ELECTRIFY TRAVERSE CITY

TC 2 NO C: REDUCING CARBON IN TRAVERSE CITY

EST. 1912
100 YEARS
TRAVERSE CITY
LIGHT & POWER

CITY OF
TRAVERSE CITY

MICHIGAN DEPARTMENT OF
ENVIRONMENT, GREAT LAKES, AND ENERGY

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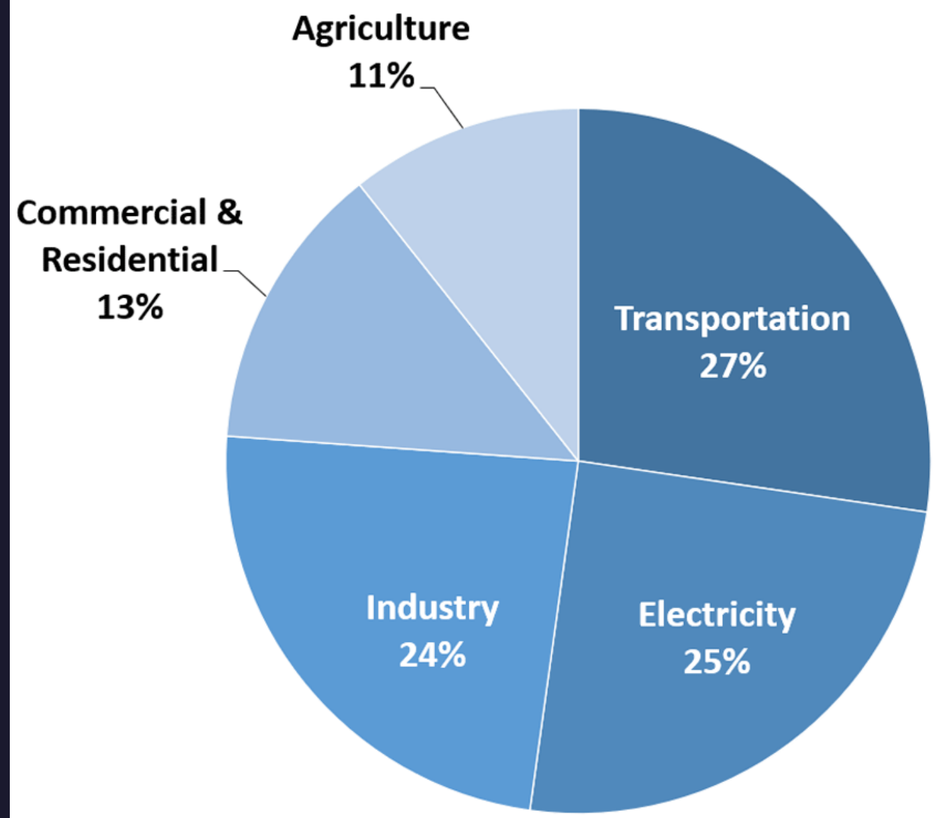
5 Lakes Energy

WHAT IS ELECTRIFICATION AND WHY DOES IT MATTER?

- Reduce Greenhouse Gas Emissions by using less natural gas.
- Nationally 13% of all U.S. GHG emissions come from commercial and residential uses
- Primarily from natural gas.
  - 80% of TCLP customers are residential.
  - 80% of TCLP revenue comes from commercial users.

Total U.S. Greenhouse Gas Emissions by Economic Sector in 2020



U.S. Environmental Protection Agency (2022). Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2020

Why electrify Traverse City?

- Municipal power companies are hyper-local
- Robust EV charging network
  - EVs key to electrification/GHG reduction
- Traverse City is in the early stages of creating a climate action plan.

ENGAGEMENT

Switching from natural gas will not be an easy sell.

- Despite some increase in fuel cost, natural gas remains relatively cheap
- Build support by showing cost savings

WEBSITE

A one-stop-shop for electrification resources

Heat Pumps 101

Weatherization

Health & Safety

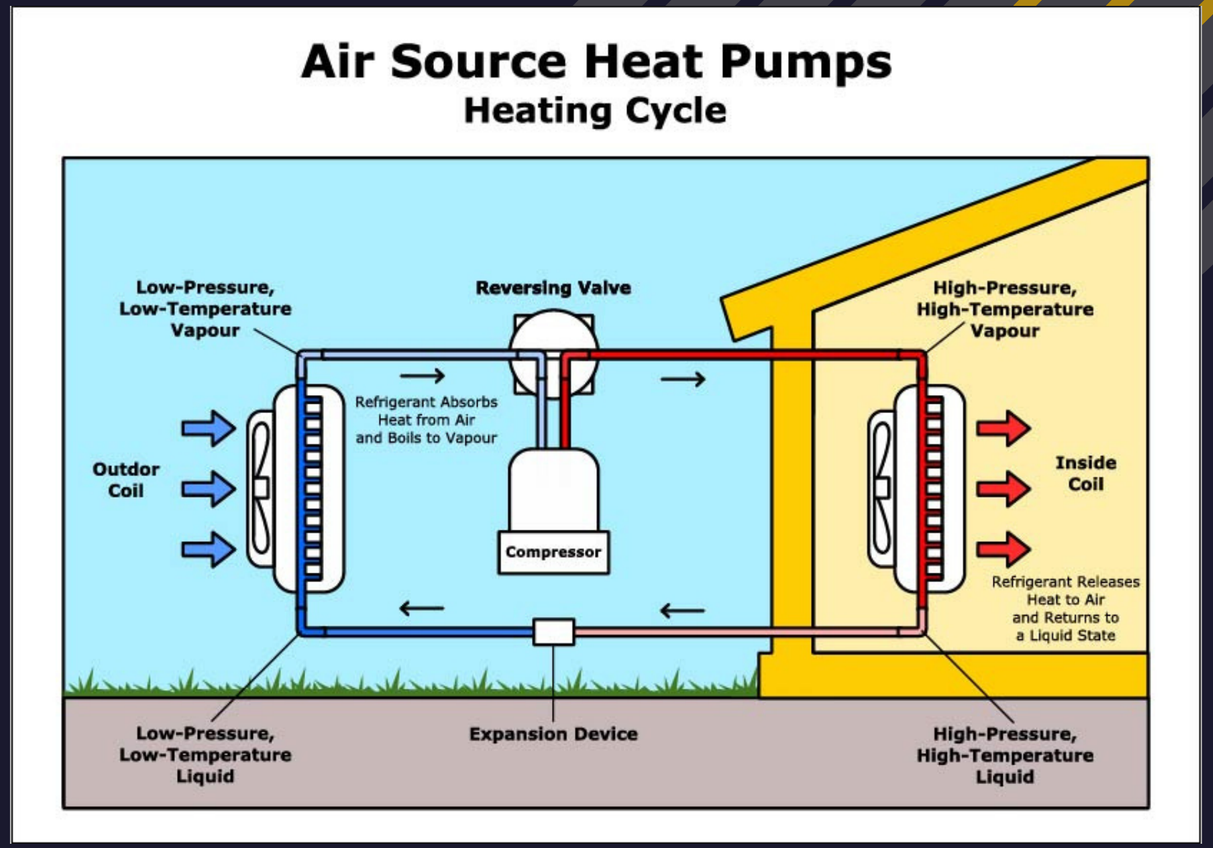
Heat Pumps 101

Problem: Both consumers and contractors are generally unaware of or misunderstand heat pumps.

Solution: The Heat Pumps 101 page offers a quick guide for HVAC novices.

- How they work
- Types of heat pumps
- Testimonial
- Financing options

Goal: Increase interest in heat pump installation.



Source: U.S. Department of Energy

Weatherization

Problem: Older buildings lack proper insulation, driving up energy costs and GHG emissions.

Solution: A simple guide to home weatherization.

- DIY steps with cost
- Financing options

Goal: Reduce home energy costs and make homes more efficient.

Source: U.S. Department of Energy

Health & Safety

Problem: Natural gas is popular for cooking but burning it exposes residents to toxins.

Solution: The Health & Safety page provides an easy-to-understand breakdown of research and links to relative websites.

Goal: Harness concerns over home safety and health to spur change.

Source:"Methane and NOx Emissions from Natural Gas Stoves, Cooktops, and Ovens in Residential Homes." *Environmental Science & Technology* 56, no. 4 (2022): 2529–39.

Creating Action

01 **Establish a net zero goal**

Give the public a number to aim for.

02 **Create strong branding**

Make climate goals ubiquitous in Traverse City with strong branding.

03 **Host TC 2 NoC Events**

Engage with people directly through community events and fairs.

04 **Consider other incentives**

Motivate people to take action with financing and rebates.

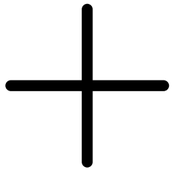
GREEN FAIR DESIGN

A dedicated event like a Green Fair helps build interest around various respects of decarbonization.

Electric Tech Demos

Electric Cooking

Home Efficiency

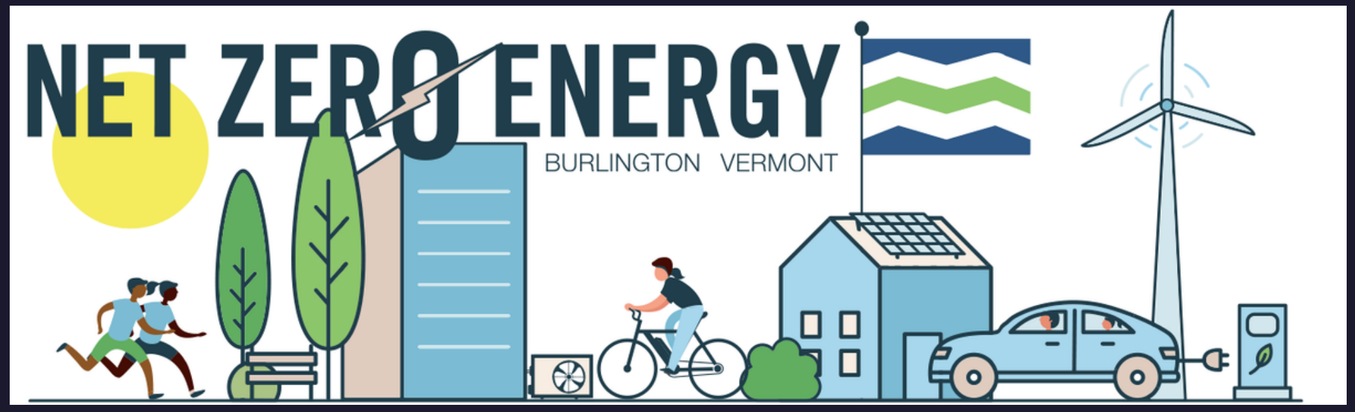


Additional Elements

Research Process

01 Interviews

- Burlington Energy Department
- Michigan Saves
- Northwest Michigan Community Action Agency
- Multiple HVAC contractors



Source: City of Burlington, Vermont

Research Process

02 Heat Pump Price Modeling

- Obtained quotes for multiple heat pump installations as well as a new standard air conditioner
- Built operating cost model with efficiency data from Minnesota

Energy Useage	Annual Cost	Average Cost for duct	Average cost for ductle
kWh/Year	$/year		
9364.32	$ 869.01	$ 727.89	
7641.48	$ 709.13		
6586.68	$ 611.24		
7782.12	$ 722.18		
5180.24	$ 480.73		$ 373.05
2859.692	$ 265.38		
Input COP here:	Input rate ($/kWh) here:		
2.5	0.0928		
	Annual Operating Cost		
	$/year	Average Ducted	Average ductless
	$ 864.80	$ 724.36	
	$ 705.69		
	$ 608.28		
	$ 718.68		
	$ 478.40		$ 107.15
	$ 264.09		
Input furnace efficiency:	Input natural gas price ($/therm):		
85%	0.92		

Research Process

Energy Useage	Annual Cost	Average Cost for duct	Average cost for ductle
kWh/Year	$/year		
7803.6	$ 724.17	$ 606.58	
6367.9	$ 590.94		
5488.9	$ 509.37		
6485.1	$ 601.82		
4316.866667	$ 400.61		$ 310.88
2383.076667	$ 221.15		
Input COP here:	Input rate ($/kWh) here:		
3	0.0928		
	Annual Operating Cost		
	$/year	Average Ducted	Average ductless
	$ 864.80	$ 724.36	
	$ 705.69		
	$ 608.28		
	$ 718.68		
	$ 478.40		$ 107.15
	$ 264.09		
Input furnace efficiency:	Input natural gas price ($/therm):		
85%	0.92		

03 Academic Research

- Summarized research about natural gas health and environmental impacts from multiple sources

04 Green Fair Structure

- Compared environmental fairs from multiple cities
- Visited Ann Arbor's Green Fair and Electrification Expo

QUESTIONS?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