



Assessing Connecticut's Energy Transition: Consumer and Commercial Incentives and Investments

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Relevance & need

Goal to decarbonize energy in CT requires millions of demand-side investment decisions about transportation and equipment that is carbon-free

Stakeholders lack good information on:

--current energy consumption behavior

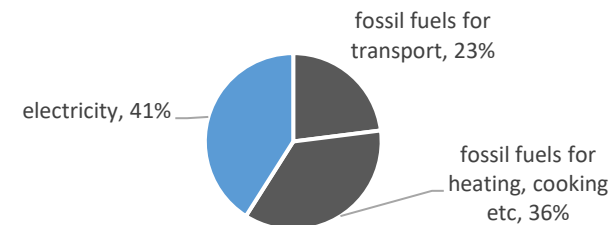
--future demand for clean energy technology

- Heat pumps
- Heat pump water heaters
- Alternative fuel Vehicles
- Rooftop PVs
- Energy storage
- Etc.

--how policy incentives affect 10-20 year equipment investments

Full decarbonization will *increase* reliance on electricity and the grid

Most CT energy consumption is not on the grid



Demand will vary *geographically* presenting possible challenges to adapting the grid efficiently.

Better forecasts of customer demand and decision-making → better planning

- Improve estimates of residential energy consumption patterns in Connecticut versus the EIAs Residential Energy Consumption Survey
 - Larger sample size (e.g., 2000 versus 300)
 - Survey more frequently (bi-annually versus every 4-5 years)
- Assess the effectiveness of incentive programs in CT
 - Do citizens know about incentives?
 - Do incentives affect decision-making?
 - Barriers to adoption
 - Validating survey responses with administrative data

Research approach

- Customer survey of CT residents
 - Summer 2024
 - Summer 2026
- Questionnaires modeled on EIAs Residential Energy Consumption Survey (RECS)
- Supplement RECS with survey items on the uptake of clean energy incentives, including plans to replace major equipment
- RCTs of drivers of decision-making
- Extrapolate survey estimates using MRP with census, geolocated parcel housing data, and utility information on historical electricity consumption

- Annual reports on
 - Energy consumption structure
 - Knowledge of existing policy incentives
 - Role of policy and other factors (like information, word-of-mouth, energy bills, affordability, concerns about resiliency), in affecting changes in energy consumption
- Small area forecasts of community energy consumption.
- Micro datafiles and codebook of large two surveys of residential and commercial utility customers regarding intentions to adopt decarbonization technologies

- Behavioral impact of financial incentives on household decision-making to adopt long-range demand side technology
- Informational intervention and investment
- Neighborhood/demonstration effects
- Validation of survey responses (linking answers w administrative data may help gauge survey instrument validity)



Long-term energy equipment investments and incentives:

Should I insulate my building?	50+ years
Should I get rooftop solar panels?	25-30 years
Should I get a heat pump to replace my oil furnace?	20 years
Should I get a heat pump water heater	15 years
Should I buy an EV	10 years
Should I get energy storage to stabilize my demand	10 years
Induction stoves	<10 years