

# Developing Energy Consumption Estimates by End Use for EIA's Buildings Surveys

Residential Energy Consumption  
Survey (RECS)

Commercial Buildings Energy  
Consumption Survey (CBECS)

# RECS

- Fielded in 1978, 1980, 1981, 1982, 1984, 1987, 1990, 1993, 1997, 2001
- Next RECS: 2005

# RECS Universe:

## Occupied Primary Housing Units:

- Covered:
  - Single family detached homes
  - Town homes
  - Mobile homes
  - Individual apartment units

# RECS Universe:

## Occupied Primary Housing Units:

- Not covered:
  - Second homes
  - Vacation homes
  - Group quarters (college dorms, military barracks)
  - Common areas in apartments

# RECS Sample Design

- Area probability design
  - 116 primary sampling units
  - 1,460 secondary sampling units

# RECS Household Data Collection:

- Personal on-site interview with occupants
- Rental agent contacted to verify data on units in apartments buildings

# RECS Energy Consumption and Expenditures Data

- Obtain billing data from suppliers
- No Submetering for end-use data
- Use regression-based procedure to estimate consumption by end use

# RECS End Uses

- Space heating
- Water heating
- Air conditioning (electricity)
- Appliances
- Refrigerators (electricity)



# CBECS

- Fielded in 1979, 1983, 1986, 1989, 1992, 1995, 1999
- Next CBECS: 2003

# CBECS Universe: Commercial Buildings

- Over 1,000 square feet
- Non-residential buildings
- Non-industrial buildings
- Non-agricultural buildings

# CBECS: Examples of In-scope Buildings Types

- Office/professional buildings (including government buildings)
- Laboratories
- Food sales
- Food service

# CBECS: Examples of In-scope Buildings Types, Continued

- Retail
- Service
- Strip malls and enclosed malls
- Lodging (hotel, motels, and college dorms)

# CBECS: Examples of In-scope Buildings Types, Continued

- Public assembly
- Warehouses
- Religious worship
- Schools

# CBECS: Examples of In-scope Buildings Types, Continued

- Public order and safety (fire stations and police stations)
- Hospitals and nursing homes
- Vacant buildings
- Other

# CBECS Out-of-scope Structures

## Buildings

- Under 1,000 square feet
- That are primarily residential
- That are primarily industrial
- That are primarily agricultural
- On military bases and other secure sites
- On industrial establishments

# CBECS Out-of-scope Structures, Continued

- Water towers
- Parking garages
- Power plants
- Grain silos
- Mobile or temporary offices



# CBECS Sample Design

- Area probability design
- Supplemented by a list sample
  - Large buildings
  - Buildings on large universities
  - Hospitals
  - Government buildings

# CBECS Buildings Characteristics Data Collection

- Mostly personal interview (telephone interviews some years)
- May interview multiple respondents for one building

# CBECS Energy Consumption and Expenditures Data:

- Obtain energy consumption and expenditures data from occupants
- Contact supplier when occupants cannot provide data
- No Submetering for end-use data
- Use model/regression based procedure to estimate consumption by end use

# CBECS End Uses

- Space heating
- Water heating
- Air conditioning/cooling
- Cooking (electricity and natural gas)
- Appliances/other

# CBECS End Uses, Continued

Electricity: additional end uses

- Ventilation
- Lighting
- Refrigeration
- Office equipment