ENVISONING SHERMAN'S ENERGY FUTURE

PACE

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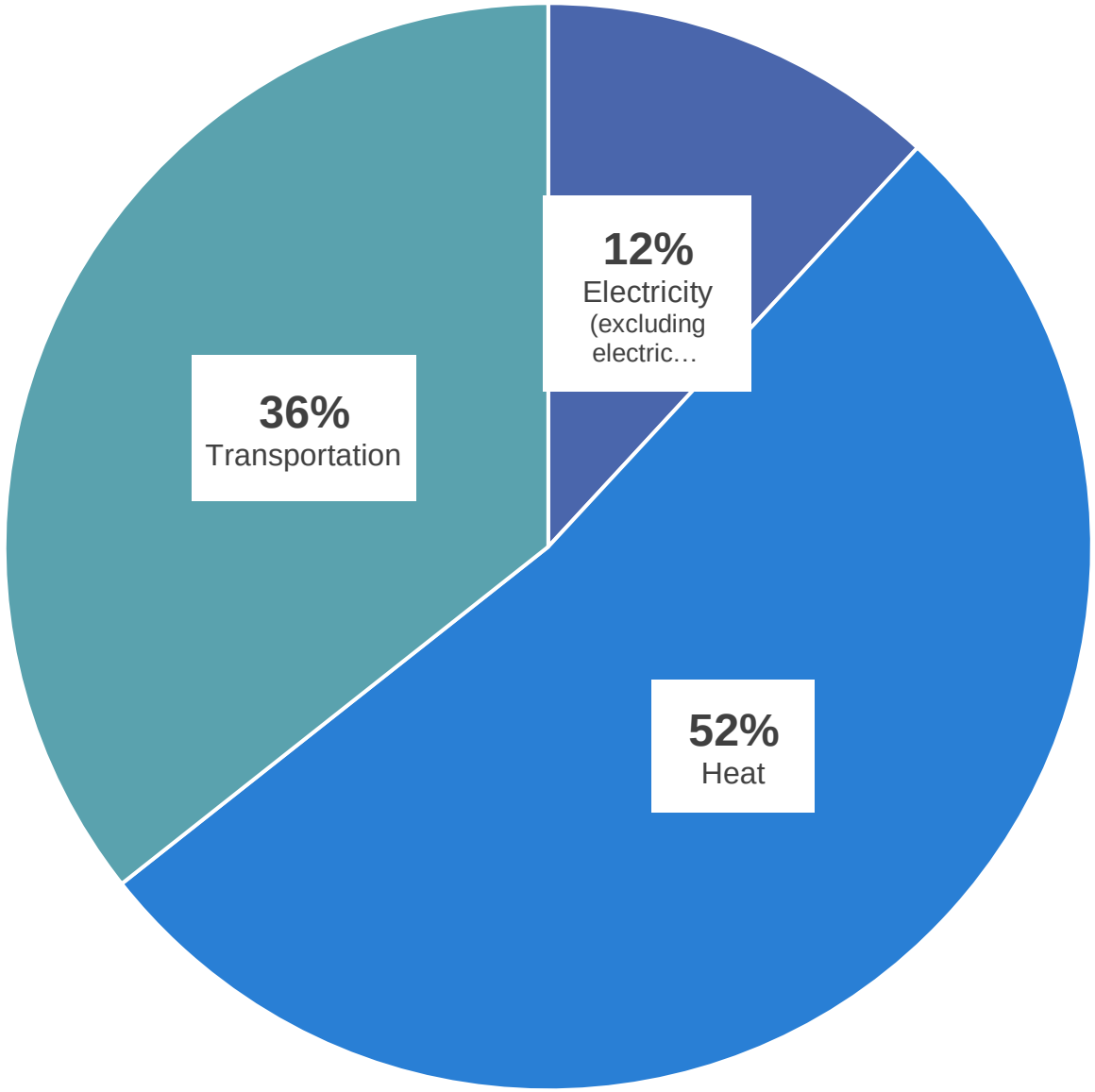
Envisioning Sherman's Energy Future

What does clean, safe, local and sustainable energy look like and how will we get there?

Envisioning Sherman's Energy Future

- **The Power and Use of a Vision**
- **Today in Sherman**
  - How we use energy
  - How much it costs
  - Our local GHG impact
- **An Envisioned Tomorrow**
  - Clean – Safe – Local - Sustainable
- **The Path to a Sustainable**
  - Home efficiency
  - Business efficiency
  - Vehicle efficiency
  - Renewable energy

Energy Today in Sherman



Current Load is 149 GWH

Today's Business as Usual

The table below shows Sherman's townwide energy use. The units for electricity, heat and transportation have been converted to a common unit of gigawatt-hour. Every year, Sherman spends $17.6 million on energy.

	Gigawatt-Hour (GWh)	Cost ($ millions)	Greenhouse Gas Emissions (Tons CO2)
Electricity (not heat)	18	3.7	5,209
Heat	78	7.7	21,562
Transportation	53	6.1	15,587
TOTAL	149	17.6	42,358

$4820 per resident!

11.6 tons per person!

The Path to100% Clean Energy

There's no question that we need to make some changes. Here are the major steps on the path to a sustainable energy future.

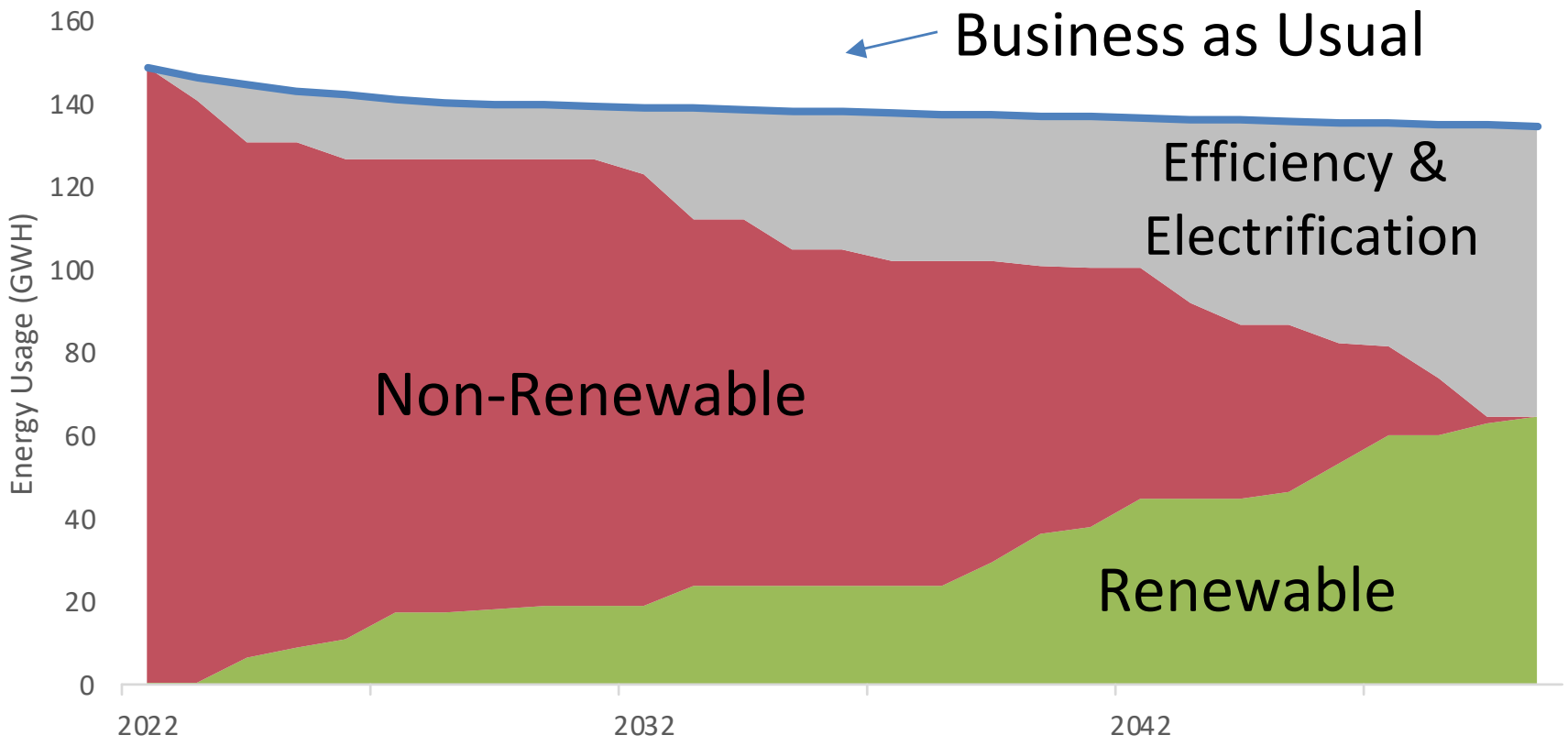
Determine Current Use & Make a Plan

Efficiency & Electrification

Invest in Renewables

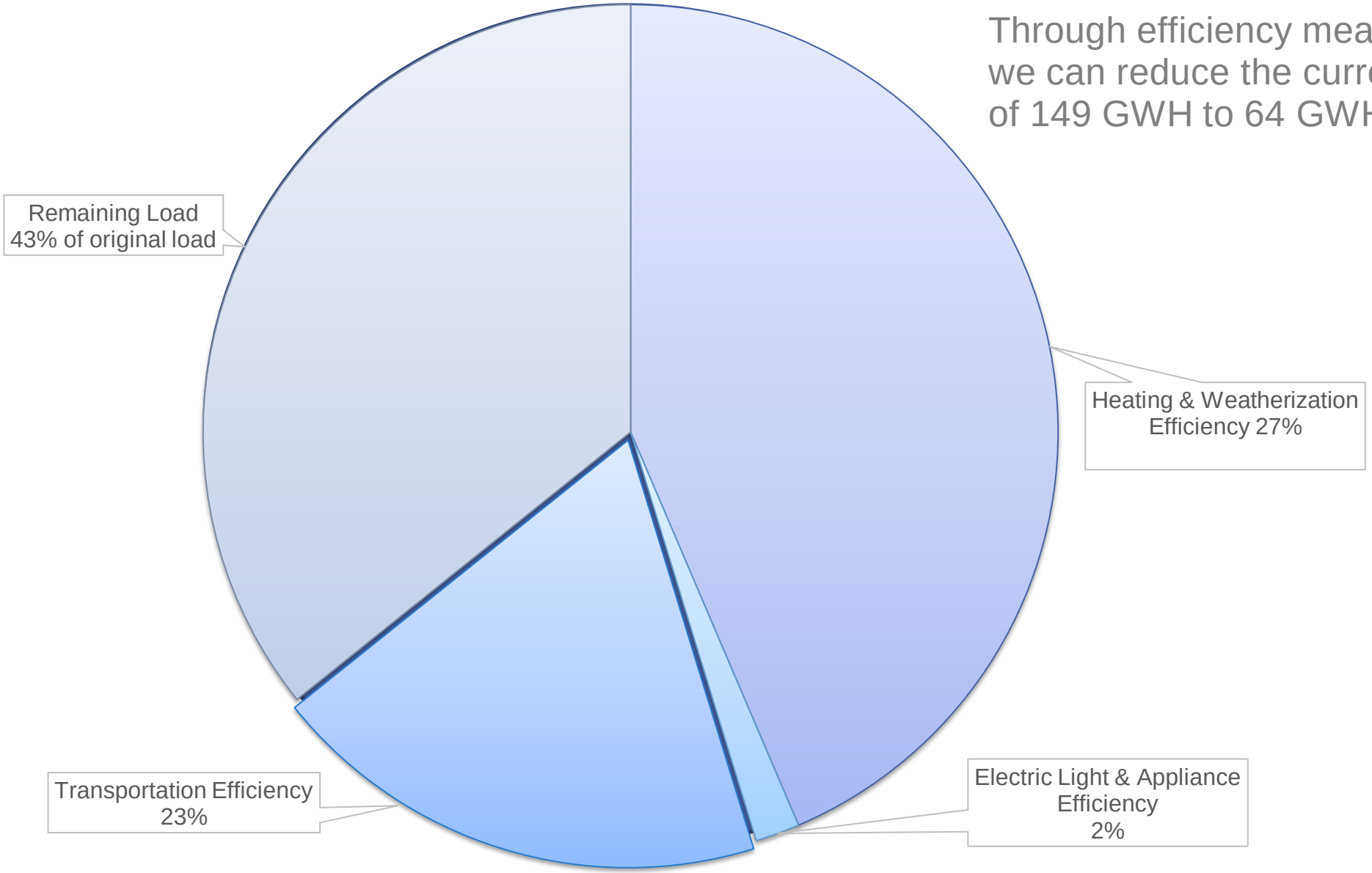
The Big Picture Strategy

The strategy is to reduce our energy consumption through efficiency measures and electrification of heating and transportation. This will greatly reduce the energy burden. The remaining energy use will be provided for by renewables such as wind and solar, some of which will be produced locally.



Energy Tomorrow in Sherman

Through efficiency measures we can reduce the current load of 149 GWH to 64 GWH



We accomplish our efficiency goals through

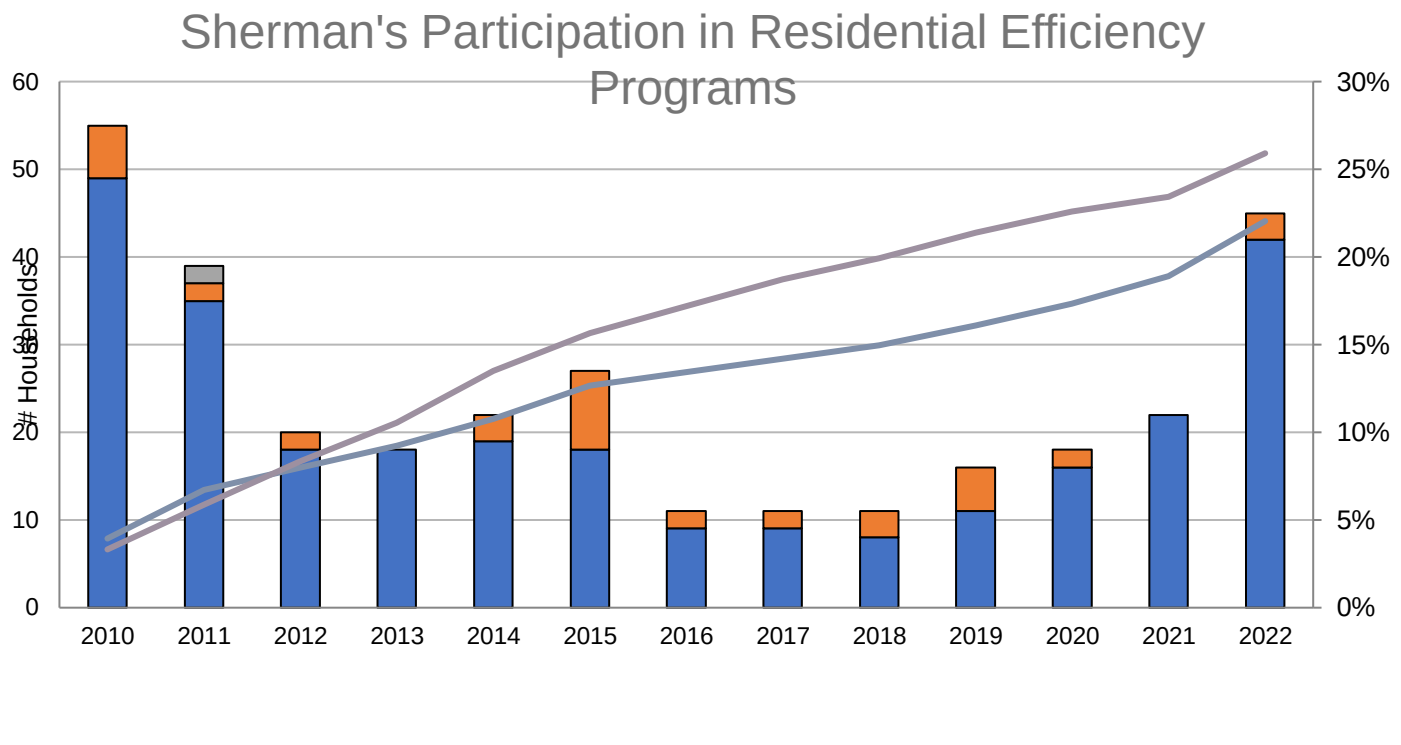
- Conservation
  - Waste less
  - Improve home efficiency
- Electrification
  - Switch to heat pumps for HVAC
  - Make your next vehicle electric

To learn more about energy conservation, visit Efficiency Tips - PACE (pacecleanenergy.org)

To learn more about heat pumps, visit HeatSmart — HeatSmart CT

For information on electric vehicles, visit EV Club of CT (evclubct.com)

Residential Efficiency

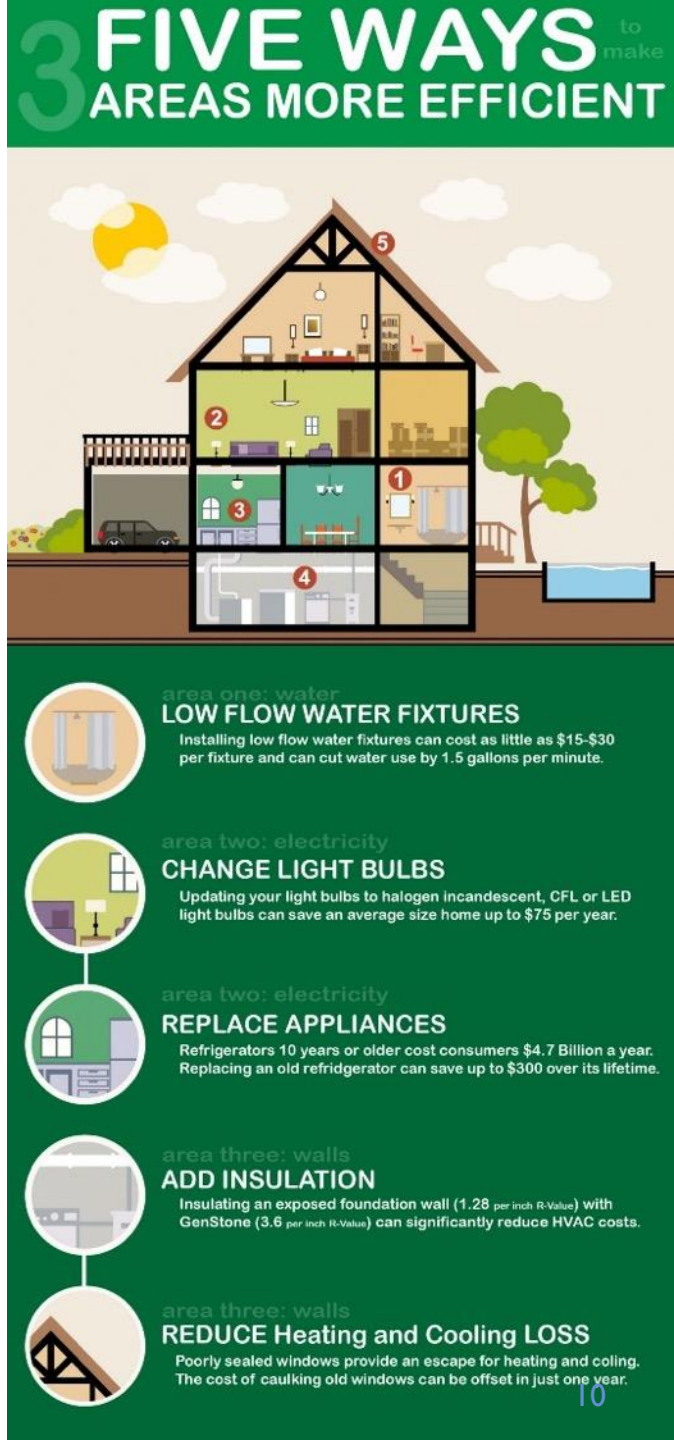


First Step – Get a HES!

Home Energy Solutions (HES)

Weatherization

Heat Pump



What Kind of Difference Can We Make?

If all of the households in Kent just took the first step — HES — that translates to reduced emissions of …

1449006

pounds of CO2

1,300 lbs x1115 HH

Electrify Your Heating and Cooling System with a Heat Pump

A heat pump can heat and cool your home.

It's called a heat pump because it redistributes heat that is already in the air or ground with a refrigerant. Redistributing heat uses less energy than producing it. And the energy used is electricity which can be generated without fossil fuels!

$$COP = \frac{\text{Power Output}}{\text{Power Input}}$$

Action Steps

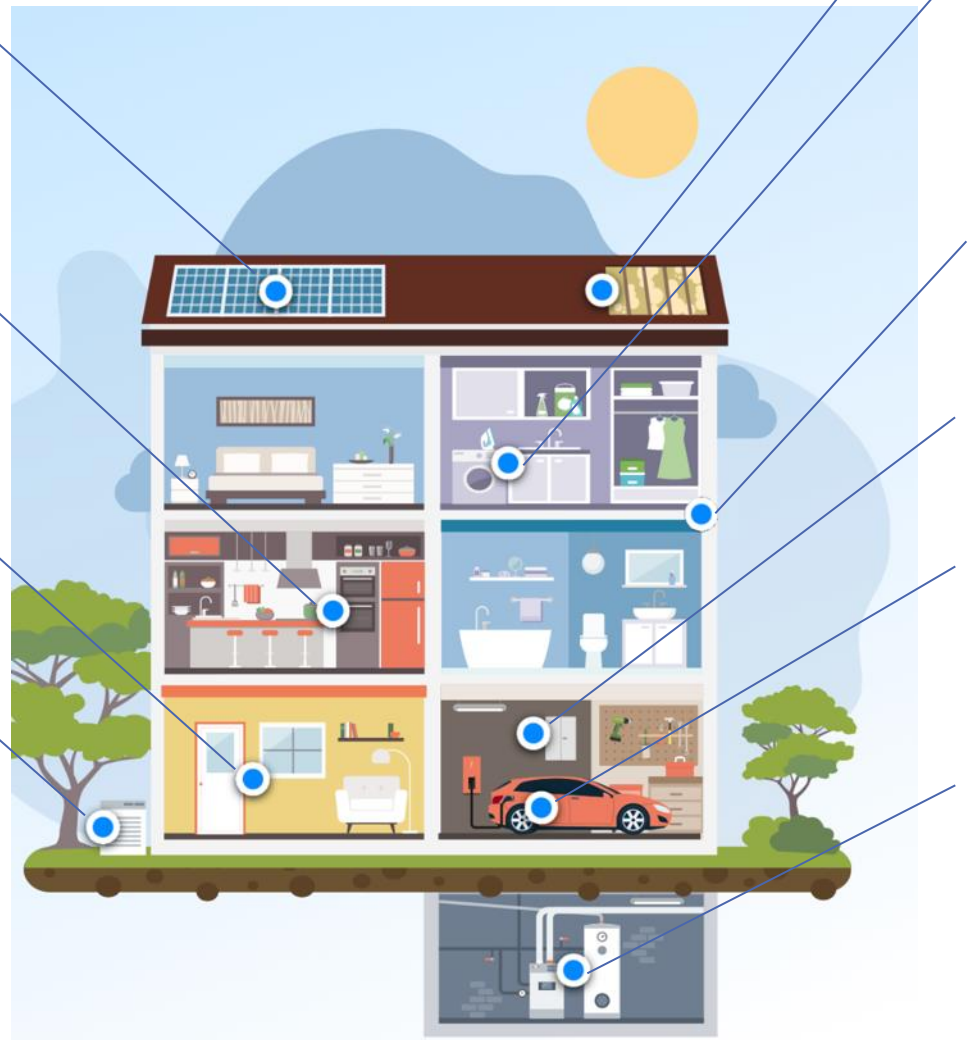
Install rooftop or ground-mounted solar

Replace old stove with induction stove. Replace refrigerator and dishwasher with energy efficient ones.

Replace drafty windows and doors

Switch to a heat pump when old AC needs replacing

Visit our informational tables to find out more …



Insulate the attic, walls, and basement

Replace inefficient dryer with heat pump dryer

Get a HES service to seal air leaks

Consider installing a battery backup

Make your next car an EV

Electrify your home heating and hot water with heat pumps

Transportation Efficiency

INCENTIVES FOR EVS

Connecticut Hydrogen and Electric Automobile Purchase Rebate - CHEAPR

- Up to $7500 for purchase or lease
- Supplemental possible for income-qualified

Inflation Reduction Act (IRA) EV Incentives, Explained - (pluginamerica.org)

- Federal Tax Credits Available up to $7500 for new autos and up to $4000 for used vehicles

Tax incentives from Inflation Reduction Act

ITEM	INCENTIVE	CONDITIONS
Electric Vehicles	Tax Credits Up to $7500 new Up to $4000 used	Cost of vehicle, manufacturing and mineral sourcing location, manufacturer caps, income of purchaser
Electric Charging Stations	Tax Credit Up to $1000 for residential/individual	Location in low-income or non-urban area
Solar - Rooftop	Tax Credit Up to 30% of installation	May be stand alone system or paired with battery
Efficiency (insulation, windows, etc.)	Tax Credit Up to $1200	TBD
Home Energy Audit	Tax Credit $150	TBD
Heat Pumps	Tax Credit Up to 30% of installation	TBD
Efficient Electric Appliances	Rebates Through State Up to 100% for LMI	TBD
Electric Upgrades	TBD	TBD

- We don't know all the impacts yet! But….
- https://www.whitehouse.gov/cleanenergy/?utm_source=cleanenergy.gov

Details from Pace's Energy Consumption Model for Sherman

Sherman: Energy Model Summary Results

Annual Energy Usage

	Unit	Original Units	Gigawatt-hours (GWh)	Cost ($ millions)	GHG Emissions (Tons CO2)
Electricity	kWh	17,832,057	18	$3.7	5,209
Natural Gas	CCF	0	0	0.0	0
Oil Heat	Gallons	1,447,985	59	5.3	16,217
Electric Heat	kWh	5,898,453	6	1.2	1,723
Other Heat	Gallons	323,427	13	1.2	3,622
Transport	Gallons	1,590,464	53	6.1	15,587
Total			149	$17.6	42,358
Per Resident				$4,820	11.6

A giga watt hour is a billion watt hours or a million KWh – we choose this because we believe the future is electric and it allows us to add across all energy types

Building Heating

Estimated Current Heating Energy

Residential

Source	Number of Buildings	Total Area (SF)	Units	Heating Energy: Units Per SF	Heating Energy: Annual Energy Usage (Orig. Units)	Heating Energy: Annual Energy Usage GWh	Heating Energy: Annual Energy Usage % of Total
Heat Pump	15	40,899	MWh	0.004	149	0.1	0.2%
Gas	0	0	CCF	**0.000**	**0**	0.0	0.0%
Oil Heat	1,381	3,416,443	Gallons	0.394	1,347,152	54.7	82.1%
Electric Heat	263	431,365	MWh	0.013	5,523	5.5	8.3%
Other Heat	168	391,759	Gallons	0.394	154,476	6.3	9.4%
Unknown	5	663	Gallons	0.394	261	0.0	0.0%
Total	1,832	4,281,129				66.6	100.0%

Residential buildings from grand list – Commercial buildings estimated based on similar towns

Commercial

Source	Number of Buildings	Total Area (SF)	Units	Heating Energy: Units Per SF	Heating Energy: Annual Energy Usage (Orig. Units)	Heating Energy: Annual Energy Usage GWh	Heating Energy: Annual Energy Usage % of Total
Heat Pump	1	11,355	MWh	0.004	41	0.0	0.4%
Gas	**0**	**0**	**CCF**	**0.000**	**0**	**0.0**	**0.0%**
Oil Heat	28	255,718	Gallons	0.394	100,833	4.1	36.0%
Electric Heat	5	29,298	MWh	0.013	375	0.4	3.3%
Other Heat	31	427,806	Gallons	0.394	168,690	6.8	60.3%
Unknown	0	0	Gallons	0.394	0	0.0	0.0%
Total	64	724,176				11.4	100.0%

Transportation

- Actual number of vehicles
- Average VMT/MPG

		Number of Vehicles			Annual Fuel Usage per Vehicle (Gallons)			Current Energy Usage (Gallons)			
Description	Priv./Comm.	BEV	PHEV	ICE	BEV	PHEV	ICE	BEV	PHEV	ICE	Total
Car	Private	13	4	2,573	168	168	480	2,185	672	1,235,769	1,238,626
Motorcycle	Private	0	0	129	19	19	56	0	0	7,179	7,179
Light-Duty Vehicle	Commercial	0	0	10	184	184	524	0	0	5,244	5,244
Light Truck	Commercial	0	0	412	239	239	683	0	0	281,200	281,200
Police	Commercial	0	0	0	498	498	1,423	0	0	0	0
School Bus	Commercial	0	0	6	664	664	1,896	0	0	11,378	11,378
Delivery Truck	Commercial	0	0	2	691	691	1,974	0	0	3,948	3,948
Taxi	Commercial	0	0	0	985	985	2,813	0	0	0	0
Para. Shuttle	Commercial	0	0	0	1,073	1,073	3,065	0	0	0	0
Refuse Truck	Commercial	0	0	0	3,457	3,457	9,877	0	0	0	0
Transit Bus	Commercial	0	0	0	3,654	3,654	10,440	0	0	0	0
Class 8 Truck	Commercial	0	0	1	4,511	4,511	12,889	0	0	12,889	12,889
Other - Zero	Private	0	0	448	0	0	0	0	0	0	0
Other - Low	Private	0	0	150	70	70	200	0	0	30,000	30,000
Other - High	Commercial	0	0	0	700	700	2,000	0	0	0	0
Car	Private										
					Weighted Avg. per Veh. (Gallons)						
	Private	13	4	3,300	168	168	386	2,185	672	1,272,947	1,275,805
	Commercial	0	0	431	19	19	730	0	0	314,659	314,659
	Total	13	4	3,731	168	168	426	2,185	672	1,587,607	1,590,464

PACE

People's Action for Clean Energy

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