Advanced Metering Infrastructure (AMI) and how it can help LMI households

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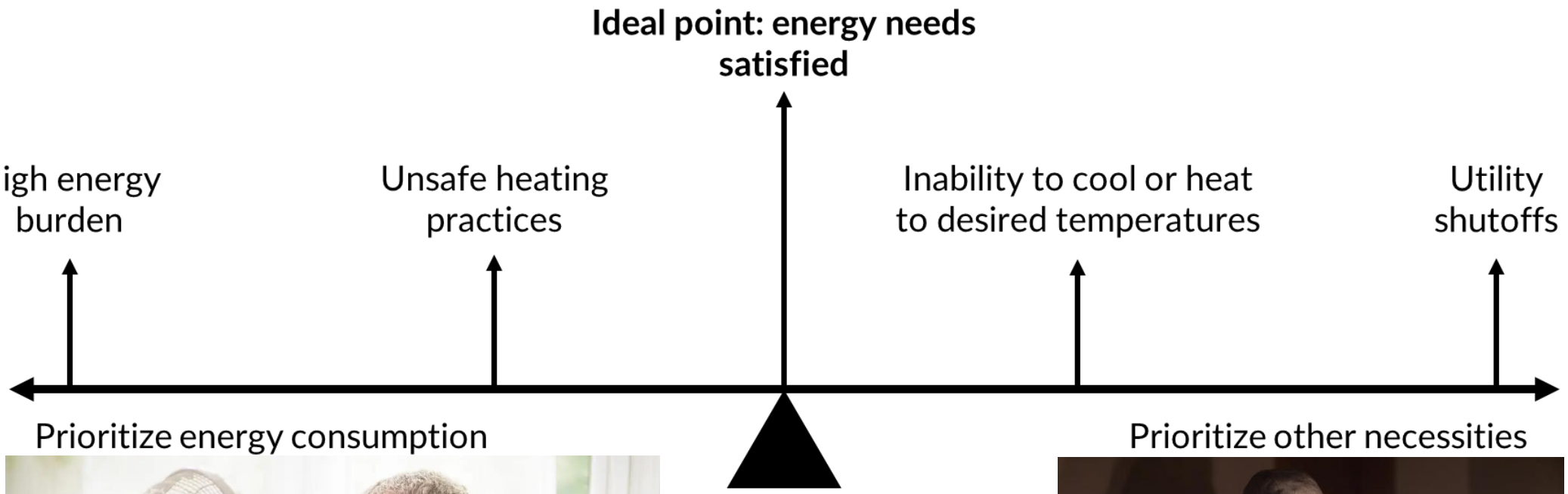
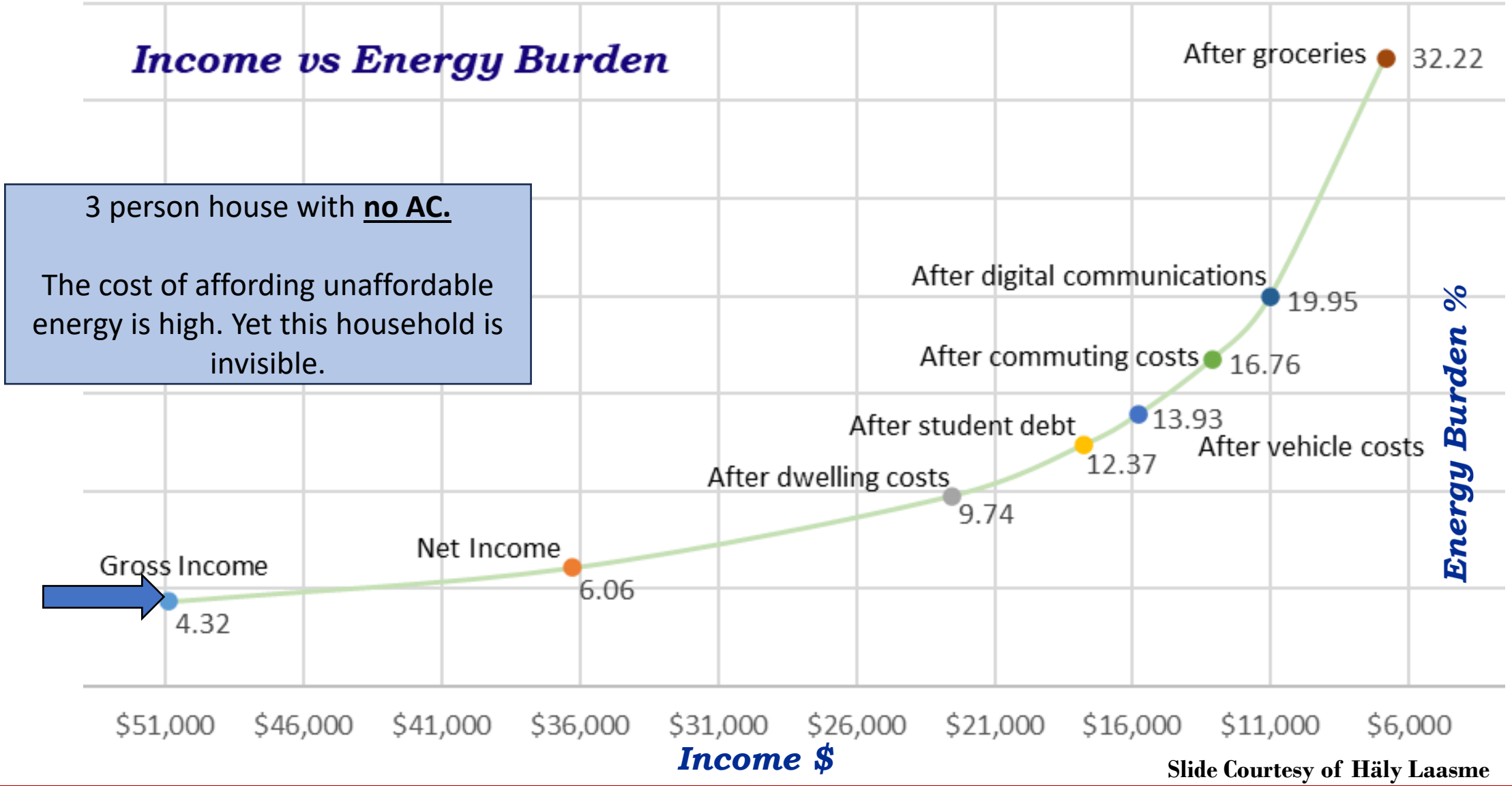
Tradeoff between energy and other necessities



Energy Burden misses the big picture and true fraction



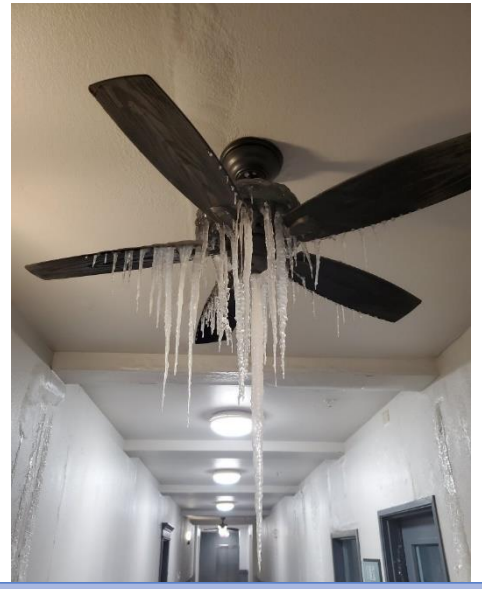
Slide Courtesy of Häly Laasme

Energy Limiting Behavior: A Hidden Inequity

Able to satisfy all your demand but high cost (Energy Burden)

People able to satisfy partial needs, but may be at risk

Unable to satisfy any of your demand (outage, disconnected)



We need to find people in the built environment who are suffering (social injustice). Household meters which collect information at the hourly level accomplish this.

Today I will discuss how AMI can…

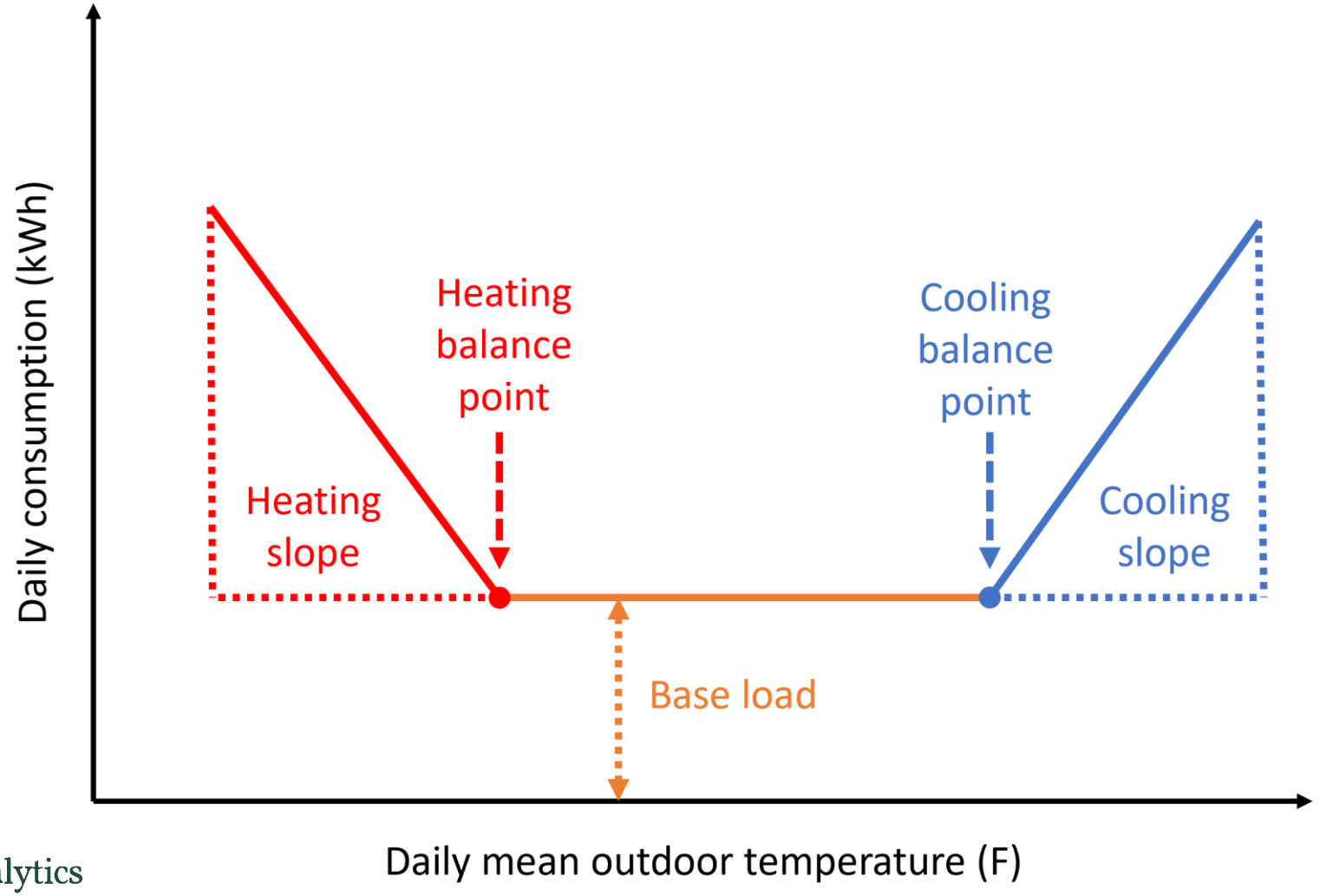
- Identify multiple at-risk households at the individual level
- Be used to more effectively target upgrades, bill assistance, and energy efficiency deployment
- Capture people's tendency to reduce their energy consumption to save money
- Finding households who need help. This information can then be used to target messaging to individual households
- I will also highlight an example of a company (Peoples Energy Analytics) using AMI to inform low-income program design and to target individual households with high bills, at-risk of disconnection, and at risk of heat stroke and cold illness

Household Meters – An Untapped Data Source

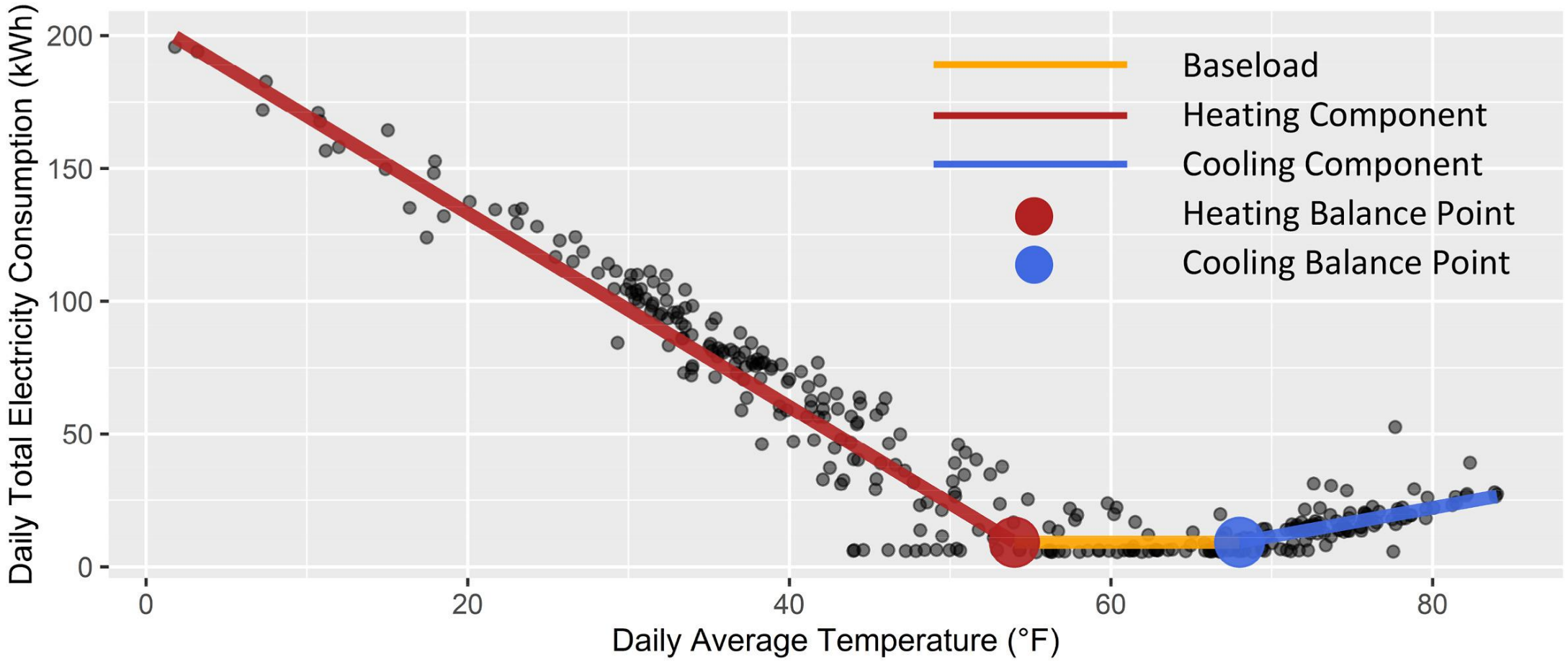
- Energy meters measure how much energy a household uses on a 15 minute basis

- These can illuminate household spending across seasons and climate events (e.g., deep freezes, heat waves, storms)

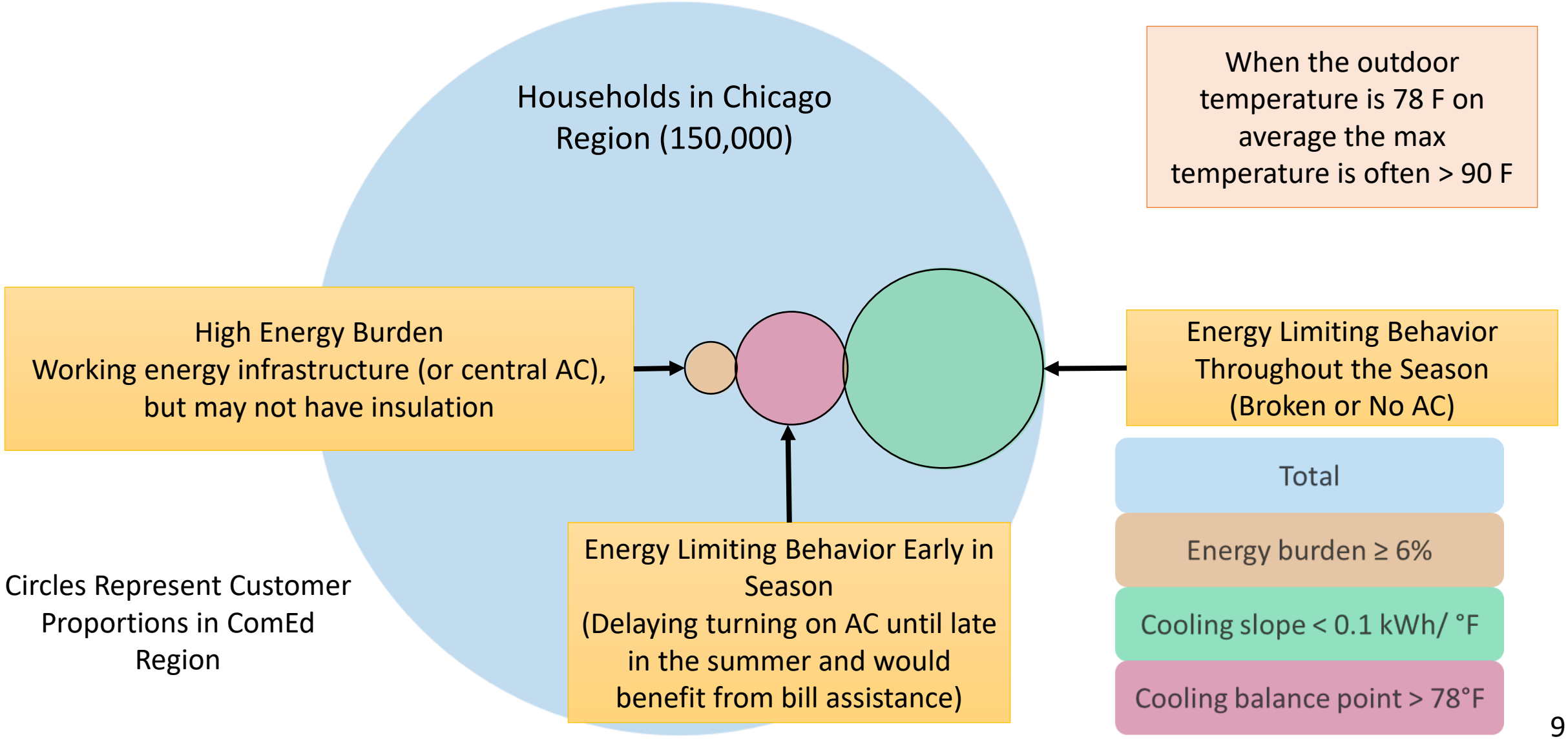
AMI at household level can be used to understand energy consumption behavior for individual households and heating and cooling use (or lack thereof).



Household with electric heating but no central AC (most likely a window unit)

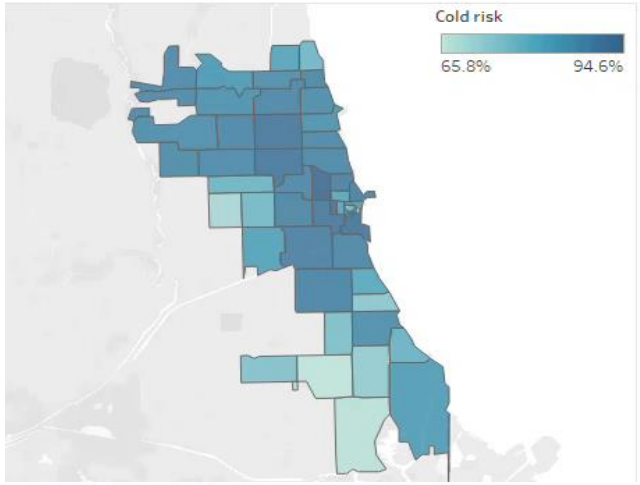


Multiple Insecurities Identified using AMI

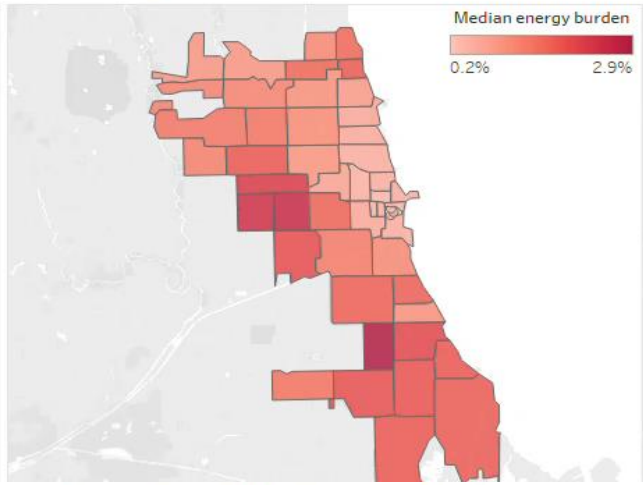


Customer classification dashboard

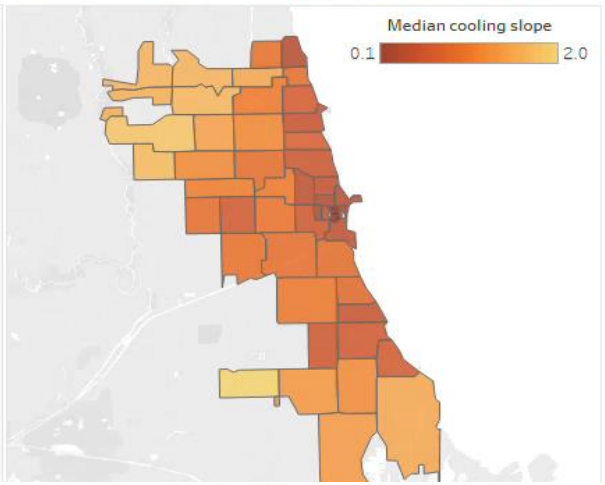
Zip codes to target to reduce cold risk



Energy burden

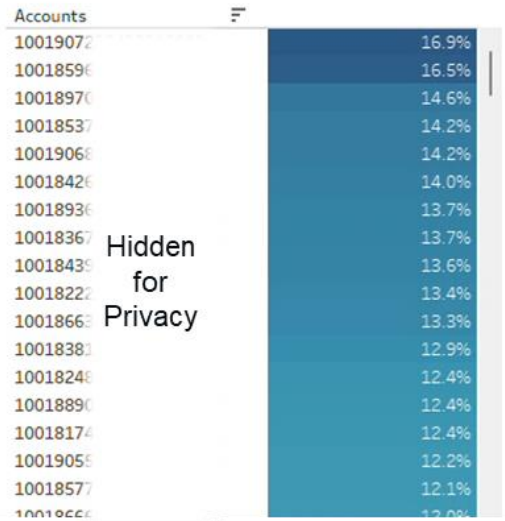


High risk regions lacking air conditioners



Accounts waiting till it's too cold to start heating

Accounts with high energy burden



Low income households to target with cooling upgrades

Peoples Energy Analytics

Peoples Energy Analytics – Example of a full-service solution

1. FIND

We identify **households** in need of technology upgrades or financial assistance

2. MARKET

We create **tailored marketing programs** to effectively target individual customers for interventions

3. ENROLL

We offer a **comprehensive dashboard** to manage and track results

Privacy concerns

- Balancing location and demographic information with the need to protect peoples information
- To effectively target at-risk households you must link energy usage with socio-economic information
- Randomizing account IDs
  - Utility never shares real ID, they hold the key
- For example: Aggregating data to the census tract level and not sharing addresses
  - Anytime have less than 15 households not presenting
  - Lowest spatial resolution is best

AMI can benefit LMI customers through

- Identifying multiple at-risk households at the individual level
- Facilitating individual targeting of households for energy upgrades, bill assistance, and energy efficiency deployment
- Identifying households who are at risk of heat stroke (due to lack of AC use) or cold illness (due to lack of heating use)
- Finding households who need help early on

Contact and Acknowledgements

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Dr. Destenie Nock

Dr. Destenie Nock is a Professor of Engineering and Public Policy and Civil and Environmental Engineering at Carnegie Mellon University. Dr. Nock is a leader in energy justice, environmental justice, sustainable energy transitions, and the energy-poverty-climate change nexus. She has pioneered new measures of energy poverty to help utility companies identify vulnerable populations and energy deficits (i.e., energy limiting behavior and forgone thermal comfort).

Dr. Nock is the Chief Executive Officer of Peoples Energy Analytics, a data driven company which uses energy analytics to identify energy poverty in vulnerable households.* Dr. Nock received her PhD in Industrial Engineering and Operations Research from the University of Massachusetts Amherst, and two BS degrees in Electrical Engineering and Applied Mathematics from North Carolina A&T State University.

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