Residential Behavior

CRAC Meeting
December 17, 2014

Northwest **Power** and **Conservation** Council

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What Is this Program?

- **For residential, we are talking about Home Energy Report (HER) programs (e.g. Opower, C3 Energy, Simple Energy, Aclara)**
- **HER programs need to be delivered with the evaluation in mind**
  - Involve participant group & control group
  - Need large number of participants to garner statistically significant estimates of savings

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Questions

- Are these programs' savings considered conservation under the Act?
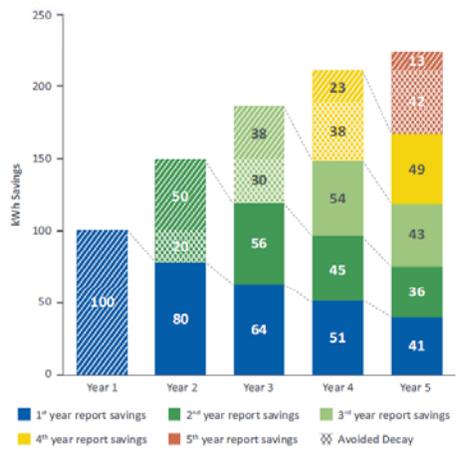- What are the savings?
- Can they be offered by smaller utilities?

Is It Conservation?

- Does this measure result in a reduction of "utils"? That is, are savings due to customers reducing comfort or utility of their home?
  - Likely in part yes, but not entirely
  - Cadmus white paper demonstrates reduction in savings after program termination, but not to zero
- Persistence of savings implies there is some conservation

What are the Savings?

Figure 4. Illustration of Avoided Decay and Incremental Savings

- From Cadmus white paper
- Numbers are for illustrative purposes only, but represent general trends
- Savings around 1.5-3% of load

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What about Overlap with Widgets?

- The HER evaluation accounts for savings from participating in other programs (known)
- But, don't know if HER participants are investing in widgets and not participating in other programs
- Doesn't account for up/mid-stream programs
- There is a risk of double counting some portion of savings

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What About Small Utilities?

- Savings are small, evaluated from randomized control trials, so need large sample to estimate
- Depending on weather and demographic differences, need at *least* 10-15,000 participants in both treatment and control group
- This number would increase with larger diversity in customer base
- Would likely require regional coordination (e.g. a BPA-sponsored program)

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Proposed Approach

- Assume a 5-year program cycle, with 3 years of engagement, 2-years "off"
- Use the average savings over the 5-year cycle, three-year savings at 1.5% of load, assuming 20% per year decay post engagement
- Use cost based on 3-years of investment
- Include narrative about regional coordination needed to achieve potential

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Applicability

- **Approx 50% of population can be participants (need control group)**
- **Max achievability 85%**
- **Costs need to be re-invested every 5 years to maintain savings**
- **Costs have an economy of scale (more participants, less cost); assume 100,000 person program**

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