Workforce Development in Vermont’s Thermal Sector

Raquel Smith
Vermont ranks 4th in nation with highest share of population at retirement age

Vermont lost 11,500 workers between 2007 and 2020

4,000 more households moved out of Vermont than moved into Vermont between 2012 and 2016
Vermont’s Energy Goals

Vermont’s historical GHG emissions and future requirements

Vermont’s GHG emissions by sector, 2018

Highest impact thermal measures in EAN Pathways Model

- **200K heat pumps** (0.8 MMTCO₂e)
- **50K pellet stoves** (0.24 MMTCO₂e)
- **2.84 TBTU** (0.15 MMTCO₂e)
- **200K heat pump water heaters** (0.13 MMTCO₂e)
- **148K homes** (0.13 MMTCO₂e)

**Year**:
- 2018, 2025, 2030

**Measures**:
- Heat pumps
- Advanced wood heat
- Renewable natural gas
- Heat pump water heaters
- Weatherization

**Emissions Reduction Pathways Model**
How many workers can we expect to need in order to meet 2030 goals?

How should we structure our career and technical education (CTE) programs?

How can we improve upon and increase recruitment?

Where can we be recruiting from?
How many workers can we expect to need in order to meet 2030 goals?

Single-zone cold-climate heat pumps
Multi-zone cold climate heat pumps
Heat pump water heaters
Weatherization
Single-zone cold-climate heat pumps

**Single-Zone Cold-Climate Heat Pump Worker Estimates Using Yearly Average**

- **Current Workers**
  - Field Workers: 68
  - Office Staff: 3

- **Needed Workers**
  - Field Workers: 156
  - Office Staff: 16

**Yearly Change in Single-Zone Cold-Climate Heat Pump Workers**

- **One Ramp-Up Example Using EAN's Emissions Reduction Pathways Model**
  - 2019: 68
  - 2020: 77
  - 2021: 88
  - 2022: 99
  - 2023: 110
  - 2024: 121
  - 2025: 132
  - 2026: 143
  - 2027: 154
  - 2028: 165
  - 2029: 176
  - 2030: 187

Legend:
- **Field Workers**
- **Office Staff**
Multi-zone cold-climate heat pumps

**Multi-Zone Cold Climate Heat Pump Worker Estimates Using Yearly Average**

<table>
<thead>
<tr>
<th>Year</th>
<th>Current Workers</th>
<th>Needed Workers</th>
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<tbody>
<tr>
<td>2019</td>
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<td>2030</td>
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</tbody>
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**Yearly Change in Multi-Zone Cold-Climate Heat Pump Workers**

One Ramp-Up Example Using EAN's Emissions Reduction Pathways Model

- **Field Workers**
- **Office Staff**
Heat pump water heaters

Heat Pump Water Heaters Worker Estimates Using Yearly Average

Yearly Change in Heat Pump Water Heater Workers
One Ramp-Up Example Using EAN's Emissions Reduction Pathways Model
How should we structure our career and technical education (CTE) programs?

Vermont has the lowest continuation rate to college among low-income students in New England.

Vermont has the highest percentage of 18 to 24 year-olds living in poverty in New England.

60% of high school students in Vermont go on to college or CTE, only 55% of those students complete their degrees or programs.
Lessons on Certification and Training Structure

1. Breaking down formal certifications
2. Building up supervisor capacity
3. Increasing on-the-job training
4. Managing expectations
5. Improving testing structure for certifications
Lessons on training curriculum

Broad, transferable skill sets

Business skills

Soft skills
How can we improve upon and increase training recruitment?

Mindset

“It’s looked down upon to go to tech school as opposed to taking college credit courses”
- Brian Gray, Energy Co-op of VT

“People don’t realize the trades are a really good career”
- Russ Flanigan, Building Energy

“It’s not college or bust”
- Tom Cheney, Advance Vermont

Affordability

“Changes in the perception of affordability can drive enrollment”
- Carolyn Weir, McClure Foundation

“Once somebody comes on board, we’re paying them to get licenses and training, and we’re giving them an automatic raise when they successfully complete the course”
- Mark Stephenson, VT Energy Contracting and Supply
How can we improve upon and increase employment recruiting?

**Framing**

Uncomfortable and physically demanding, but is important work that provides opportunities

“Having a personal connection with someone who has persevered and demonstrated you can get through it, matters. Having that camaraderie is critical.”

- Paul Zabriskie, EnergySmart VT

**Culture**

“We spend a bunch of time training somebody and then they’re off to the next thing”

- Russ Flanigan, Building Energy

**Retention**
Partnerships

Symbiotic and collaborative relationship between training programs, employers, and students

Mission

“You go home at the end of the day and you’ve accomplished a visible task”

“When you go home at night, you may be tired and you may be dirty, but you can say to your kids, ‘I’m part of the solution for climate change’”

- Mark Stephenson, VT Energy Contracting and Supply

- Russ Flanigan, Building Energy
Where can we be recruiting from?

- High Schools
- Unemployed and Underemployed
- Non-Traditional Labor Pools
- Out-of-State
Further Research Opportunities
Develop partnership outreach program

Incorporate justice-based training programs into institutions that work with non-traditional labor pools

Develop mission-and-service-based volunteer programs

Incorporate do-it-yourself models into energy efficiency

Think creatively about ways to combine energy efficiency, workforce, and affordable housing

Cautiously prepare for possibility of ‘traveling tradespeople’ similar to health care’s ‘traveling nurses’

Look into already-existing or new corps programs related to energy efficiency
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