UtilityAnalytics® WEEK

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UtilityAnalyticsWeek.com

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Rethinking Utility Incentives with Analytics

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@weareUAI | #UAWeek #UtilityAnalytics

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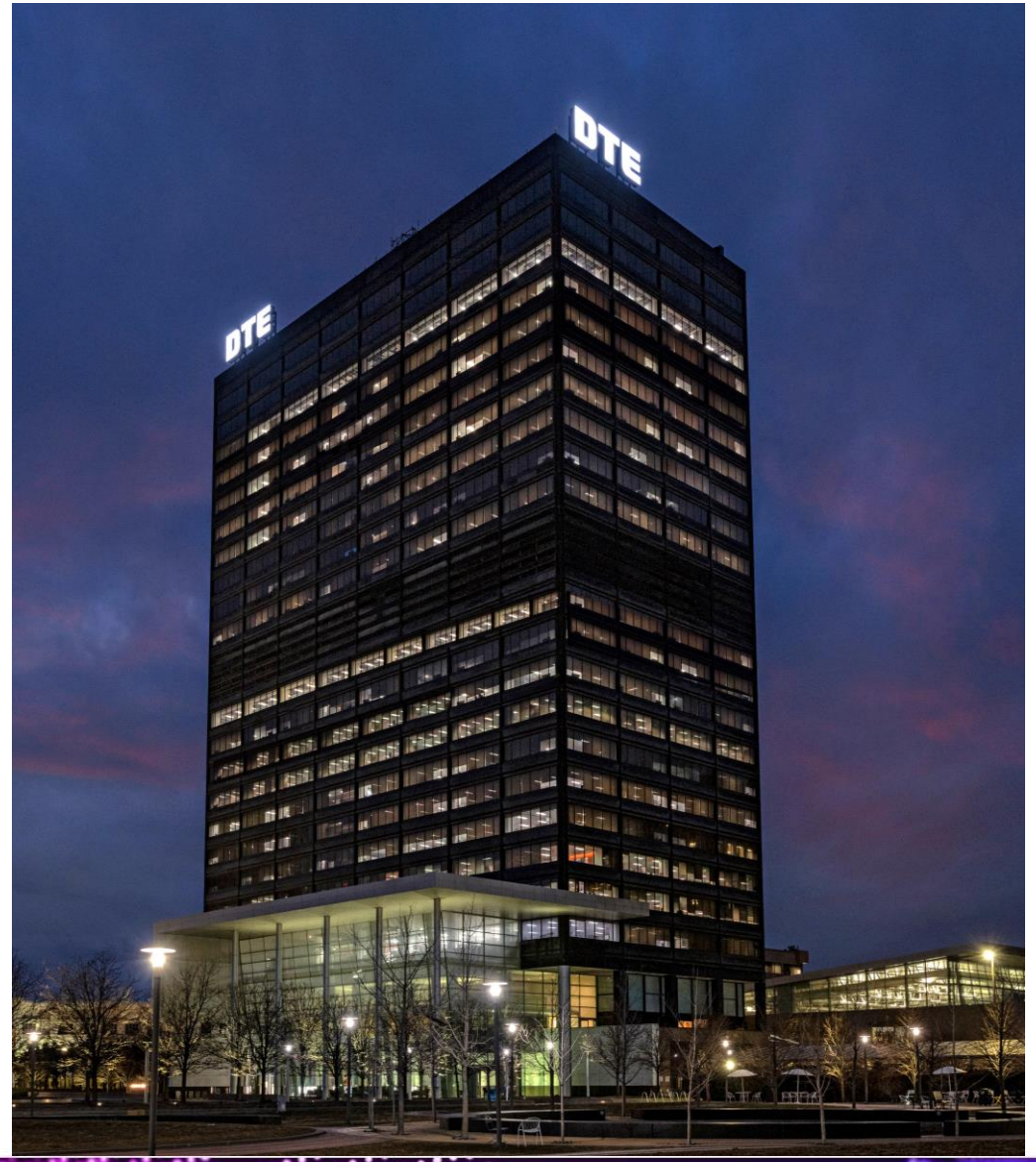


About DTE

3.6M

Residential, business and industrial customers; largest electric and natural gas utility in Michigan

150 years

Powering our communities with reliable and affordable energy

10 years

Awarded GALLUP Great Place to Work

10,680

Employees throughout 26 states (based in Detroit)

2050 Net Zero

Leader in clean energy; Net zero carbon by 2050

Top 10

Energy efficiency program*
2% annual electric savings
1% annual gas savings
$220M - 2022 EE investment
22% - Income-qualified

* ACEEE 2020 Utility Energy Efficiency Scorecard

What we will cover today

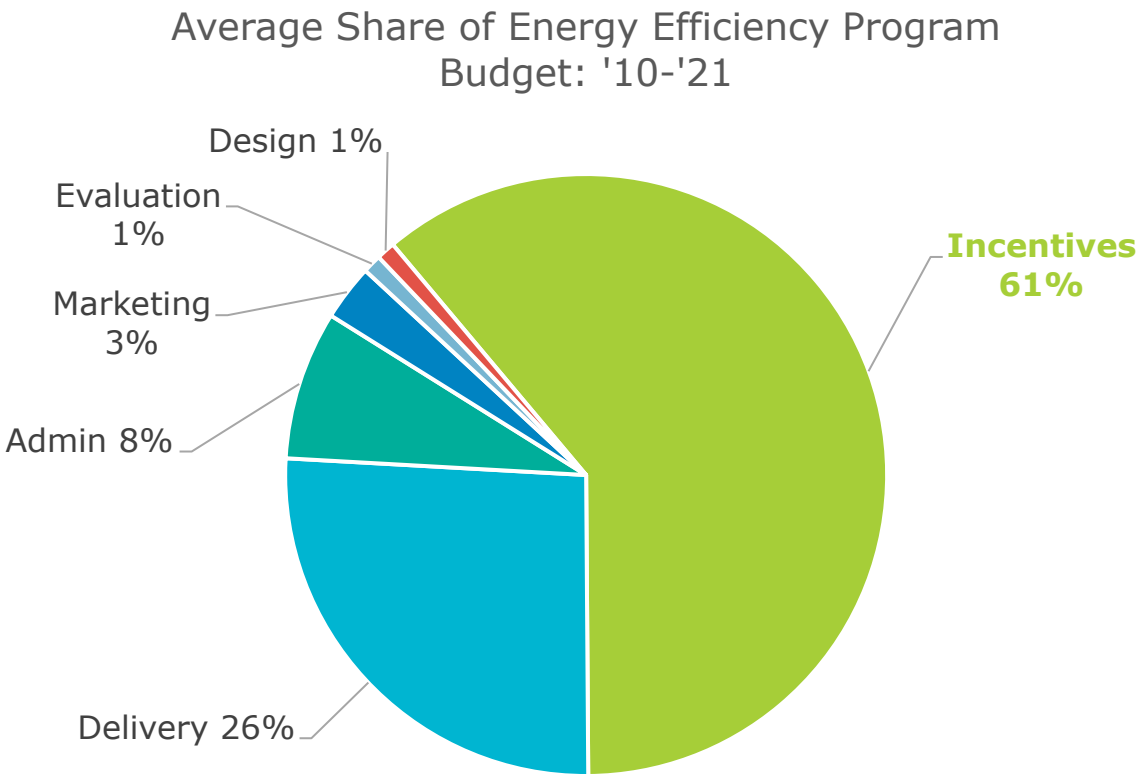
1. Why Incentive Optimization?
2. NextGen Research and Analytics
3. Findings and Insights
4. Q&A

Questions for the audience

1. How many of you run utility programs?
2. How many of you have assessed your incentive strategy in the last year?
3. How many of you offer incentive strategies other than rebates?

Why Incentive Optimization?

Why consider Incentive Optimization?



Why did DTE participate in an Incentive Optimization Study?

- Energy Efficiency landscape in Michigan
- Overall program participation
- Ways to grow the program
- Maintaining cost effectiveness

Source: E Source DSM Insights

The Challenge

Large Amounts of Incentive Spending by Utilities

Reliance on Under-examined Incentive Pricing Strategies

Exclusive Use of Financial Motivators to Encourage Product Adoption

One-sized Fits all Customers Solutions that Fail to Recognize

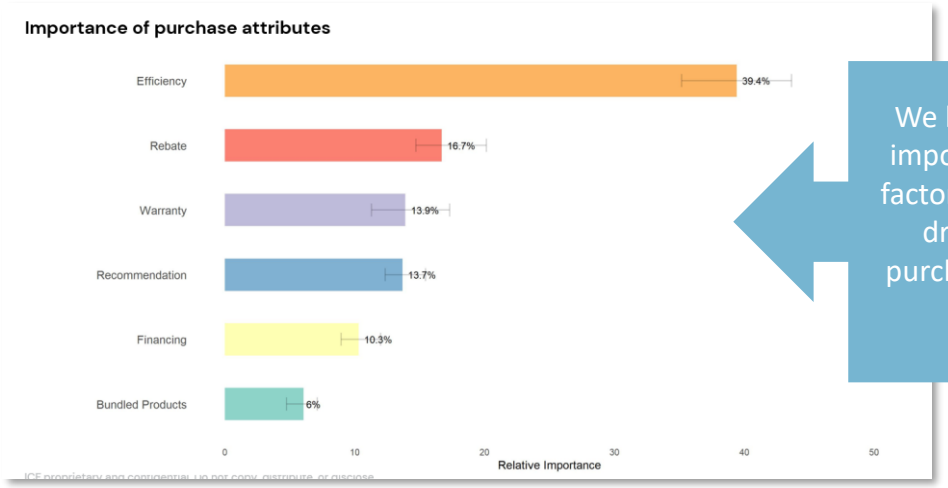
Diversity

Free Ridership

What is unique about this innovative approach?

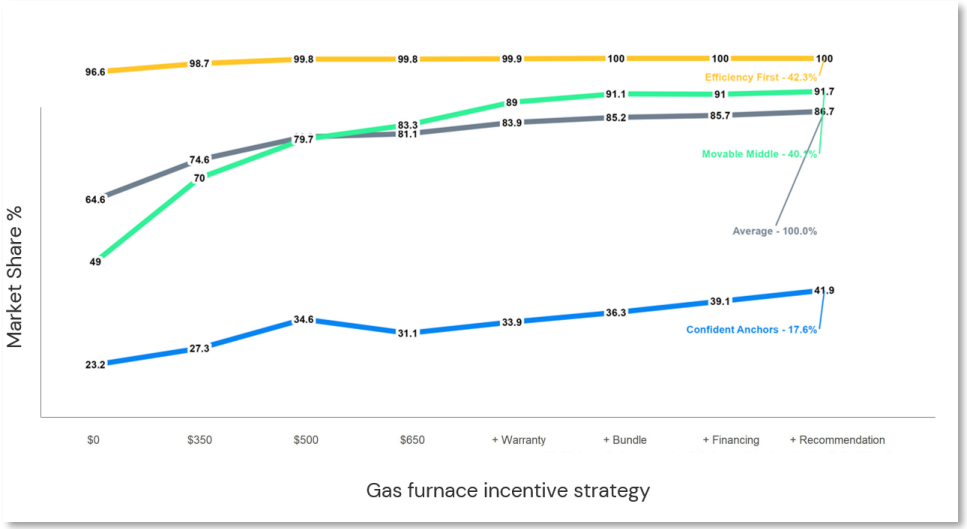
Improvements over traditional research studies

- ✓ Research goes beyond traditional research methods – uses best practices from outside the utility industry.
- ✓ Pinpoint customer values and preferences that shape specific technology choices when forced to decide between different sets of product attributes.
- ✓ Unlock technology-specific price elasticities that reveal customers' true willingness-to-pay for efficiency.
- ✓ Reveal distinct decision-making patterns associated with different customer groups.



We know important factors that drive purchases.

Different elasticities for distinct customer groups tell us what features matter most to particular types of customers



NextGen Research and Analytics

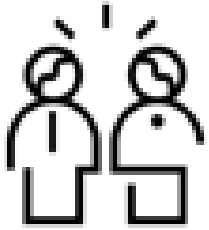
HVAC Group Study

- The NextGen group study focused on HVAC technologies and was sponsored by eight electric and gas utilities across the U.S. and Canada.
- Bringing science to the unexamined 60-70% of energy efficiency program budgets

Research Methodology

Industry research

- Stakeholder interviews
- Literature review
- Industry interviews
- Benchmarking



Customer research

- Customer interviews
- Customer experience
- Conjoint survey

Data analytics, simulation, & optimization

- Incentive scenarios and simulations tool

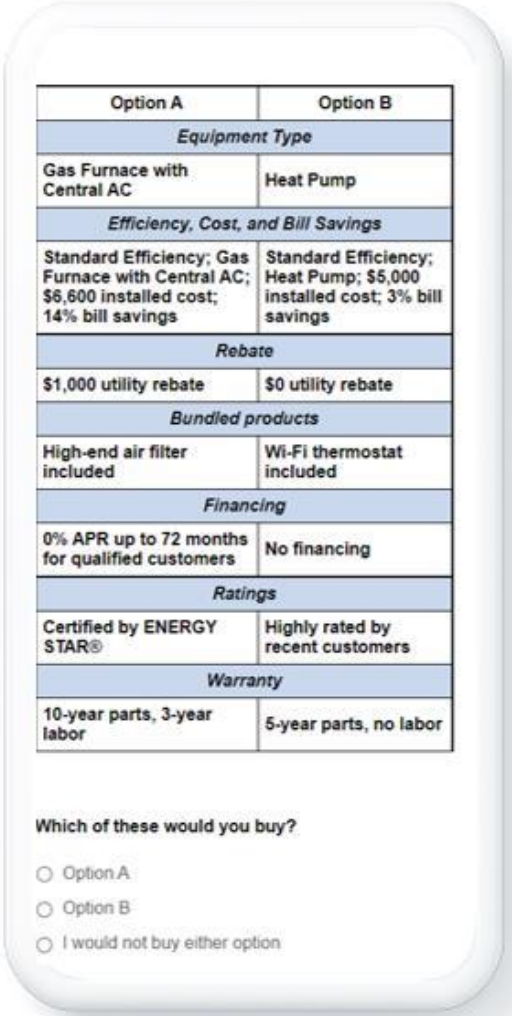
Industry research

- Initiate **stakeholder interviews** to learn more about existing programs and incentive structures.
- Conduct a **literature review** of research reports, academic papers, and case studies.
- Perform **industry interviews** with (6–12) non-utility stakeholders.
- **Benchmarking** of active programs with similar designs and incentive structures.

Rebate Level Benchmark

Customer research

- Conduct **customer interviews** to understand customer purchasing experiences and uncover product preferences.
- Leverage interview insights to build a customer journey map and to design a **conjoint and customer experience** survey.
- Field **conjoint survey** to study how customers react when asked to choose between a series of product options with unique product attributes.



Option A	Option B
Equipment Type	
Gas Furnace with Central AC	Heat Pump
Efficiency, Cost, and Bill Savings	
Standard Efficiency; Gas Furnace with Central AC; $6,600 installed cost; 14% bill savings	Standard Efficiency; Heat Pump; $5,000 installed cost; 3% bill savings
Rebate	
$1,000 utility rebate	$0 utility rebate
Bundled products	
High-end air filter included	Wi-Fi thermostat included
Financing	
0% APR up to 72 months for qualified customers	No financing
Ratings	
Certified by ENERGY STAR®	Highly rated by recent customers
Warranty	
10-year parts, 3-year labor	5-year parts, no labor

Which of these would you buy?

- Option A
- Option B
- I would not buy either option

Research tasks by the numbers

115

Academic, industry, & utility studies reviewed

25

Industry and utility stakeholders interviewed

44

Utility HVAC programs benchmarked, including 230 equipment incentives

44

Promotions & financing offers benchmarked from distributors, manufacturers, & dealers

25

Utility customers interviewed

15,000

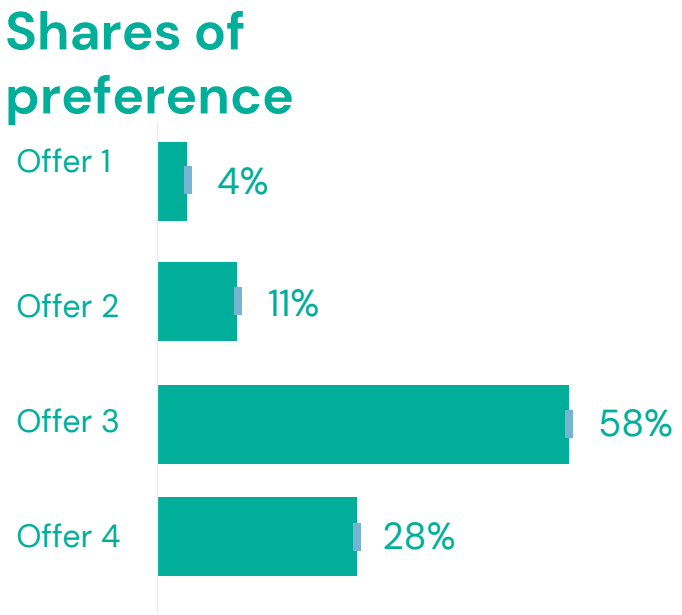
Customers responded to conjoint survey

Data analytics, simulation, & optimization

- Analyze results of the conjoint survey to assess the **impact of rebates and other attributes** on product adoption.
- Develop **incentive scenarios and simulations** to determine the share of respondents willing to adopt each product for a given incentive mix.
- Vary incentive and participation attributes to recommend **optimized program designs** for each sponsor to meet goals.

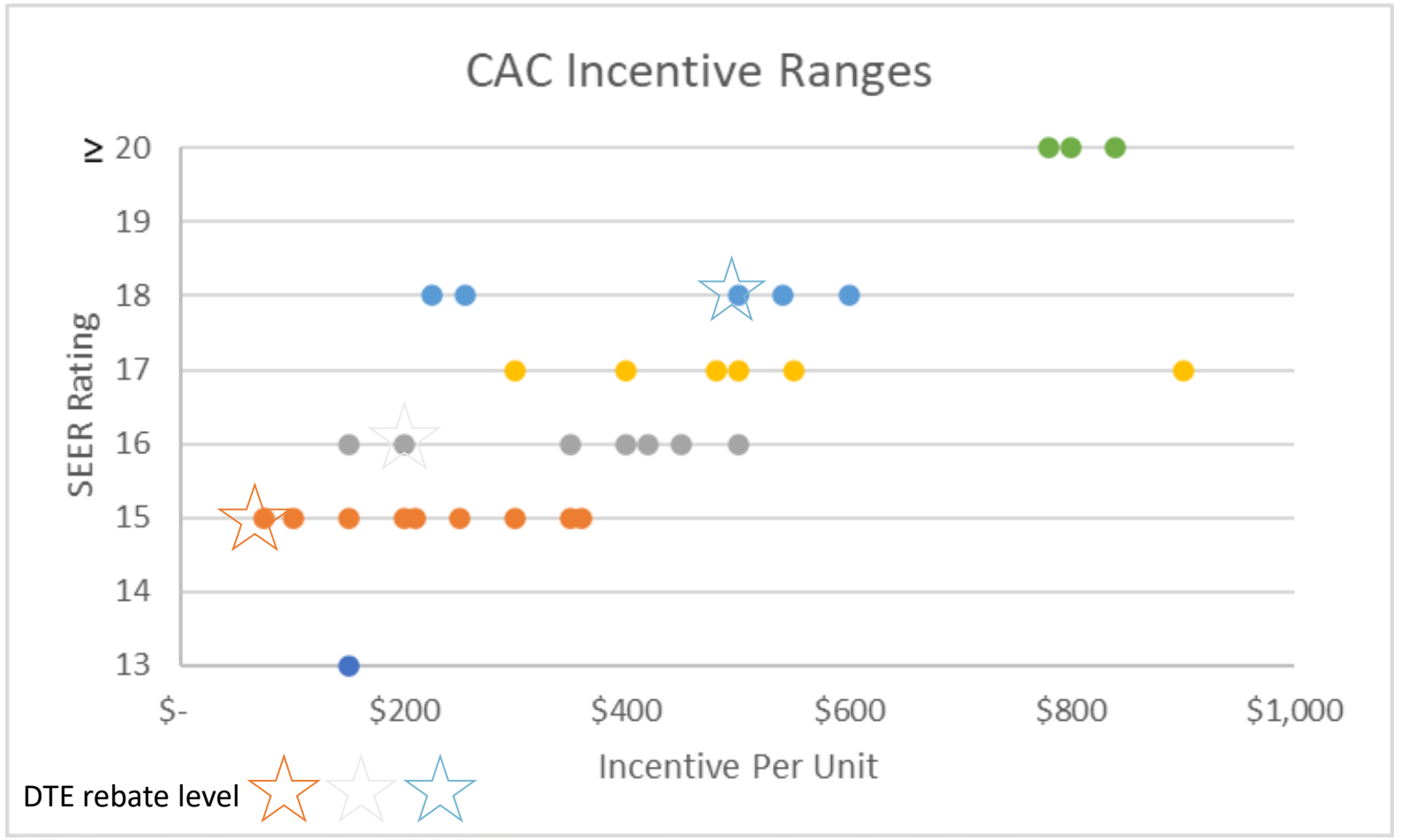
Data analytics, simulation & optimization

Outputs:	Segmentation: None	
Product name	Shares of preference	Standard error
Offer 1	3.68%	0.07%
Offer 2	10.95%	0.09%
Offer 3	57.59%	0.49%
Offer 4	27.77%	0.42%

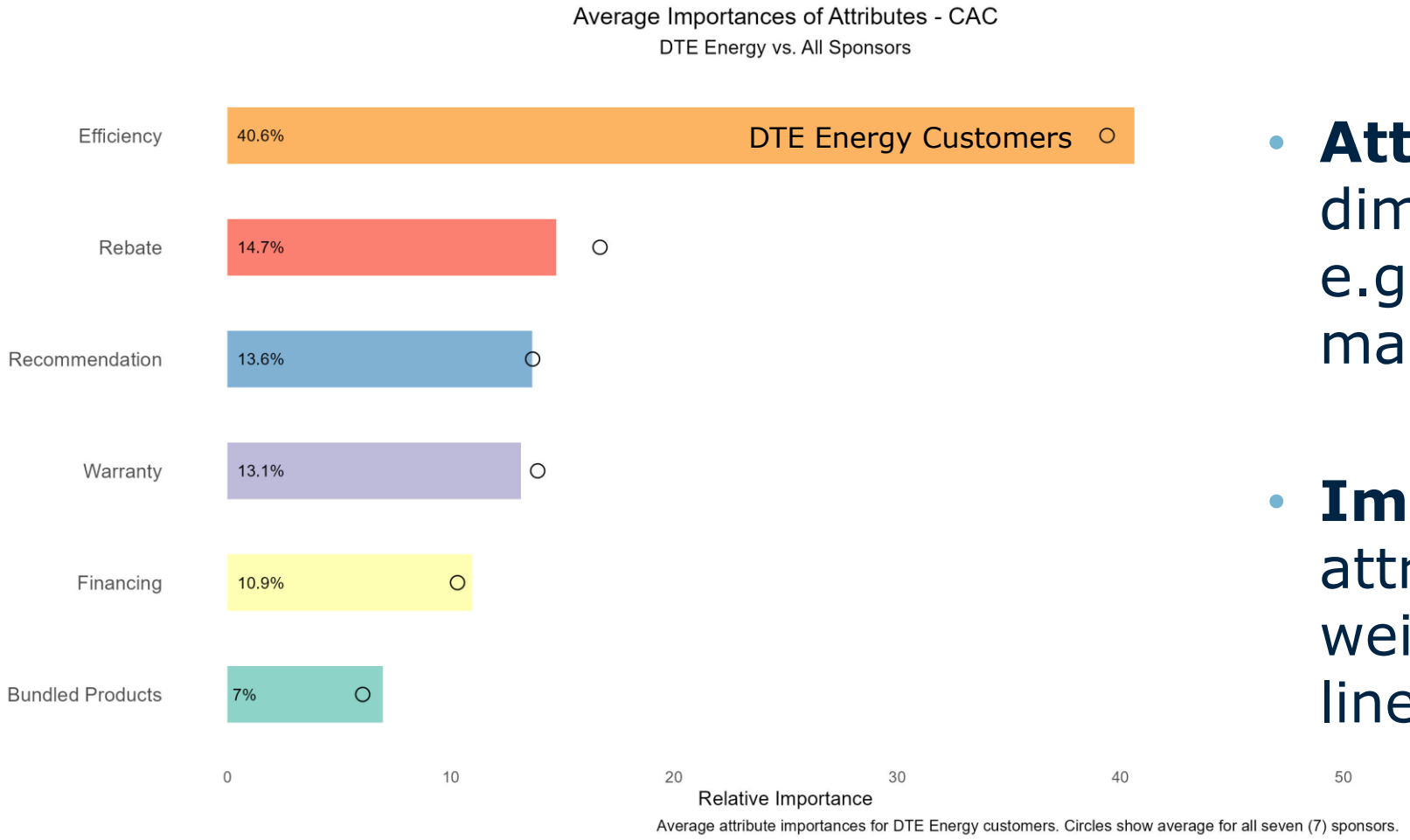


Findings and Insights

Incentives benchmarking for a 3-ton residential split AC system

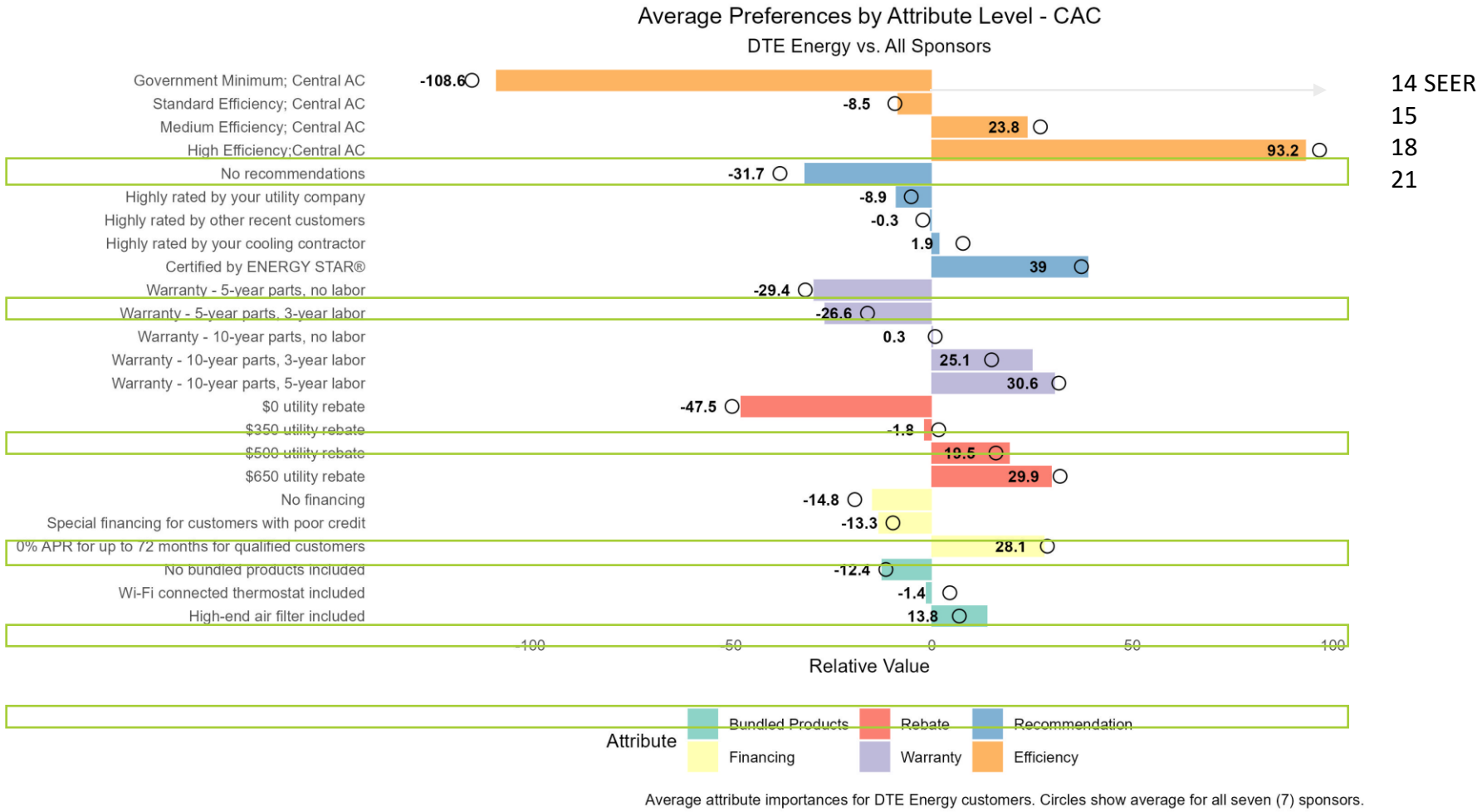


Importance of attributes for CAC



- **Attribute:** General dimension of a product, e.g. “Rebate”, contains many levels
- **Importance Score:** For attributes only, Relative weight, 0-100%, Not linearly scalable

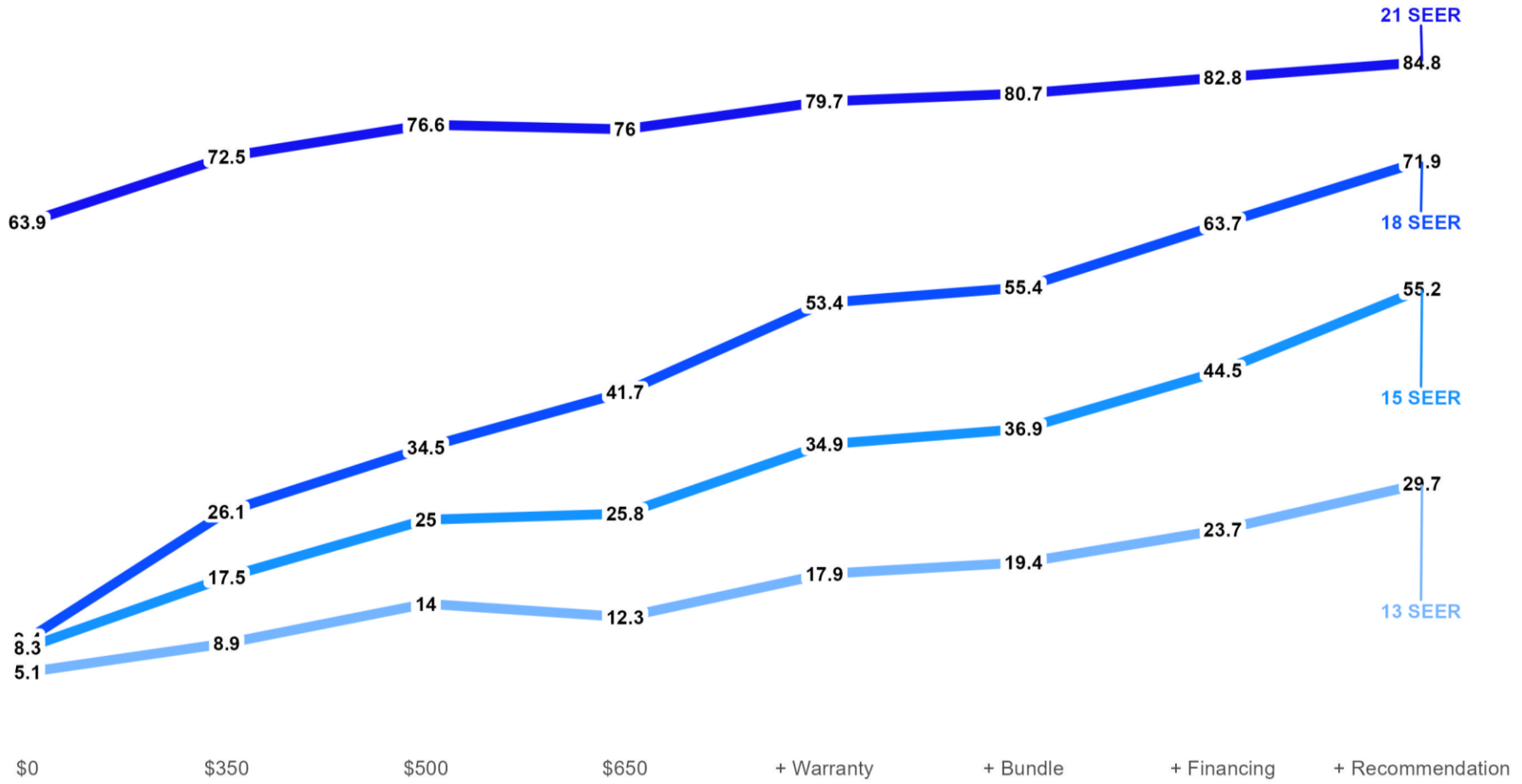
Rank order preference of levels for CAC



14 SEER
15
18
21

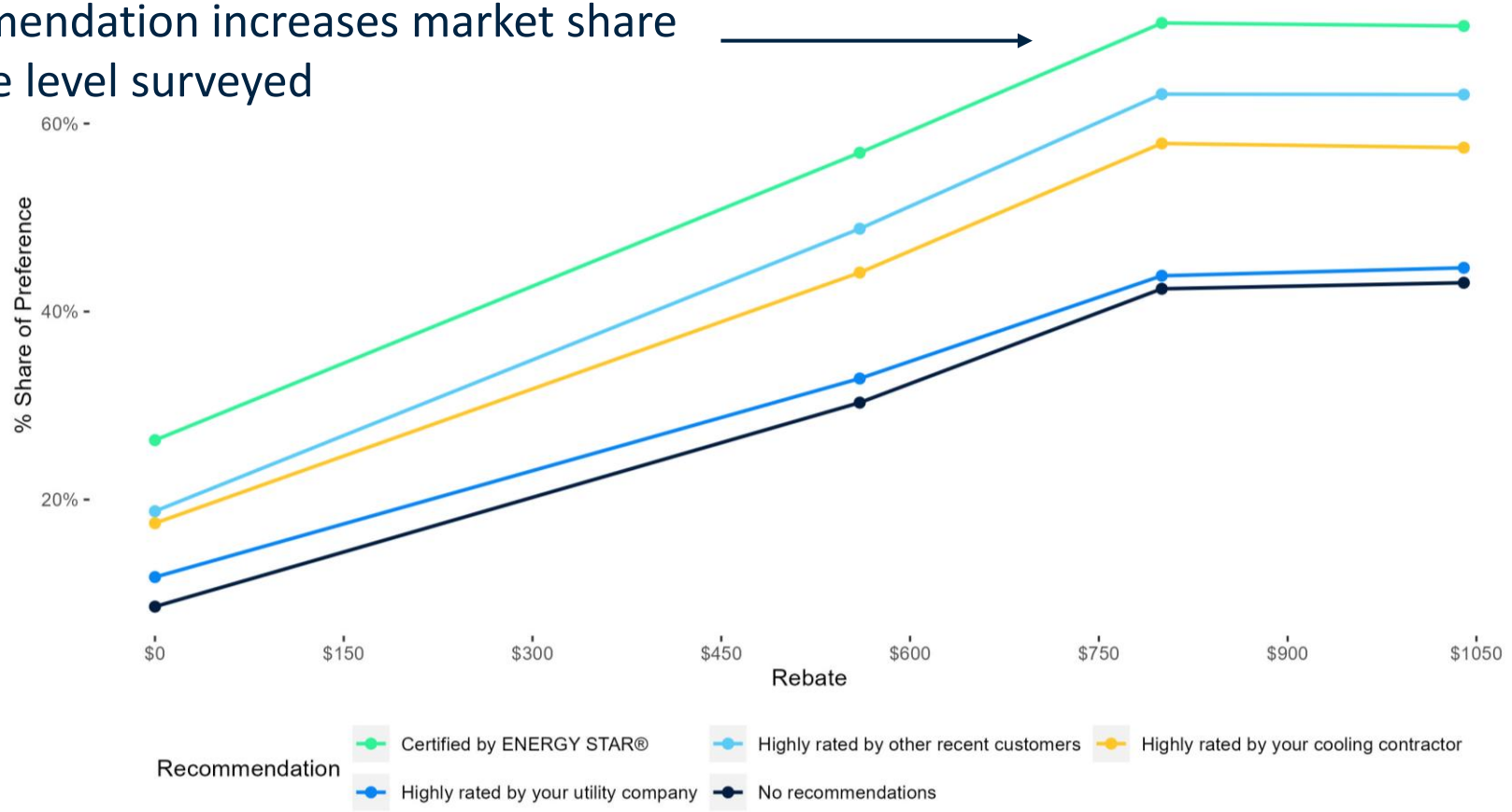
Average attribute importances for DTE Energy customers. Circles show average for all seven (7) sponsors.

Elasticity trends by efficiency level: CAC

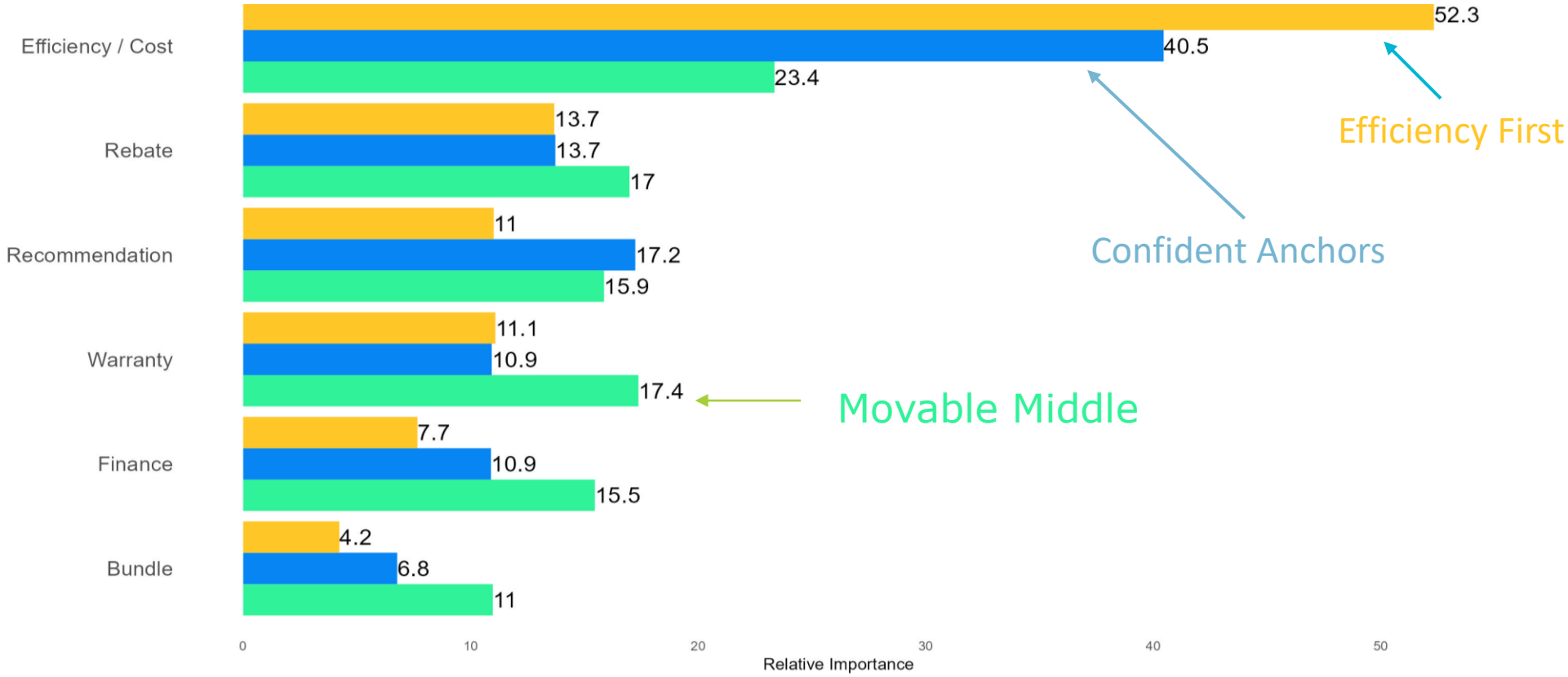


Elasticities by product feature, including impact of ENERGY STAR®

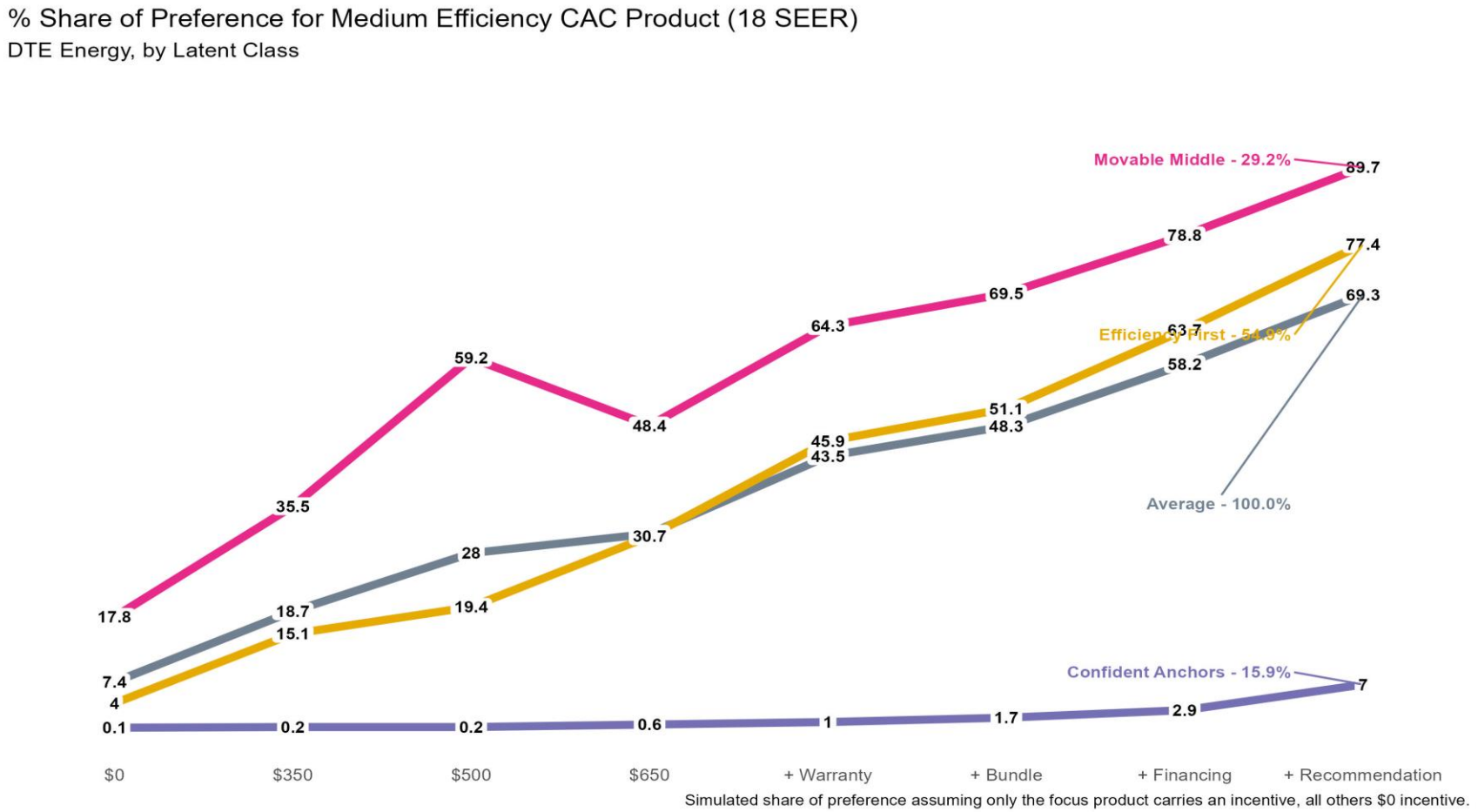
ENERGYSTAR® recommendation increases market share at every cash incentive level surveyed



What matters to different customer groups: Central A/C



Elasticity trends by latent class – CAC Medium Efficiency



Simulation tool tailored for customer elasticity curves to explore combinations of incentive offers

Product Simulator | Sponsor Products

Central Air Conditioners | Heat Pumps/ Combined Systems | Gas Furnace

User Inputs:

Step 1: Input total annual units sold through program

Annual Units:	30,000

* Total annual units will be splitted between products based on simulated shares of preference

Step 2: Select products and attributes

Offer Name [1]	Include	Efficiency and Cost [3]	Rebate	Bundled Products	Financing	Recommendation	Warranty
Offer 1 (EDITABLE)	Yes	Medium Efficiency (18 SEER); $4,600 installed cost; 28% bill savings	$500 utility rebate	No bundled products included	Not Included	No recommendations	Not Included
Offer 2	Yes	Medium Efficiency (18 SEER); $4,600 installed cost; 28% bill savings	$650 utility rebate	No bundled products included	Not Included	No recommendations	Not Included
Offer 3	Yes	Medium Efficiency (18 SEER); $4,600 installed cost; 28% bill savings	$500 utility rebate	No bundled products included	0% APR for up to 72 months for qualified customers	No recommendations	Not Included
Offer 4	Yes	Medium Efficiency (18 SEER); $4,600 installed cost; 28% bill savings	$650 utility rebate	No bundled products included	Not Included	No recommendations	Warranty - 10-year parts, 3-year labor
Do Not Buy [2]	Yes						

1. Offer names are editable
2. If "Do Not Buy" is selected as "Yes", that would mean that customers will have option to not to purchase the product.
3. See glossary for definitions (scroll to the right of the page)

Step 3 (optional): Select a customer segment of interest

Segmentation Variable:	None
Segment to Include:	None

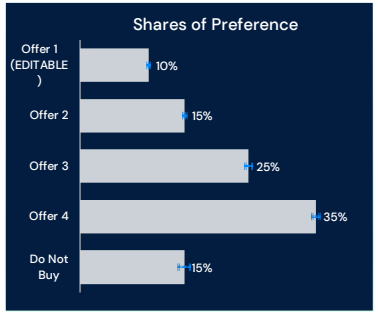
Legend:

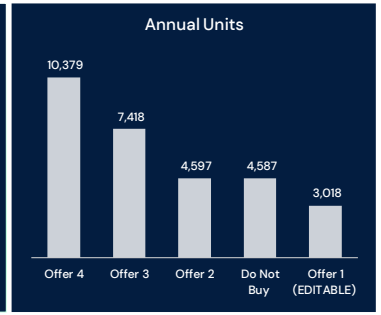
Type-In Input
Dropdown Selection
Invalid Input

Outputs:

Segmentation: None

Product Name	Shares of Preference	Standard Error	Annual Units
Offer 1 (EDITABLE)	10.06%	0.15%	3,018
Offer 2	15.32%	0.23%	4,597
Offer 3	24.73%	0.48%	7,418
Offer 4	34.60%	0.50%	10,379
Do Not Buy	15.29%	0.83%	4,587





Scenario Comparison

	Scenario #1 Traditional Budget Minimization	Scenario #2 Budget Minimization with Parts Warranty	Scenario #3 Budget Minimization with Full Warranty	Scenario #4 Traditional Rebate - Focused on Energy Savings Strategy
Total Program Cost Reduction Opportunity	$414,960	$695,560	$586,000	N/A
Net Program Incentive Budget Reduction Opportunity	10%	17%	40%	N/A
Program Savings Opportunities	N/A	N/A	N/A	• MWh ~ 3% • MW ~ 7% • Therm ~ 5%

Application of the Findings

Application of the Findings

DTE leveraged the NextGen findings to implement a pilot program.

Pilot program is designed to test an extended labor warranty and impact of EnergyStar ratings.

Q&A / Discussion

THANK YOU

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