DNV·GL

ENERGY

Commission-Led Workshop on Normalized Metered Energy Consumption

Operationalizing Directives in Assembly Bill 802 and Assembly Bill 793

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Econometrics Methods

- Econometrics are central to all the different entries in this panel.
  - All the methods in Granderson's Applied Energy article
  - All the RCT methods
  - Billing analysis – monthly, daily, hourly

- All approaches characterize consumption patterns, with the available consumption and secondary data, with the intent of isolating program effects.

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Econometric Challenges

- Isolate program-related consumption change from other, non-program change.

- **This is where we get HOPPs "Normalized" Consumption**
- Accounts for key drivers affecting energy use, including:
  - a) weather
  - b) production volume/activity level
  - c) occupancy or schedule
  - d) non-routine adjustments
  - e) And any other baseline adjustments

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How well can we Normalize?

- RCT/ RED Experimental design (non-econometric solution)
  - Provides closest we can get to the counterfactual
  - Isolates program effect

- Also provides a great context within which to understand what non-experimental approaches need to accomplish.

- A WHITE PAPER: Residential Portfolio Impacts from Whole-Premise Metering: Thought experiments in Random Assignment and Top-Down Modeling
  - http://calmac.org/publications/Res_Portfolio_Impacts_White_Paper_%28Final%29_DNVGL_1-22-2016.pdf

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How well can we Normalize?

- Quasi-experimental Approaches
  - Use a combination of data and model specification to approximate the counterfactual
    - Weather, but what else, consistently?
    - Commercial context- production

- Is it good enough? Differs by program, population.

- Can we account for changes in occupancy, square-footage, schedule, etc?
  - Comparison group?

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Takeaways

- Econometrics are not magic -- Cannot isolate program effects without the data and model specification to characterize key aspects of consumption
  - There will be bias and results will vary with
    - Complexity of non-program change.
    - Complexity of consumption patterns
    - Availability of valid control/comparison groups

- Compare approaches in a framework like Granderson's
  - Across time periods
  - Without actual program effects (predicted vs actuals)
  - More time periods, climate zones the better.

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