



EPA and Energy Efficiency

Next Generation of Energy Efficiency
Initiatives in Minnesota Workshop
St. Paul, Minnesota
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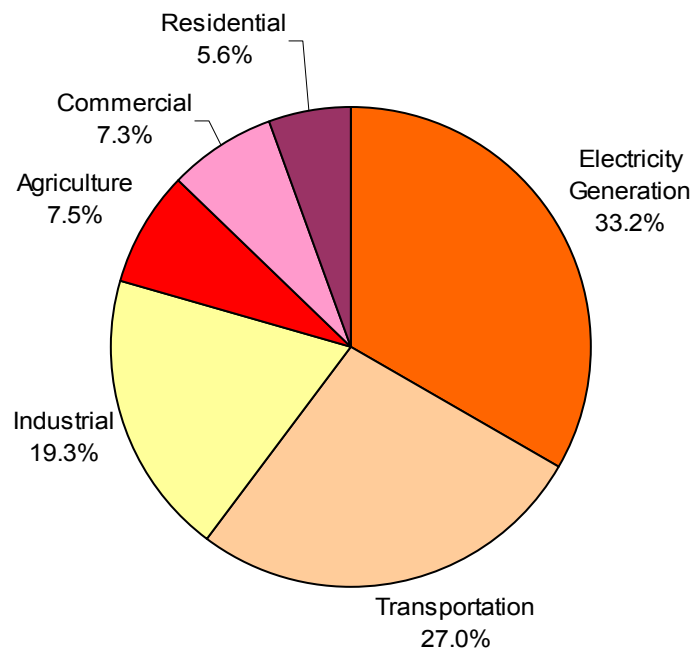
Agenda

- EPA and energy efficiency
- What we're doing
- Opportunities for further action

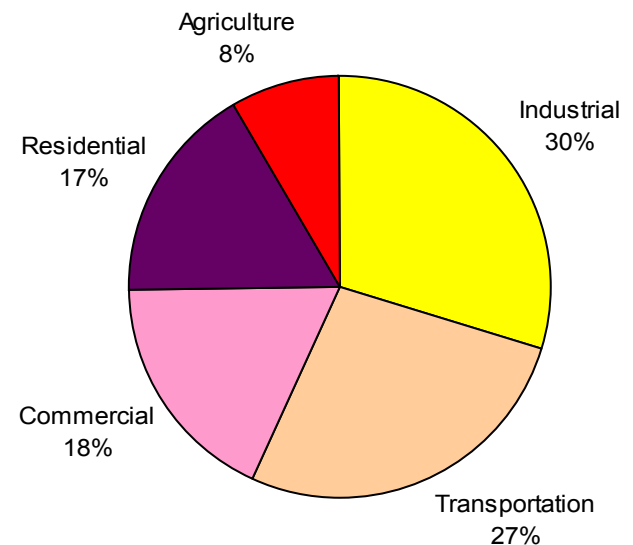
EPA's Interest in Energy Efficiency

- Energy efficiency provides substantial environmental benefits including a **reduction in greenhouse gas emissions** while creating economic benefits for customers.

U.S. Greenhouse Gas Emissions by Sector in 2002
(Total = 6,888 MMTCO₂E)

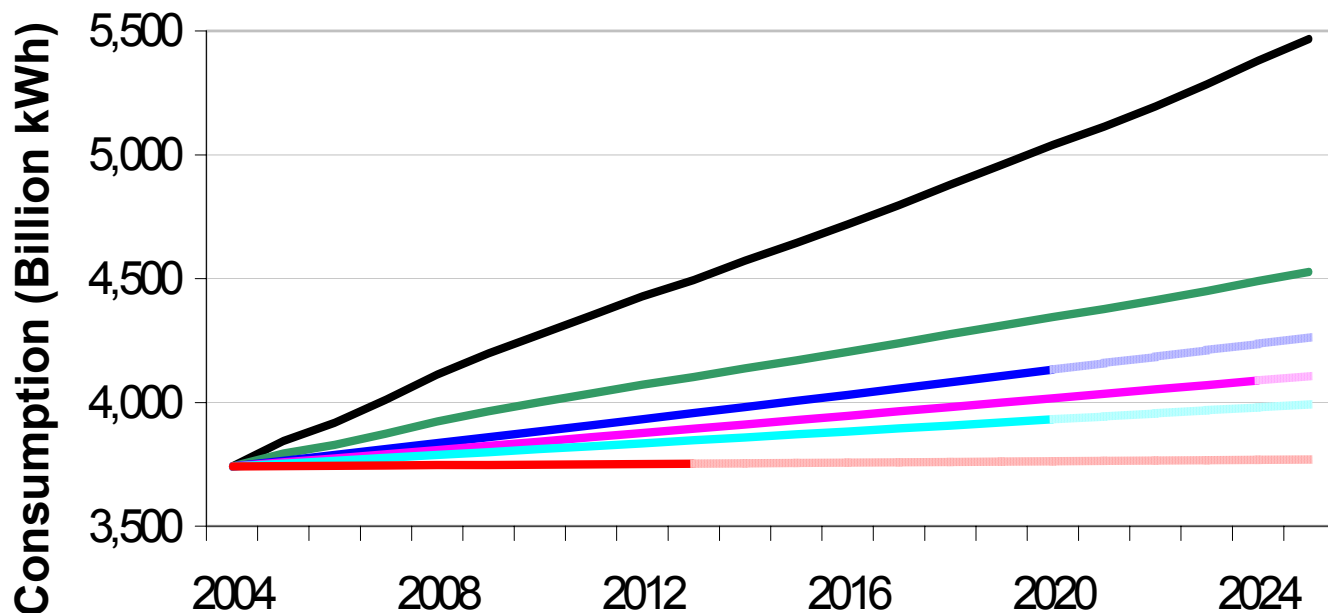


U.S. Greenhouse Gas Emissions by Sector
with Electricity-Related Emissions Distributed
in 2002 (Total = 6,888 MMTCO₂E)



Great Potential for Additional Cost-Effective Energy Efficiency

U.S. Electricity Consumption Projections



— AEO 2005 Reference Case		[avg. annual growth 1.8%]
— Half Growth Scenario	(17% reduction by 2025)	[avg. annual growth 0.9%]
— 5 Labs Study	(18% reduction by 2020)	[avg. annual growth 0.6%]
— ACEEE median achievable	(24% reduction in 20 years)	[avg. annual growth 0.5%]
— NV Study	(22% reduction by 2020)	[avg. annual growth 0.3%]
— NEEP Study	(17% reduction by 2013)	[avg. annual growth <0.1%]

EPA Efforts to Advance Clean Energy and Energy Efficiency

- Traditional end-user barriers
 - Lack of information
 - Competing vendor claims
 - Split incentives
- State decision-makers
 - Lack of good documentation on clean energy policies
- Utilities
 - Financial disincentives for utilities to reach full potential of energy efficiency resources
 - Concern that energy efficiency will raise rates
 - Lack of good documentation and education on demand-side programs

*ENERGY STAR
Clean Supply
Programs*



*State Clean Energy-
Environment Partnership*

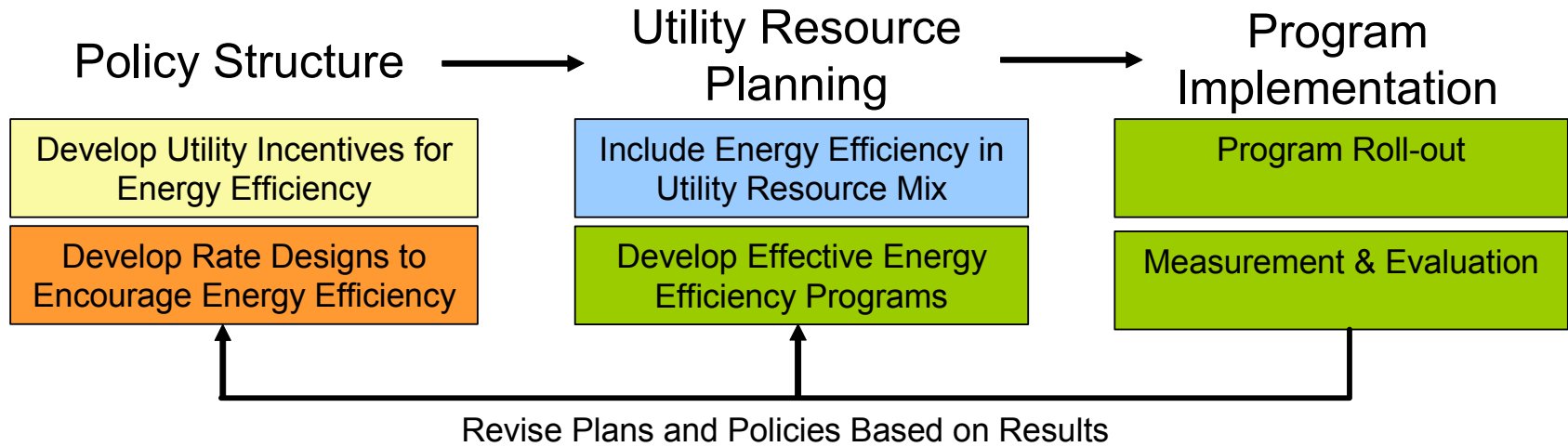


Energy Efficiency Action Plan

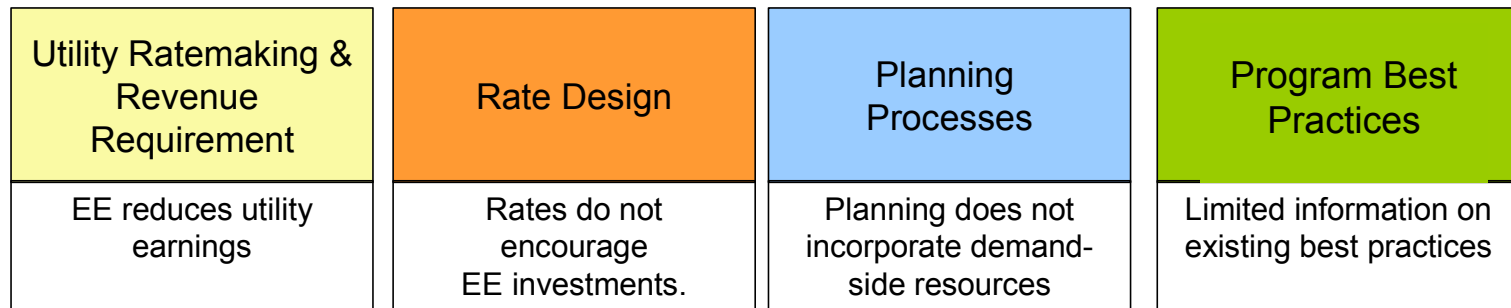
*EPA-State Energy Efficiency-
Renewable Energy Projects*

Opportunities for Further Action on Energy Efficiency

Actions to Encourage Greater Energy Efficiency



Actions Linked to Key Barriers



Utility Ratemaking and Revenue Requirements

- State policies and regulatory approaches can remove utility disincentives to efficiency, including:
 - Decoupling of utility profits from volume of sales
 - Ensuring program cost recovery
 - Defining shareholder performance incentives
- IOUs and public utilities may respond to different incentives
- Throughput disincentive greater for distribution-only utilities

Simplified Illustration of Decoupling Rate Effect

Rates and fixed cost recovery during initial period:

	Sales At Forecast	Sales Below Forecast	Sales Above Forecast
Sales Forecast	100 kWh		
Fixed Cost*	\$6.00		
Variable Cost**	\$0.04 per kWh		
Total Variable Cost	\$4.00	\$3.80	\$4.20
Total Costs [Fixed + Variable]	\$10.00	\$9.80	\$10.20
Authorized Rate [Costs ÷ Sales Forecast]	\$0.100 per kWh		
Actual Sales	100 kWh	95 kWh	105 kWh
Actual Revenues	\$10.00	\$9.50	\$10.50
Fixed Cost Recovery	Even	Under	Over
[Revenue - Cost]	\$0.00	(\$0.30)	\$0.30

Rates in next period after decoupling true-up:

	Sales At Forecast	Sales Below Forecast	Sales Above Forecast
Sales Forecast***	100 kWh		
Total Costs***	\$10.00		
Revenue Requirement [Total Costs - Fixed Cost Recovery]	\$10.00	\$10.30	\$9.70
New Authorized Rate [Revenue Requirement ÷ Sales Forecast]	\$0.100 per kWh	\$0.103 per kWh	\$0.097 per kWh

*Fixed costs include return on rate base.

** Variable costs include operating costs of power plants.

*** Assumes values from initial period for illustrative purposes.

Rate Design

- Rates provide the largest customer incentives to manage energy use
- Frequently rates do not encourage energy efficiency
 - Fixed rates do not benefit customers who consume less
 - Customers do not see when costs are high
- States are pursuing several rate design approaches to promote energy efficiency.

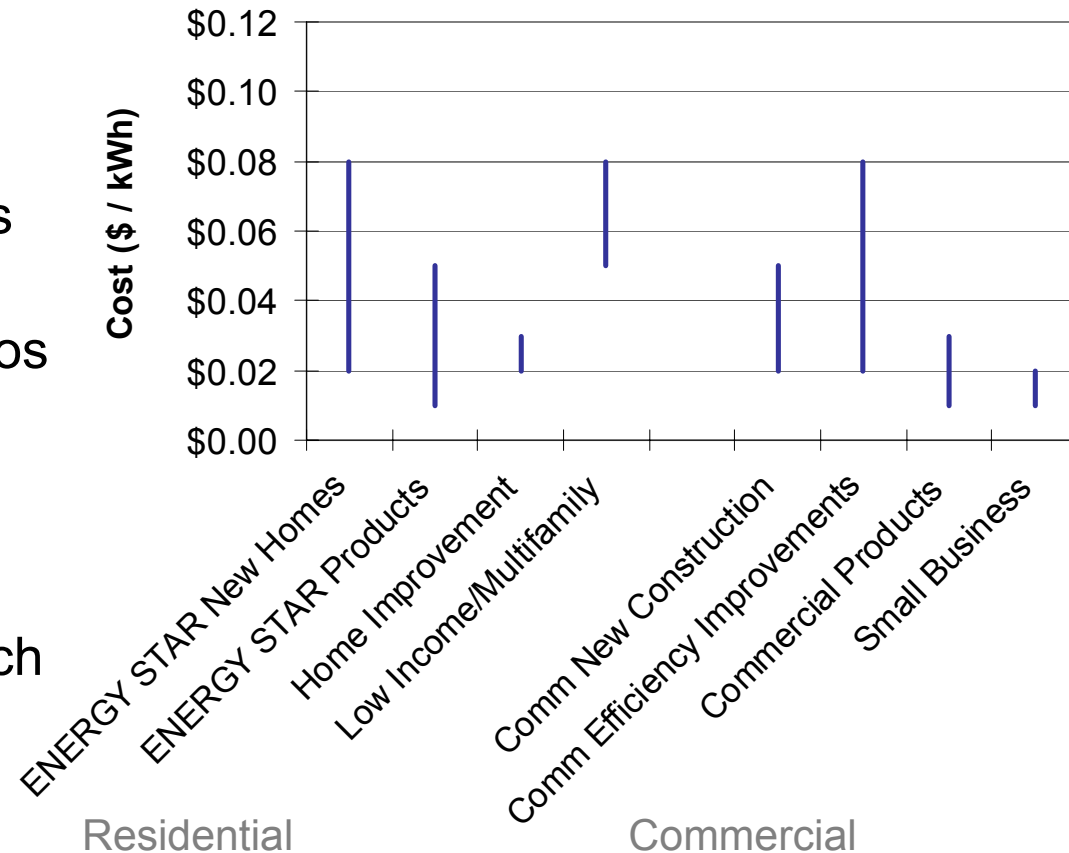
Planning Processes

- Energy efficiency resources can be maximized when considered equal to supply, transmission and distribution.
- Comparison of EE and other system resources requires consideration of appropriate trade-offs:
 - Cost
 - Reliability
 - Environmental Impact
 - Risk Management
 - Local Economic Effect
 - Others
- Efficiency often more favorable than new T&D expenditures

Program Best Practices

- Programs work for various reasons:
 - Due to political and administrative factors
 - Across end-use sectors and customer classes
 - Within effective portfolios
- States are pursuing increased efficiency in commercial buildings
 - Whole building approach producing superior energy performance

Programs across sectors are providing cost-effective energy efficiency



Summary

- Energy efficiency is cost-effective part of a clean, reliable energy system.
- EPA is happy to support the next generation of efficiency in Minnesota.



EPA and Energy Efficiency: Building on State Success with Energy Efficiency

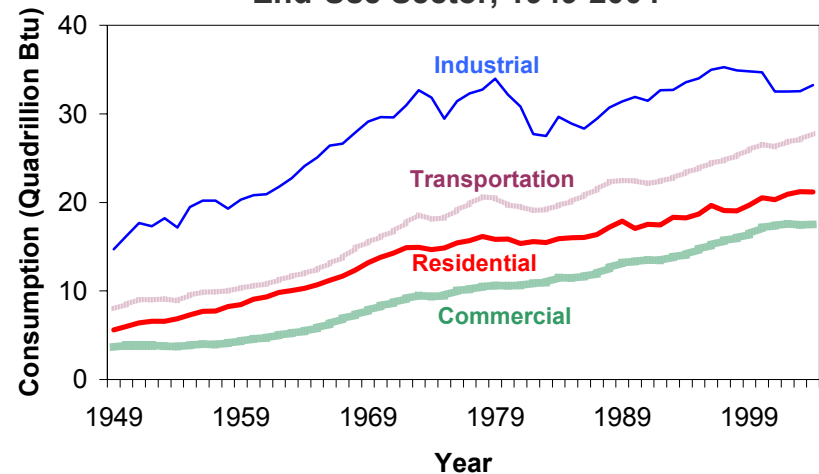
Background Material



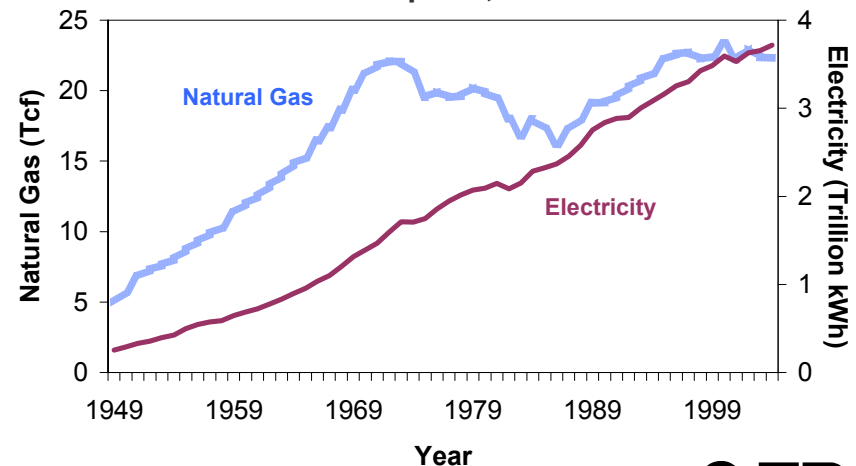
Time for Action on Energy Efficiency

- Energy demand continues to grow
- Higher energy prices than seen for decades
- High energy expenditures
- Reliability issues
- Capital expenses for generation, transmission and congestion relief
- Investment risk associated with climate change
- Security concerns

Total Energy Consumption by End-Use Sector, 1949-2004



Growth in U.S. Electricity and Natural Gas Consumption, 1949-2004



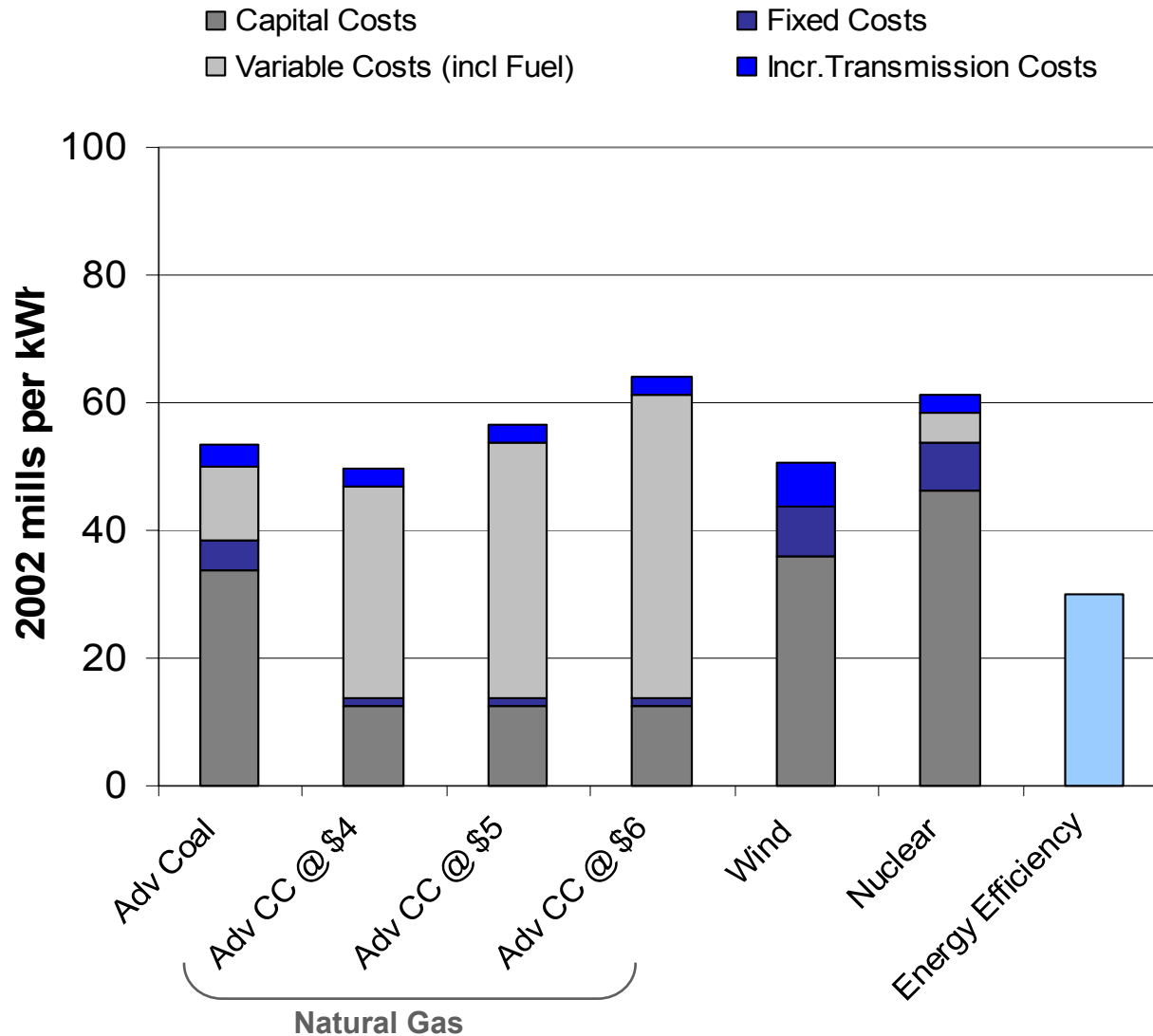
Benefits of Energy Efficiency

- Economic
 - Lower cost compared to new generation and transmission
 - Downward pressure on natural gas prices and volatility
 - Lower wholesale electricity prices
 - Improved local economy and service to low income and seniors
- Utility System Benefits
 - Near-term fix with persistent, long-term benefits
 - Improved security of electricity and gas systems
 - Improved resilience due to lower reliance on fossil fuels
 - Lower baseload and peak demand
 - Reduce need for “hard to site” G&T assets
 - Targeted, modular, manageable
- Environmental
 - Lower greenhouse gas emissions and criteria pollutants
 - Lower water use
- Risk Management
 - Diversifies utility resource portfolios

Energy Efficiency -- More Than a Decade of Experience

- Established energy efficiency as reliable, low-cost resource
 - Real programs with real results
 - Programs delivering efficiency at 2 to 4 cents / kWh
- Established large potential to meet new demand
 - Regionally, nationally
 - Real programs
 - Can provide 50% or more of expected load growth
- Established measurement and verification procedures
 - Savings are real, persistent
 - Integrated into resource planning
- Established model energy efficiency delivery programs for key customer classes
 - Residential -- commercial – industrial
 - Low income
 - Gas / electric
 - New / mature

Energy efficiency is cost competitive



EPA's Partnership Program Group



- 15 years of experience with non-regulatory programs
- Broad range of issues
 - Energy efficiency
 - Renewable energy
 - Clean distributed generation
- Overcoming market barriers to financially attractive technologies/practices
 - ENERGY STAR -- residential, commercial, industrial
 - Renewable energy
 - CHP and landfill gas recovery
- Broad set of partners: utilities, states, industry, NGOs

Energy Efficiency Action Plan

- Goal

- An aggressive new national commitment to energy efficiency by electric and natural gas utilities and partner organizations in the United States.

- Leadership Group

- Utilities, regulators, energy directors, consumer advocates, NGO's, industrials, and others – ** Including Minnesota ** -
- EPA/DOE facilitated

- Expected Outcomes

- Documenting business practices / solutions for overcoming barriers limiting utility investment in energy efficiency
 - Removing disincentives / providing incentives
 - Integrating EE into utility planning
 - Examples of EE programs that work
 - Tactics that help EE succeed
- Communication strategy for spreading practices / solutions
- A network of experts and resource materials on energy efficiency practices

EPA-State Energy Efficiency and Renewable Energy Projects

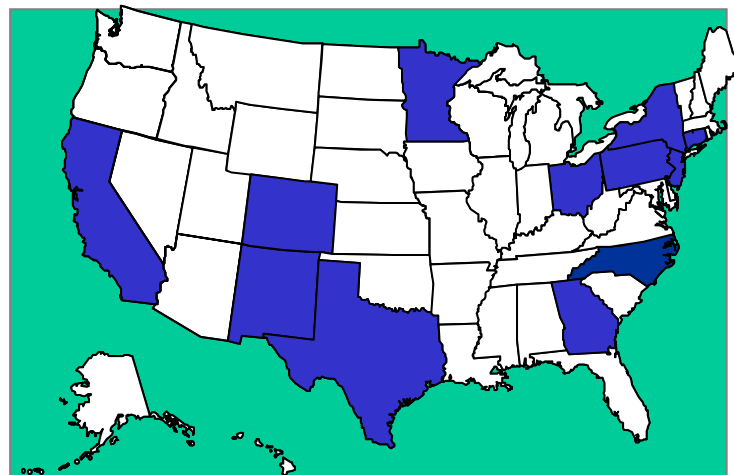
- EPA is working with utility commissions in six states explore a range of approaches for encouraging energy efficiency and clean energy resources within state utility commission processes based on specific State interests:
 - Rate design
 - Resource planning
 - Energy efficiency program best practices
 - T&D planning
 - Renewable portfolio implementation
 - Combined heat and power
- Pilot states: Arkansas, Connecticut, Hawaii, Minnesota, New Mexico, New Jersey and District of Columbia.

Clean Energy-Environment State Partnership



- Partnering to pursue cost-effective clean energy resources to achieve environmental, public health, and economic goals
- EPA provides:
 - Access to tools, analysis and expertise
 - Clean Energy-Environment Guide to Action
 - State-to-state peer exchange and communication support
 - Information about funding opportunities and related clean energy resources
 - National recognition
- State Partners take action:
 - Sign MOU with EPA
 - Foster collaboration among state agencies
 - Establish 1 or more clean energy goals
 - Conduct analyses, evaluate options and measure benefits
 - Develop and implement clean energy-environment action plan

State Partners:
CA, CO, CT, GA, MN,
NC, NJ, NM, NY, OH, PA, TX



State Policies Addressed by Clean Energy-Environment Partnership



- **Leading by Example**
- **State funding for EE/DG/RE**
 - public benefit funds
- **EE portfolio standards**
- **State codes and standards**
 - commercial and residential codes
 - appliance standards
- **Power market rules / regulation**
 - decoupling profits from sales
 - level playing field with new gen/trans
 - utility IRP
- **Linking air quality policies to energy**
- **Clean DG-friendly policies**
 - interconnect standard
 - backup / standby rates
- **Renewable policies**
 - renewable portfolio standards

Leading States

CA, MA, NY

AZ, CA, CT, DE, IL, MA, ME, MI, MN, MT, NV

NH, NJ, NM, NY, OH, PA, RI, TX, VT, WI

CA, CT, IL, TX

CA, MA, MN

AZ, CA, CT, MD, NJ, NY, OR, RI, WA

CA, ID, ME, NV, OR

OR

CA, HI, MN, MT, OR

MD, LA, TX

CA, MA, NJ, NY, TX

CA, NJ, NY

AZ, CA, CO, CT, DE, HI, IA, IL, MA, MD, ME,

MN, MT, NV, NJ, NM, NY, PA, TX, RI, WI, VT

ENERGY STAR



- ENERGY STAR is a cost-effective platform
 - Helps lower program administration costs
 - Reduces start-up time
 - Provide valuable lessons learned
 - Provide access to a network of partners
- Partnering with Key Market Players
 - Major Manufacturers and retailers
 - Utilities / system benefits charge administrators
 - 60% of utility customers
 - States -- 30 partners
- Broad national platform for EE
 - Residential
 - products – 40+
 - existing home retrofit
 - new homes
 - Commercial
 - products
 - existing buildings
 - new buildings
- National recognition -- 60% of public

Results thru 2004

- 1.5 billion products sold
- many buildings improved
- 360,000 new homes

- 125 billion kWh avoided
- 25 GW avoided
- 20 million vehicles worth of GHG emissions

Energy Star offers support to utility programs and other voluntary efforts



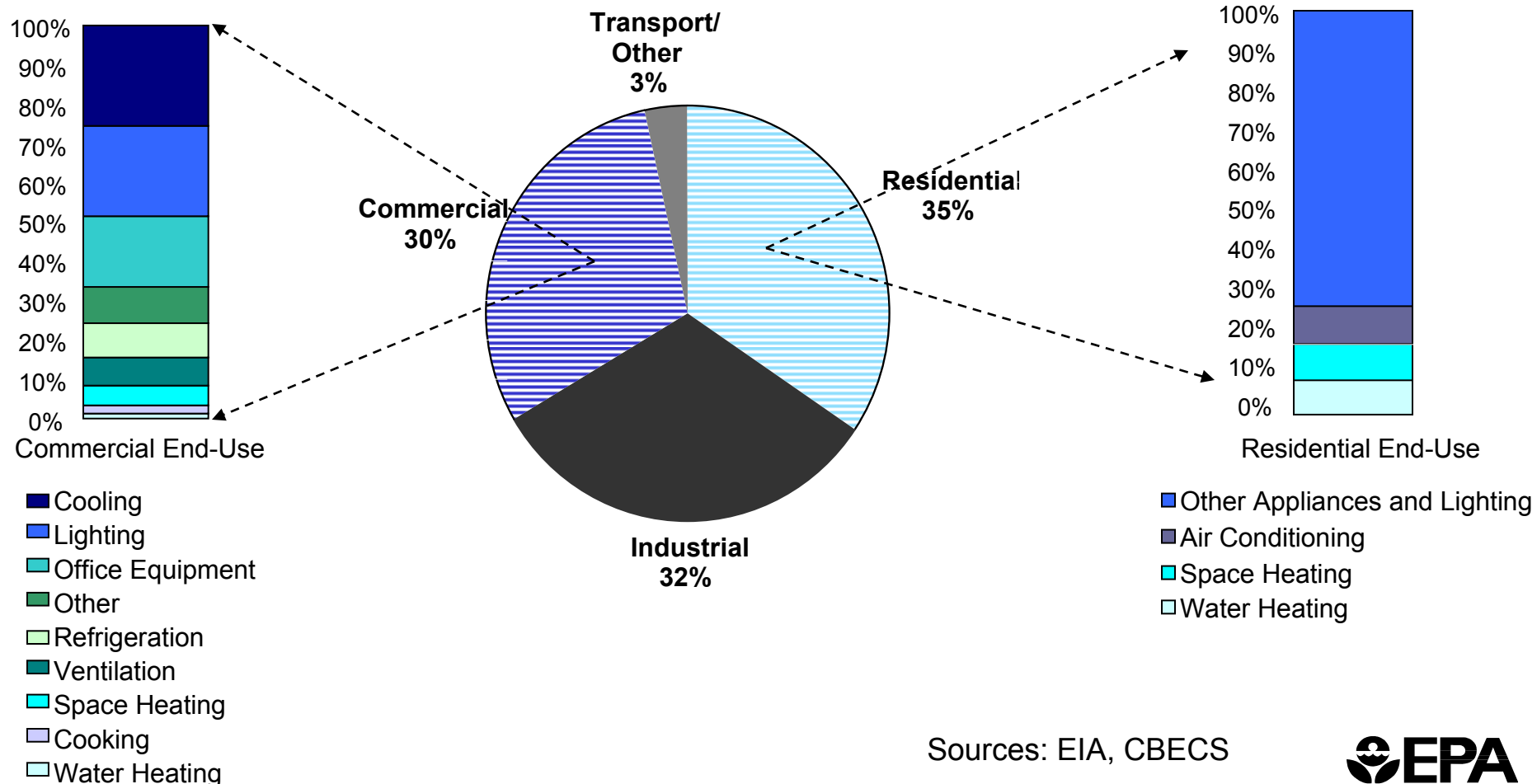
- Over 238 Minnesota cities, schools, utilities, builders, manufacturers and others are currently Energy Star partners.
- In 2004, 45 Minnesota buildings earned the Energy Star.

Property managers include:

- 3M
- Best Buy
- Bloomington Public School
- CB Richard Ellis
- CBRE
- Country Financial Insurance
- Hines
- Kennedy-Wilson International
- SUPERVALU, Inc
- UnitedHealth Group
- West St. Paul ISD 197

Electricity End Uses and Buildings

Electricity Sales by Sector
(3,312 B KWh in 1999)

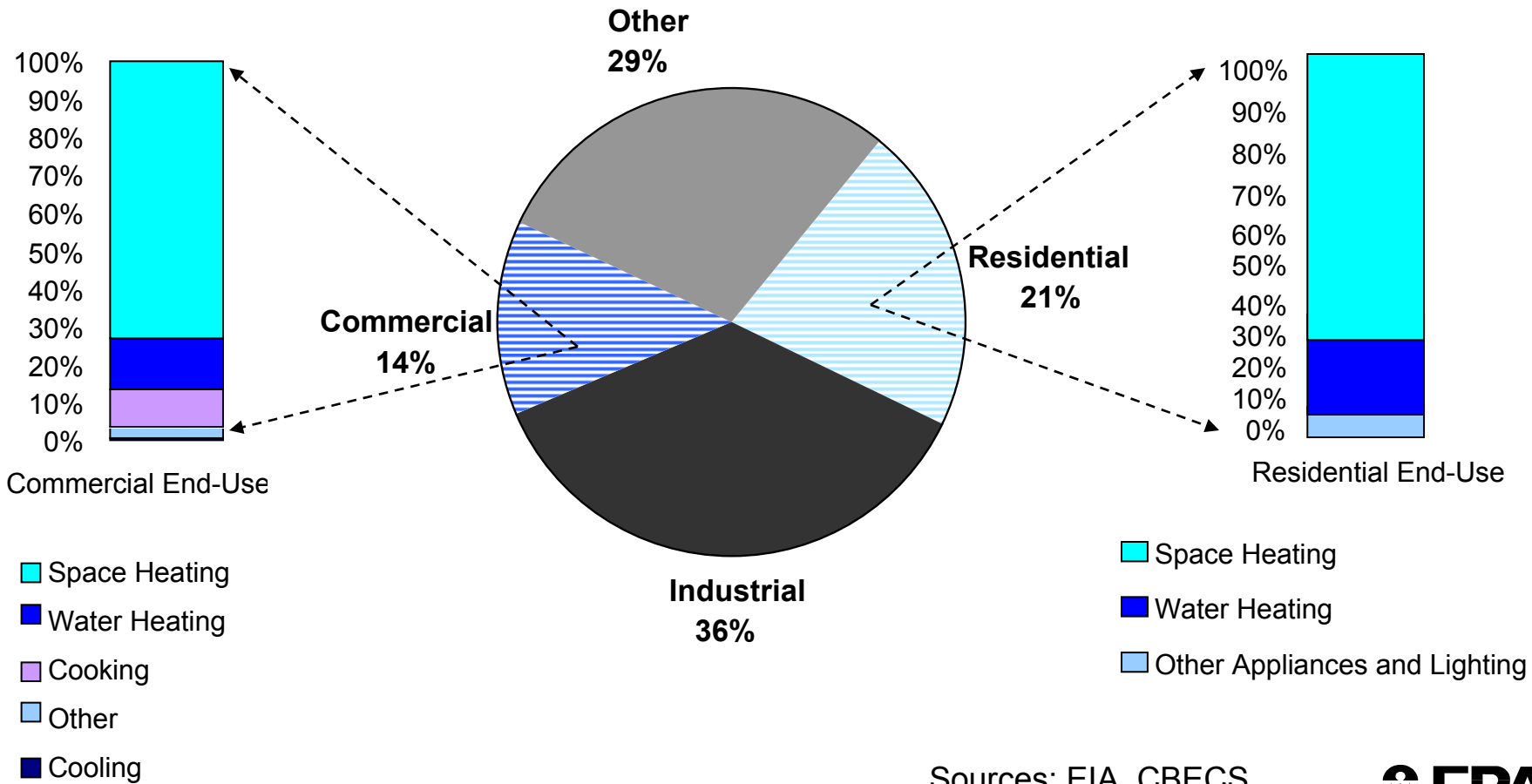


Sources: EIA, CBECS



Natural Gas Use and Buildings

Natural Gas Consumption by Sector



Sources: EIA, CBECS

