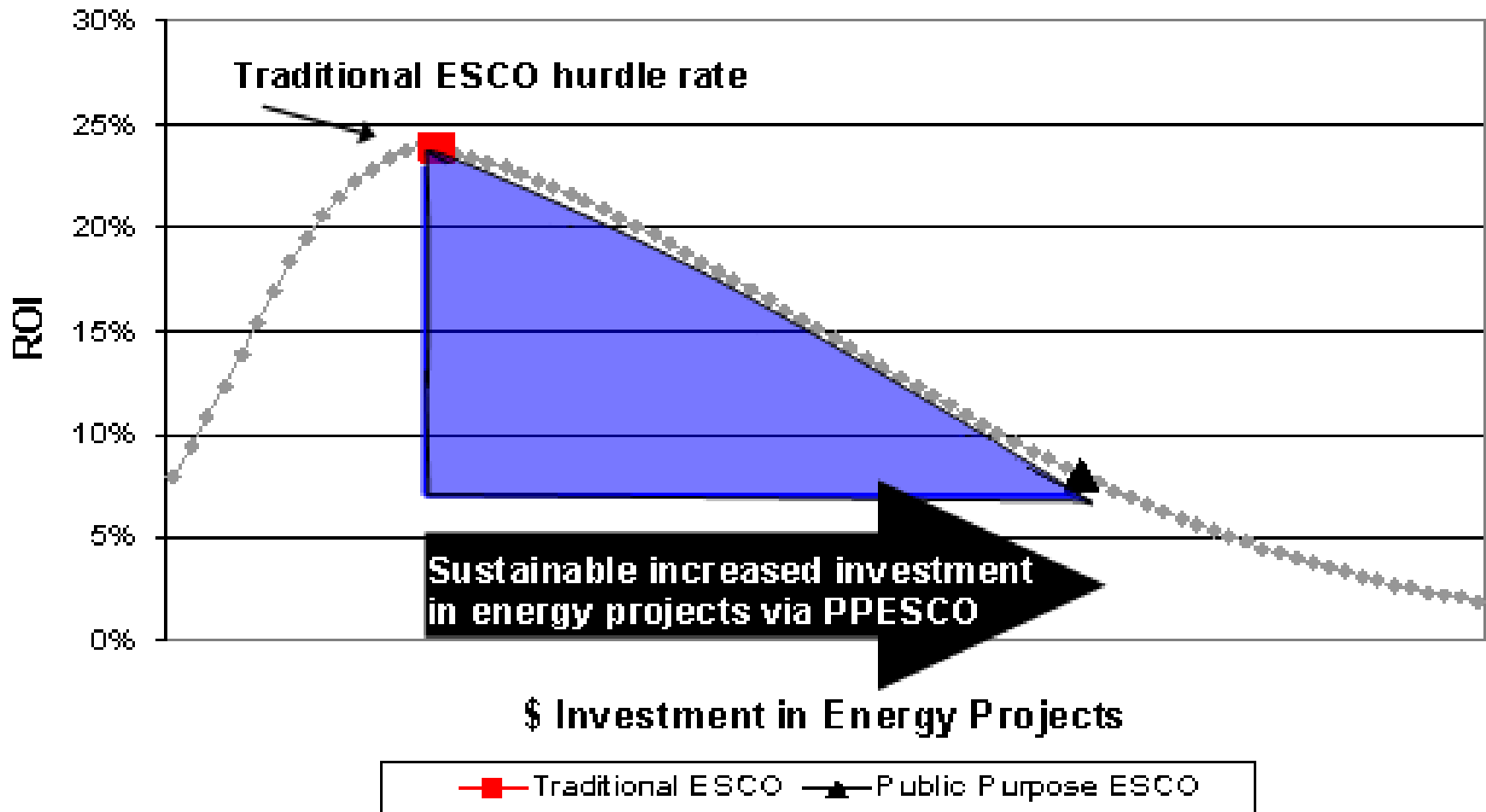


Public Purpose Energy Service Company: PPESCO

- PPESCO model seeks to perform all cost-effective measures, rather than following the traditional ESCO model of limiting measures to those that achieve the greatest return on investment.
- By its nature, a PPESCO will tend to make higher levels of investment for a given project than a traditional ESCO would, with associated deeper savings.



PPESCO Defined





The PPESCO Model Serves Broader Public Purposes

- Enables deeper energy savings; business structures allow for transparency in project pricing, longer investment timeframes, and lower returns on investment.
- Aids market growth and increased use of high-efficiency approaches and products in sectors with large potential, but with little or no ESCO penetration
- Lowers barriers to achieving goals in energy-related economic development, and to housing affordability by removing high margins as one requirement of upfront financing.

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