Lawrence Berkeley National Laboratory
Environmental Energy Technologies Division **Behavior Analytics**
Providing insights that enable evidence-based, data-driven decisions

Behavior Analytics Webinar Series

Uses for Smart Meter Data

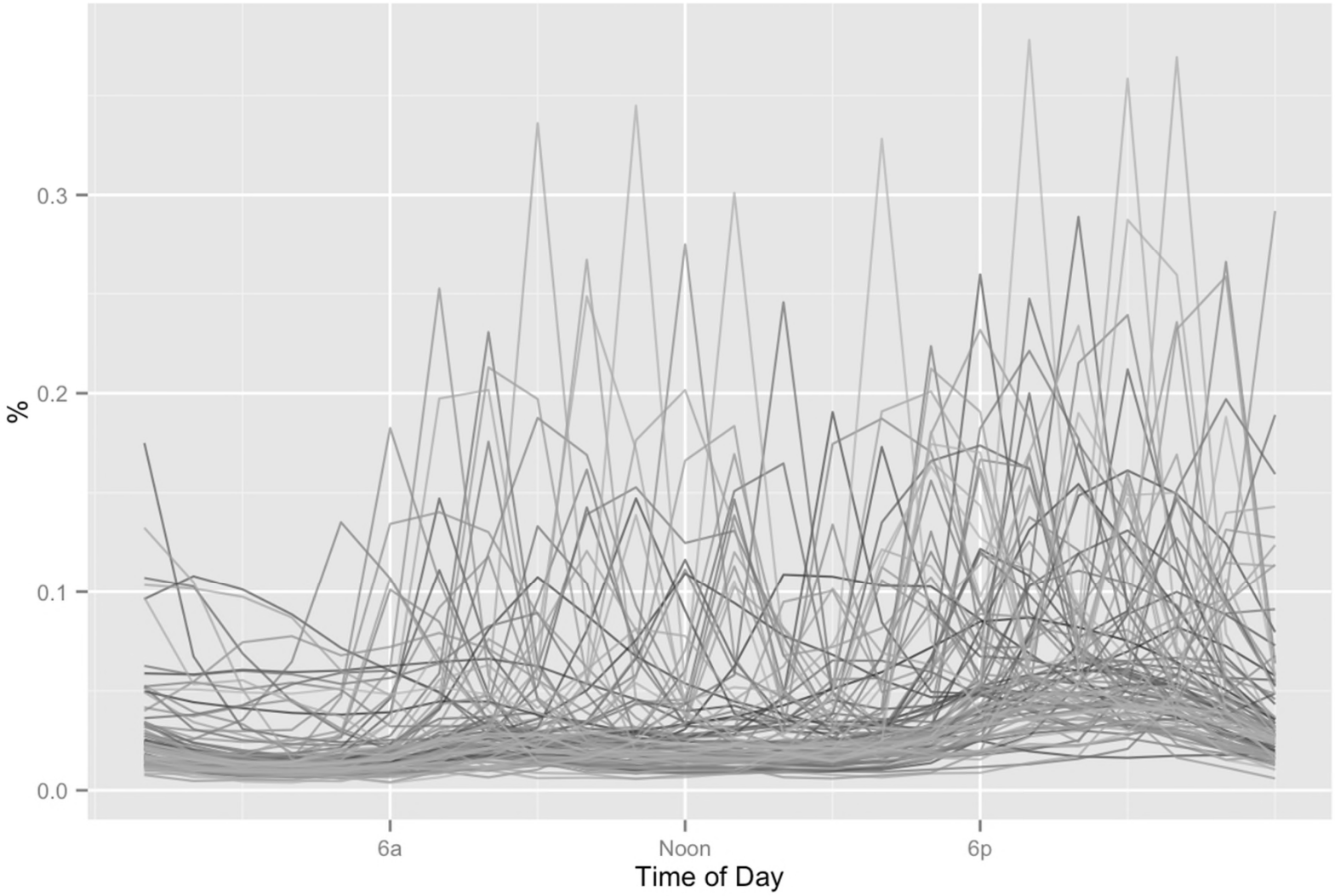
Topic #3: Customer Segmentation Applications in Existing Rates and Programs

Peter Cappers, Annika Todd & Greg Leventis

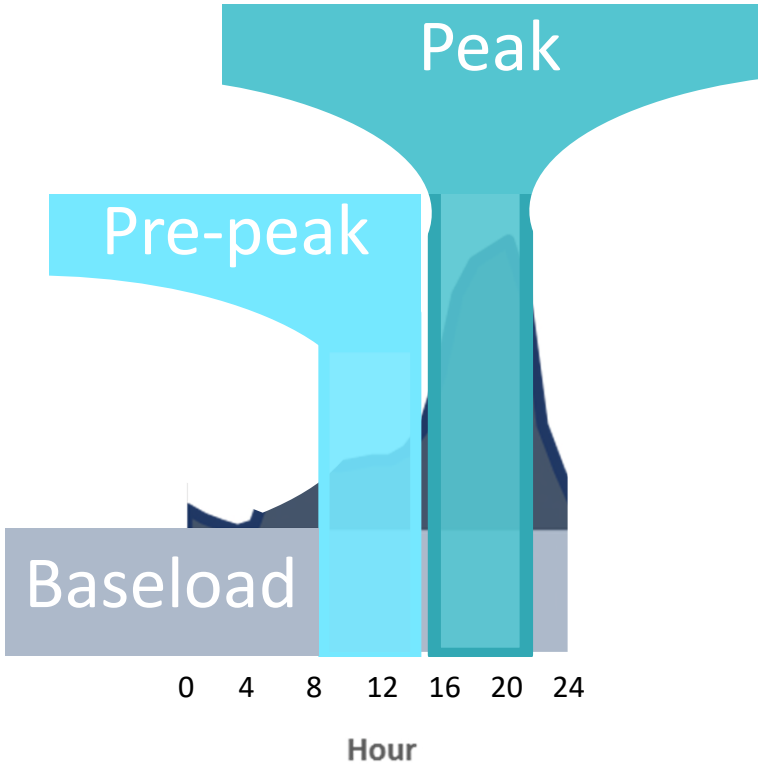
December 13, 2018

Research team also includes: C. Anna Spurlock, Ling Jin, Sam Borgeson, Dan Fredman

Wide Variety of Load Shapes Exist Across Customers Within the Same Class



Load Shape Characteristics that we found are important for clustering households into groups

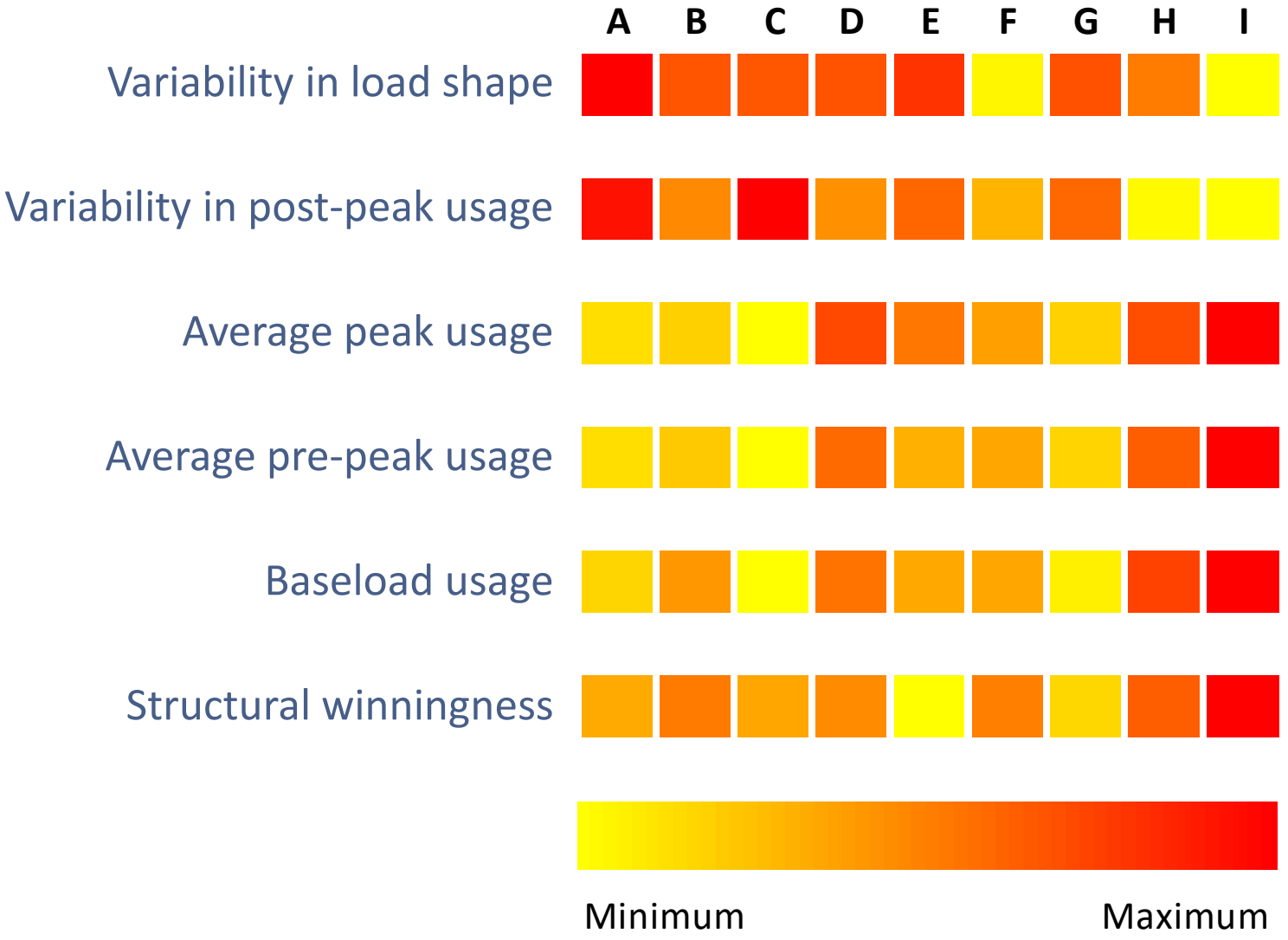


Load Shape Characteristics that we found are important for clustering households into groups

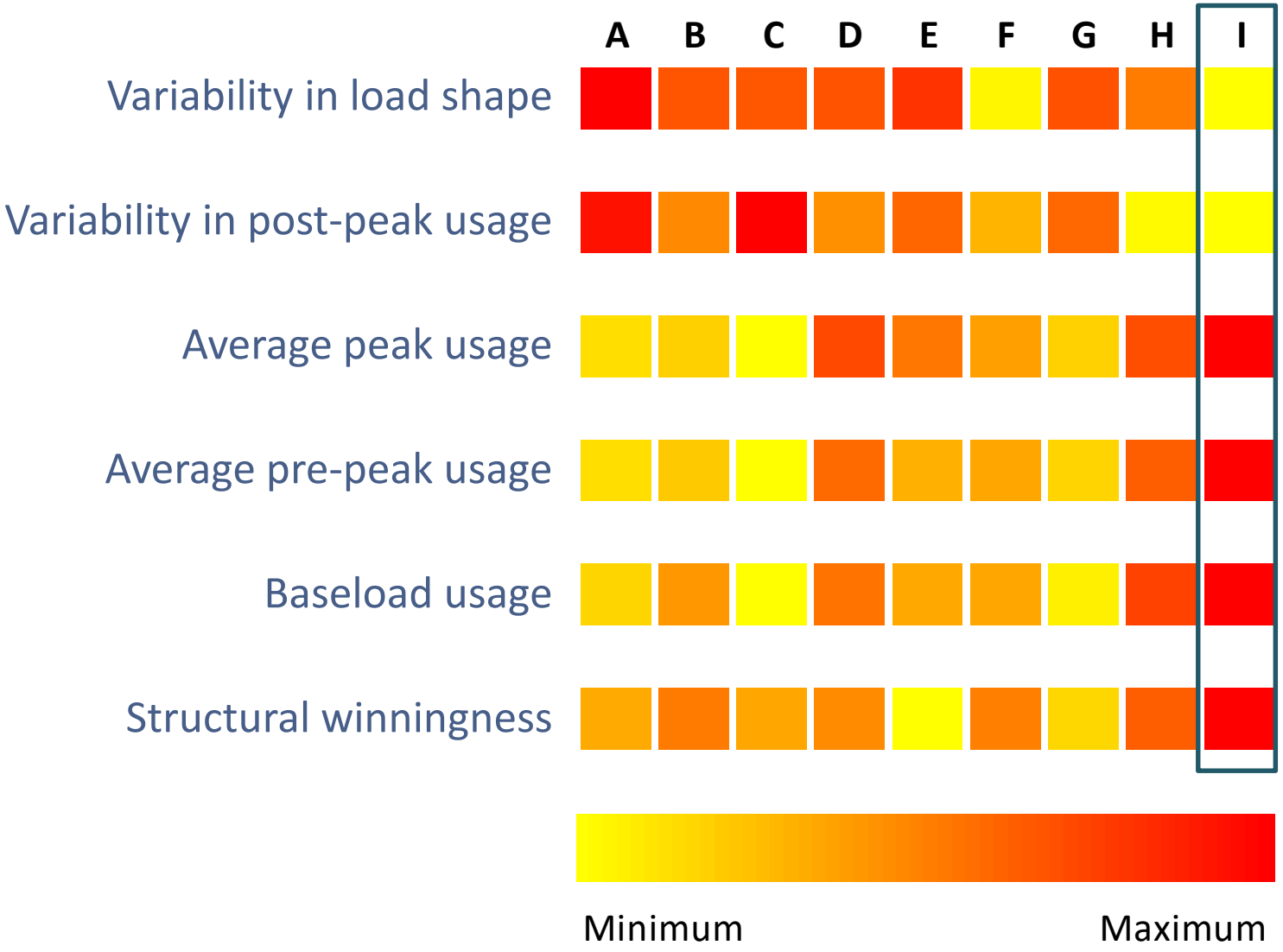
← Variability in **load shapes** across days →

← Variability in **post-peak hours** across days →

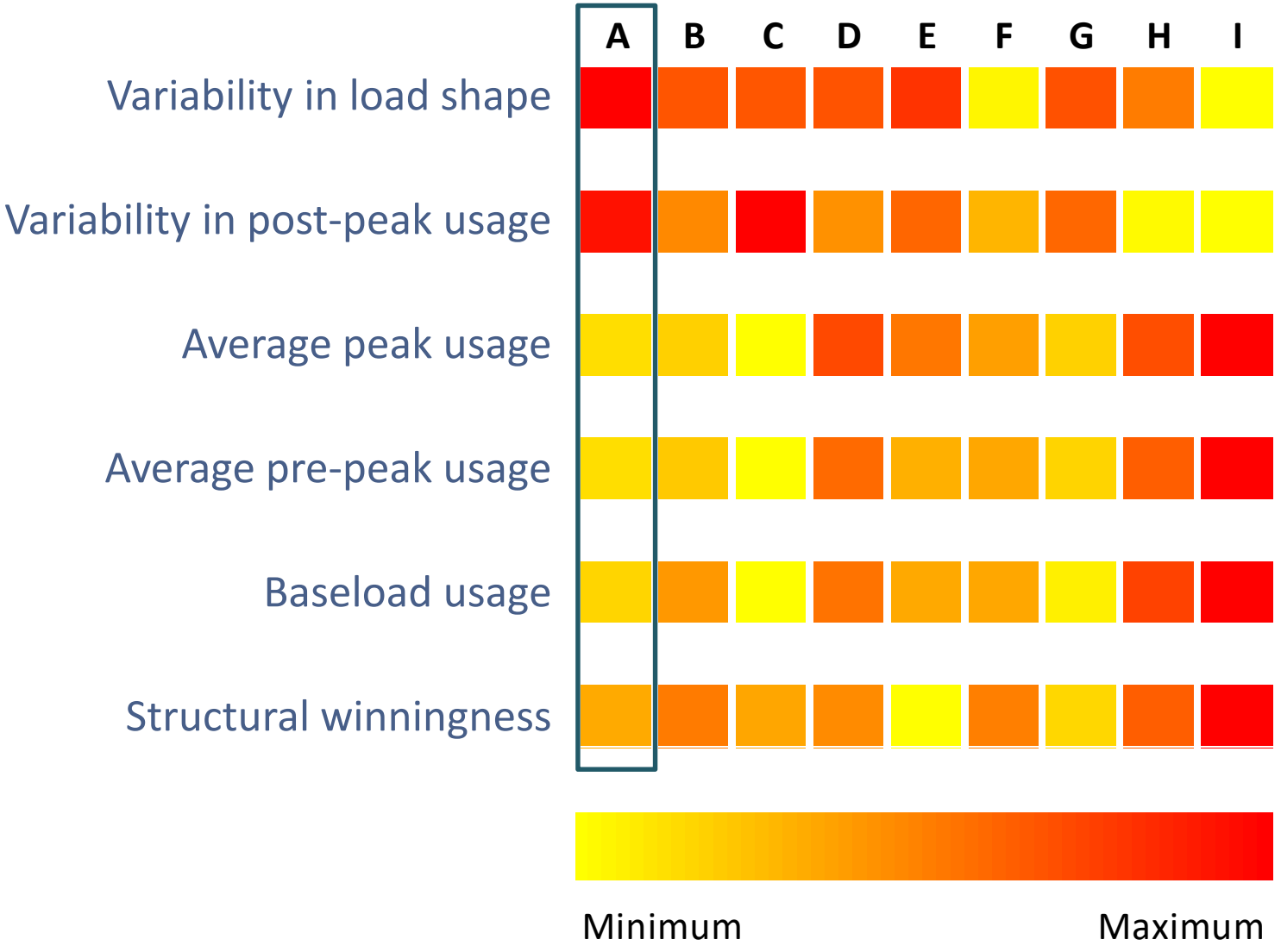
Comparing Load Shape Metrics Across Customer Cluster Groups



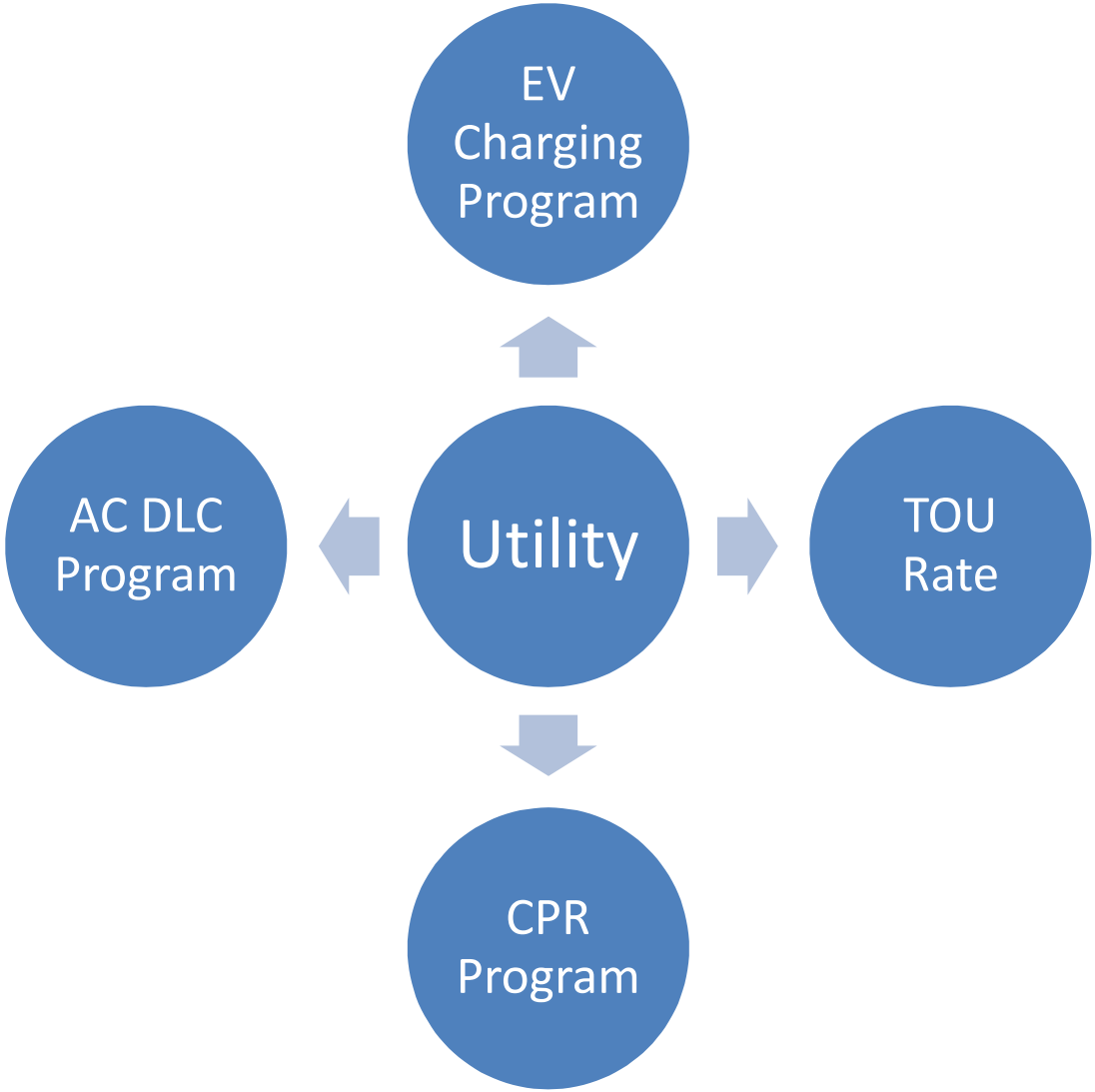
Comparing Load Shape Metrics Across Customer Cluster Groups



Comparing Characteristics Across Customer Cluster Groups



Analyze Cluster Groups to Better Understand Existing Rate or Program Offerings



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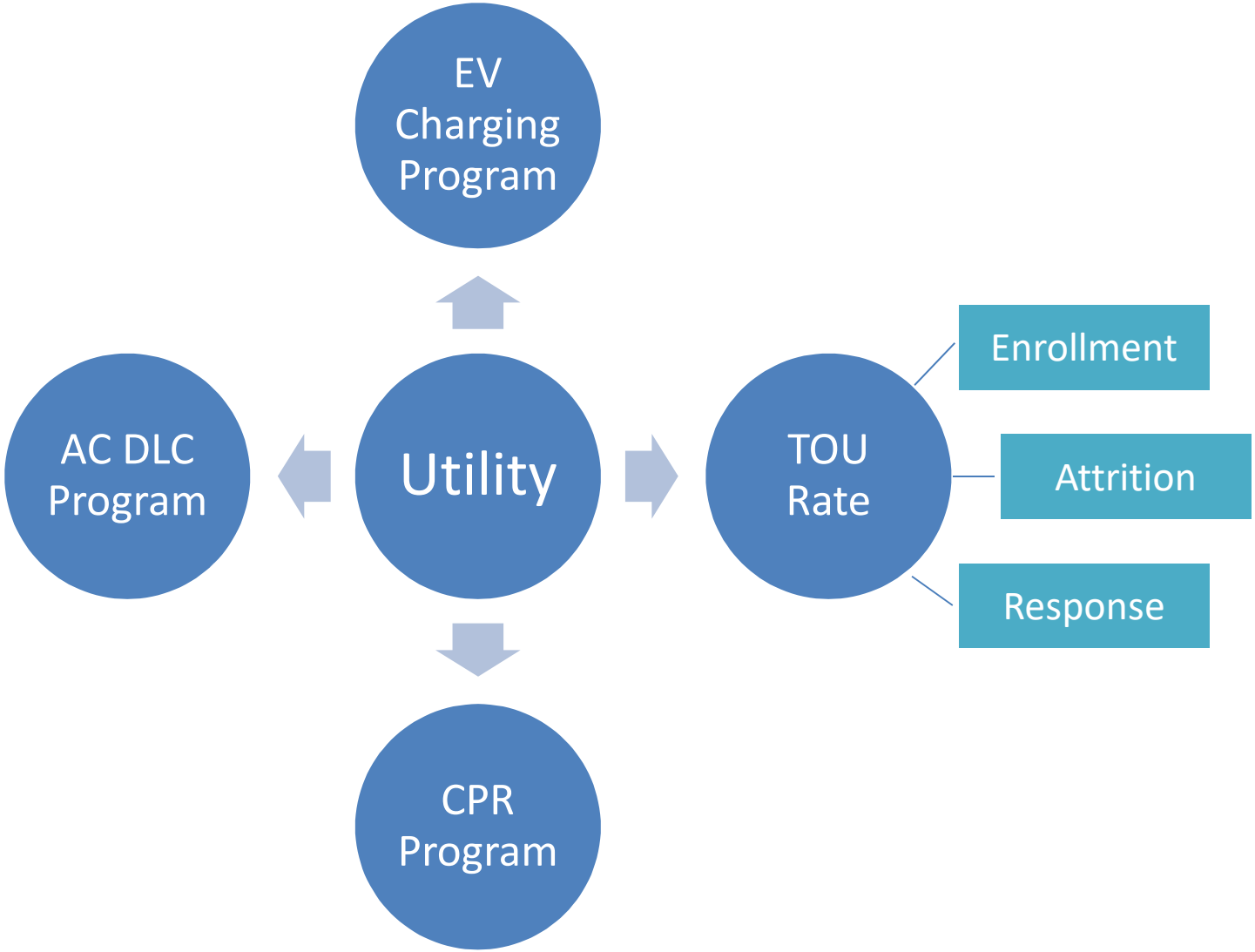

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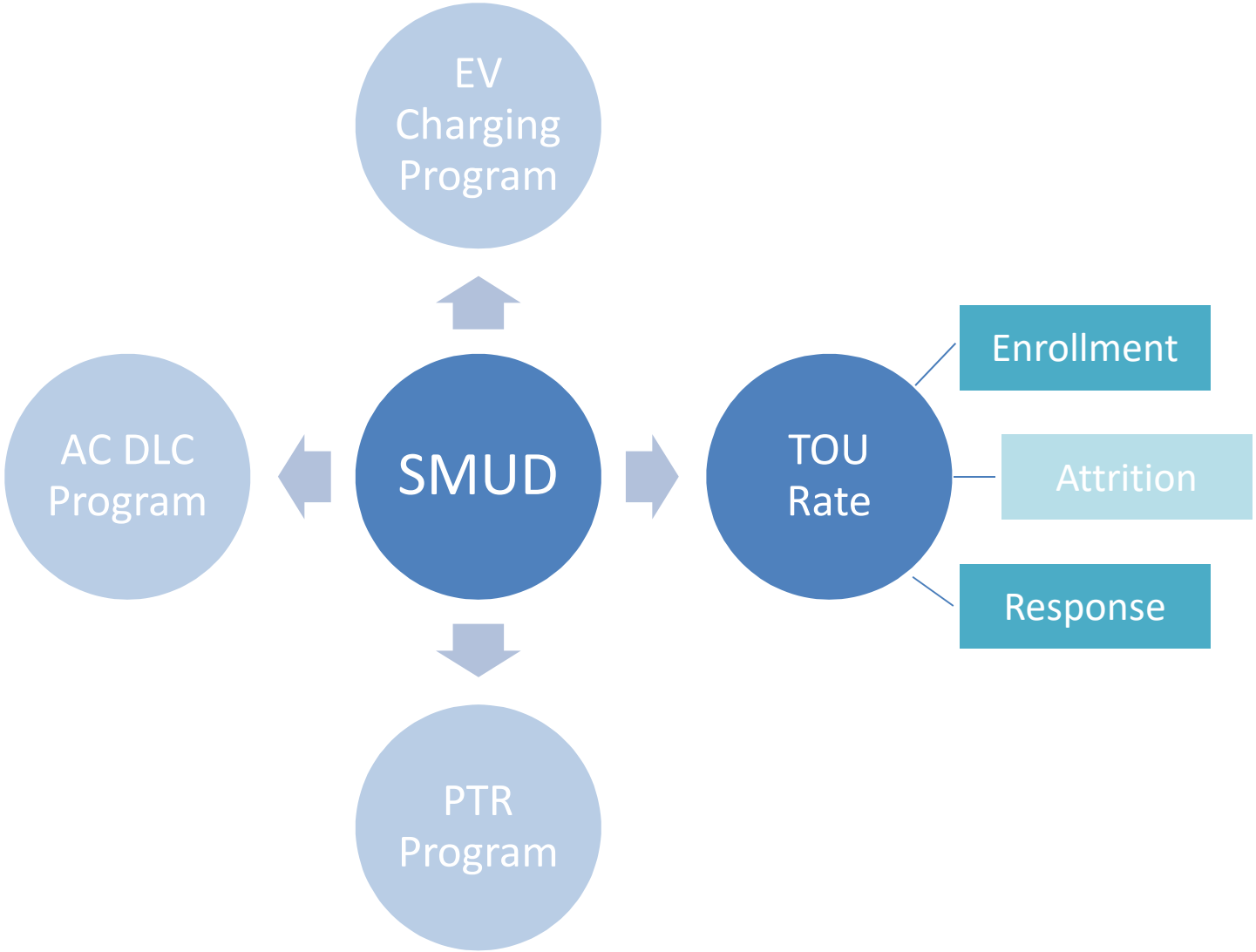
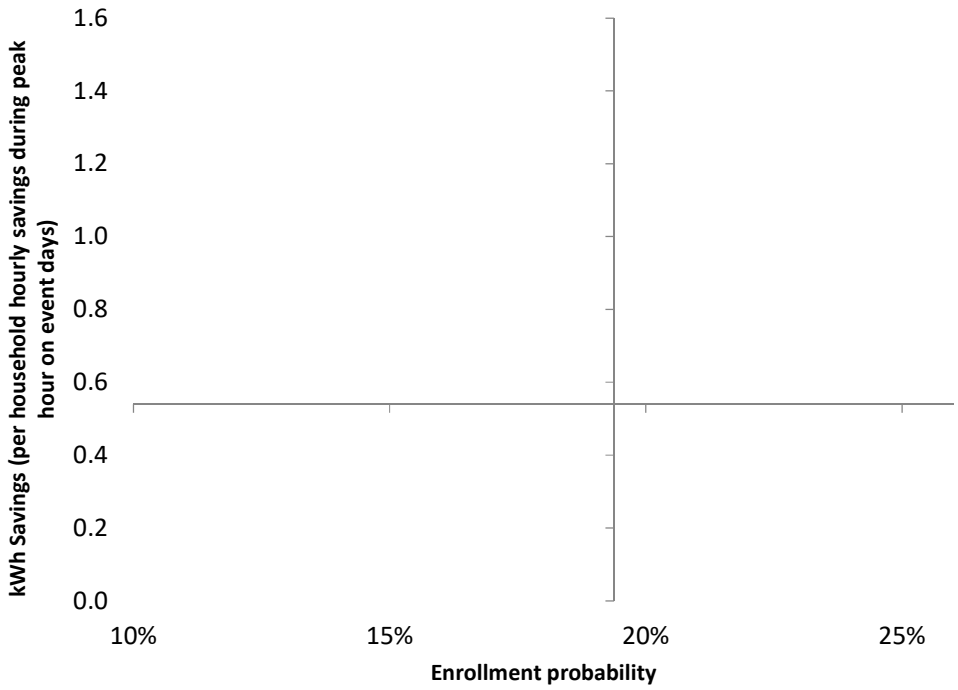
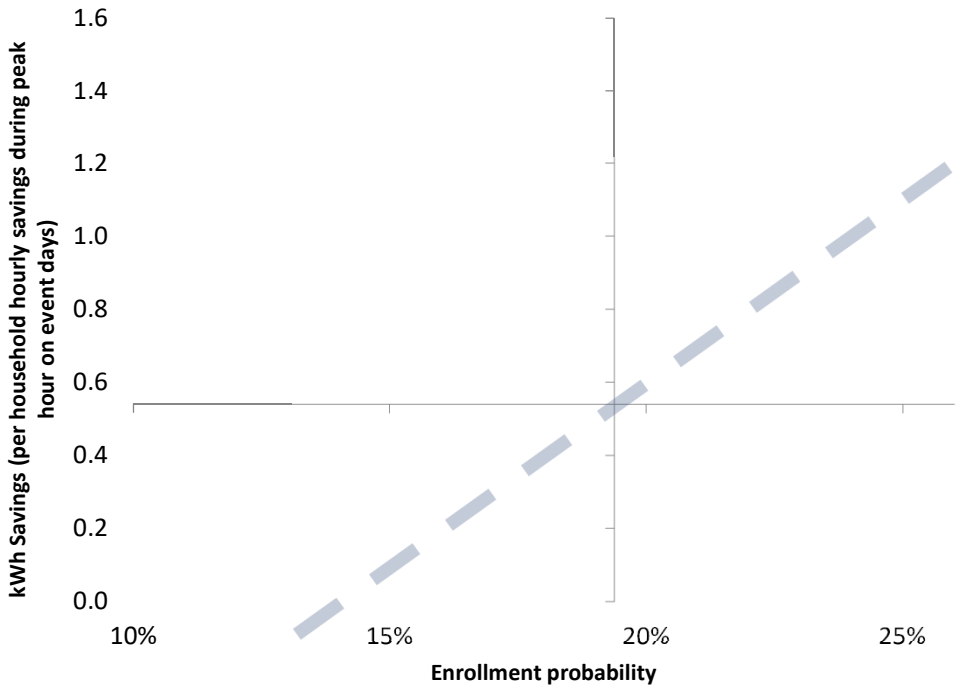


Customer Cluster Groups

TOU Enrollment vs. Response



Do Customers who are More Likely to Enroll Also Provide Greater Load Response?



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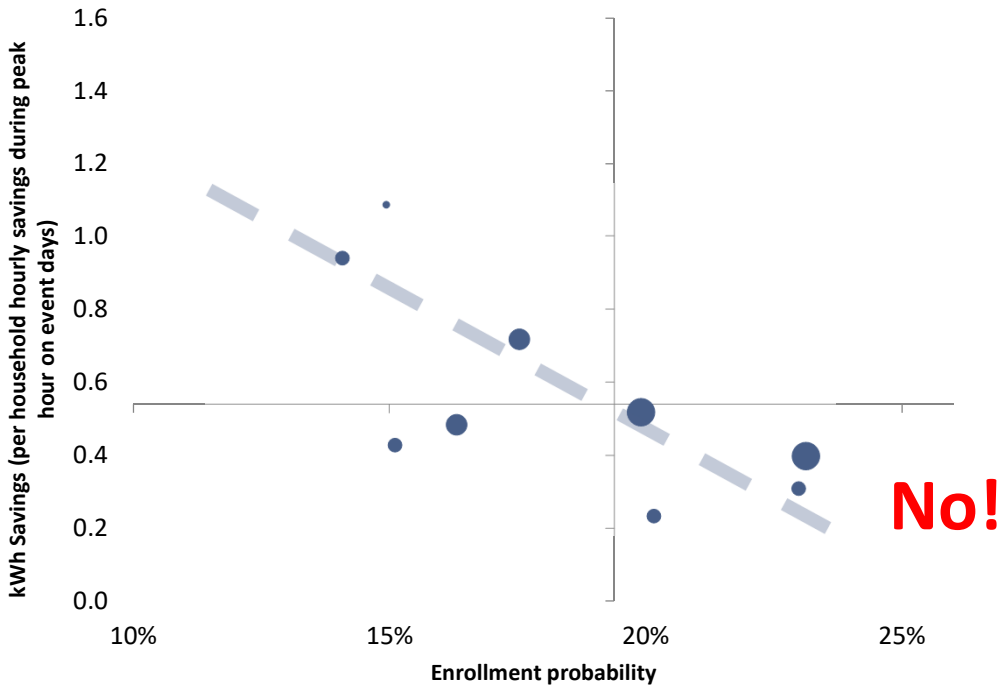
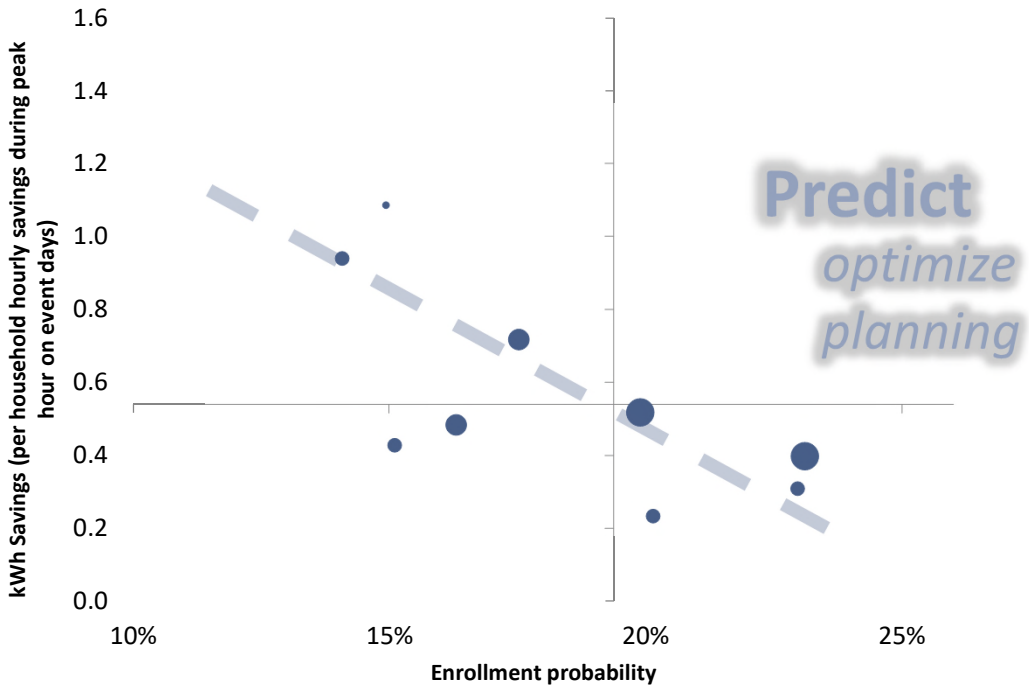
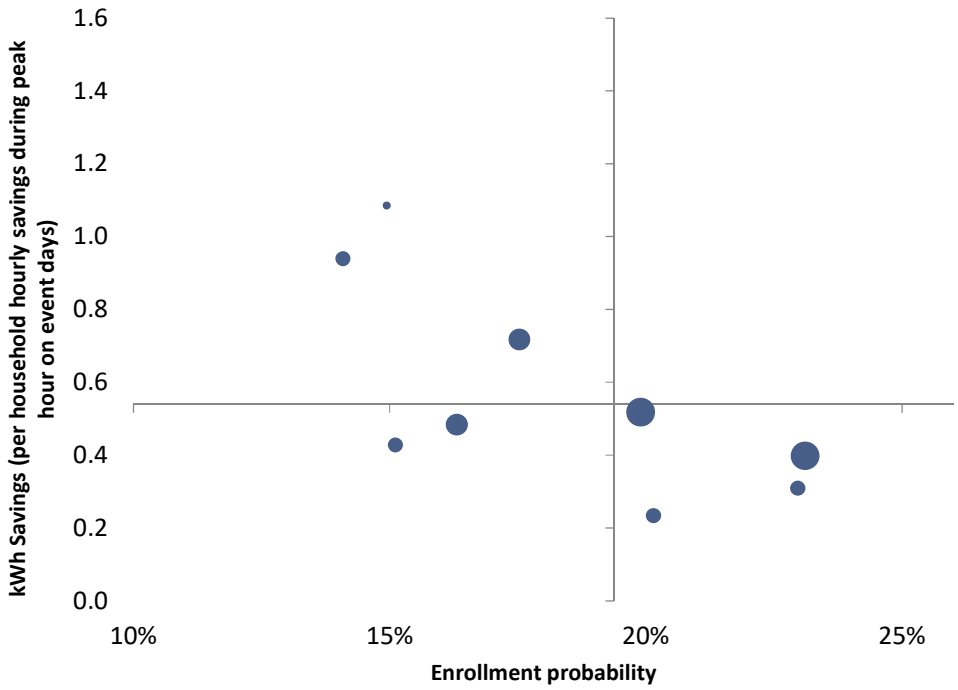


Set More Reasonable and Achievable Enrollment and Response Goals



Do Structural Winners Provide Less Load Response?



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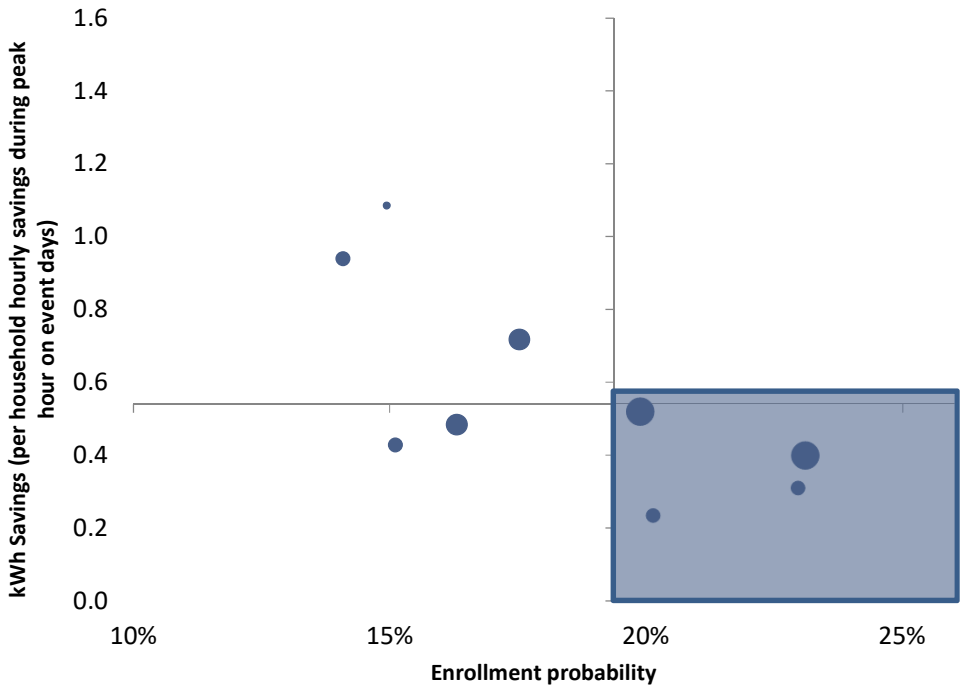

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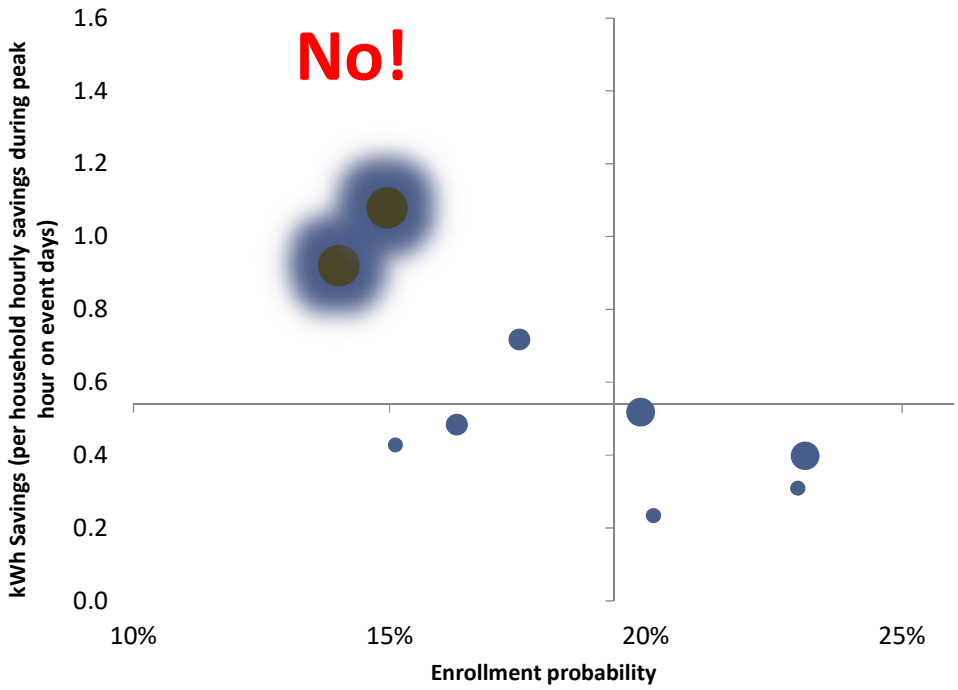
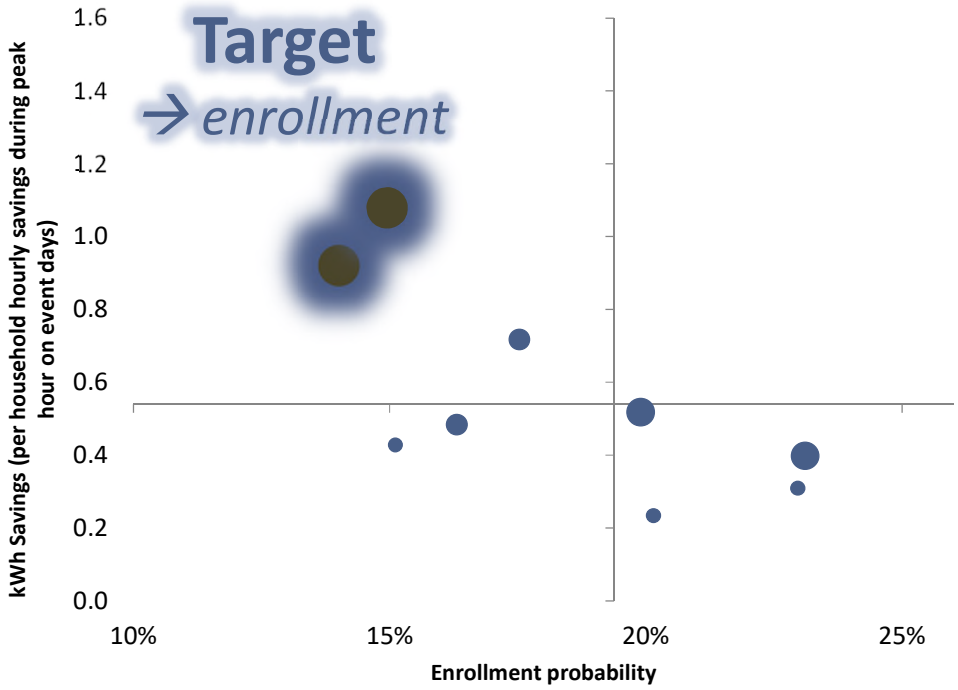
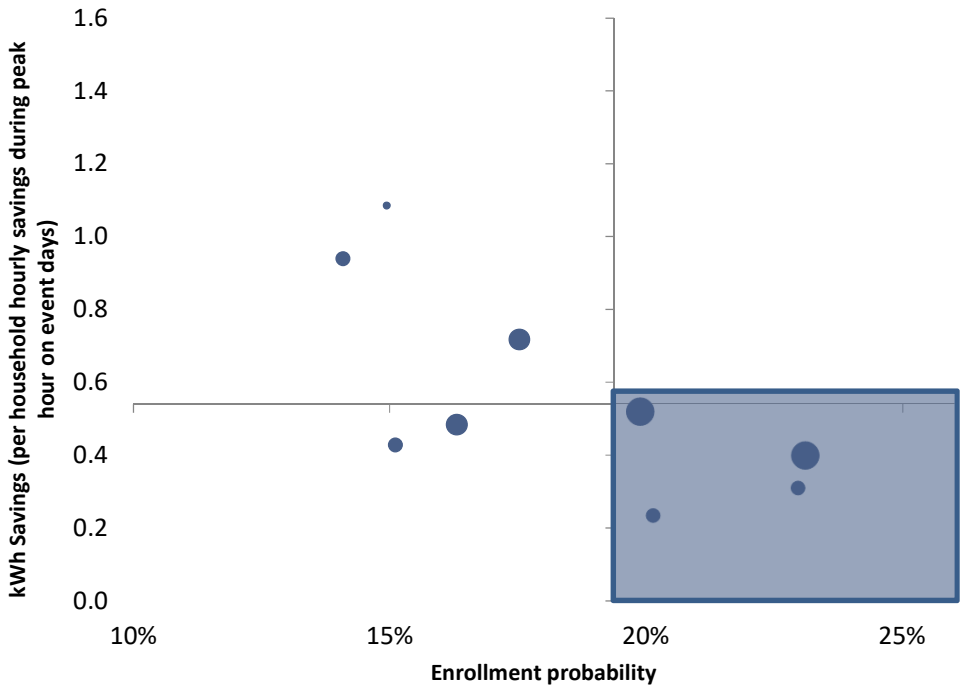


Target Market to the Most Responsive Customer Cluster Groups



Who are the Customers Most Likely to Enroll?



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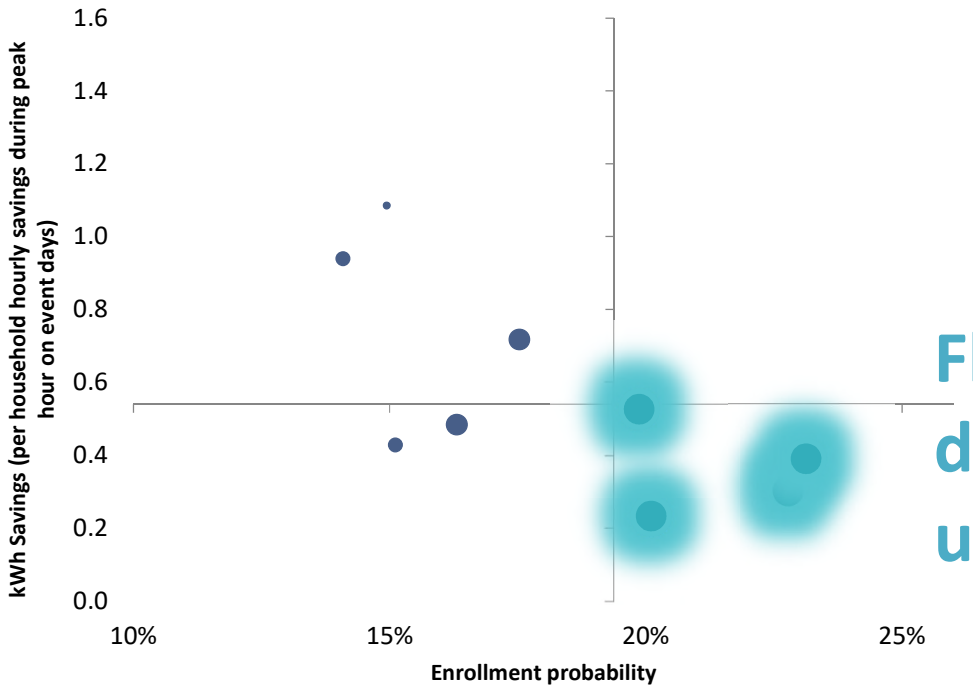
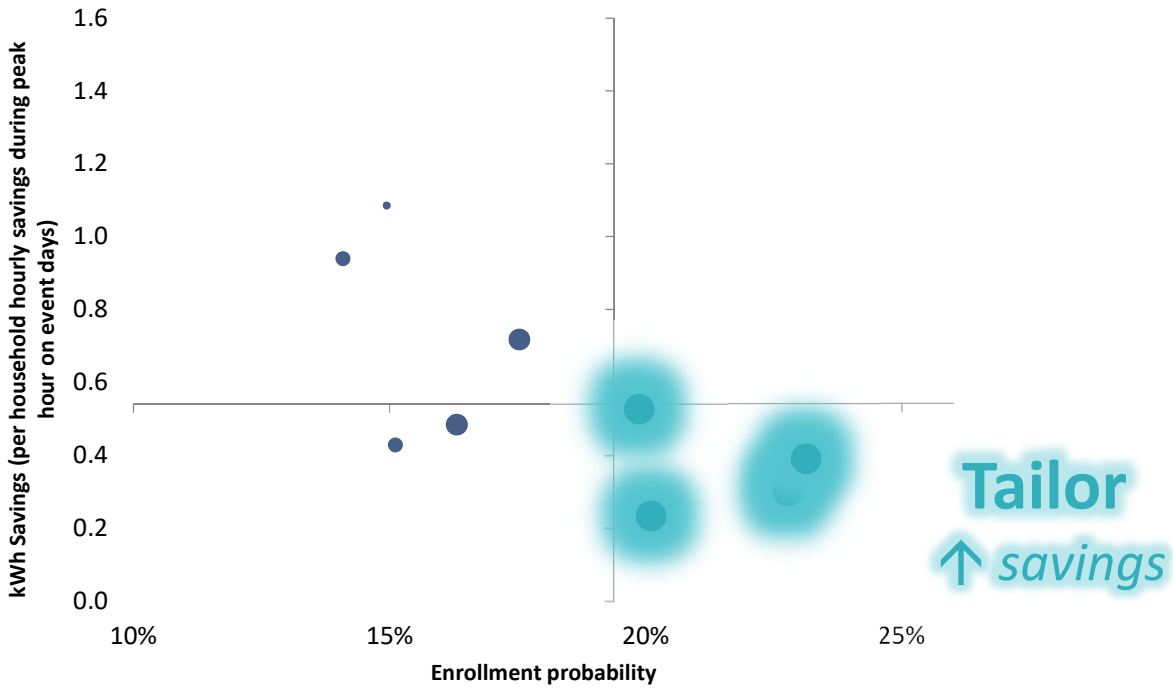


Flexible with discretionary usage

Tailor Marketing and Education Material to Increase Responsiveness



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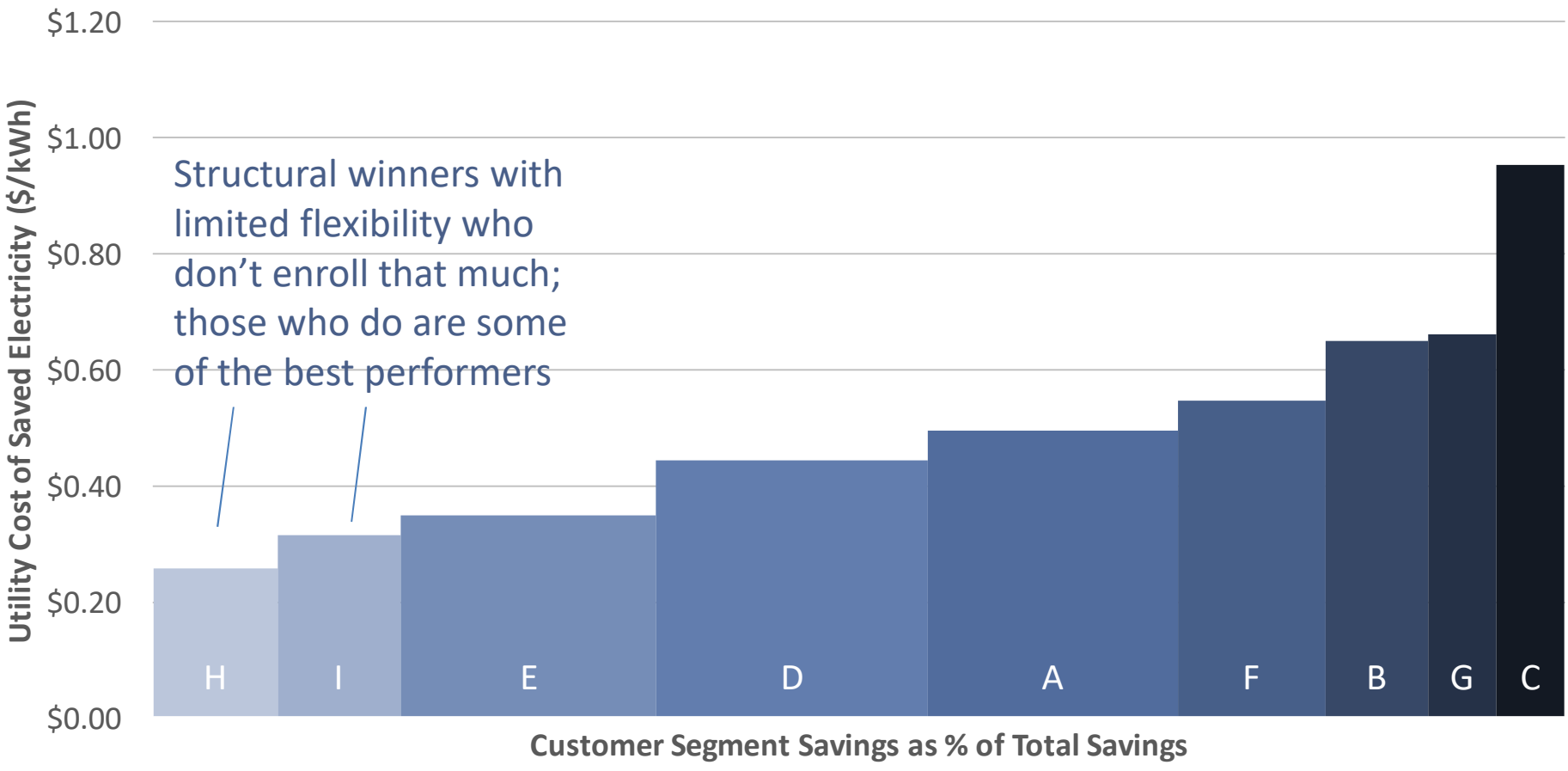

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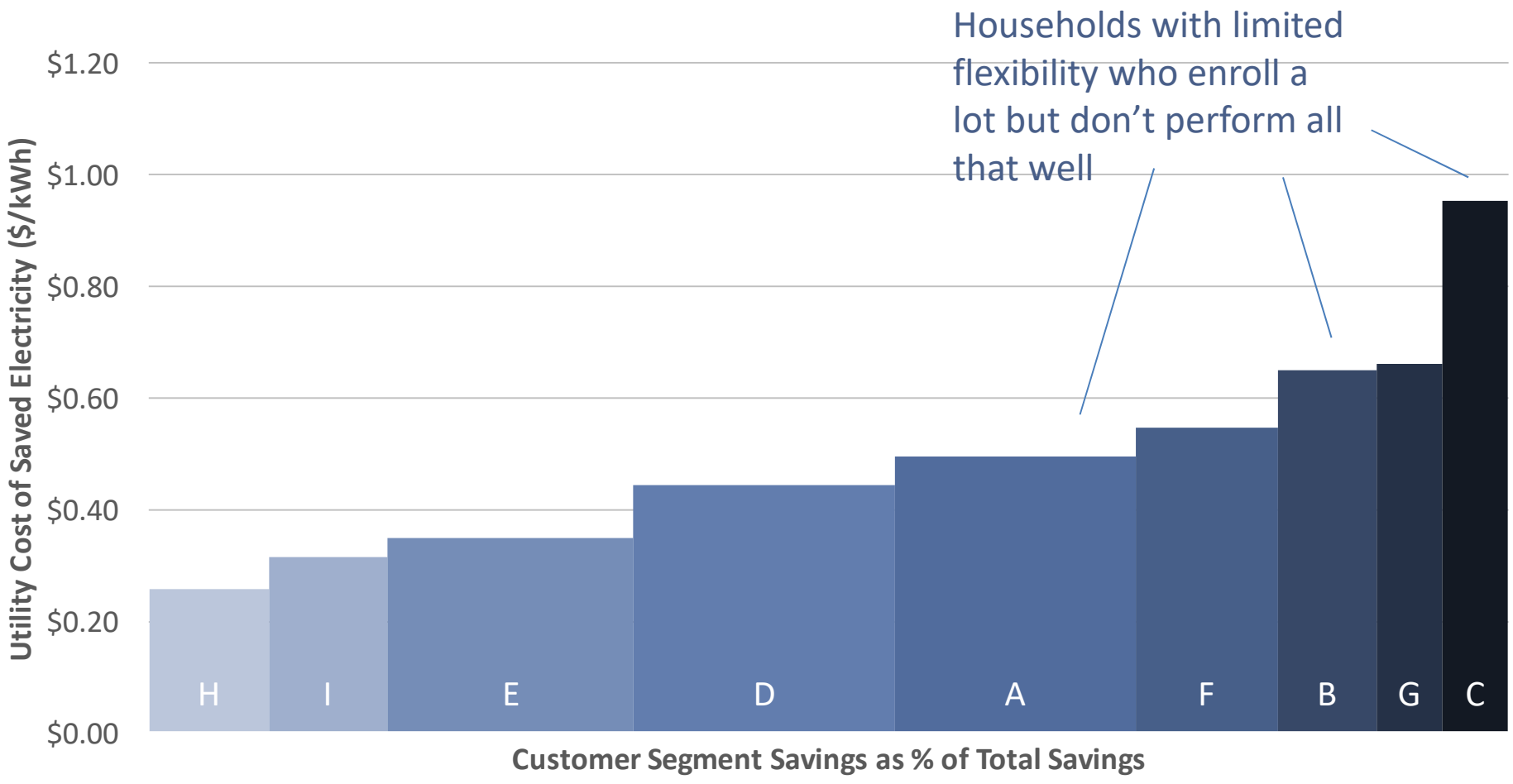

Conclusions

- By analyzing existing smart meter data, a utility can:
  - Better understand the diversity of customers in its service territory
  - Identify load shapes that may be more conducive than others for participation in some rate or program
  - Identify load shapes that may be more conducive than others for providing peak reductions (or more generally, energy demand smoothing)
  - Target customers with those load shapes for rate or program offerings, as well as education and outreach material specific to them
  - Identify load shapes that should be avoided when seeking participation in some rate or program
  - Be able to easily change program offerings as the grid expands and requires load reductions at different times (e.g., solar and wind power, EV charging, batteries, etc. might change what time the peak system load occurs)

Berkeley Lab - *Behavior Analytics*

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