What Is VEIC?

OUR MISSION

"to reduce the costs, both monetary and environmental, of energy use"
Our Organizational Objectives

VEIC is an organization working for social change; and for a better, cleaner, more sustainable environment. VEIC:

- Makes decisions based on what is best for society; we serve as a public-interest technical assistance organization.
- Maintains a balance of theory (consulting) and practice (implementation); we ground the advocacy work in real-life implementation experience.
- Strives to be in a position to regularly perform pro bono work.
Our Organizational Objectives

In its work for social change, and for a better, cleaner, more sustainable environment, VEIC:

- Seeks ways to overcome barriers to energy efficiency in government policy and in the marketplace—financial, informational, organizational, institutional, and bureaucratic—with special emphasis on the greater barriers that face low- and moderate-income people, who are most affected by energy inefficiency.

- Is a trustworthy source of reliable information to the public.
Our Organizational Objectives

In its work for social change, and for a better, cleaner, more sustainable environment, VEIC also:

- Maintains a commitment to the financing of energy efficiency measures.
- Maintains a balance of objectives between affecting long-term systemic change and current actions, and achieving direct benefits for consumers—to illustrate the value of affordable energy efficiency.
Our Basic Values & Principles

Big Thinking... and Big Results
We set ambitious goals that will have a large impact in the world, and we deliver tangible results to which we hold ourselves accountable.

Our Staff... The Heart & Soul of VEIC
We maintain a workplace in which we respect every member of our community. We value each person's unique contributions, and encourage everyone to reach their full potential. We collectively own our results; we work together to fix our problems and we share our successes. We cherish a healthy balance of life and work.
Our Basic Values & Principles

**Our Commitment to the Planet & the Life it Sustains**

We share a deep commitment to VEIC’s environmental and economic mission, and use it to guide everything we do. Within the context of that mission, we bring a commitment to reducing the social inequity that places a greater burden on low-income people.

**Our Passion for Creativity & Innovation**

We take risks and resist complacency. We challenge ourselves to seek the next great thing—to be at the cutting edge of our field. We value the dynamic tension that comes from working together to design & implement energy services and initiatives. We encourage and support continuous learning. We continuously improve our work by listening to and learning from our customers & constituents, and from each other.
VEIC Overview

• Non-profit energy services company founded in 1986
  ▪ 170+ employees
  ▪ ~$40 million annual budget

• Focus on energy efficiency and renewables

• Broad range of activities and experience
  ▪ Program administration
  ▪ Consulting services
  ▪ Project development
A Sampling of VEIC Programs

  - Responsible for statewide electric efficiency programs
    - More aggressive efforts in target regions to defer T&D upgrades
    - Expanding to address fossil fuel efficiency in 2009
  - Numerous national awards
  - 2007 savings of ~1.75% of sales, 2.5% in 2008
- VT Renewable Energy Rebate Program since 2003
- NJ Customer-Sited Renewables Program since 2006
  - Working with CSG (Massachusetts) and Honeywell
  - Administer annual budget of >$140 million (in 2008)
  - Second-largest U.S. photovoltaic market, after California
VEIC Consulting

Areas of Expertise
• Market analysis
• Program design
• Cost-effectiveness screening
• Regulatory policy

Range of Clients
• Regulators
• Government agencies
• Advocates
• Utilities – IOUs, Munis, Co-ops

Range of Jurisdictions
• 25 states, 6 Canadian provinces
• China, Viet Nam, Mexico, others

Current client locations in red
II. Efficiency Vermont Overview
Vermont’s “Energy Efficiency Utility”

• First in the nation – 10 years old
• Vermont Public Service Board contracts with VEIC to provide “Efficiency Vermont” services
• Competitively bid, performance-based contract
• Treated entirely as a utility cost, paid like other utility costs as a volumetric charge by all retail electric consumers
• Up and running in March 2000
An Infrastructure Serving
340,000 Electricity Customers in Vermont

- A legislative and regulatory framework
- Systems to assure accountability and performance
- More than 180 staff
- More than 40 subcontractors
- Hundreds of partners that provide energy efficiency products and services
A Contract for Results

2009-2011 contract is for $100 million of energy efficiency resources

- 360,000 MWh of incremental annual energy savings
- 50 MW of incremental summer and winter peak reduction
- $342 million in net economic benefits
- Other measurable indicators
What Are Efficiency Vermont’s Markets?

- Existing Homes
- Efficient Products
- Equipment Replacement
- Business New Construction
- New Homes
- Existing Businesses
- Low-Income

Target Sub-Markets:
- Colleges and Universities
- Municipal Waste and Water
- K-12 Schools
- Industrial Process
- State Buildings
- Farms
- Hospitals
- Ski Areas
What Does Efficiency Vermont Do to Obtain Energy Savings?

1. Works with Vermont energy users to help them make cost-effective improvements to their homes, businesses and institutions
   - Residential, business, and industrial customers

2. Works with a broad network of Vermont product and service providers so that the market will increase the design, specification, sale, and installation of energy-efficient products, equipment, and buildings
   - Architects, engineers, retailers, builders, suppliers, developers, designers, wholesalers
What Does Efficiency Vermont Do to Obtain Energy Savings?

• **Technical Assistance**
  - Public energy information and education
  - Advice on design, equipment, and technology selection
  - On-site consultation and custom analysis for large users
  - Cash flow and investment analysis
  - Training – suppliers, architects, builders, operators, contractors
  - Commissioning advice

• **Financial Incentives**
  - Cash incentives and rebates
  - Financing assistance
  - Buy-downs
A Tale of Cheese – from Farm to Market to Table

- Cabot Cooperative’s dairy farmers reduce their costs with energy-efficient refrigeration, lighting, and process equipment.
- Efficiency Vermont provides expert technical assistance, cash incentives, loan subsidies, and guarantees to farmers.
- First-year energy savings: 3,300,000 kWh - $290,000
Since 2000, Cabot Creamery has worked with Efficiency Vermont to install efficient lighting, motors and controls in its cheese processing plant to reduce energy use.

Efficiency Vermont provided expert technical analysis, financial analysis and cash incentives.

First-year energy savings: 740,000 kWh - $54,000
The retailer selling Cabot’s dairy products uses energy-efficient lighting, refrigeration, and air conditioning.

Efficiency Vermont provided engineering, technical analysis, financial analysis and cash incentives

First-year energy savings: 120,000 kWh and $10,400
• Efficiency Vermont promotes and rebates the sale of ENERGY STAR® labeled refrigerators to reduce home energy use.

• Efficiency Vermont has provided more than 7,000 refrigerator rebates through over 100 retail partners (all dealers in the state)

• First-year energy savings: 2,400,000 kWh and $250,000
V. Efficiency Vermont’s Results – What Is Possible
Vermont Is the Leader in Energy Efficiency Investment

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

Vermont Leads the Nation: Depth of Savings Through Efficiency

Efficiency Savings as % of total kWh sales (2007)

- Vermont
- Connecticut
- Oregon
- Massachusetts
- California
- Rhode Island
- Washington
- Wisconsin
- Median
- Minnesota
- Iowa
- Nevada
- New Jersey
- Texas

Efficiency Vermont MWh Savings and Yield: 2000-2007

- Incremental annual MWh savings
- Yield – MWh savings per $10,000 invested
Efficiency Vermont’s approximate cost of electric efficiency 2.9¢ / kWh

Approximate cost of comparable electric supply 14¢ / kWh
Energy Savings vs. Projected Load Growth

Rate of load growth without efficiency

Annual new efficiency savings as a percentage of statewide resource requirements
VEIC Bids Efficiency into ISO New England Forward Capacity Market

Final Results of ISO-NE FCM Auction #2

<table>
<thead>
<tr>
<th>Round</th>
<th>Supply available (MW) at end of round</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start</td>
<td>$12.00</td>
</tr>
<tr>
<td>1</td>
<td>$7.20</td>
</tr>
<tr>
<td>2</td>
<td>$6.00</td>
</tr>
<tr>
<td>3</td>
<td>$5.40</td>
</tr>
<tr>
<td>4</td>
<td>$4.80</td>
</tr>
<tr>
<td>5</td>
<td>$4.50</td>
</tr>
<tr>
<td>6</td>
<td>$4.20</td>
</tr>
<tr>
<td>7</td>
<td>$3.90</td>
</tr>
<tr>
<td>Close</td>
<td>$3.60</td>
</tr>
</tbody>
</table>

Yellow boxes give end-of-round price

Final Capacity Needed (ICR)
Efficiency: VT’s Second-Largest Resource in the Regional Capacity Market

Top Ten FCM Capacity Providers (as of FCA#2)

- VT Yankee (nuclear)
- McNeil (wood)
- Other generators

Efficiency Vermont

620 MW
III. Cross-Cutting Keys to Success
That Works for Vermont

but....
… the Principles Can Apply Everywhere

1. Clarity of Goals
   • Policy stated
   • Objectives specified

2. Mission Alignment
   • Clear incentives
   • No disincentives
The Principles Can Apply Everywhere

3. **Motivation**
   Well-designed, performance-based contract for delivery

4. **Accountability for results**
   Focus on success, not on compliance: Reward for taking risks

5. **Flexibility**
   Allow for appropriate program revision, response to changing markets

6. **Stability and sustained effort**
   Clarity that 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 info and usage
- Tracking results by market
- Customer contact database
- Business linkage – corporate and divisions
- Supply chain relationships
- Customer complaint tracking
- Activity reminder for users (deadlines etc.)
- Accurate and timely reporting
It Is a Public / Private Partnership
Guiding and Responding to Markets
Lessons for Others Who Want to Implement a “Deep Efficiency Acquisition System”

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 Others
Who Want to Implement a “Deep Efficiency Acquisition System”

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, CHP

9. Change the rules / change the laws
   Partner on codes & standards, financing, tax changes
Moving to a Sustainable Energy Future

![Diagram showing the transition from unsustainable to sustainable energy resources over time. The diagram illustrates the increase in energy requirements for business as usual, efficiency, and reduced use, and the transition to sustainable energy resources.](image-url)
How Much Efficiency Will We Have to Deliver?

Because efficiency is our cleanest and cheapest energy resource....

• It *should* and *will* be called upon to provide 30 – 50 % of our future energy requirements
Delivering 30% of energy resource needs, 20 years from now, will require ramping up to incremental savings of 3% per year in the next 10 years

(assuming 1.5% underlying load growth)
Raising Our Expectations
A scenario for ramping up annual efficiency savings as a portion of load
Raising Our Expectations

- The rate of efficiency resources delivery of the very best states and utilities in the country will have to **double**
- For average states and utilities that are already active, it will have to increase **six-fold**
- For those that aren’t doing much, expectations of **enormous** ramp-up need to be adopted
What Do We Need to Do?

Start by doing much more of what we already know how to do…
What Do We Need to Do?

Ramp up to much **wider** and **deeper** acquisition of energy efficiency resources

*Wider: Every state aggressively ramping up*

*Deeper: Working toward +3% / year goal*
What Do We Need to Do?

Ramp up to much **wider** and **deeper** acquisition of energy efficiency resources

**Wider:** More participants

**Deeper:** More savings per participant
What Do We Need to Do?

Ramp up to much **wider** and **deeper** acquisition of energy efficiency resources

**Wider:** More decisions affected

**Deeper:** More savings per decision
Go After Much Deeper Savings in Lost-Opportunity Markets

For example, in new construction…

**much higher targets**

[Diagram of solar panel and building]

LEED Net-zero buildings

50% + for commercial buildings

... and accelerated adoption as requirements
Reaching Climate Goals—The Building Retrofit Challenge

• Nationally, we need to do more than $2 trillion of building retrofits

• Voluntary programs can’t get this done fast enough—and time matters

• It isn’t politically feasible to pay for it all with public funds

• An integrated solution:
  1. Adoption of key policy instruments:
     - Time-of-sale building labeling → time-of-sale energy code
  2. New clean energy financing mechanisms
     - Property Assessed Clean Energy (PACE) Districts
     - New energy mortgage products
The Kinds of Implementation Strategies We Will Need

- Community-based energy initiatives
- Integrating efficiency and renewables
- Net-zero-energy new buildings / developments
- *Really* Smart Grid (enabling customers to save energy)
- Demonstration of scalable models of really deep retrofits
- Massive, door-to-door direct installation
- New public-purpose, community-scale implementation entities
- Bringing efficiency implementation lessons to transportation
More Integration

Integrated all-fuels efficiency

Integration with renewables
The Return of Direct Installation

- Santa Monica Energy Fitness (1985)
- United Illuminating Homewos (1989)
- PEPCO Apartments Plus (1994)
- WEC Direct Install Program (1992)
- CA small business Direct Install Programs (2005-)
- NGRID Small Business Program (1989-)

Years:
- 1985
- 1990
- 1995
- 2000
- 2005
Absolute Use Matters

• It’s time to focus on appropriately sized buildings, equipment, and appliances
• Find ways to make downsizing an attribute, amenity, and benefit, rather than a sacrifice
• Make “using less” a value, rather than a sacrifice
Address Our Biggest Barrier to Massive Efficiency

The barrier is not technical or economic – it’s INFRASTRUCTURE
Infrastructure Needs

• A deep, competitive infrastructure of efficiency-related service providers needs to be ready and able to provide services

• An enormous ramp-up
  • We’ll need tens of thousands of people
  • For this not to be the barrier, we need training at all levels to ready a new workforce

• Big transformations like this usually require a lot of time
  • We need to get going now
We’ll Need to Create a Market Where...

• Providers of efficiency services and products are vigorously competing for customers
• Customers have a broad range of attractive efficiency offers to choose from
• Efficient products, equipment, and buildings are less expensive than inefficient ones, using pricing mechanisms that reflect energy costs
Efficiency Should Be as Easy to Buy as Energy Supply…

• One stop, no hassle, one phone call away
• As easy to buy as the tank of oil it displaces over time
• As easy as pulling into the gas station and pumping gas
• Efficiency products and services as ubiquitous as convenience stores
Contact Information

Vermont Energy Investment Corporation
255 S. Champlain Street
Burlington, VT 05401

(802) 658-6060