

Beneficial Electrification

Presentation to the Environment & Transportation
Committee of the Maryland General Assembly

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Status Quo: Inherited Policies



While many technologies and the policies supporting them have served us well in the past ...

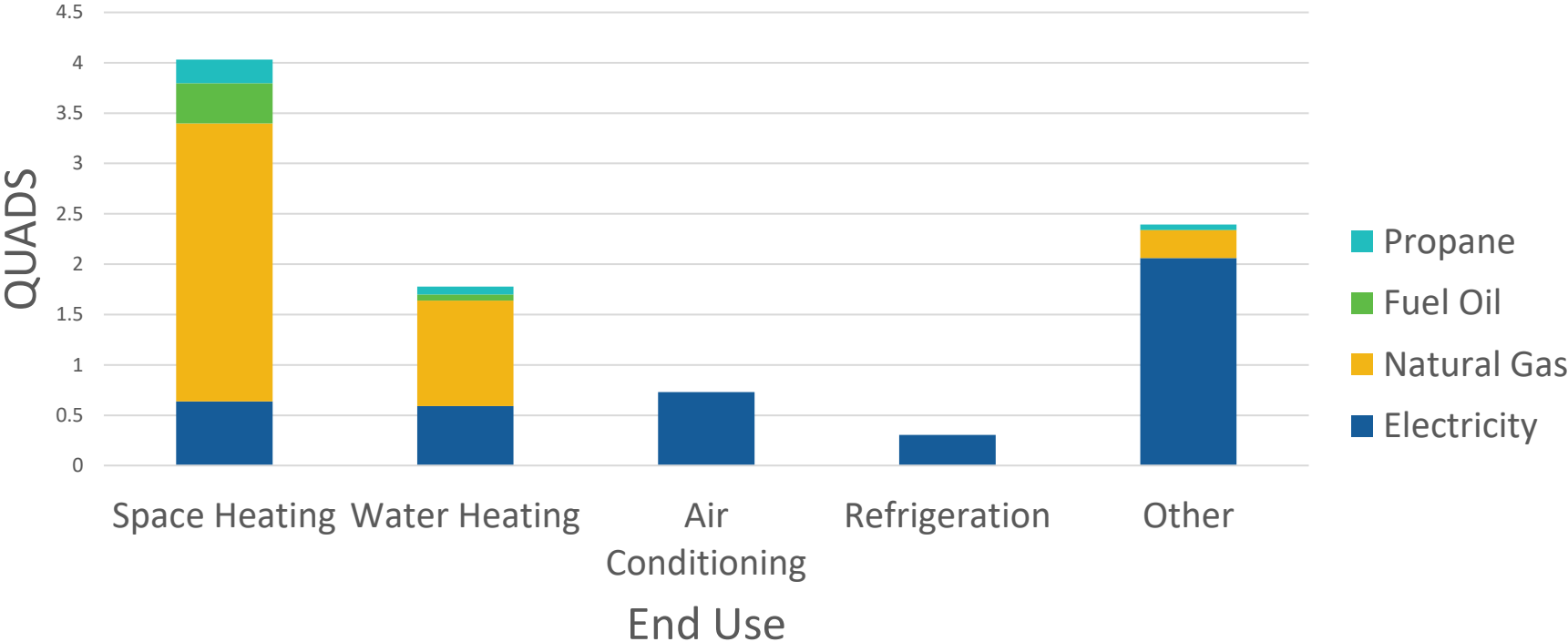
Regulation Needs Renovation



... new policy priorities and technologies are driving a need for change.

Fossil Fuels Still Dominate Space and Water Heating

Final energy use in residential buildings by fuel and end use application



Source: [EIA's Residential Consumption Survey \(RECS\) 2015](#)

The Opportunity

- Efficient, clean, and controllable – cost-effective electric end-use technologies installed in US buildings will produce benefits:

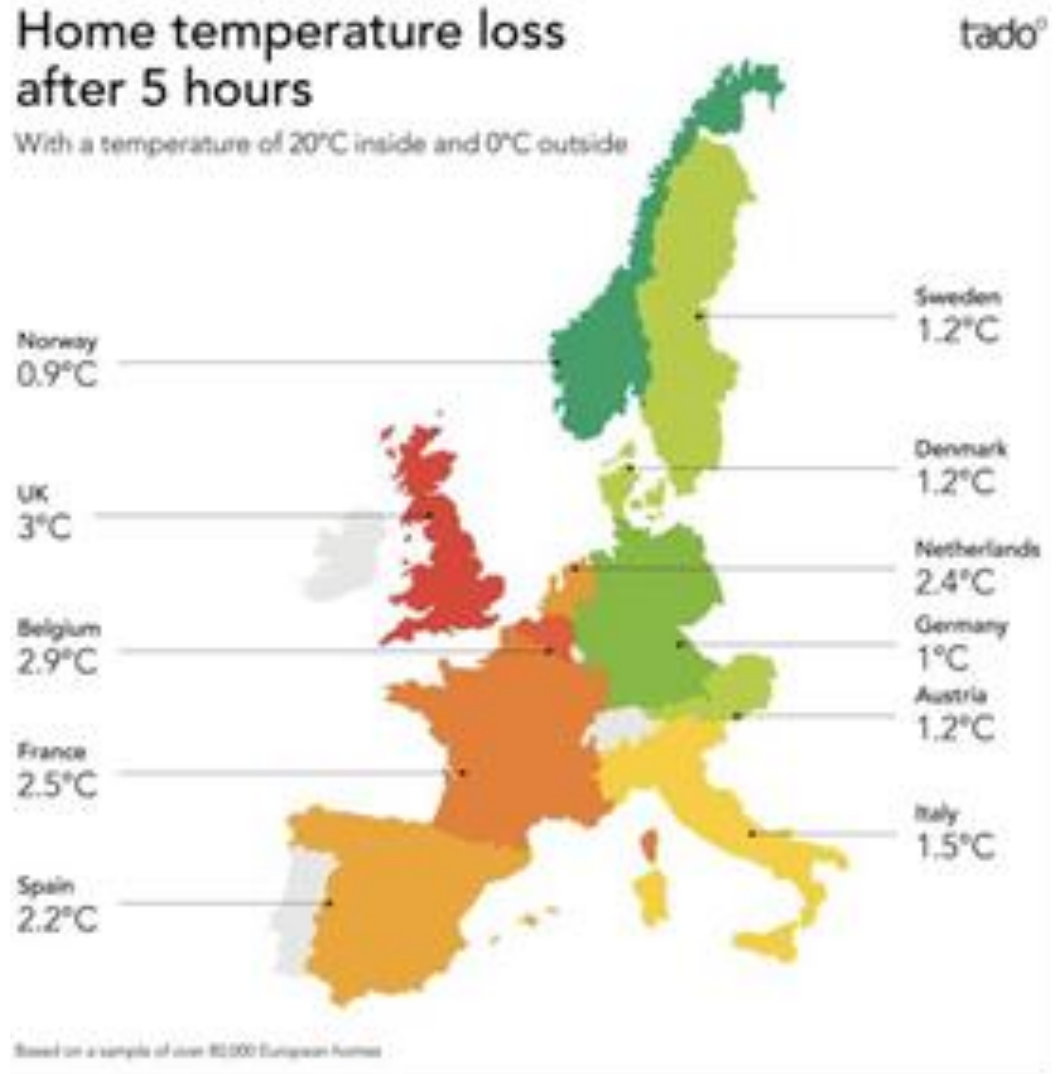
- Cost savings
- Grid flexibility
- Lower emissions



The Opportunity

Buildings = thermal storage

This storage adds further flexibility to the grid

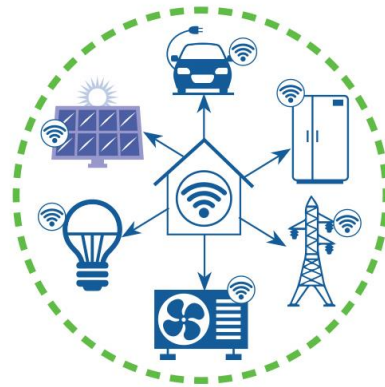


Buildings as Grid Resources



Efficient

Persistent low energy use minimizes demand on grid resources and infrastructure.



Connected

Two-way communication with flexible technologies, the grid and occupants.



Smart

Analytics supported by sensors and controls co-optimize efficiency, flexibility and occupant preferences.

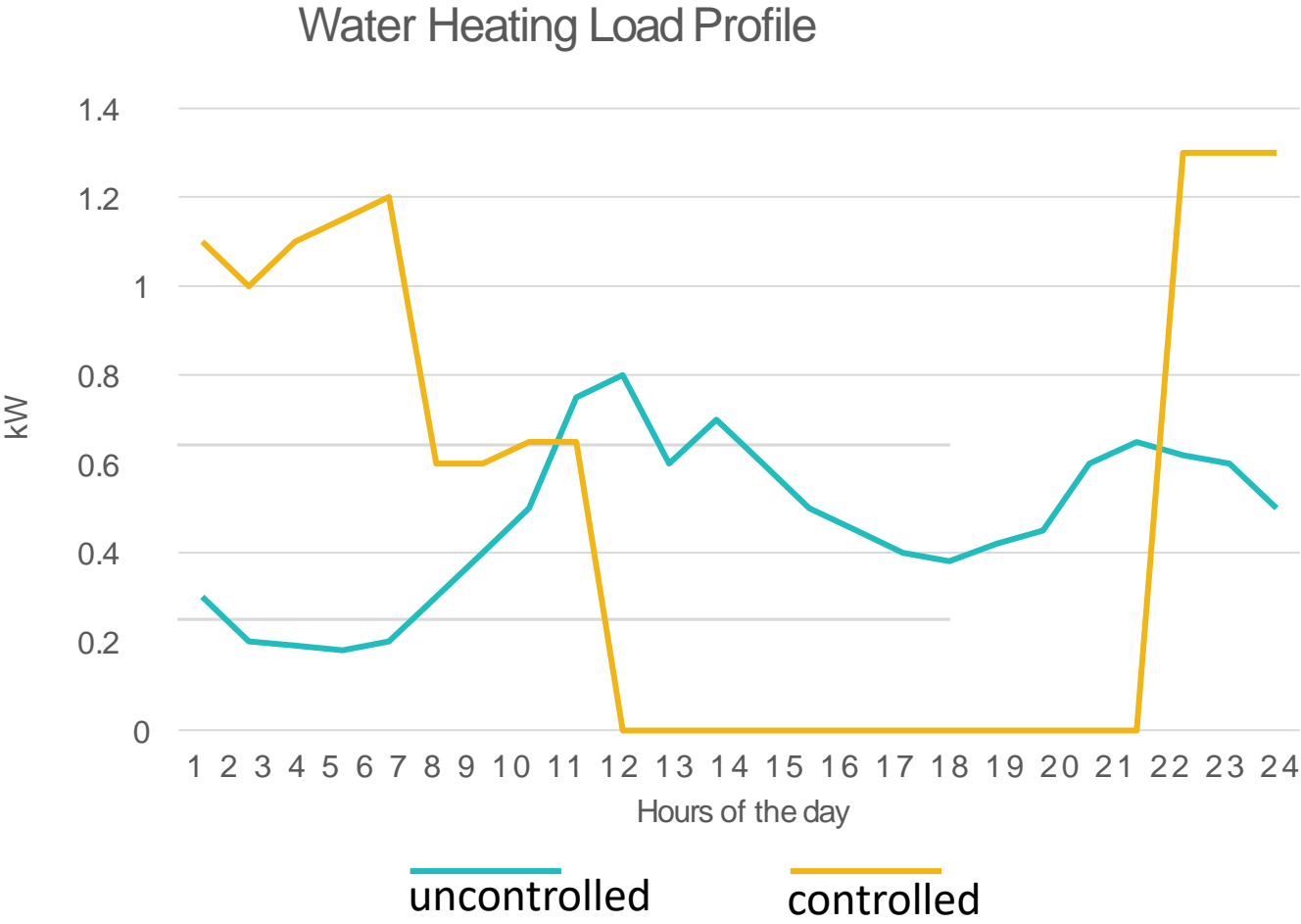


Flexible

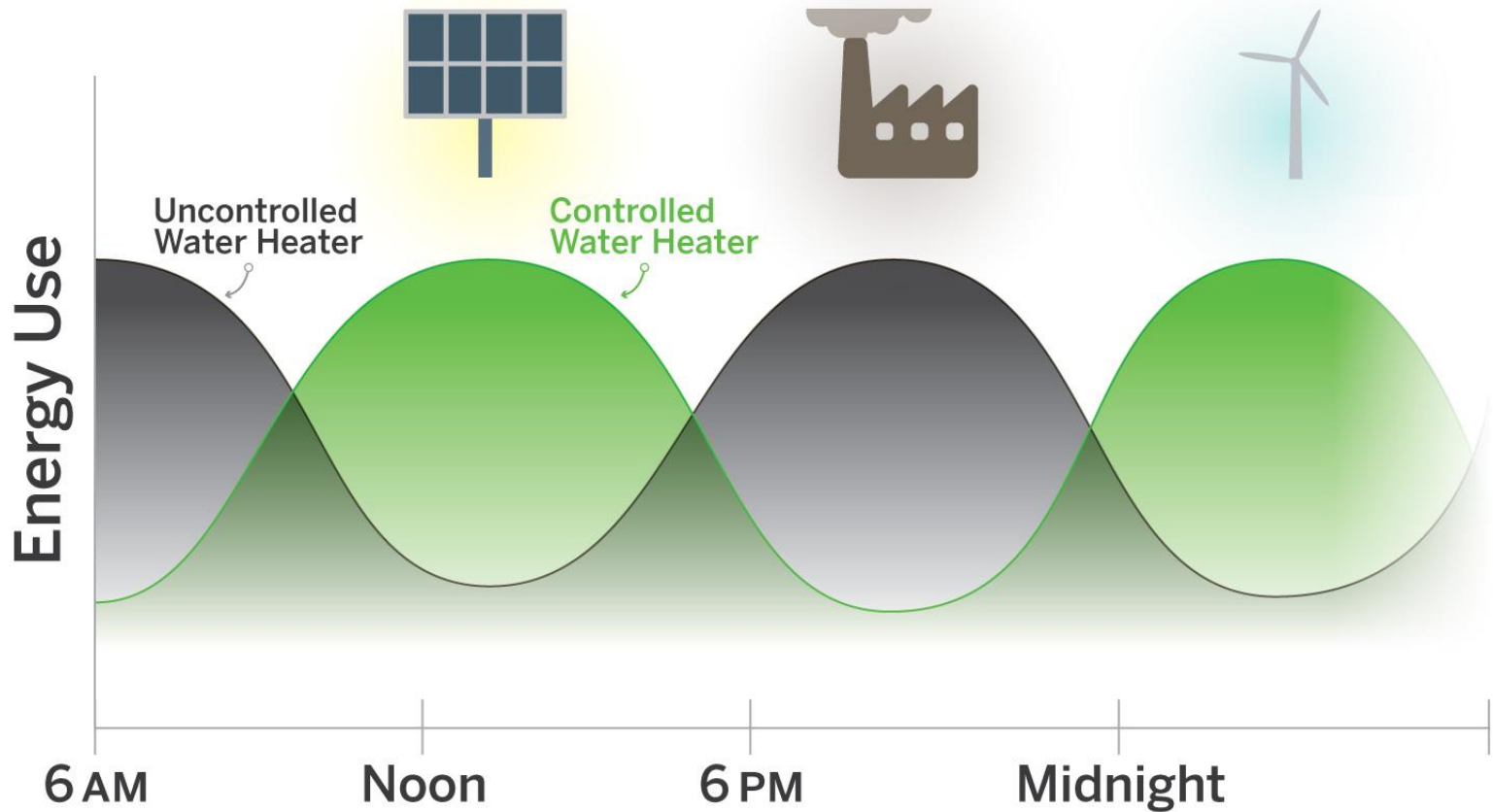
Flexible loads and distributed generation/storage can be used to reduce, shift or modulate energy use.

Source: Neukomm, M., Nubbe, V., and Fares, R. (2019). *Grid-Interactive Efficient Buildings*.

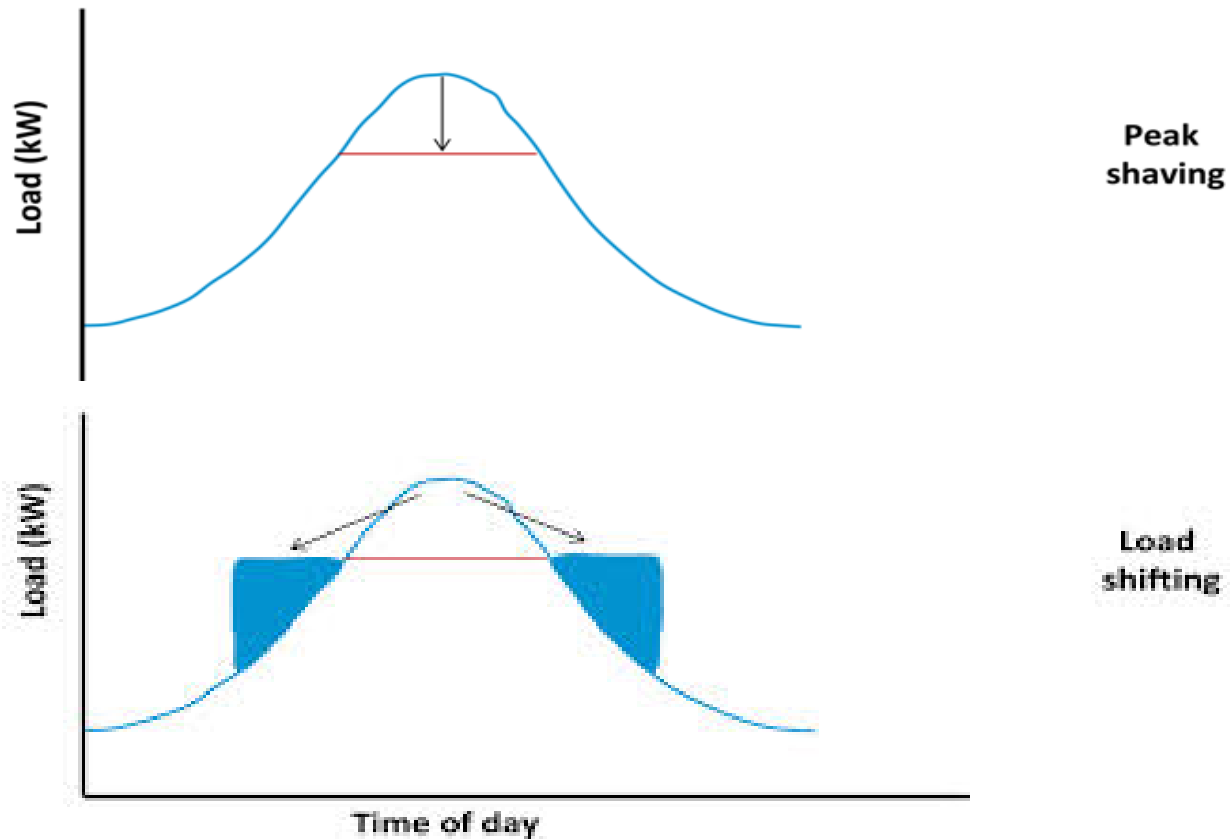
What is Load Flexibility?



Recognize the Value of Flexible Load: Grid Operations

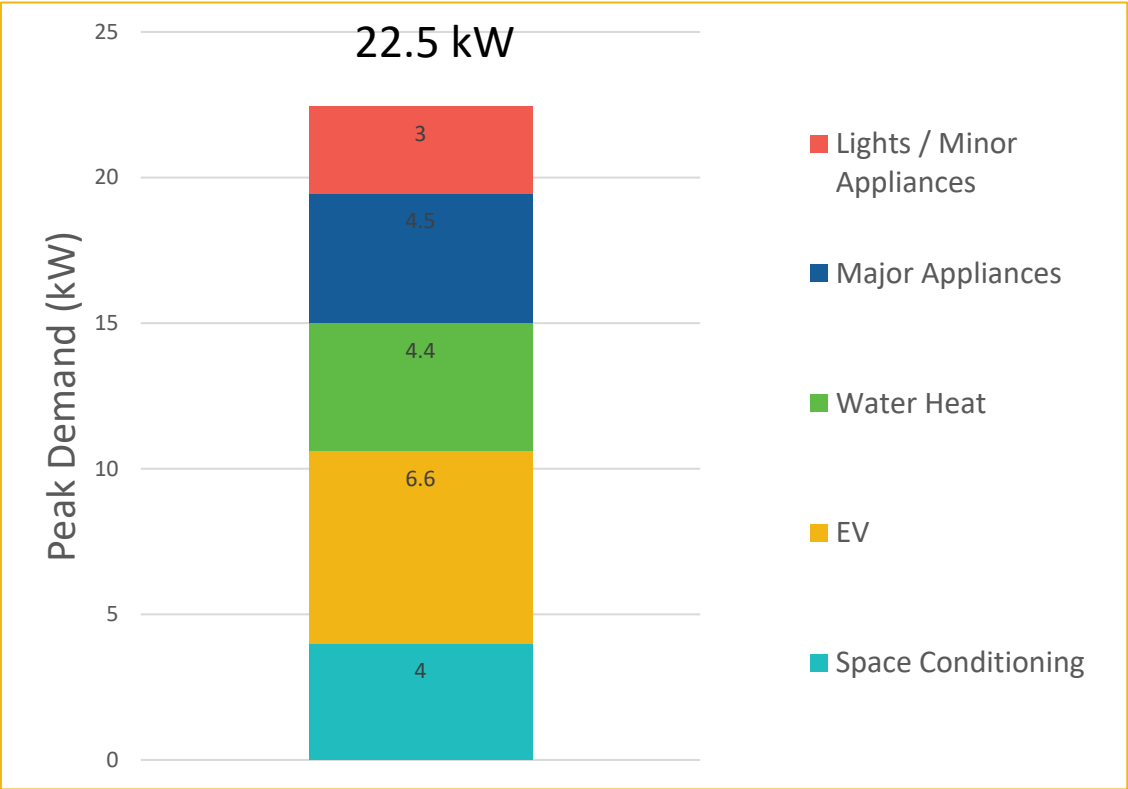


Traditional DR: Emergency peak management

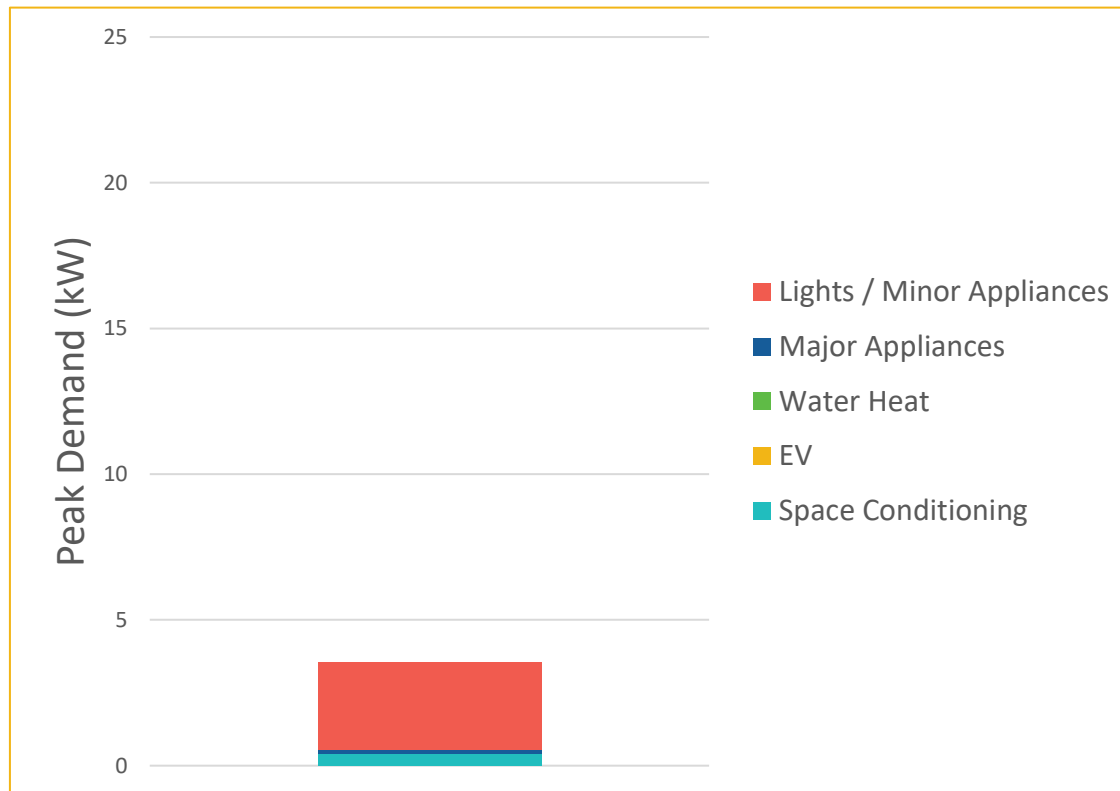


Source: Marsden Jacob Associates' analysis, 2011

Uncontrolled Household Loads Add Up



Flexibility Cuts Peak Demand: Shift EV, water heat, major appliances, and pre-condition spaces



***Beneficial* Electrification**

Will Better Position Utilities and Consumers for the Future



**1. Saves Customers Money
Long-Term; More Services**



**2. Reduces Environmental
Impacts**



**3. Enables Better Grid
Management**

Beneficial Electrification Resources from RAP

- [Beneficial Electrification: Ensuring Electrification in the Public Interest](#)
- [Utilities Can Get a “LEG” Up with Beneficial Electrification—But Regulators Also Have to be Ready](#)
- [Beneficial Electrification: A Growth Opportunity](#)
- [Beneficial Electrification: A Key to Better Grid Management](#)
- [Environmentally Beneficial Electrification: The Dawn of Emissions Efficiency \(Electricity Journal\)](#)

RAP®

Beneficial Elec of Space Heat

By Jessica Shipley, Jim Lazar, David Farnsworth, and C
Part of the *Electrification in the Pu*

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Beneficial Elec of Water Heat

By David Farnsworth, Jim Lazar, and Jessica Shipley
Part of the *Electrification in the Pu*

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Beneficial Electrification

Ensuring Electrification in the Public Interest

By David Farnsworth, Jessica Shipley, Jim Lazar, and Nancy Seidman

About RAP

The Regulatory Assistance Project (RAP)[®] is an independent, non-partisan, non-governmental organization dedicated to accelerating the transition to a clean, reliable, and efficient energy future.

Learn more about our work at raponline.org



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