

# IT Sector Growth and Electricity Demand in Buildings

NEMS Conference

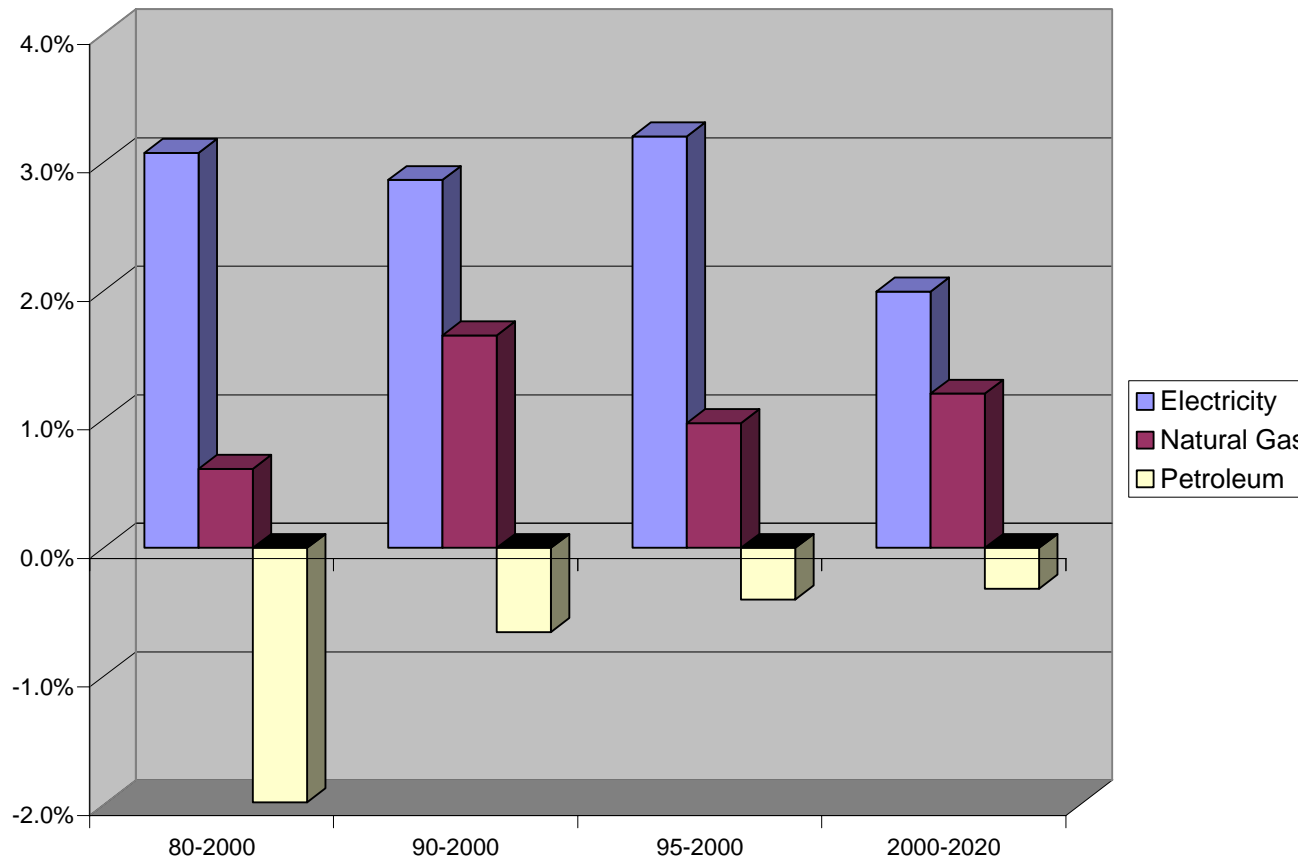
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# Historical Electricity Growth

- Electricity has been the fastest growing energy source in buildings, over almost any decade-long span going back to 1960.
- Key factors:
  - penetration of air conditioning, electric heat pumps and electric appliances
  - growth in south and west
  - home and office electronics
    - IT-related equipment is a important contributor
    - non-traditional uses and computer and related equipment and other office equipment are the fastest growing components in AEO 2002

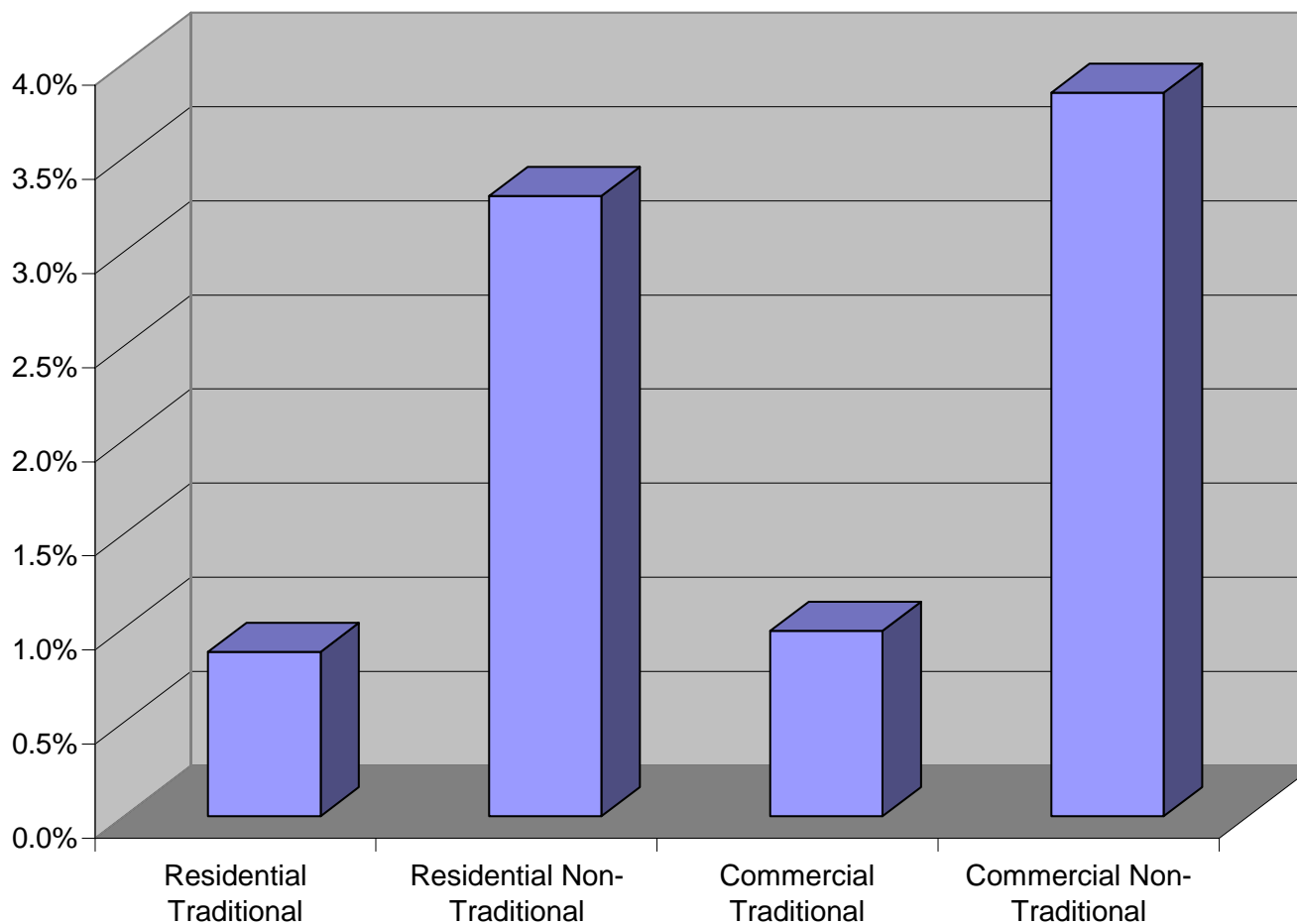
# Building Sector Major Energy Sources

## CAGR Various Intervals



# Building Sector Electricity Growth

CAGR 2000-2020



# Assumed Computing Environment for AEO2002

- Desktop Computing Will Continue to Grow
- Local PC Hardware Will Continue to Provide Computing, Storage and Multi-Media
- No Radical Changes from Today's Structure
- Internet Will Continue to Grow in Content and Bandwidth

# Key Issues for AEO Projections

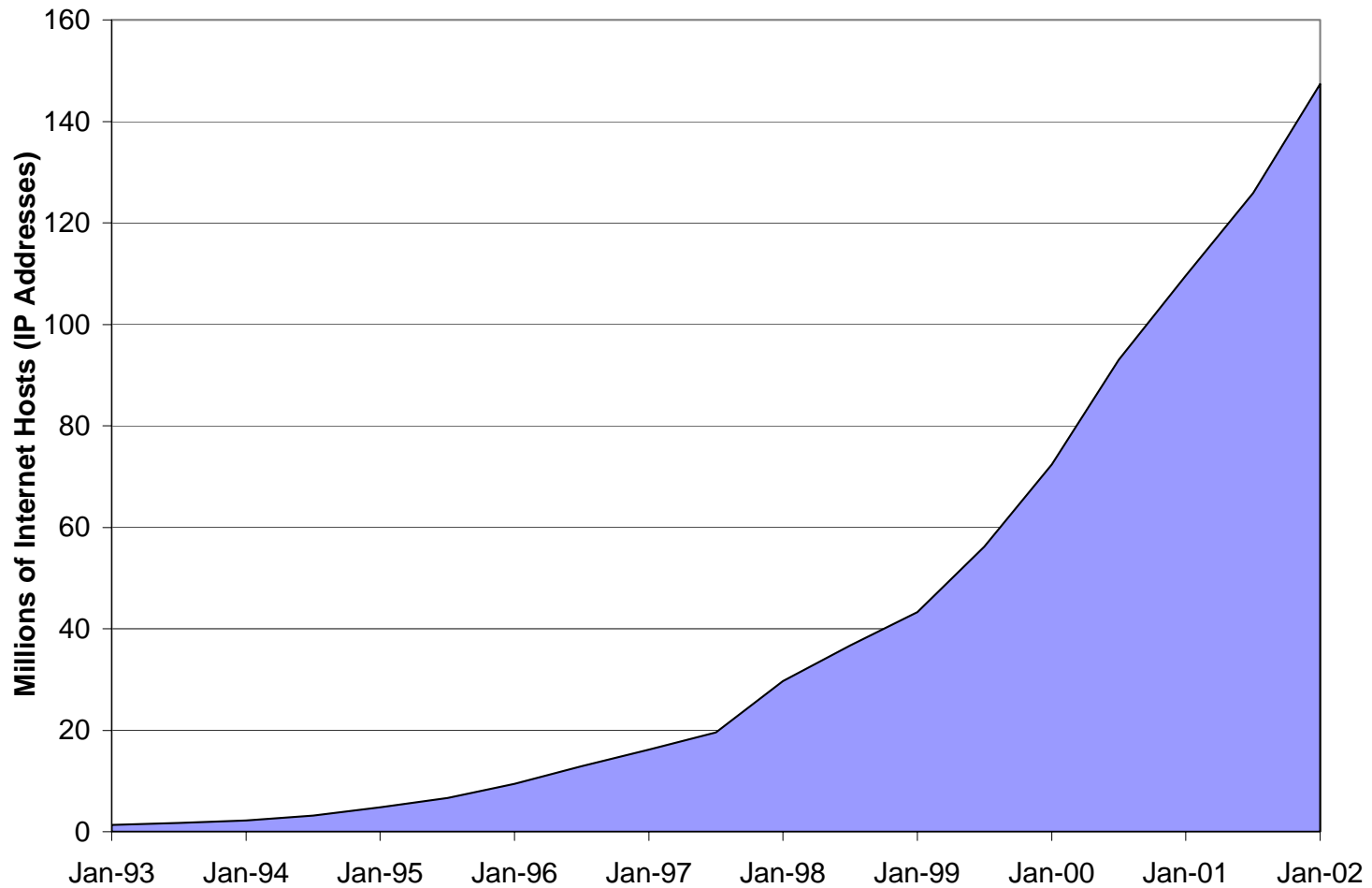
- PCs and Related Equipment
  - Penetration Limits (per HH, per Employee)
  - Energy Star Enabling Rates
  - PC and Related Technology
    - Energy Consumption of PC (CPU, Storage Media)
    - Monitor Display Area
    - Monitor Technology Shift to LCD
    - Evolution of Related Equipment (Video, Audio, Printing)

# Key Issues for AEO Projections

(continued)

- Networks and Related Equipment
  - Growth in Internet
    - Number of Users and Usage “Intensity”
    - Number of Sites
    - Bandwidth
  - Growth in Data Center Energy Consumption
    - Growth in Data Centers
    - Energy Consumption of Servers and Routers
    - Data Center Design Improvements

# Internet Domain Survey



Source: Internet Software Consortium (<http://www.isc.org/>)



# Presentations

- IT-Related Demand in the AEO 2002
  - Erin Boedecker, Energy Information Administration
- Latest Measured Data on Data Center Power Use in the U.S.
  - Jonathan Koomey, Ph.D., Lawrence Berkeley National Laboratory
- Energy Consumption by Commercial Office and Telecommunications Equipment
  - Kurt Roth, Ph.D., Arthur D Little, Inc.