Efficiency Vermont

Meeting Vermont's Building Efficiency Goals

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Meeting Vermont's Building Efficiency Goals

Presentation Topics:

- Why is this important?
- What does 25% average savings look like?
- What does achieving 25% in 80,000 homes look like?
- What would meeting these goals cost and what are the workforce needs?
- How much would meeting 2020 Building Efficiency Goals help with meeting climate goals?

Building efficiency goals set forth in Vermont Legislation:

Sec. 6. 10 V.S.A.§ 581.

BUILDING EFFICIENCY GOALS

It shall be goals of the state:

(1) To improve substantially the energy fitness of at least 20 percent of the state's housing stock by 2017 (more than 60,000 housing units), and 25 percent of the state's h

(2) To reduc housing units ser

(3) To reduce total fossil fuel consumption across all buildings by an additional one-half percent each year, leading to a total reduction of six percent annually by 2017 and 10 percent annually by 2025.

(4) To save Vermont families and businesses a total of $1.5 billion on their fuel bills over the lifetimes of the improvements and measures installed between 2008 and 2017.

(5) To increase weatherization services to low income Vermonters by expanding the number of units weatherized, or the scope of services provided, or both, as revenue becomes available in the home weatherization assistance trust fund.

Reduce annual fuel needs of 80,000 homes by 25% by 2020

25% Savings in 80,000 Homes by 2020

Why is this important?

- The Climate Imperative
  - Energy efficiency is the lowest cost means to achieving substantial greenhouse gas reductions
  - Most climate experts' plans to meet 80% reduction by 2050 call for efficiency to achieve 30% to 50% of the required GHG reductions
  - Residential energy consumption is the second largest source of greenhouse gas emissions in Vermont (after Transportation), and is responsible for 25% of total GHG emissions.
- Individual Savings
  - This year, a typical home with oil heat will spend $2,200 for heat and another $1,000 for electricity.
  - 25% savings for this home would be $800 savings per year.
  - 25% savings in 80,000 such homes would provide $64 Million in annual savings to Vermont households.

25% Savings in 80,000 Homes by 2020
Why is this important?

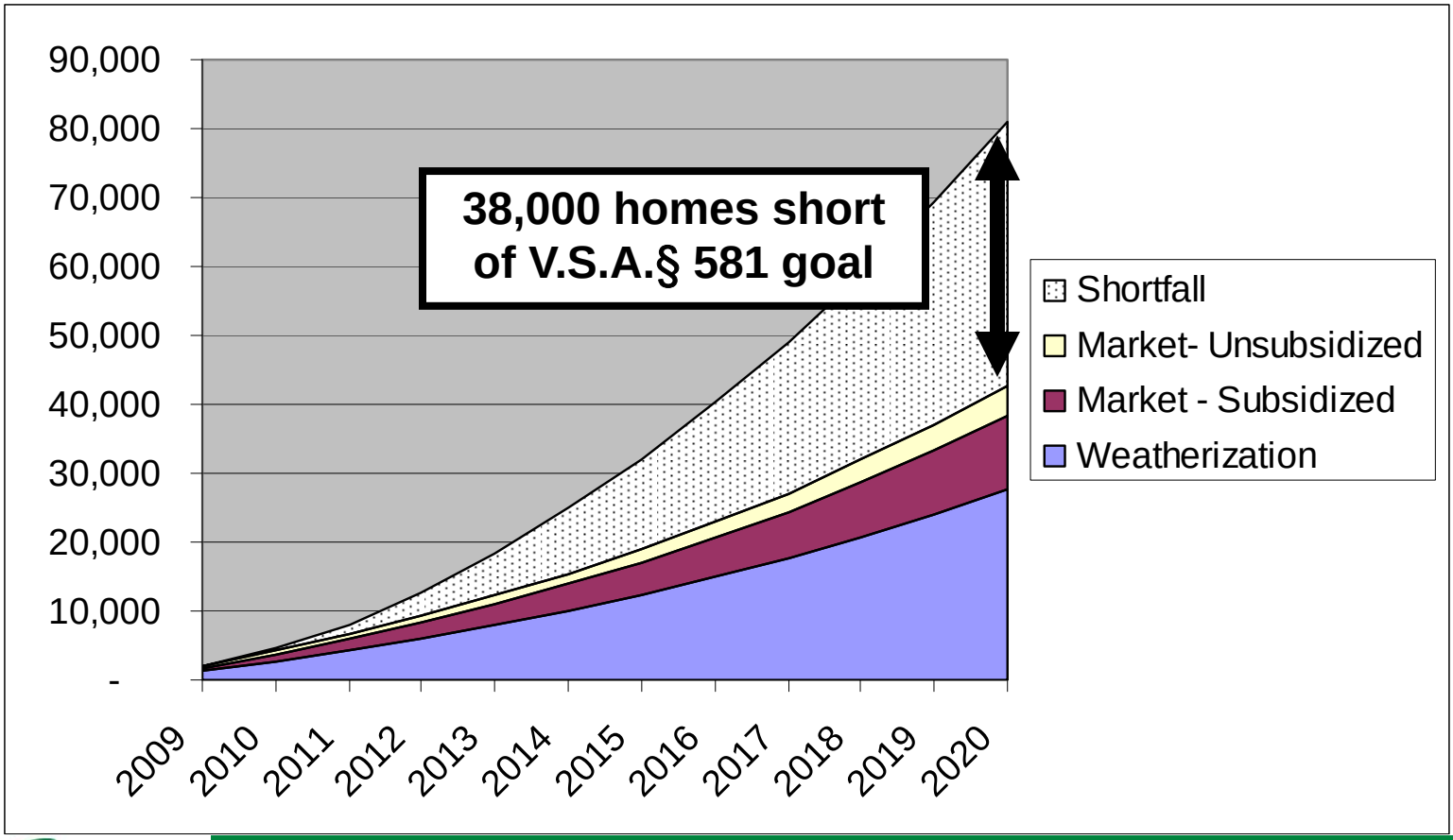
- Strengthening Vermont's Economy and Infrastructure
  - About 80% of expenditures on energy supply leave the State and 80% of expenditures on efficiency stay in the state, paying for local goods and services. This year, that's over $700 million leaving the local economy just from residential energy use.
  - High levels of efficiency improve our building infrastructure, lower individual and collective energy costs, and reduce exposure to future fuel price escalation
  - Maintaining the future viability of our stock of affordable housing requires protection from fuel price volatility and escalation, making very high levels of efficiency a necessity.

What is Typically Necessary to Save 25% in a home?

In order of priority:

1. Integrated package of:
    - Blower-door guided air sealing
    - Insulation in the attic, walls, kneewalls, and basement
    - Combustion safety; improved indoor quality through mechanical ventilation
2. Upgrade heating systems (controls, efficiency retrofit, duct sealing and boiler/furnace replacement where appropriate)
3. Upgrade water heating efficiency (replace as appropriate)
4. Selectively replace lighting and appliances

Given Current Rate of 2,000 Retrofits/Year, Suppose We Had the Resources (we don't) to Grow by 10% Annually? (considered "manageable" by many current providers)



So, What Does the Path to Achieving 25% in 80,000 Homes Look Like?

Year	Cumulative Retrofits	Total Annual Retrofits	Weatherization	Market - Subsidized	Market- Unsubsidized
2009	2,000	2,000	1,300	500	200
2010	4,640	2,640	1,625	800	215
2011	8,125	3,485	1,788	1,280	417
2012	12,725	4,600	1,966	2,048	586
2013	18,245	5,520			695
2014	24,869	6,624			834
2015	32,155	7,286			976
2016	40,170	8,015			1,000
2017	48,986	8,816			1,158
2018	58,684	9,698	2,4	5,067	2,155
2019	69,352	10,668	2,501	5,574	2,593
2020	81,087	11,735	2,526	6,132	3,078
		81,087	26,004	40,127	14,956

We Need to Ramp Up from 2,000 to 12,000 Retrofits per Year

What is the Typical Cost of a 25% Savings Retrofit?

	rate	hours	total
weatherization technician	$ 20	64	$ 1,280
crew chief	$ 25	32	$ 800
energy analyst (auditor)	$ 35	6	$ 210
electrician	$ 40	5	$ 200
heating system technician	$ 40	20	$ 800
program manager	$ 50	1	$ 50
program aministrator	$ 25	1	$ 25
		Total Direct Labor	$ 3,365
		Overhead	$ 673
		Total Labor & Overhead	$ 4,038
		Total Materials	$ 6,000
		Total Job	$ 10,038

Total investment to meet goal:
$10,038 X 80,000 homes =
$803,040,000

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Assuming Households Below Median Income Will Require Subsidies (Sliding Scale, averaging $4000), What Public Funding is Required for Subsidies?

Year	Subsidized Homes	Annual Subsidies @ avg. $4000 per Home	Cumulative Subsidies
2010	800	$ 3,200,000	$ 3,200,000
2011	1,280	$ 5,120,000	$ 8,320,000
2012	2,048	$ 8,192,000	$ 16,512,000
2013	2,662	$10,649,600	$ 27,161,600
2014	3,461	$13,844,480	$ 41,006,080
2015	3,807	$15,228,928	$ 56,235,008
2016	4,188	$16,751,821	$ 72,986,829
2017	4,607	$18,427,003	$ 91,413,832
2018	5,067	$20,269,703	$111,683,535
2019	5,574	$22,296,673	$133,980,208
2020	6,132	$24,526,341	$ 158,506,549

What are the Incremental Workforce Needs?

Low Income Weatherization would need to double, and for Market-Based Services:

year	weatherization technician	crew chief	energy analyst (auditor)	electrician	heating system technician	program manager	program aministrator	total
2009	26.4	13.2	2.5	2.1	8.2	0.4	0.4	53.1
2010	11.9	5.9	1.1	0.9	3.7	0.2	0.2	23.9
2011	25.7	12.9	2.4	2.0	8.0	0.4	0.4	51.9
2012	35.3	17.7	3.3	2.8	11.0	0.6	0.6	71.2
2013	27.4	13.7	2.6	2.1	8.5	0.4	0.4	55.1
2014	33.6	16.8	3.1	2.6	10.5	0.5	0.5	67.7
2015	24.2	12.1	2.3	1.9	7.6	0.4	0.4	48.9
2016	26.8	13.4	2.5	2.1	8.4	0.4	0.4	53.9
2017	29.5	14.8	2.8	2.3	9.2	0.5	0.5	59.5
2018	32.6	16.3	3.1	2.5	10.2	0.5	0.5	65.6
2019	35.9	18.0	3.4	2.8	11.2	0.6	0.6	72.4
2020	39.6	19.8	3.7	3.1	12.4	0.6	0.6	79.8
Total	**322**	**161**	**30**	**25**	**10**	**5**	**5**	**650**

How Much Would Meeting 2020 Building Efficiency Goals Help with Meeting Climate Goals?