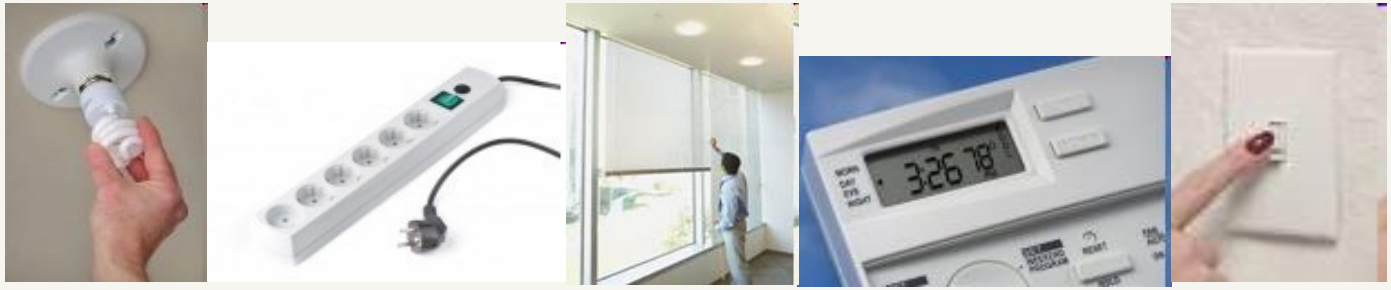
# Identifying and Selecting Behavioral Targets:
## *Resources and methodologies*



Karen Ehrhardt-Martinez, Ph.D.

# Learning Goals

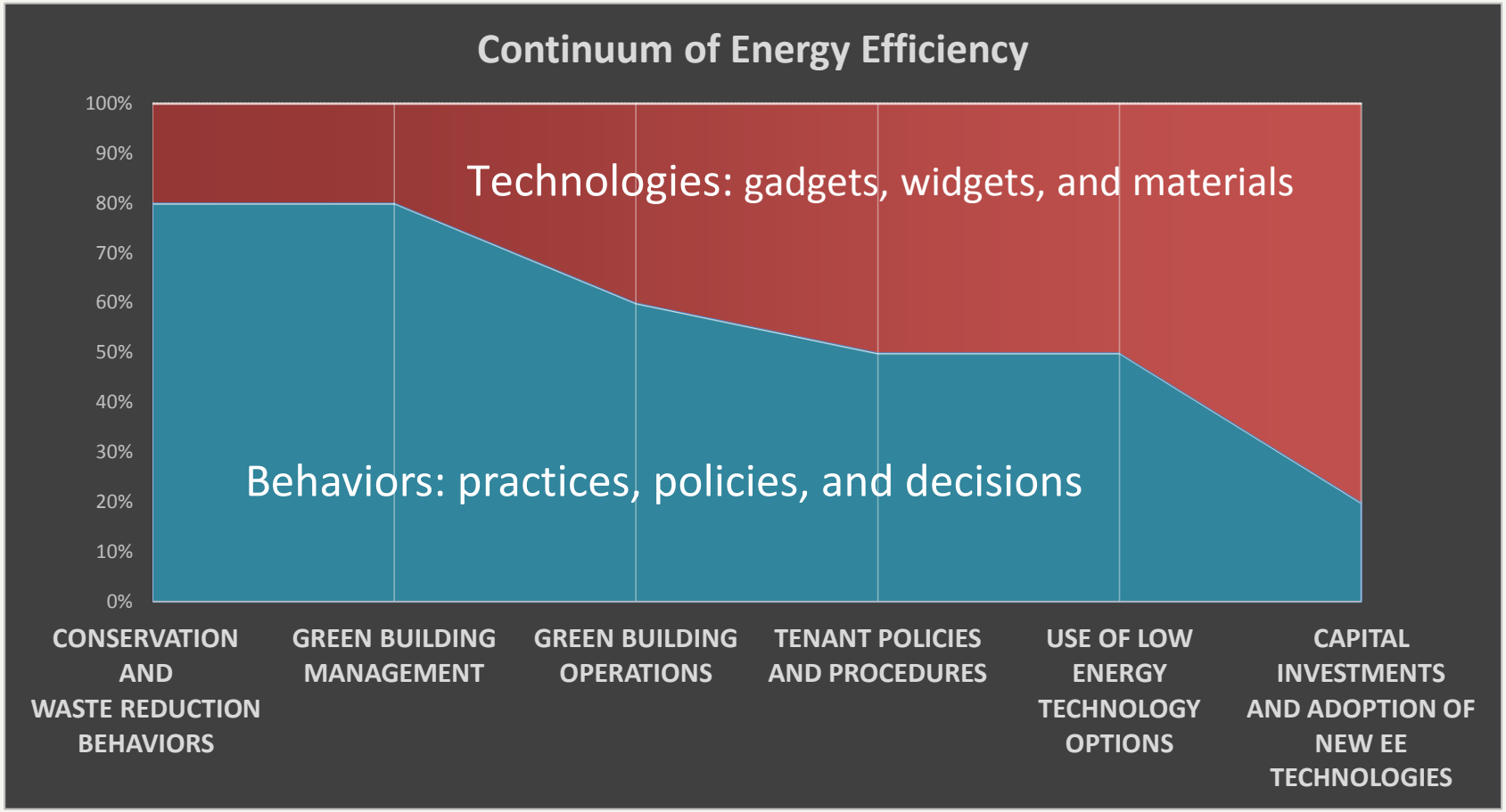
- A clear understanding of the term "behavior"
- Skills for identifying behavioral targets.
- Data needs and data sources.
- Considerations for determining which targeting approach to take.

# Behavioral Targeting – The Agenda

1. What do we mean by “Behavior”?
2. Program goals & behavioral targeting
3. A story of three behavioral programs

4. Data needs
5. Information sources
6. Choosing the “best” approach for targeting

# What do we mean by “behavior”?



# Program Goals & Behavioral Targeting

## Program Goals and Desired Outcomes

- Maximizing energy/carbon/water savings…
- Achieving these ends cost-effectively…
- Achieving these ends in a timely way…
- Others?

## Program Strategy

Behavioral Targeting

- What needs to change?
- Who needs to act?
- What is the process?
- Etc.

# Program Goals and Behavioral Targeting

## Why do we need to target behaviors at all?

Limited Resources:

We can't do everything – we need to narrow our focus.

Maximum Impact:

Some actions are more important than others – select for those actions.

Collaboration:

We want engage and empower others – provide the short list vs. the laundry list.

# Three Behavioral Programs

# Story 1: Utility Program

**Goal**
Reduce household electricity consum
several small cities.

**Strategy**
Behavior + traditional widget-based incentive programs

**Resources**
Utility funding
Utility data on household electricity consumption and participation in utility programs

Which behaviors to target?

# Story 2: Commercial Building Demo

**Goal**
Help tenant in commercial office building reduce their electricity consumption

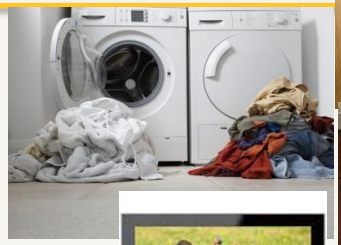
**Strategy**
Employee engagement and organizational policies/procedures

Which behaviors to target?

**Resources**

- Financial support from 2 local foundations
- Floor-level smart meter data
- Support of Office Building Tenant and Facilities Manager

# Story 3. City Sustainability Program







**Goal**
Reduce city-wide energy consumption

**Strategy**
Change behaviors in residential and commercial buildi

**Resources**
City funding (limited)
No city-wide data

Which behaviors to target?

# Your Experiences/Challenges

1
2
3
4
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11
12

# Approaches to Targeting

**What are traditional ways of targeting programs and quantifying savings opportunities?**

Who or What are the biggest energy users? (Which end-uses, technologies, buildings?)

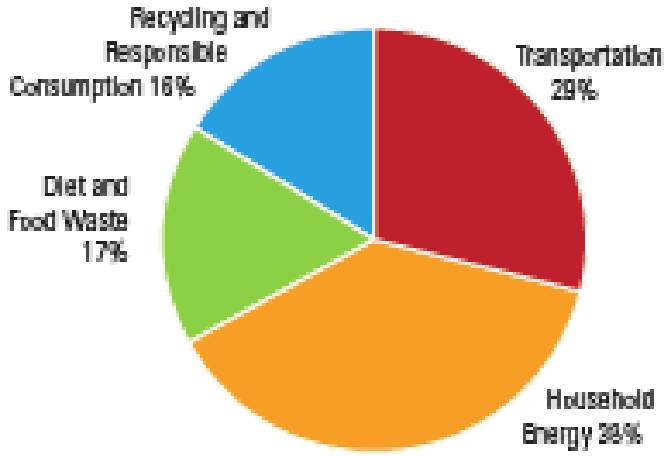
What are the potential savings if everyone did X, Y, or Z or adopted a particular technology?

# NRDC Study of Residential Emissions Reductions Opportunities

**Simple and Inexpensive Actions Could Reduce Global Warming Emissions by One Billion Tons**

**Figure 1: Where in Our Lives We Can Reduce Our Impact**

**Share of Total Reductions, by Sector**




The data in this pie chart are derived from the chart above.

Source: NRDC and Garrison Institute March 2010

# Approaches to Targeting

**What are traditional ways of targeting programs and quantifying savings opportunities?**

Who or What are the biggest energy users? (Which end-uses, technologies, buildings?)

What are the potential savings if everyone did X, Y, or Z or adopted a particular technology?

What are the ***achievable savings*** when we take into account eligibility and participation rates?

# Approaches to Targeting

**Achievable Savings =**

(Eligibility to Participate)
**x**
(Likelihood of Participation)
**x**
(Action-Specific Energy Savings)

# Targeting and Data Needs

**How can we estimate *Achievable Savings*?**

## Key Data Needs:

1. Current Energy Use Patterns
2. List of Relevant Behaviors
3. Eligibility to Take Action
4. Likelihood of Taking Action
5. Action-specific Energy Savings Estimates

…for the local context.

# Targeting and Data Needs

## Information and Data Sources

### Primary Data

1. Focus Groups
2. Observational Research
3. Surveys
4. Behavior Audits

### Secondary Data

1. Building Audits
2. Utility Data
3. RECS and CBECS
4. Behavior Wedge Assessments

# Potential Data Sources

## Primary Data: Focus Groups


Small group of people who are guided through a discussion by a trained moderator to get beyond superficial answers and uncover insights on attitudes and behavior.

| | | Pros | Cons |
|---|---|---|---|
| 1 | Focus Groups | a) Great for "getting a sense for things" – exploratory in nature.<br>b) Less expensive. | a) Small sample.<br>b) Not representative of pop. |

# Potential Data Sources

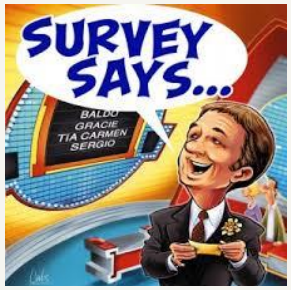
## Primary Data: Observational Research

Direct and systematic observation of phenomena in a natural setting to provide a descriptive analysis of routines, practices and interactions.

| | | Pros | Cons |
|---|---|---|---|
| 2 | Observation Research | a) Eliminates reporting biases.<br>b) Exploratory in nature.<br>c) Generally qualitative. | a) Small sample size.<br>b) Not representative.<br>c) Not highly quantitative. |

# Potential Data Sources

## Primary Data: Surveys




Gathering information about individuals thoughts, attitudes, beliefs, and/or practices by asking questions via questionnaires or interviews.

| | | Pros | Cons |
|---|---|---|---|
| 3 | Surveys | a) Multiple forms including web surveys.<br>b) Can provide representative data for a broad/diverse population.<br>c) Can provide insights into current practices, eligibility to take action, and likelihood of taking action. | a) Requires contact information for everyone in the population in order to be representative.<br>b) Somewhat expensive.<br>c) Often low response rates.<br>d) Reporting-related biases. |

# Potential Data Sources

## Primary Data: Behavior Audits

A term that I made up – that hopefully sounds convincing - to describe a multi-method approach to understanding how people use energy.

| | | Pros | Cons |
|---|---|---|---|
| 4 | Combined: Behavioral Audits | a) Provides quantitative and qualitative insights. | a) Somewhat time intensive.<br>b) More expensive. |

# What is a Behavior Audit?

**Primary Data Collection**
**Multiple Methodologies**
**Small Population**
**Provides Deep Understanding**

- Focus Groups
- Observational Research
- Interviews
- Staff Survey
- Review of Energy Data

## Research Goals

Deep understanding of:

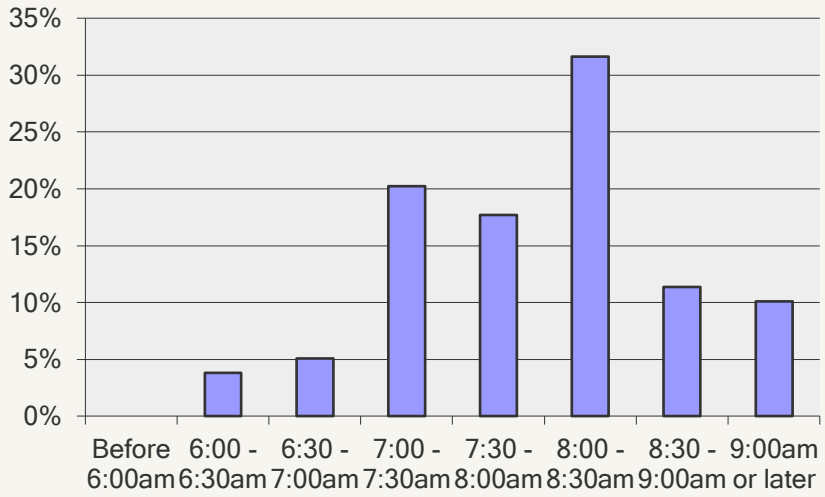
- characteristics of staff,
- work space characteristics,
- work responsibilities,
- work patterns,
- office technologies,
- current policies and practices,
- attitudes and values,
- energy consumption patterns

… to develop a tailored energy savings plan.

# Audit: Organizational Work Patterns

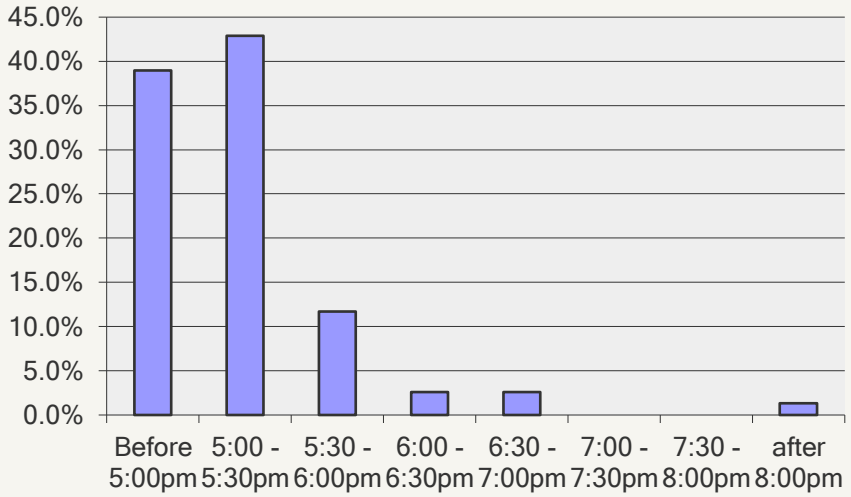
## Arrival Times

70% of staff arrive between 7 and 8:30 am.




## Departure Times

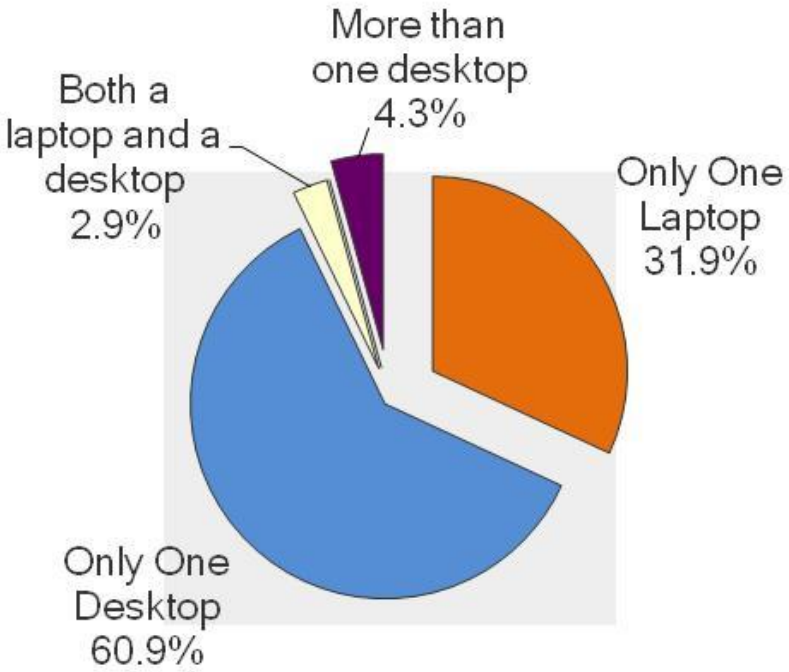
82% of staff arrive leave by 5:30 pm.



# Audity: Office Technologies

## Laptop versus Desktop Computers

1/3 of staff have laptops while 2/3 of desktop computers..

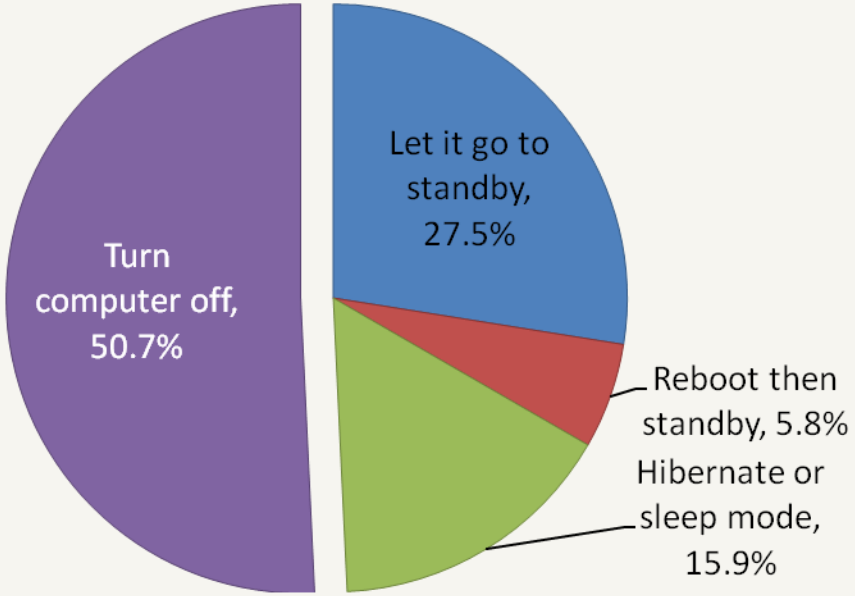


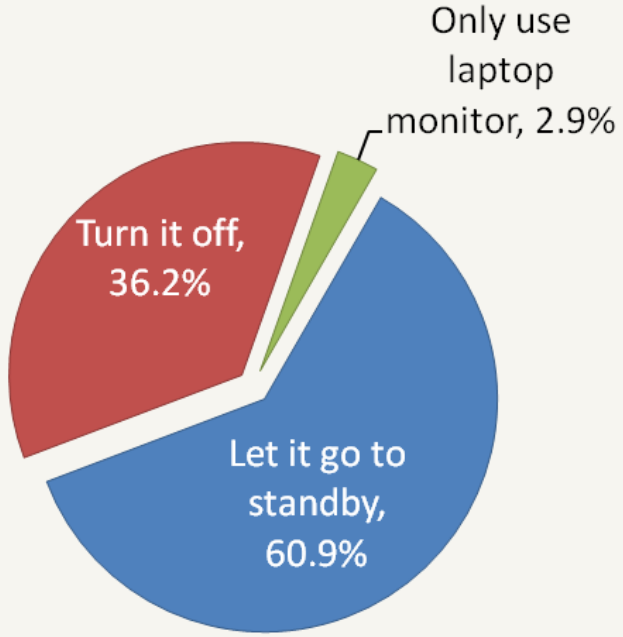

Approximately 54% of people with laptops take them home at least once per week on average

# Audit: Technology Use Patterns

## Powering Down Computers and Monitors

50% of computers are turned off.
36% of monitors are turned off.



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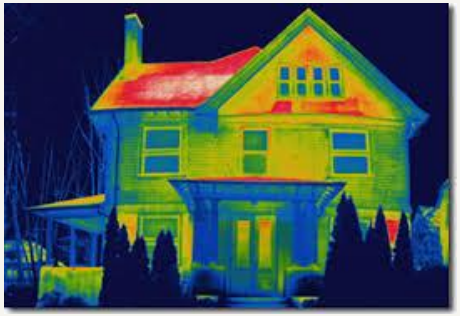
# Potential Data Sources

## Secondary: Building Energy Audits

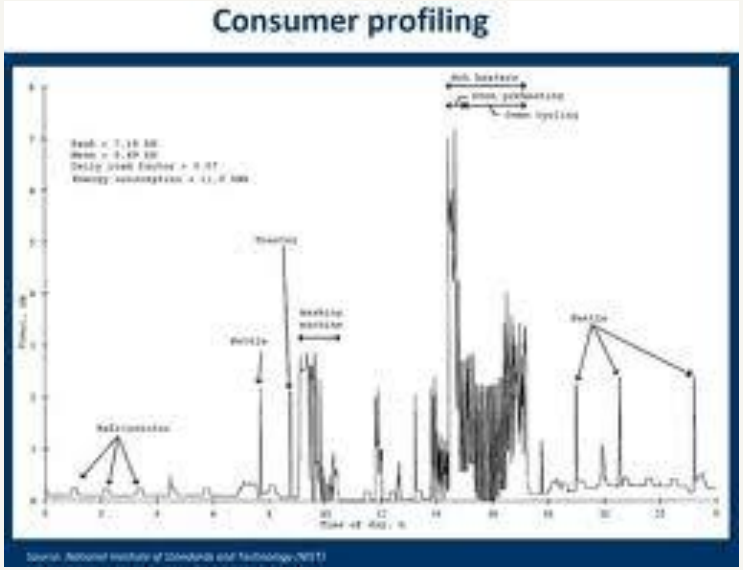


The inspection, survey and analysis of energy flows in a building, process or system to reduce the amount of energy input into the system without negatively affecting the output(s).

| | | Pros | Cons |
|---|---|---|---|
| 1 | Energy Audits | a) Detailed, building-specific information about building characteristics, technologies and energy consumption. | a) Data limited to buildings that have done audits.<br>b) Tenant and occupant behaviors not considered. |

# Potential Data Sources

## Secondary: Utility Data




Building-level energy use data (sometimes interval level data) and information about participation in utility programs.

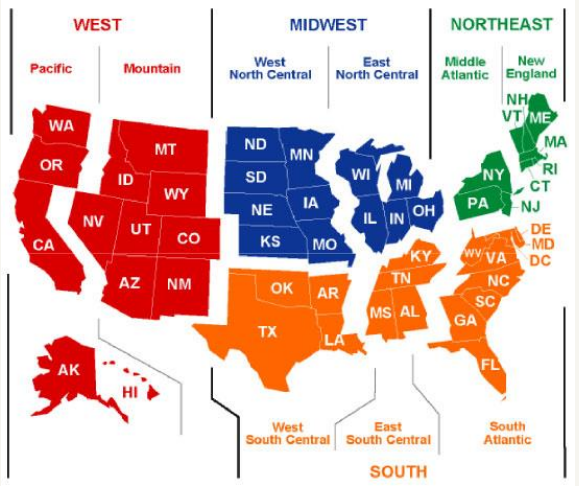
| | | Pros | Cons |
|---|---|---|---|
| 2 | Utility Data | a) Customer energy use data for all customers in territory.<br>b) Specific to locale in question.<br>c) Interval energy data reveal use patterns over the course of time (a day, a week, seasonality, etc.) | a) Difficult to obtain.<br>b) Often time-intensive to clean and decipher.<br>c) Doesn't include information about eligibility, behaviors or participation rates. |

# Potential Data Sources

## Secondary: RECS and CBECS

### Residential Energy Consumption Survey

- Data collected from a nationally representative sample of housing units.
- Uses specially trained interviewers.
- Collects information about energy characteristics of the housing unit, usage patterns, and household demographics.
- And information from energy suppliers to energy usage for heating, cooling, appliances and other end uses

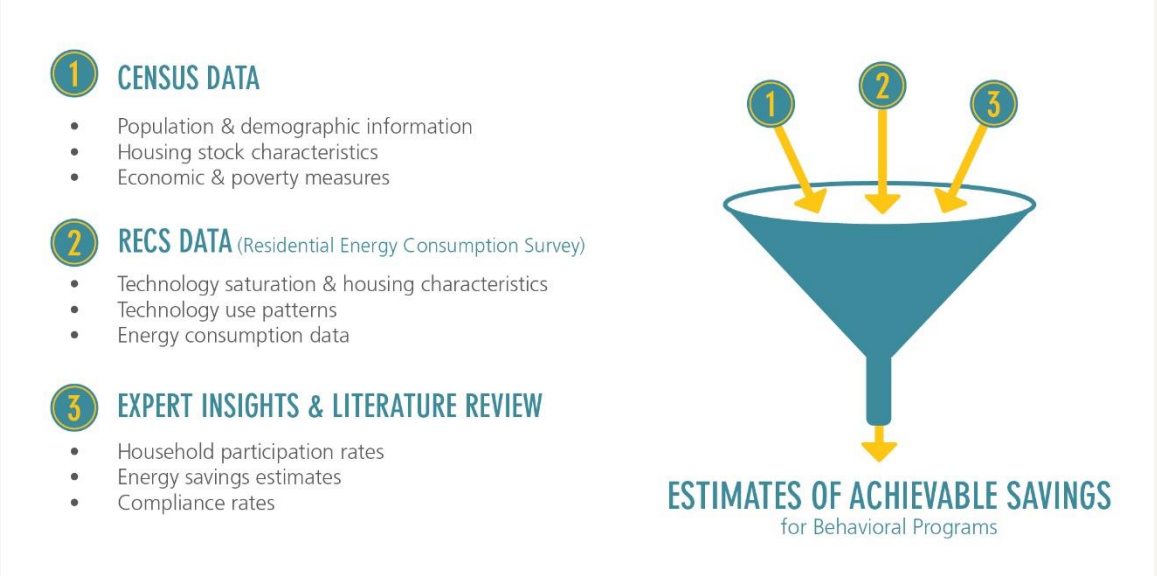



| | | Pros | Cons |
|---|---|---|---|
| 3 | RECS and CBECS | a) High quality, readily avail. data.<br>b) Info. about behaviors, technologies & energy use.<br>c) National and state-level info. | a) Data are not city specific.<br>b) Time-intensive to develop relevant estimates. |

# Potential Data Sources

## Secondary: Municipal Behavior Wedge

City level estimates of energy consumption and achievable savings for a range of behaviors in residential and commercial buildings.




| | | Pros | Cons |
|---|---|---|---|
| 4 | Residential and Commercial Behavior Wedge | a) Addresses all dimensions of targeting requirements.<br>b) Ranks behavioral opportunities<br>c) Quantifies potential savings<br>d) Provides city-specific estimates. | a) Proprietary model.<br>b) Relies on estimates rather than actual measures.<br>c) Data must be purchase (but relatively low cost). |

# Potential Data Sources

## Secondary

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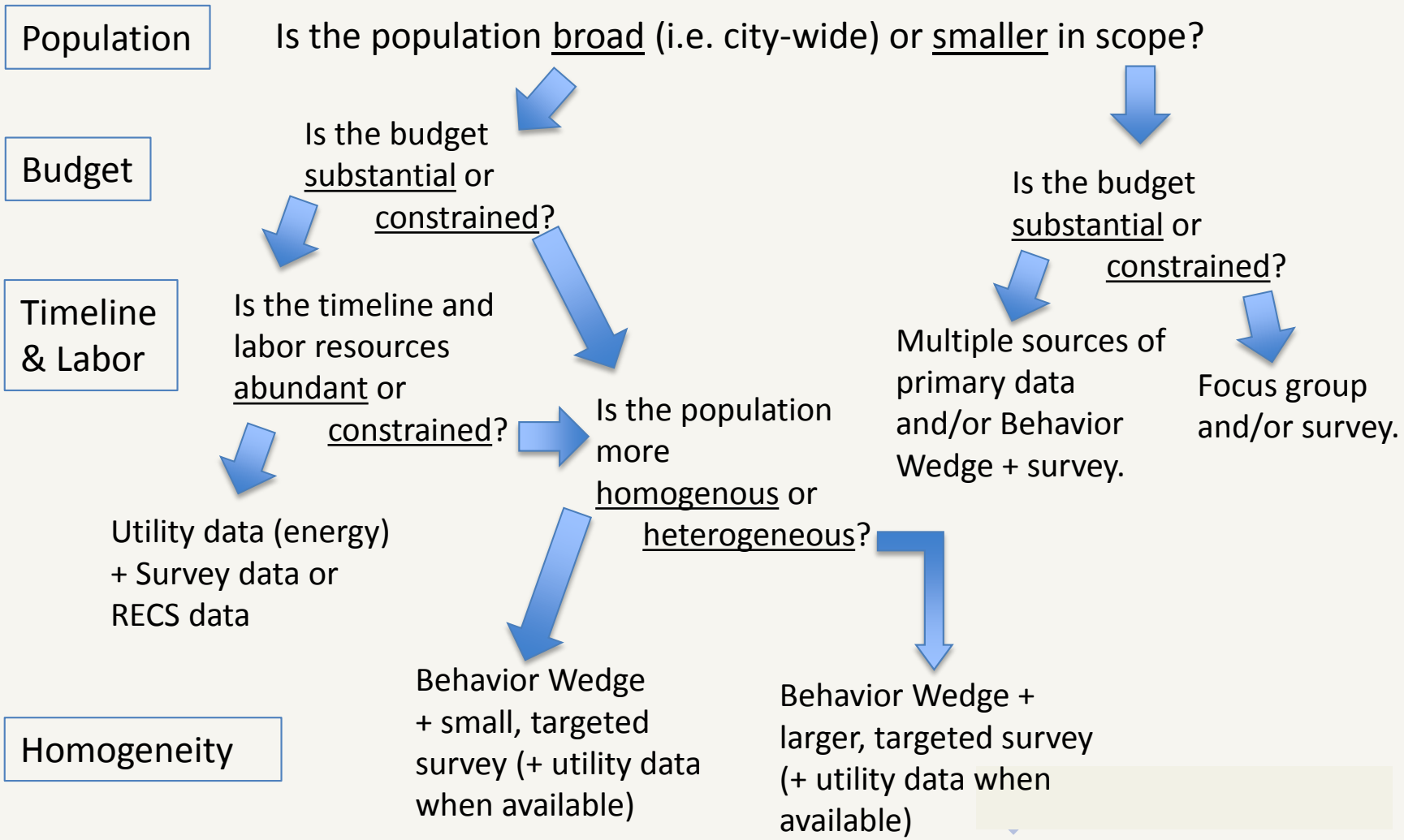
# Potential Data Sources

## Behavior Wedge Assessments: Residential & Commercial

See Municipal Behavior Wedge Slide Deck

# Potential Data Sources

## Decision Tree



# Contact Information

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