



Saving Energy Through Behavioral Tools:

Behavior Theory and Efficiency Vermont's Application

Nick Lange – Senior Consultant

Jason Lenihan – Program Portfolio Manager

December 2015

VECAN Conference Agenda (12/5/15)



- Efficiency Vermont
- This is Behavioral Energy
- Behavior Tools
- Efficiency Vermont's Home Energy Reports: (HERs)
 - A Residential Behavior Program
- The HERs Web Portal
- Q&A

Efficiency Vermont



Energy efficiency can make a real difference!

Building Power Systems Based on Saving Energy

- Goal - Help VT'ers use less power w/out sacrificing comfort & productivity
- Invisible Energy Savings meets 14% of VT's electric needs at about half the cost.
 - The *cheapest* kWh or Mmbtu is the one you don't *buy*
 - The *cleanest* kWh or MMbtu is the one you don't *use*

Better efficiency can reduce overall costs for Vermonters:

- Eliminate need for additional generation and infrastructure
- Reduce need for utilities to buy expensive power to meet short-term demand

Total Resource Benefit – More than Electric Savings

- Electric, Heating & Fuel, Water for the life time of efficiency measures

Behavioral Concepts

Behaviors are ...



“What people do”

not what they...



Behavioral science ...



Types (Habits, Choices)

Theory (Explanatory Models)

Experiments (Changes)

Behavioral Results



Tools for Understanding

Effective Interventions

Behavioral Energy Tools

Two types of behavioral energy savings opportunities:

1. What people have → buy, repair, replace
2. Using what they have → when, where, how long

Historically, energy savings programs focused on #1:

- Behavioral tool is an economic incentive (\$ rebate, or buy-down)
- Why? -- Simple, Direct, Measurable → Program Savings Impact
 - A note about “Attribution” benefits and challenges

Many other behavioral science components: Goal Setting Existing Values

Anchor Bias Knowledge Gaps Modeling Behavior Reciprocity Public Commitment

Behavior Portfolio

Non-Incentive Based Programs:

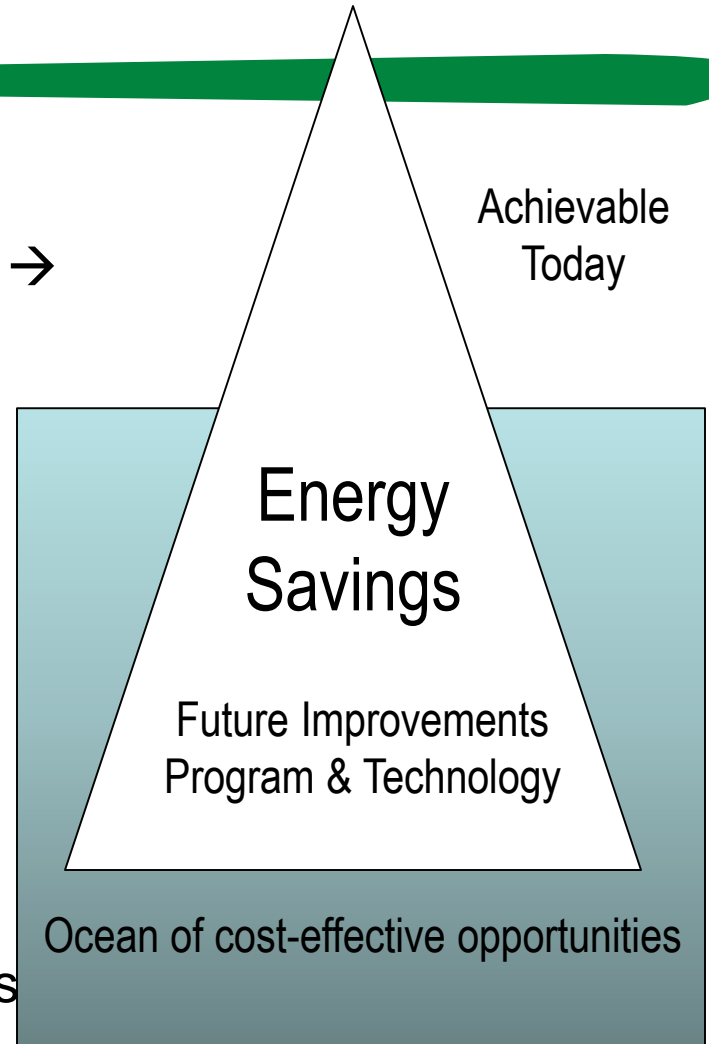
- What they are & why they matter →
- “Big Data” – Analytics & Services

Efficiency Vermont Behavioral R&D :

- Savings Potential
- Measurability
- Long-Term Strategic Alignment

Current Activities

- Initial Pilots
- Future Focus Areas (New Initiatives)



What is the Home Energy Reports Pilot?

Uses AMI “Smart Meter” Data

120K Vermont residences randomly selected from Green Mountain Power

- 100K received reports
- 20K did not receive reports
- The groups are compared to see if the reports help with savings

Reports compare among neighbors/like homes: while not always “apples to apples” it is meant to provide some context for the amount of energy used

Behavioral Energy – Motivation for Energy Efficiency

Why Home Energy Reports Pilot ?



Key Questions:

Does providing these reports helps Vermonters change their behavior to save electricity usage and money?

Will getting reports lift participation in other Efficiency Vermont programs initiatives ?

Our Program:

- Vendor runs program with ~100 utilities/~50 million customers
- Best in Class: Home Energy Management Leaderboard - Selected as “Leaders”

Verm

As told by

Click &



Efficiency Vermont
128 Lakeland Avenue, Suite 401
Burlington, VT 05401



Home Energy Report

Account number: [REDACTED]
Report period: 06/30/15-07/29/15

This report gives you context on your electricity use to help you make smart energy saving decisions.

Charge your electric vehicle at home? Heat your home with a heat pump system? Call to discuss your report experience at 1-888-921-5990.

For a full list of energy saving products and services for purchase, including rebates from Efficiency Vermont, visit:



EfficiencyVermont.com/Connect

Understand your energy use

Energy is all around us — and our goal at Efficiency Vermont is to help you use it the best way possible. The first step is knowing how much you use and whether there is an opportunity to save. That's the purpose of your Home Energy Report.

How should I use the Home Energy Report?

The Home Energy Report puts your electricity use in context. It's a ballpark for how your use compares to others, which helps you identify opportunities for improvement.

Who am I being compared to?

Your comparison group includes approximately 100 occupied, nearby homes, where homes are often around the same age. Over the past two months, Efficiency Vermont has improved the accuracy of your report to make the information even more useful.

What makes my Neighbor Comparison accurate?

Better information about your home makes your comparison more accurate. Get the best Neighbor Comparison possible by visiting efficiencyvermont.com/connect.

Last Month Neighbor Comparison | You used **47% more** electricity than your efficient neighbors.



* kWh: A 100-Watt bulb burning for 10 hours uses 1 kilowatt-hour.

All Neighbors: Approximately 100 occupied, nearby homes (avg 3.1 mi away) **Efficient Neighbors:** The most efficient 20 percent from the "All Neighbors" group

How you're doing:

Great 😊 😊

▶ **GOOD** 😊

More than average

An Accurate Comparison

It's easy to view your household information EfficiencyVermont.com/Connect



Efficiency Vermont
128 Lakeside Avenue, Suite 401
Burlington, VT 05401

Home Energy Report

Account number: [REDACTED]
Report period: 06/30/15-07/29/15

This report gives you context on your **electricity** use to help you make smart energy saving decisions.

Charge your electric vehicle at home? Heat your home with a heat pump system? Call to discuss your report experience at 1-888-921-5990.

For a full list of energy saving products and services for purchase, including rebates from Efficiency Vermont, visit:



EfficiencyVermont.com/Connect

Exploring Behavior in Home Energy Reports

- Prompts
- Social Norms
- Cognitive Dissonance
- Illusory Superiority
- Feedback
- Default Bias

Understand your energy use

Energy is all around us — and our goal at Efficiency Vermont is to help you use it the best way possible. The first step is knowing how much you use and whether there is an opportunity to save. That's the purpose of your Home Energy Report.

How should I use the Home Energy Report?

The Home Energy Report puts your electricity use in context. It's a ballpark for how your use compares to others, which helps you identify opportunities for improvement.

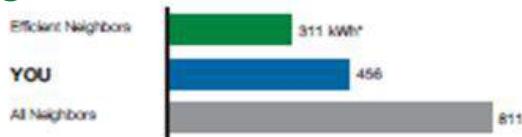
Who am I being compared to?

Your comparison group includes approximately 100 occupied, nearby homes, whose homes are often around the same age. Over the past two months, Efficiency Vermont has improved the accuracy of your report to make the information even more useful.

What makes my Neighbor Comparison accurate?

Better information about your home makes your comparison more accurate. Get the best Neighbor Comparison possible by visiting efficiencyvermont.com/connect.

Last Month Neighbor Comparison | You used **47% more** electricity than your efficient neighbors.

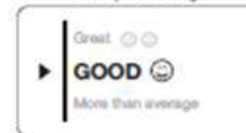


* kWh: A 100-Watt bulb burning for 10 hours uses 1 kilowatt-hour.

■ **All Neighbors:** Approximately 100 occupied, nearby homes (avg. 1.1 mi away)

■ **Efficient Neighbors:** The most efficient 20 percent from the "All Neighbors" group

How you're doing:



An Accurate Comparison

It's easy to view your household information
EfficiencyVermont.com/Connect

HERS – Prompts

Prompting VT'ers to Save Energy via Delivery of the Home Energy Reports

- ❑ Delivery in itself
- ❑ Delivery Frequency
 - ❑ Paper Reports Vary
 - ❑ eHERs Monthly

Efficiency Vermont
128 Lakeside Avenue, Suite 401
Burlington, VT 05401

Home Energy Report
Account number: [REDACTED]
Report period: 06/30/15-07/29/15

This report gives you context on your **electricity** use to help you make smart energy saving decisions.
Charge your electric vehicle at home? Heat your home with a heat pump system? Call to discuss your report experience at 1-888-921-5990.
For a full list of energy saving products and services for purchase, including rebates from Efficiency Vermont, visit:
EfficiencyVermont.com/Connect

Understand your energy use

Energy is all around us — and our goal at Efficiency Vermont is to help you use it the best way possible. The first step is knowing how much you use and whether there is an opportunity to save. That's the purpose of your Home Energy Report.

How should I use the Home Energy Report?
The Home Energy Report puts your electricity use in context. It's a ballpark for how your use compares to others, which helps you identify opportunities for improvement.

Who am I being compared to?
Your comparison group includes approximately 100 occupied, nearby homes, whose homes are often around the same age. Over the past two months, Efficiency Vermont has improved the accuracy of your report to make the information even more useful.

What makes my Neighbor Comparison accurate?
Better information about your home makes your comparison more accurate. Get the best Neighbor Comparison possible by visiting efficiencyvermont.com/connect.

Last Month Neighbor Comparison

You used **47% more** electricity than your efficient neighbors.

Category	Usage (kWh)
Efficient Neighbors	311
YOU	456
All Neighbors	811

* kWh: A 100-Watt bulb burning for 10 hours uses 1 kilowatt-hour.

How you're doing:
Great 😊
▶ **GOOD** 😊
More than average

All Neighbors: Approximately 100 occupied, nearby homes (avg 1.1 mi away)
Efficient Neighbors: The most efficient 20 percent from the "All Neighbors" group

An Accurate Comparison

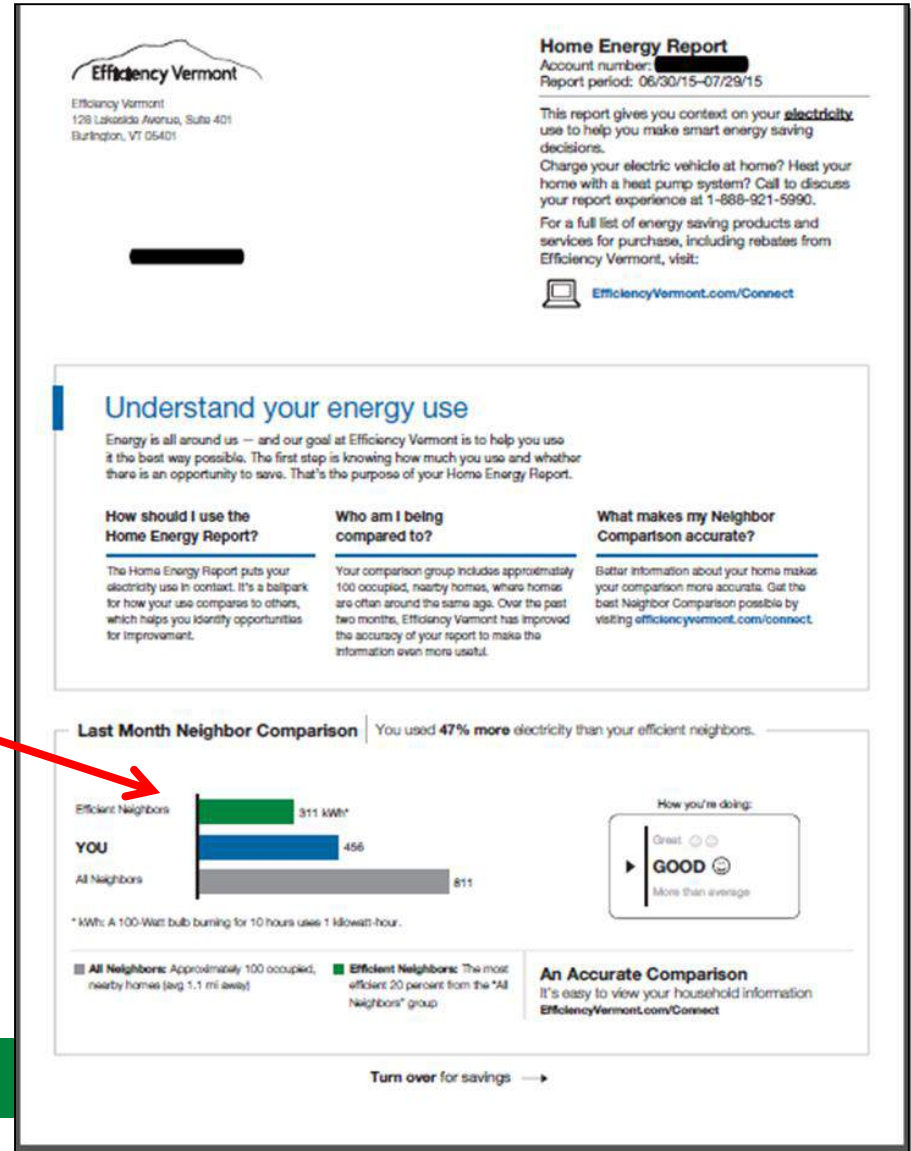
It's easy to view your household information
EfficiencyVermont.com/Connect

Turn over for savings →

Social Norms

Everyone is doing it.

- Efficient Neighbors
- YOU
- All Neighbors



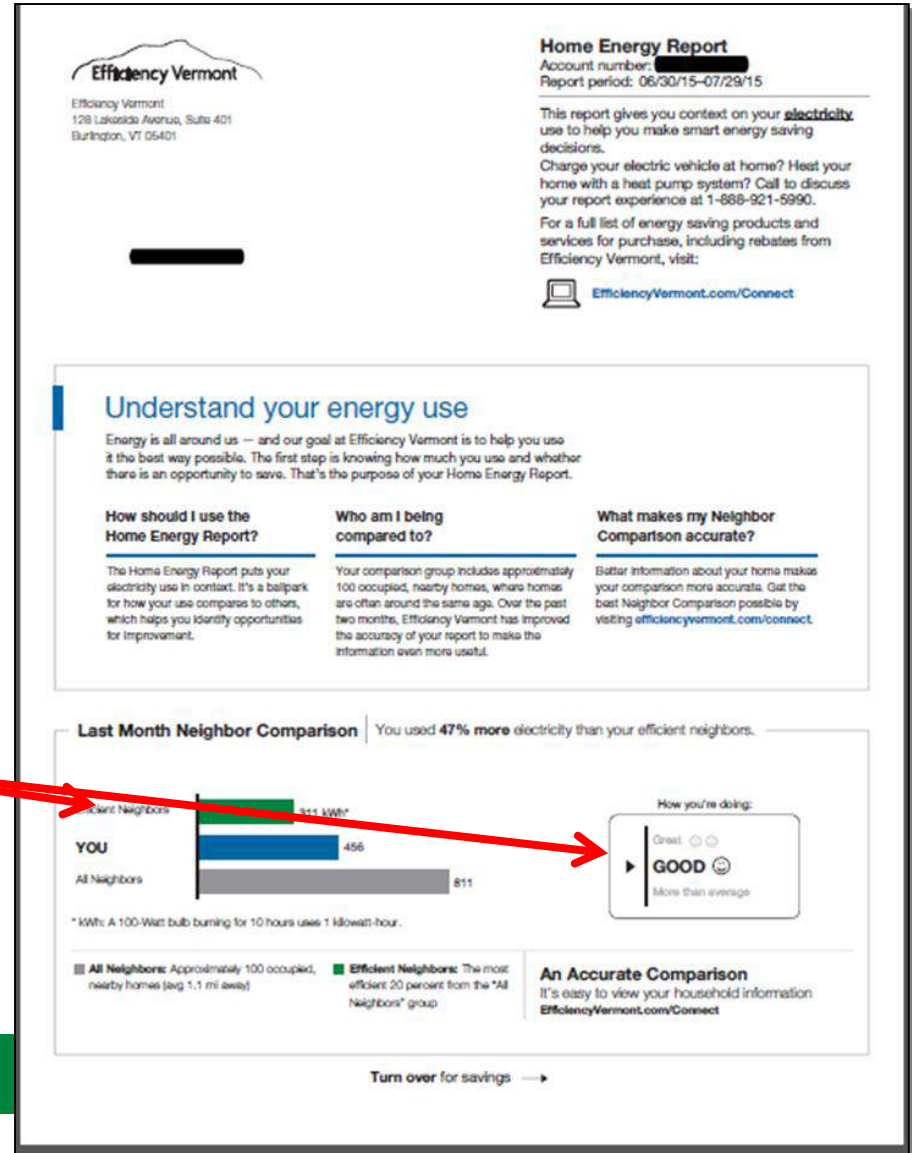
Cognitive Dissonance

Illusory superiority (Lake Woebegone)

How Dare you? I am Good.

How am I doing?

- Great 😊😊
- Good 😊
- More than average



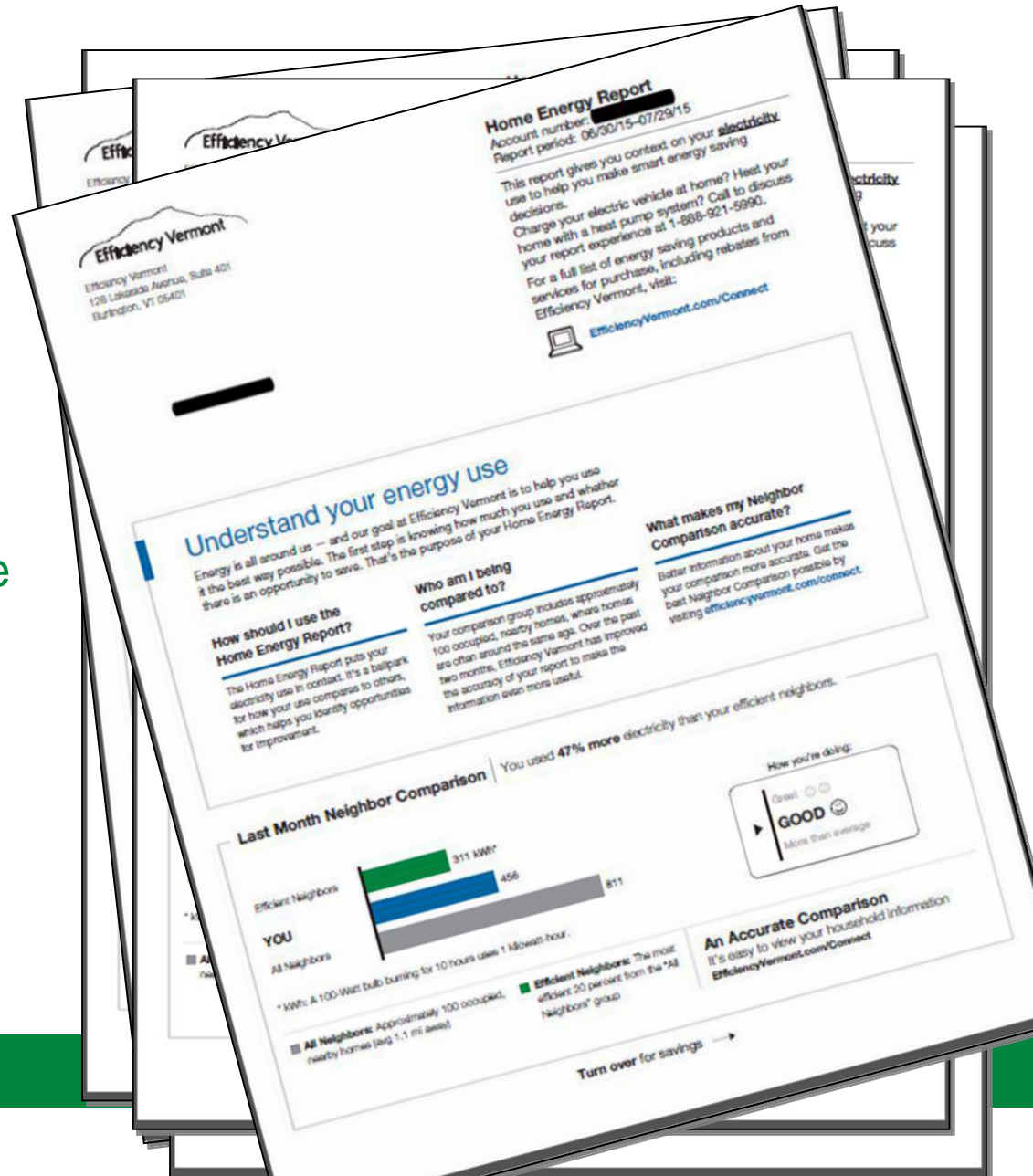
Feedback

HERs Provides Context

- Information on Energy Use and related costs

Reminders are Key to Program

- More Effective the more Frequently is given



Default Bias

Opt-out Programs Increase Participation

- In first 12 Months 0.89% of Participants have opted out

IN

OUT

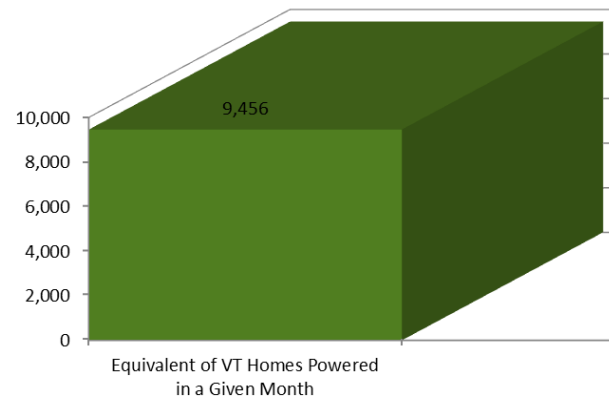


Does it work?

Figuring IT OUT

Total Reported Savings – 5,342,598kWh (Roughly \$800K)

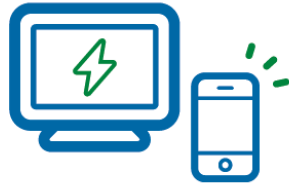
Powering Vermont Homes



How Does this Fit?

- All Savings are Created Equal – Capital or Measure vs. Behavior
- One Thing we know – Engaged Works
 - On-Liners are Bigger Savers





Discover your energy savings potential

Vermonters! Activate your Efficiency Vermont Online Home Energy Report:

Gain insights

See how much electricity your home uses

Compare

Find out if you are using more electricity than other homes like yours

Save Energy & Money

Find personalized tips on the best ways to save on your electric bills

Set Savings Goals

Track progress towards your energy savings objectives

Get started at

www.encyvermont.com/connect

Web Portal Overview – Getting Started

www.encyvermont.com/connect

The screenshot shows a web browser window with the URL <https://www.encyvermont.com/For-My-Hor>. The browser's address bar shows "Home Energy Report" and the page title is "Home Energy Report". The browser's menu bar includes "File", "Edit", "View", "Favorites", "Tools", and "Help". The browser's toolbar includes "Convert" and "Select". The browser's status bar shows "Goal Setting - Home", "Reporting Services - Proje...", and "Web Slice Gallery".

The main content area features the Efficiency Vermont logo and a navigation menu with the following items: "FOR MY HOME", "FOR MY BUSINESS", "FOR PARTNERS", "MORE ABOUT US", and "BLOG ENERGY. FORWARD.". There is also a search bar.

Below the navigation menu, there are two main sections:

- Discover your energy savings potential**: This section includes an icon of a computer monitor and a smartphone, and a list of bullet points:
 - See how much electricity your home uses
 - Find personalized tips based on your energy use
 - Update your personal profileA "LOG IN" button is located at the bottom right of this section.
- Questions? Contact our customer support team. 844-651-2421**: This is a light blue box with contact information.

At the bottom of the main content area, there is a quote from Jeremy, St. Albans, VT: "The home energy reports have raised our awareness of where our energy spending goes. We've been gradually updating and remodeling our 1940s home. It has been helpful to have the information the report provides for planning purposes, as we prioritize projects."

Welcome

How you're doing: Sep 1—Sep 30

You used 100% more than your efficient neighbors



[Who are my neighbors?](#)

[Explore my usage](#)

Steps you can take right now



[Use computer power-saving modes](#)

274 people do this

Added to [your completed tips](#) [View](#)



[Wash clothes with cold water](#)

264 people do this

Added to [your completed tips](#) [View](#)



[Use and switch off power strips](#)

280 people do this

Added to [your completed tips](#) [View](#)



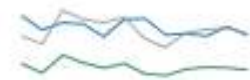
[Turn off your computer at night](#)

280 people do this

Added to [your completed tips](#) [View](#)

[More ways to save](#)

Your insights



See when you use the most
Find out how your usage changes throughout the year.

[Explore your usage](#)



Set a goal to reduce your use
Customers who set goals are more likely to use less.

[Learn more](#)

Account Preferences

[Tell us about your home](#)

[Change report settings](#)

See the best ways to save for your area

- [Free steps to take](#)
- [Smart purchases](#)
- [Great investments](#)
- [View all tips](#)



insists of

Home

The Home
a serie

Account Preferences

HOME

MY ENERGY USE

MY PLAN

WAYS TO SAVE

About my home

Report settings

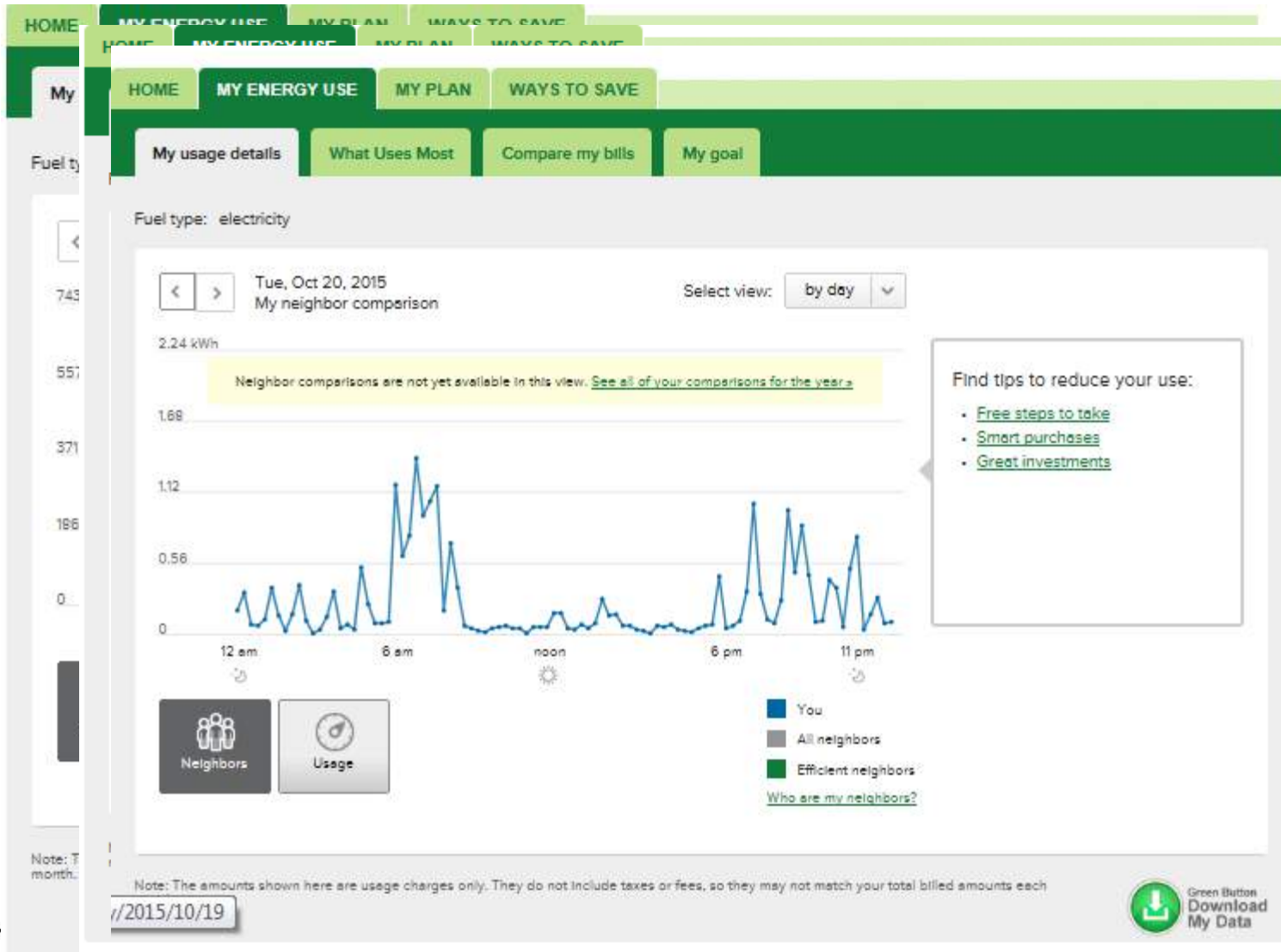
Account settings

About My Home

We use this information to improve our advice and analysis. Please note that it may take up to one billing cycle for changes to take effect.

Home type	Single family (house, rowhouse, or townhouse) ▼
Own/rent	Own ▼
Heating system	Other ▼
Heating fuel	Wood or pellets ▼
Air conditioning	Fans ▼
Pool <small>On your personal property</small>	No, I don't have a pool ▼
Spa/Sauna <small>On your personal property</small>	-select one- ▼
Fireplace	No, I don't have a fireplace ▼
Solar panels (photovoltaic) <small>Supplying a substantial amount of electricity to your home</small>	-select one- ▼
Number of residents	2 adults ▼
<small>Living in your home most of the year</small>	1 child ▼

My Energy Use



- Compare by:
1. Year
 2. Bill
 3. Day

What Uses Most

Interact

HOME MY ENERGY USE MY PLAN WAYS TO SAVE

My usage details What Uses Most Compare my bills My goal

Click a section for more information.



4%
Lighting

Edit Answers

The percentages shown here are estimates.
Estimates are based on your energy use and the information you provided about your home. [Learn More](#)

Top 5 tips for your home

- 
[Learn more from a home power monitor](#)
29 people do this
- 
[Choose an efficient television](#)
59 people do this
- 
[Use a laptop instead of a desktop computer](#)
45 people do this
- 
[Install efficient showerheads](#)
70 people do this

Bill Comparison

HOME

MY ENERGY USE

MY PLAN

WAYS TO SAVE

My usage details

What Uses Most

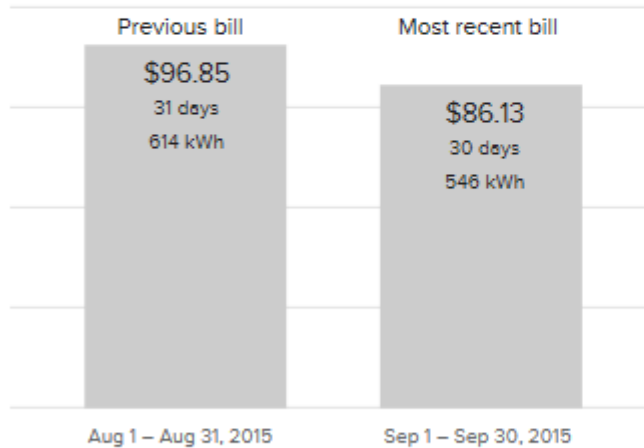
Compare my bills

My goal

Fuel type: electricity

✔ You spent \$11 less.

Compare: previous bill
 same bill last year



Analysis:	Learn more
There was 1 less day in the billing period.	- \$3.12
You used less due to other factors.	- \$7.60
	\$10.72 less

Steps to lower your bill:


- [Add tips to your plan](#)

Note: The amounts shown here are usage charges only. They do not include taxes or fees, so they may not match your total billed amounts each month.

Goal Setting

HOME MY ENERGY USE MY PLAN WAYS TO SAVE

My usage details What Uses Most Compare my bills My goal



Set a goal to reduce

Join your neighbors and set a goal to reduce your electricity use. You can set a goal for the next 4 months, Nov 1 – Feb 29. We'll help you meet your goal.

How It works:

- Your goal is to **use 5% less** than you used for the same time last year.
- We'll **track your progress** on this website and in your Home Energy Reports.
- You can **find ways to reach your goal** on this website.
- If you don't meet your goal, you can always set another goal to try again.

Yes, I'll set a goal to reduce

Find Tips for Your Plan

HOME

MY ENERGY USE

MY PLAN

WAYS TO SAVE

My Plan

Your plan for saving energy

When you complete tips in your plan, check them off.

You don't have any tips in your plan. [Find tips for your plan >](#)

Tips you've completed

- [Clean your refrigerator coils](#)
- [Use natural light during the day](#)
- [Avoid over-drying clothes](#)
- [Turn off lights when not needed](#)
- [Cook efficiently](#)
- [Spotlight your work spaces](#)
- [Wash clothes with cold water](#)
- [Power down your cable or DVR box when it's not in use](#)

Find tips for your plan

- [Cooling](#)
- [Appliances](#)
- [Lighting](#)

- [Free steps to take](#)
- [Smart purchases](#)
- [Great investments](#)

- [View all tips](#)

Ways To Save

HOME

MY ENERGY USE

MY PLAN

WAYS TO SAVE

Ways to Save

By Type

[Cooling \(12\)](#)

[Hot water \(9\)](#)

[Lighting \(9\)](#)

[Appliances \(17\)](#)

[Other \(16\)](#)

By Cost

Free (24)

[Smart purchases \(19\)](#)

[Great](#)

[investments \(20\)](#)

[Rebates \(8\)](#)

By Season

[Summer \(13\)](#)

[Winter \(2\)](#)

Share this page:



[Tweet](#)



[Share](#)



These tips are selected for your home

Based on: [Single Family Home](#) - [Owner](#) - [Wood heat](#) - [Fans](#) - [No pool](#) - [No fireplace](#) - [Edit](#)

Free tips to reduce your use

Sort by:

Featured



[Raise your thermostat a few degrees in the summer](#)

27 people do this

I'll do it Already do it No thanks



[Unplug electronics when they're not in use](#)

188 people do this

Added to [your completed tips](#)



[Hang laundry to dry](#)

184 people do this

Added to [your completed tips](#)



[Shave a minute off shower time](#)

85 people do this

I'll do it Already do it No thanks



[Close your shades in the summer](#)

157 people do this

I'll do it Already do it No thanks



[Be smart about dishwashing](#)

162 people do this

I'll do it Already do it No thanks

There is a Biz Portal



Largely the Same Look and feel

Subtract:

- Neighbor Compares
- Residential Specific Tips

Q&A



Customer Satisfaction & Changes

CET Survey Results Incorporated

- Results Reviewed
 - 73% of Customers Like the Report
 - 13% Dislike the Report (1/3 of these see value)
- Program Grading against EVT
 - Building EVT Awareness – 83% of Recipients
 - 92% of Customers Neutral or More Favorable to EVT
- Direction on Program Changes (weighing cost / savings / likability)
 - Make Improvements on Accuracy / Likability

improve overall satisfaction, without compromising the ability to drive energy savings