

## What analysis can be done with high-resolution product data?

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### Summary

[see also the accompanying slides]

- Many types of analysis are made possible by high-resolution data pulled from retailer websites, certification databases, and other online sources. For example:
  - Measure changes over time in the energy use of a given end-use product in a given market
  - Derive product price-efficiency relationships
  - Calculate average lifecycle cost (LCC) for a given product class in real time
  - Identify the LCC-minimizing annual energy consumption (AEC) value for a given choice of economic payback period (PBP)
  - Monitor markets to determine to what extent consumer LCC is being minimized
- If LCC is minimized,

$$AEC = \frac{\varepsilon P_A}{PBP \cdot P_E}$$

Where

$\varepsilon$  = elasticity of price with respect to efficiency

$P_A$  = appliance price

$P_E$  = electricity price

These three parameters can be measured (or forecast) empirically. PBP is a policy parameter that reflects a societal decision about how quickly investments in energy efficiency should pay back.

- High-resolution data (time and number of products) has advantages and disadvantages [see slide 6] and requires some fairly sophisticated mathematical transformations and statistical analyses.
- Remaining challenges:
  - Automating data collection and quality control to make large volumes of data cheaper and easier to get
  - Developing improved statistical techniques for using data to calculate quantities of interest with confidence
  - Educating the international policy community on how to use analysis products and having the discussion on policy implications
  - Providing expanded access to analysis products of interest