

Tracking Changes in Energy End Use: EIA's Consumption Surveys

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Energy Information Administration
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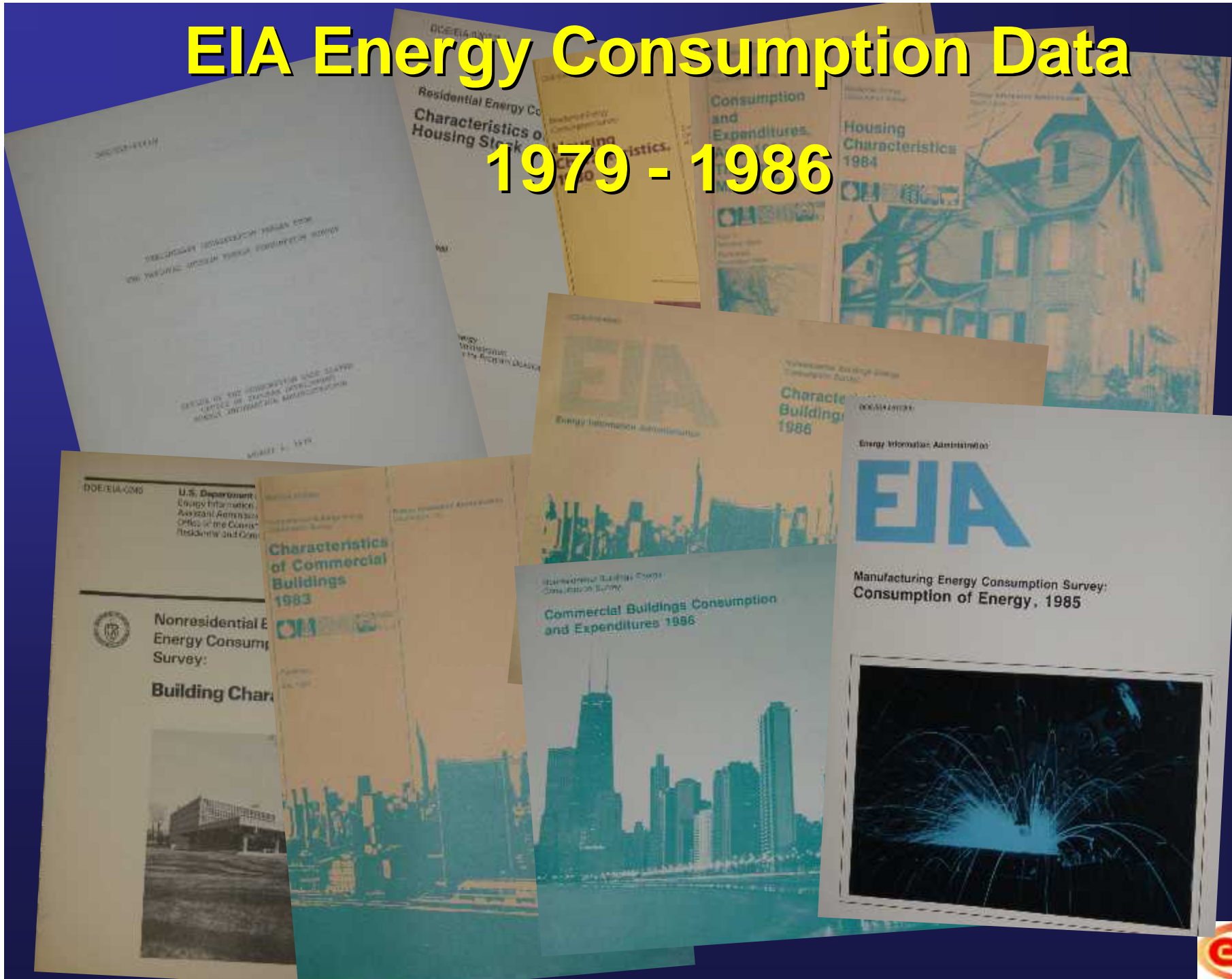
Energy Consumption Surveys are as Old as the Energy Information Administration

- **The Department of Energy (DOE) Organization Act of 1977**, Public Law 95-91, created the Department of Energy. Section 205 of this law established the Energy Information Administration (EIA).

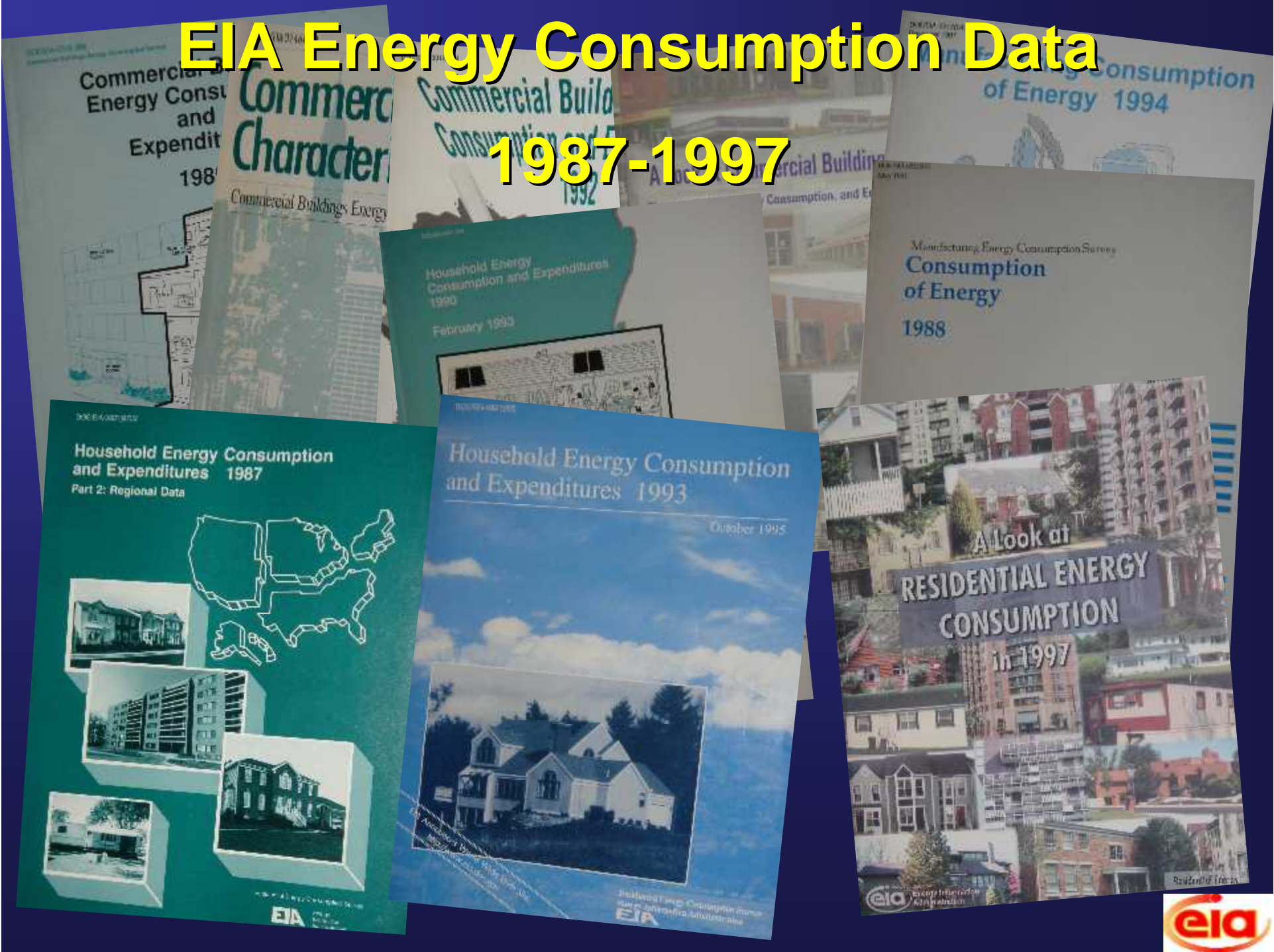
At the same time three sectors were designated to have mandated surveys:

- Residential Energy Consumption Survey
- Commercial Buildings Energy Consumption Survey
- Manufacturing Energy Consumption Survey

EIA Energy Consumption Data 1979 - 1986



EIA Energy Consumption Data 1987-1997



EIA Energy Consumption Data

On the Internet Today

Energy Efficiency

Energy-Related Carbon Emissions in Manufacturing

Manufacturing, which accounts for about 30 percent of industrial energy consumption, also accounts for about 80 percent of industrial energy-related carbon emissions. (Agriculture, mining, forestry, and fisheries account for the remaining 20 percent.) In 1994, three industries, petroleum, chemicals, and primary metals, emitted almost 65 percent of the energy-related carbon in manufacturing. The next two largest emitters (paper, food, and the stone, glass, and clay products industry) produced an additional 27 percent of the energy-related manufacturing emissions (Table 1).

The carbon intensity of energy use is the amount of carbon emitted per unit of energy used. Both the mix of energy sources used and the uses of energy affect carbon intensity. For electricity that manufacturers purchase, the carbon emissions occur where the electricity is generated, rather than at the manufacturing establishment. These emissions are assigned here to the electric user. Overall, manufacturing industries had a carbon intensity of 17.16 million metric tons per quadrillion Btu in 1994. However, individual industry carbon intensities differed markedly (Table 2), for different reasons.

The electric industry had a relatively high carbon intensity, due to the extensive use of coal (primarily in the top and older industry) and electricity (in the aluminum and iron and steel industries). In contrast, the paper industry had a relatively low carbon intensity, due to its use of renewable energy sources. The two industries with the highest carbon emissions, the petroleum refineries and chemical industries, have relatively low carbon intensities—these industries use large amounts of energy, but do not use as much energy as fuel. Instead, these industries derived energy sources, such as liquefied petroleum gases or natural gas, into other products. A portion of the carbon contained in the original energy source is sequestered in the product rather than emitted to the atmosphere.

Figure 1. Energy-Related Carbon Emissions for Manufacturing Industries, 1994

Industry	Percentage
All Other	19%
Petroleum	21%
Chemicals	23%
Paper	9%
Food	7%
Stone, Clay, Glass	6%

Residential

Characteristics of Residential Housing Units by Ceiling Fans

The South and Midwest census regions had a higher percentage of ceiling fans than the Northeast or West census regions.

Figure 1. Households With Ceiling Fans by Census Region

Census Region	Percentage
Northeast	48.4
Midwest	73.5
South	77.9
West	56.7

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Commercial Buildings Energy Consumption Survey

A Look at Building Activities in the 1999 Commercial Buildings Energy Consumption Survey

The Commercial Buildings Energy Consumption Survey, or CBECS, covers a wide variety of building types—office buildings, shopping malls, hospitals, churches, and schools, to name just a few. Some of these buildings might not traditionally be considered "commercial," but the survey includes them because of their energy use.

Compare Activities by...

- Number of Buildings
- Building size
- Employees
- Building Age
- Energy Consumption
- Number of Computers
- Electricity Generation Capability
- Total Energy Use
- Electricity Use
- Natural Gas Use
- Fuel Oil Use
- District Heat Use

Characteristics by Activity...

- Education
- Food Sales
- Food Service
- Health Care
- Lodging
- Mercantile
- Office
- Public Assembly
- Public Order and Safety
- Religious Worship
- Service
- Warehouse and Storage
- Other
- Vacant

Energy Information Administration

Commercial Buildings Energy Consumption Survey

2007 CBCEC Status Report

Data collection for the 2007 CBCEC will begin in February, 2008. Updates will be posted here on the release of preliminary data tables.

The Commercial Buildings Energy Consumption Survey (CBCEC) is a national sample survey that collects information on the stock of U.S. commercial buildings, their energy-related building characteristics, and their energy consumption and expenditures. Commercial buildings include all buildings in which at least half of the floor space is used for a purpose that is not residential, industrial, or agricultural, so they include building types that might not traditionally be considered "commercial," such as schools, correctional institutions, and buildings used for religious worship.

The CBCEC was first conducted in 1979, the eighth, and most recent survey, was conducted in 2003. CBCEC is currently conducted on a quadrennial basis.

Frequently Asked Questions about CBCEC

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Manufacturing Energy Consumption Survey

2006 MECS is currently in the field!

The manufacturing sector consists of all manufacturing establishments in the 50 States and the District of Columbia. The 2002 MECS was EIA's sixth survey of the manufacturing sector. Previous surveys were conducted in 1986, 1989, 1992, 1995, and 1998 (or reporting years 1986, 1989, 1991, 1994, and 1998, respectively). Subsequent MECS are planned for every four years (See MECS attributes for the 1991, 1994, and 1998 surveys).

The basic unit of data collection for this survey is the manufacturing establishment. A nationally representative sample of these establishments supplies the information through mailed questionnaires. The 2002 MECS sample size of approximately 15,200 establishments was drawn from a sample frame representing 97.9% of the manufacturing payroll. This sample allowed EIA to report separate estimates of energy use for 21 3-digit industry subsectors, and 46 industry groups and industries according to the North American Industry Classification System (NAICS).

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Energy Information Administration

Households, Buildings, Industry & Vehicles

U.S. Data

- Residential Energy Consumption
- Commercial Energy Consumption
- Manufacturing Energy Consumption
- Vehicle Energy Consumption
- Energy Intensity
- Consumption Summaries
- International Data

Program Information & Reports

- Residential Energy Consumption Survey (RECS)
- Commercial Buildings Energy Consumption Survey (CBCEC)
- Manufacturing Energy Consumption Survey (MECS)
- Transportation Energy (TECS)
- Regional Energy Profiles
- Energy Efficiency

Analyses

- Commercial Buildings Characteristics 7/13/08
- Residential End Use Electricity Consumption 8/24/05
- Residential Energy Maps 7/10/03
- Energy Use in Manufacturing 1998 to 2002 4/20/06

Forecasts

- Short-Term Energy Outlook
- Annual Energy Outlook
- International Energy Outlook

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Energy Information Administration

U.S. Census Regions and Divisions:

Return to CBCEC Home Page

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Specific questions on these products may be directed to:
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FAX: (202) 586-0018
URL: http://www.eia.doe.gov/emeu/cbcecs/census_maps.html

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Residential Energy Consumption Survey

RECS 2005 STATUS REPORT

RECS data processing continues. Updates will be posted on the release of preliminary data tables.

The Residential Energy Consumption Survey (RECS) provides information on the use of energy in residential housing units in the United States. This information includes:

- the physical characteristics of the housing units,
- the appliances utilized including space heating and cooling equipment,
- demographic characteristics of the household,
- the types of fuels used, and
- other information that relates to energy use.

The RECS also provides energy consumption and expenditures data for:

- natural gas,
- electricity,
- fuel oil,
- liquefied petroleum gas (LPG), and
- veresene

The RECS is a national area-probability sample survey that collects energy-related data for occupied primary housing units. First conducted in 1978, the twelfth RECS was conducted in 2005. The 2005 survey collected data from 4,201 households in housing units statistically selected to represent the 111.1 million housing units in the United States. RECS data are tabulated for the four Census regions, the nine Census divisions, and for the four most populous States—California, Florida, New York, and Texas.

RECS data come from three sources:

- 45-minute in-person interviews with householders of sampled housing units
- Mail questionnaires from on- or in-person or telephone interviews with rental agents for sampled rental units where some or all energy costs were included in the rent.
- Mail questionnaires from energy suppliers who provide actual energy consumption and expenditure data for the sampled housing unit.

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Data Tables

- Housing Characteristics 2001 1997 1993
- Consumption & Expenditures 2001 1997 1993
- Residential Fuel Use 2001 1997
- Most Populated State Estimates 1997
- End Use Electricity 2001
- Median Values and Percentiles 1997

Public Use Microdata 2001 1997 1993 Other

Data Query

- Housing Characteristics 2001 1997
- Consumption and Expenditures 2001 1997

Methodology

- Survey Methods 2001 1997
- Data Quality 2001 1997 1993
- Survey Forms 2001 1997
- Glossary 2001 1997 1993

Census Map, US Climate Zones

Special Topics

- Trend Analysis
- Housing Unit Size
- Household Members and Buildings
- Origin of Householder

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- Lighting
- Appliances
- Cooking Trends

Heating Oil

- Natural Gas
- Fuel Oil Trends

Thermostat Settings

- Air Conditioning Trends
- Air Conditioning Facts
- Ceiling Fans
- Insulation



Most of the Data Collected Have Been the Same Over the Years-- However....

- Adapted to Current Energy Issues and Changing and New Technologies
 - Demand-Side Management
 - Fuel Switching
 - Garages with Electric Outlets
 - Energy Star Awareness and Appliance Purchases
 - Water Usage Questions
 - Data Centers
 - Computers and Other Office Equipment

Today's Issues Will Increase Demand for Energy Consumption Data

- Climate Change
- Energy Security

One Example

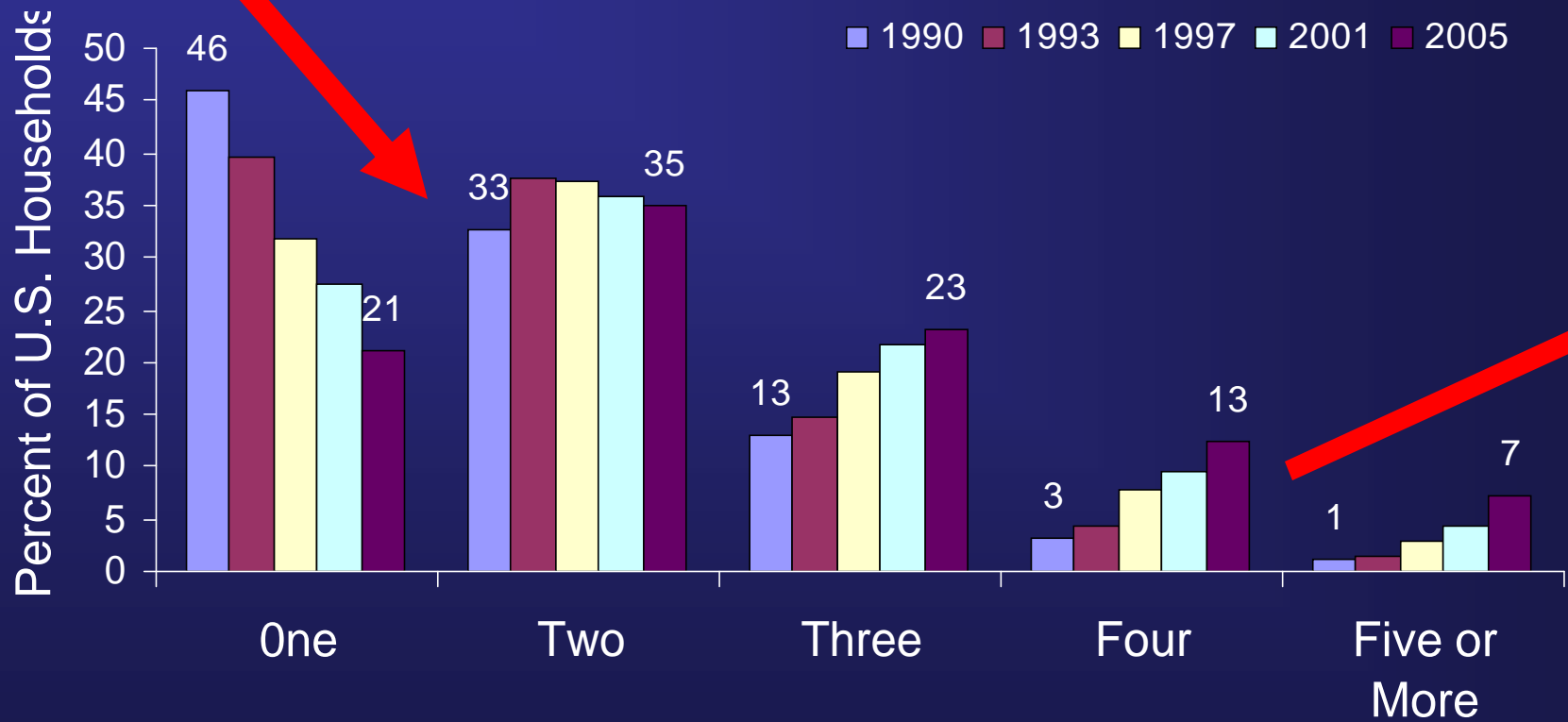


Energy Efficiency as a Resource



Energy Efficiency Indicators

8 Million Households Have 5 or More TVs



Energy Independence and Security Act of 2007

- TITLE IV--ENERGY SAVINGS IN BUILDINGS AND INDUSTRY
 - SEC. 401. DEFINITIONS.
 - (13) HIGH-PERFORMANCE GREEN BUILDING
 - The term `high-performance green building' means a high-performance building that, during its life-cycle, as compared with similar buildings (as measured by **Commercial Buildings Energy Consumption Survey** or **Residential Energy Consumption Survey** data from the Energy Information Agency).

Federal Buildings

- SEC. 433. FEDERAL BUILDING ENERGY EFFICIENCY PERFORMANCE STANDARDS.
 - The buildings shall be designed so that the fossil fuel-generated energy consumption of the buildings is reduced, as compared with such energy consumption by a similar building in fiscal year 2003 (as measured by **Commercial Buildings Energy Consumption Survey** or **Residential Energy Consumption Survey** data from the Energy Information Agency), by the percentage specified in the following table: