The Energy Policy Act of 2005

Beth Shearer

Beth Shearer & Associates, Inc.

Beth.shearer@comcast.net

The Energy Policy Act of 2005

- Why EPAct ’05?
- EPAct ’05 Titles
- The Federal Energy Market
- Federal Energy Requirements
- Federal Building Performance Standards
- Tax Credits

Legislative history / Executive Orders

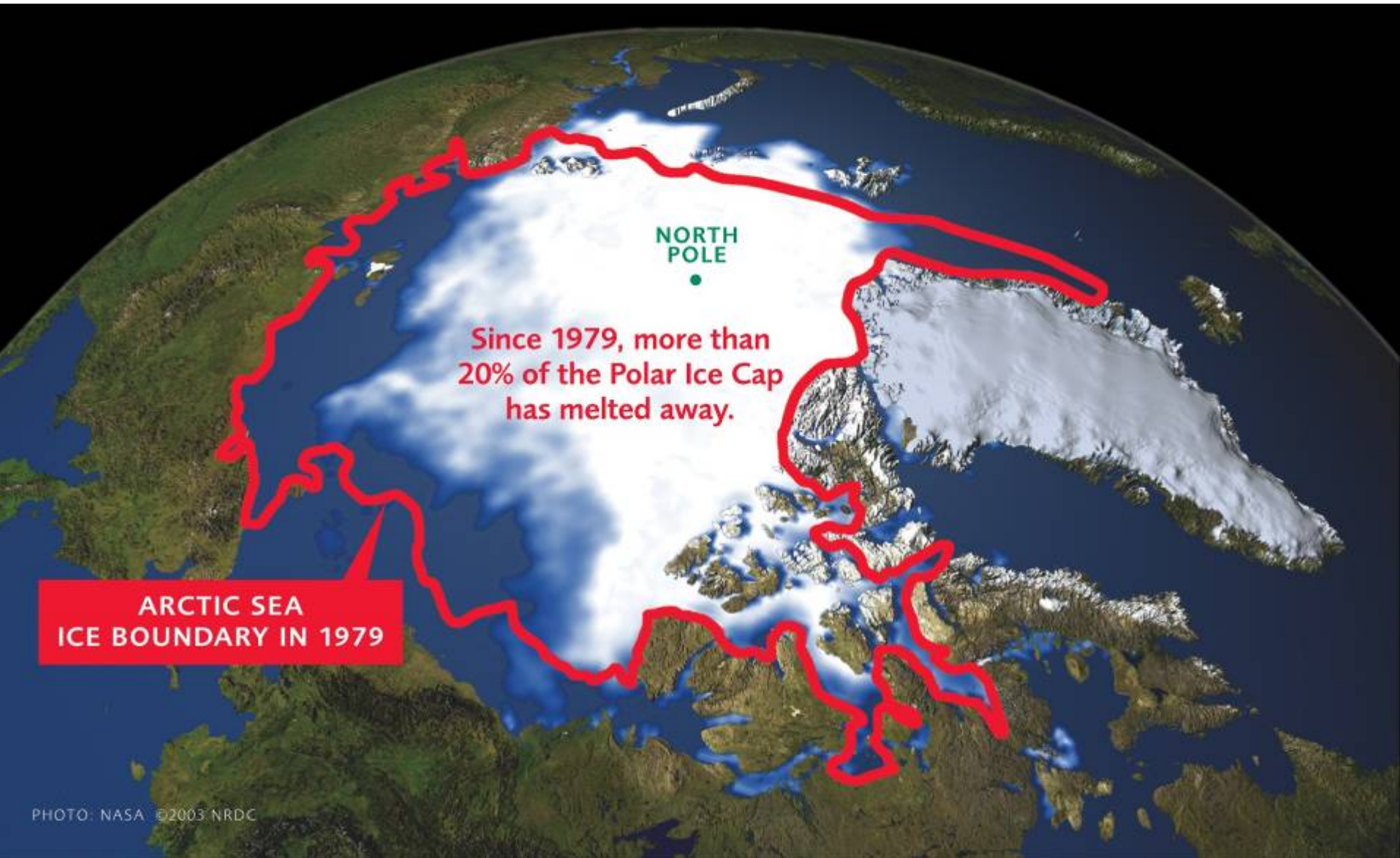
- Energy Policy and Conservation Act (1975)
- DOE Organization Act (1977)
- National Energy Conservation Policy Act (1978)
- Federal Energy Management Improvement Act (1988)
- Executive Order 12759 (1991)
- Energy Policy Act (1992)
- Executive Order 12902 (1994)
- Executive Order 13123 (1999)
- Executive Order 13221 (2001)
- Energy Policy Act of 2005 (EPAct ’05)

History:
Why we need an energy policy

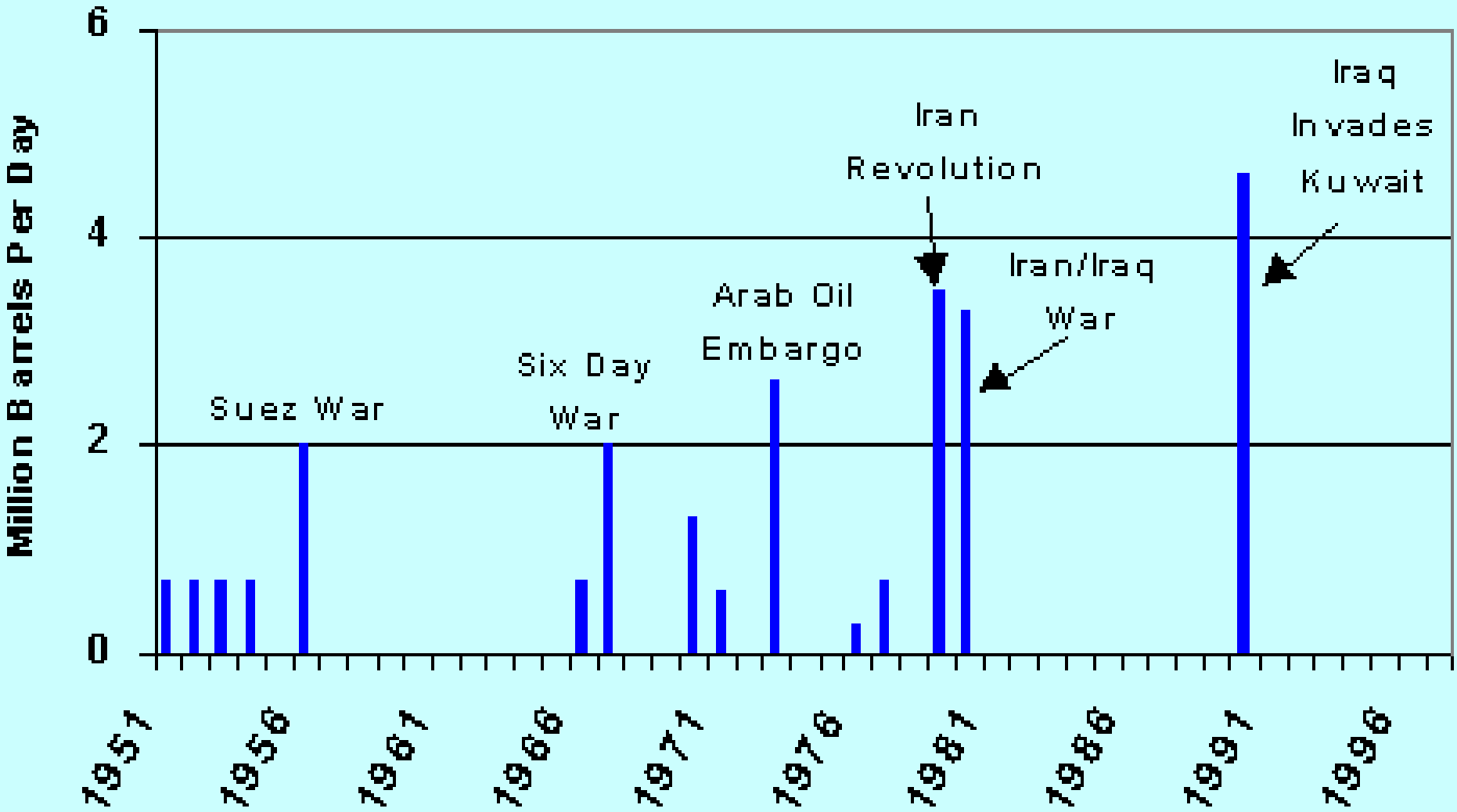
- 1960: Iran, Iraq, Kuwait, Saudi Arabia, and Venezuela started OPEC (now 11 countries comprise OPEC).
- 1970: U.S. production of petroleum reached its highest level at 11.7 million barrels per day.
- 1993: U.S. imports of oil and refined petroleum exceeds production.
- Today: The U.S. produces 24% of the world's total emissions

*Information and graphs from the Energy Information Administration

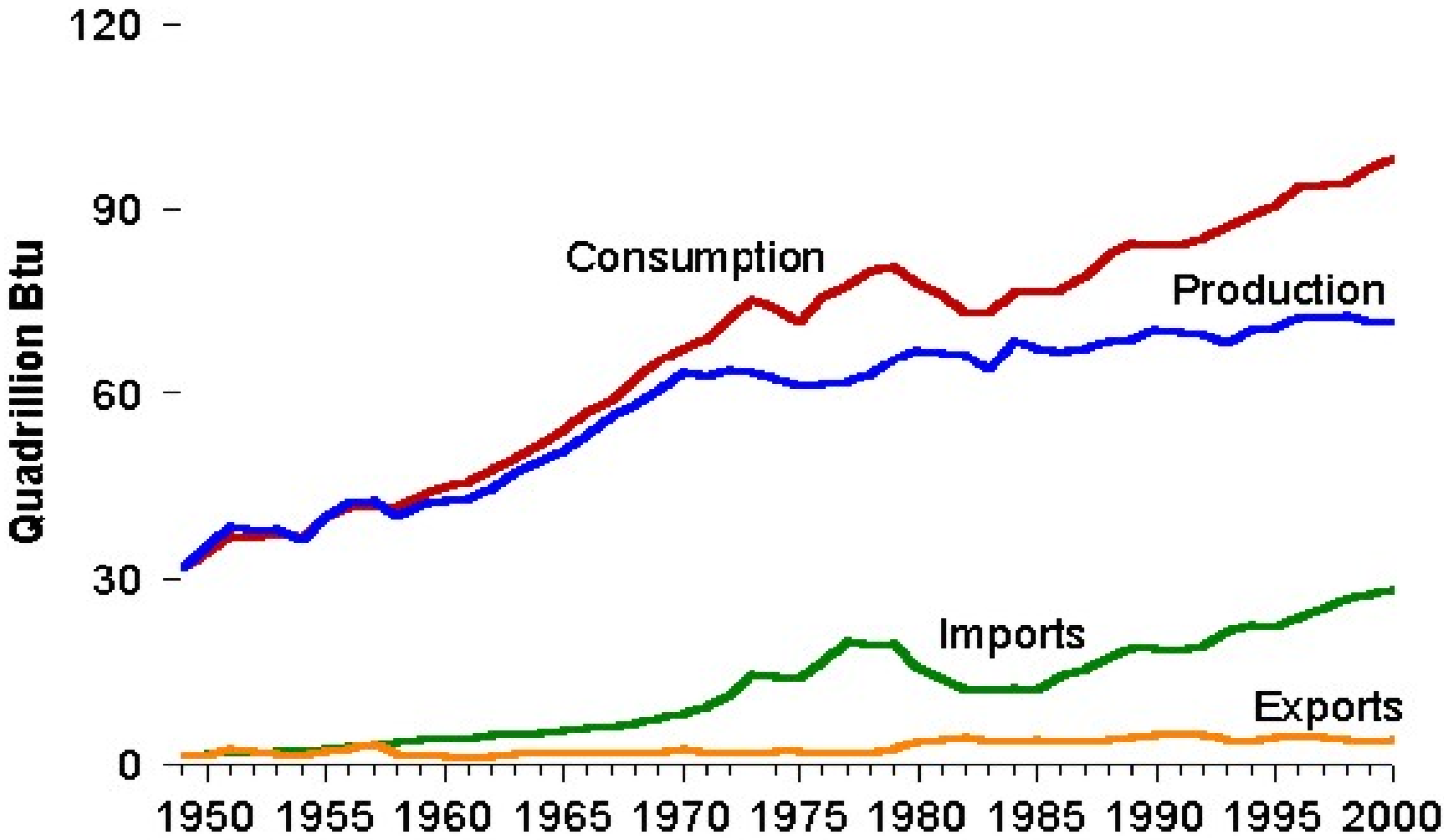
What's wrong with this picture?



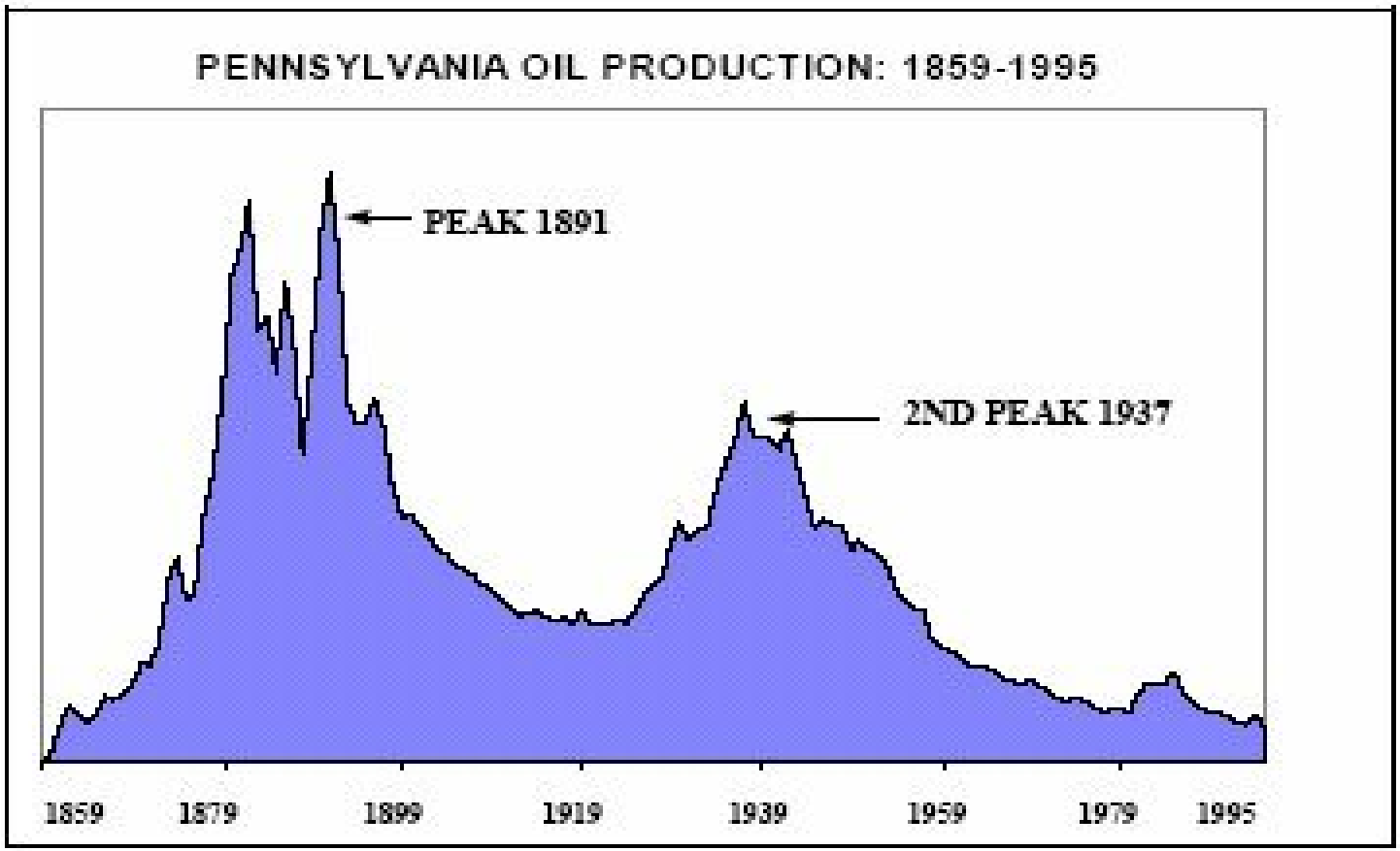
Major Disruptions of World Oil Supply



Energy Overview

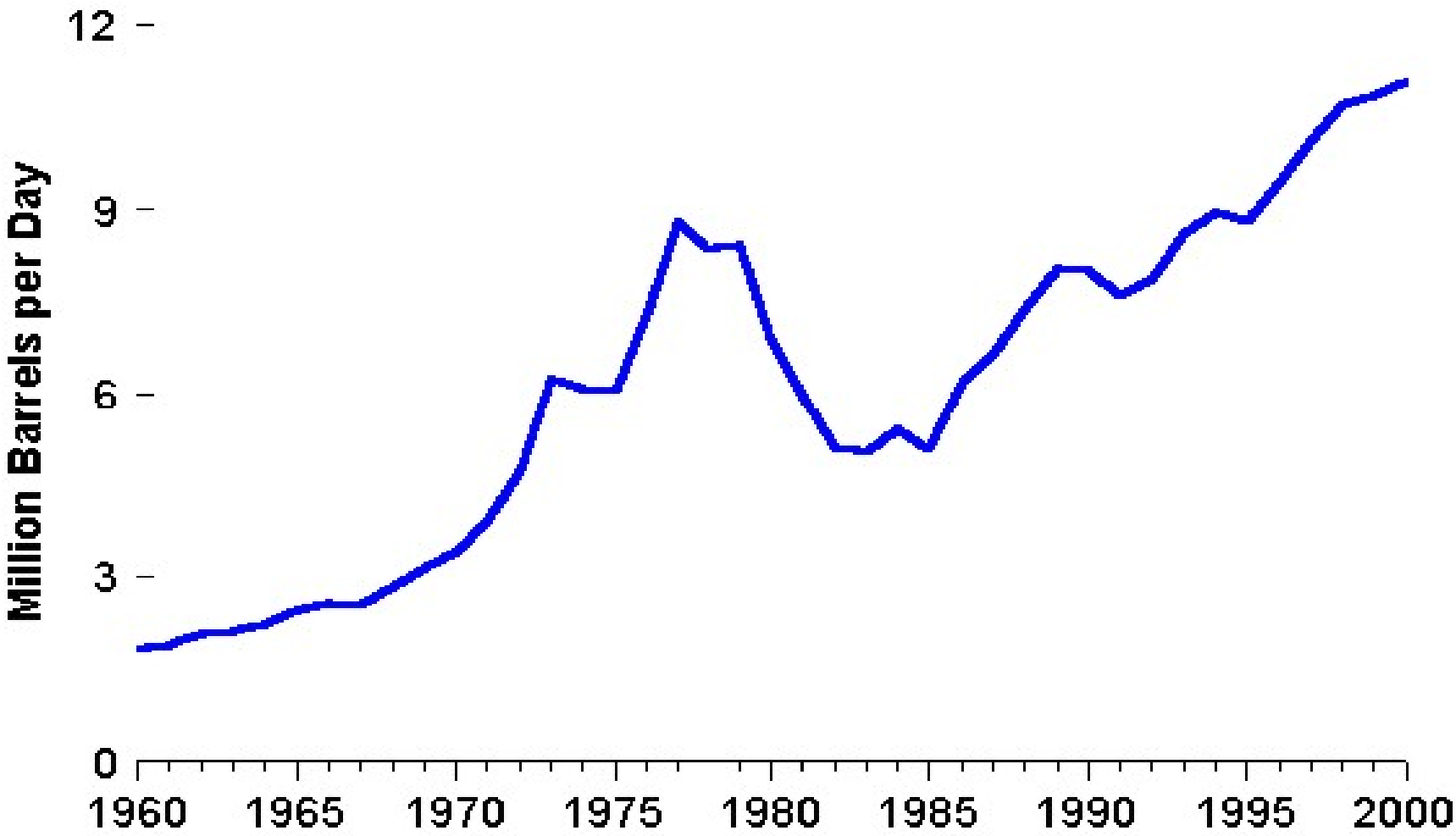


Energy Overview

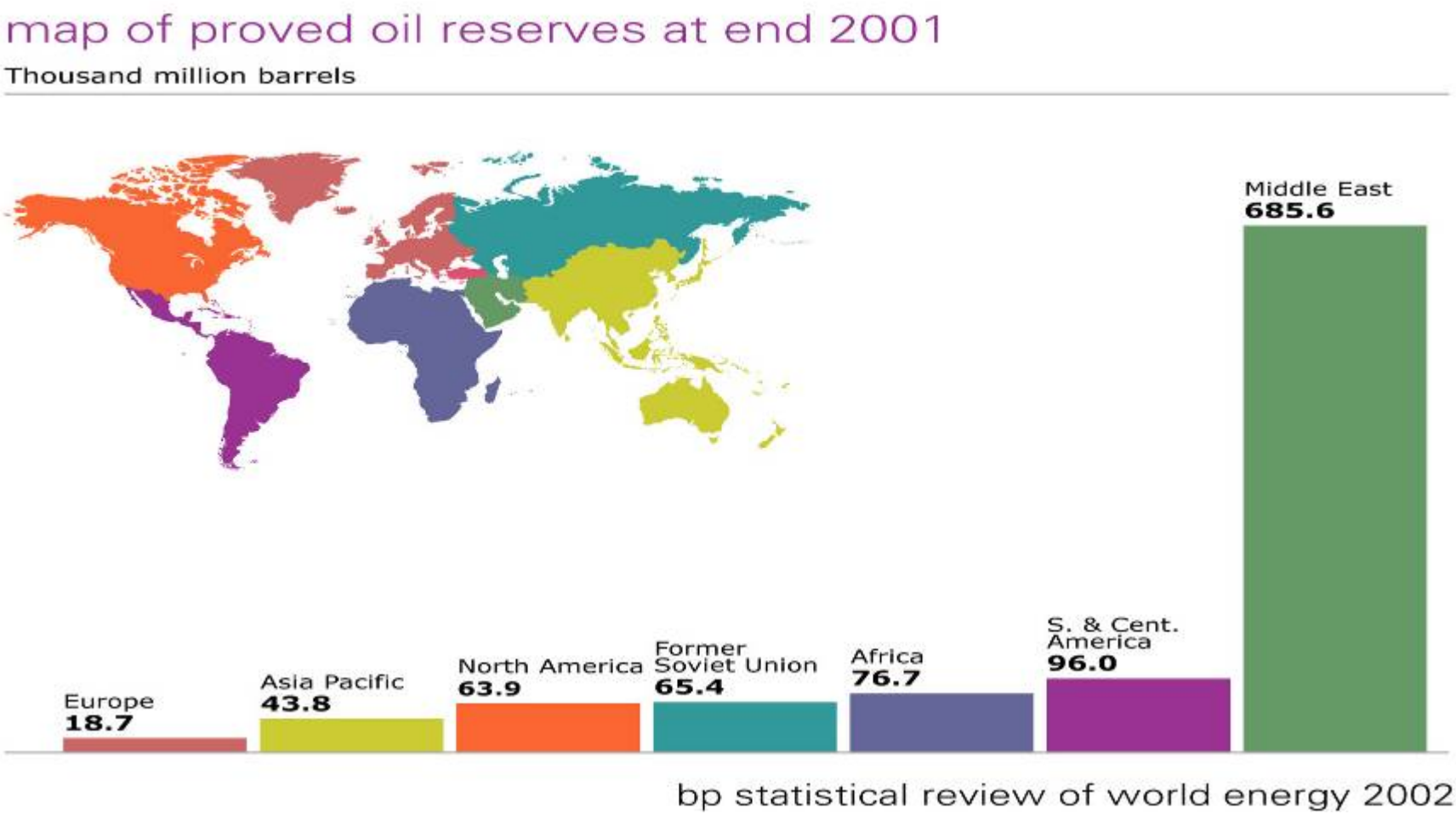


A typical Pennsylvania oil well produces 15 gallons per day; an average well in Saudi Arabia, 231,000.

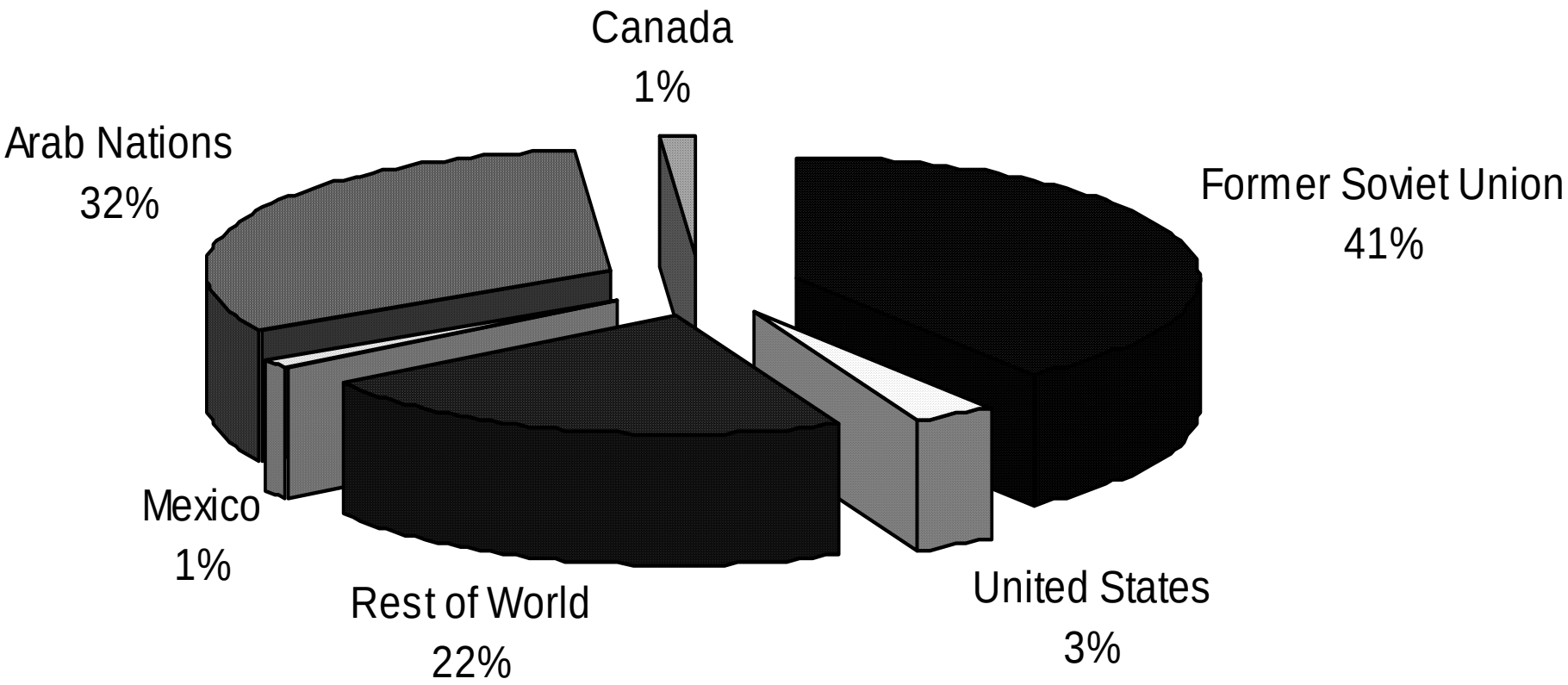
Petroleum Imports 1960 – 2000



Global Petroleum Reserves

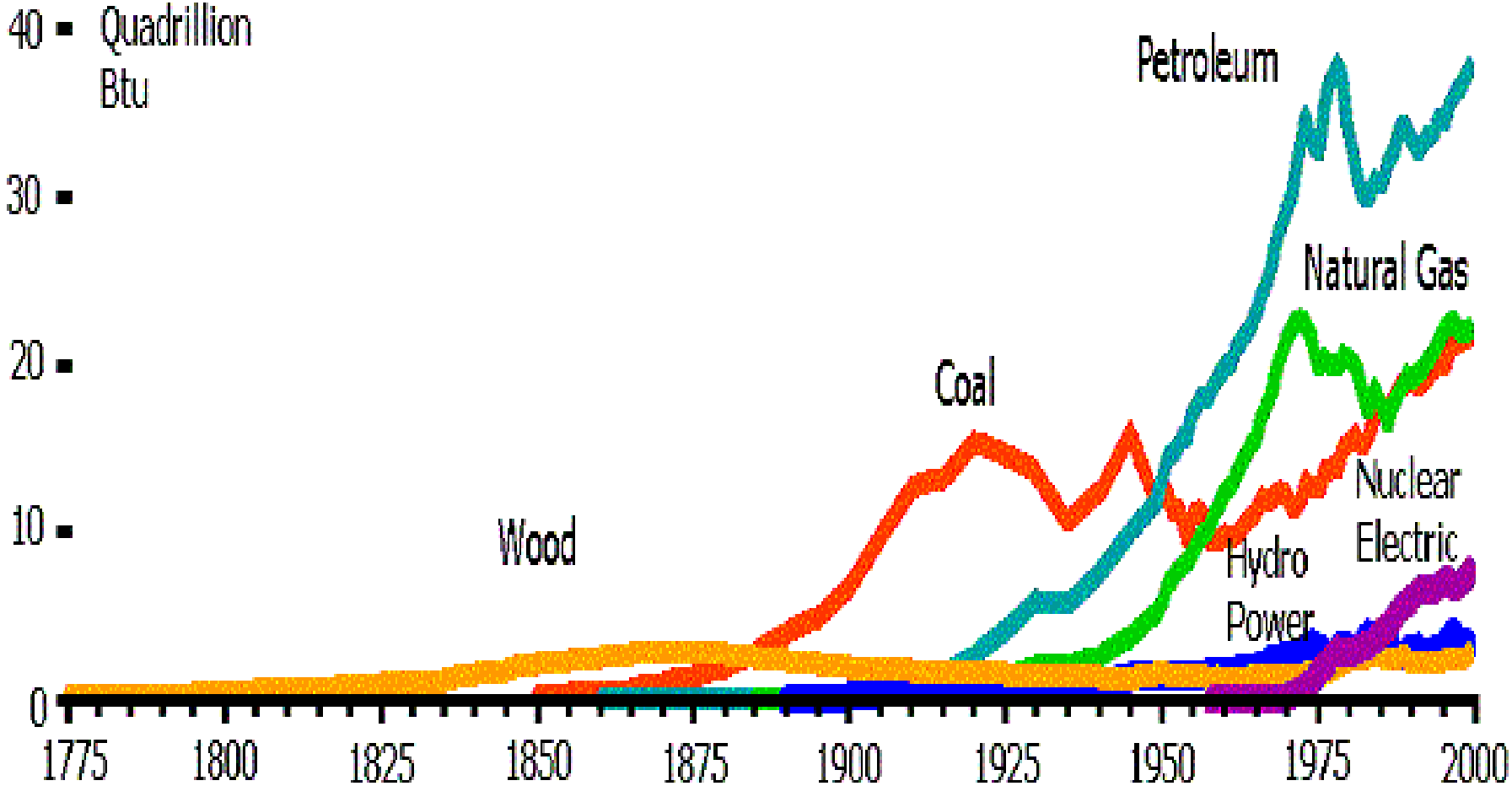


Global Natural Gas Reserves

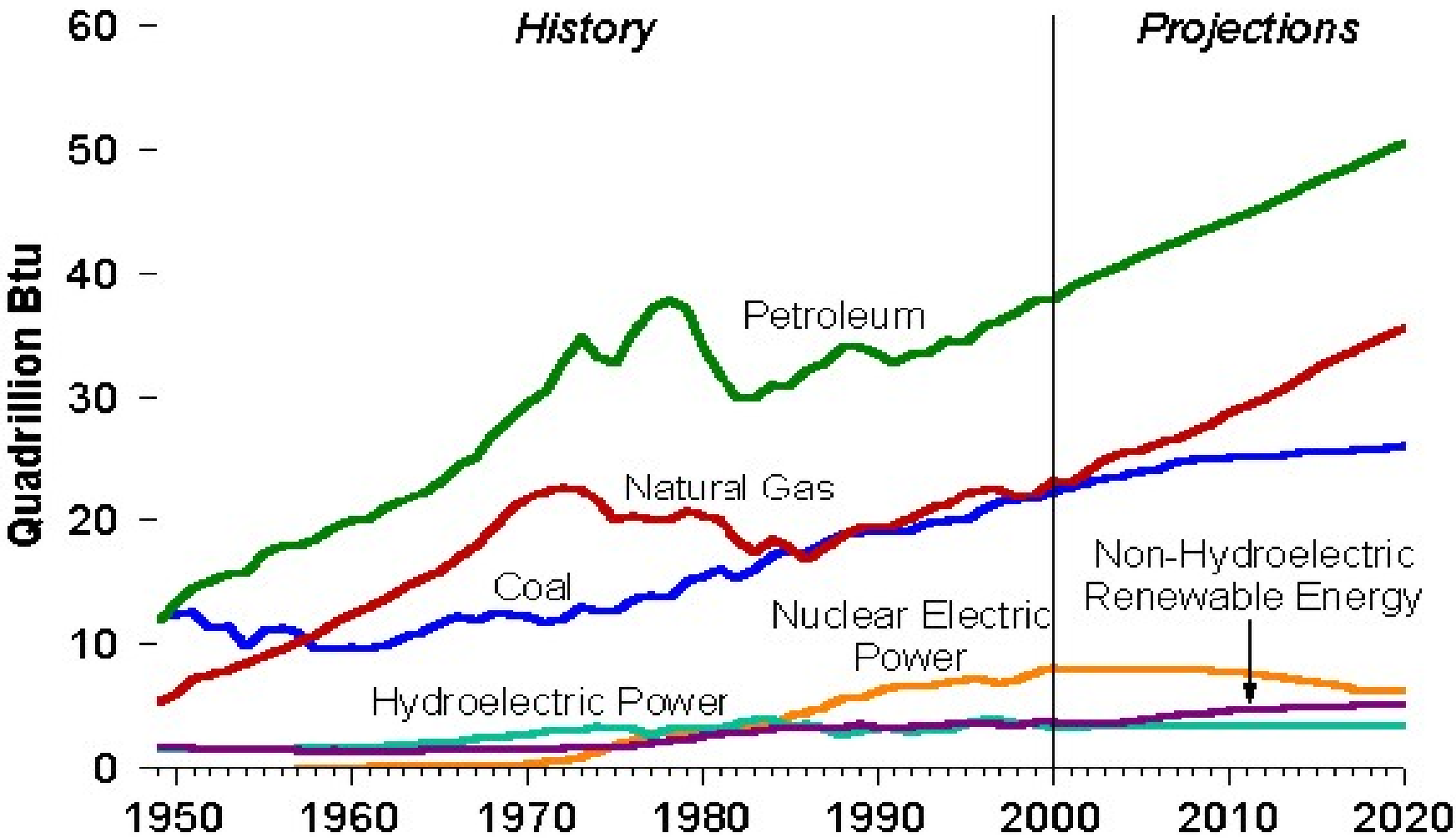


Source: Energy Information Administration, International Energy Outlook 1997

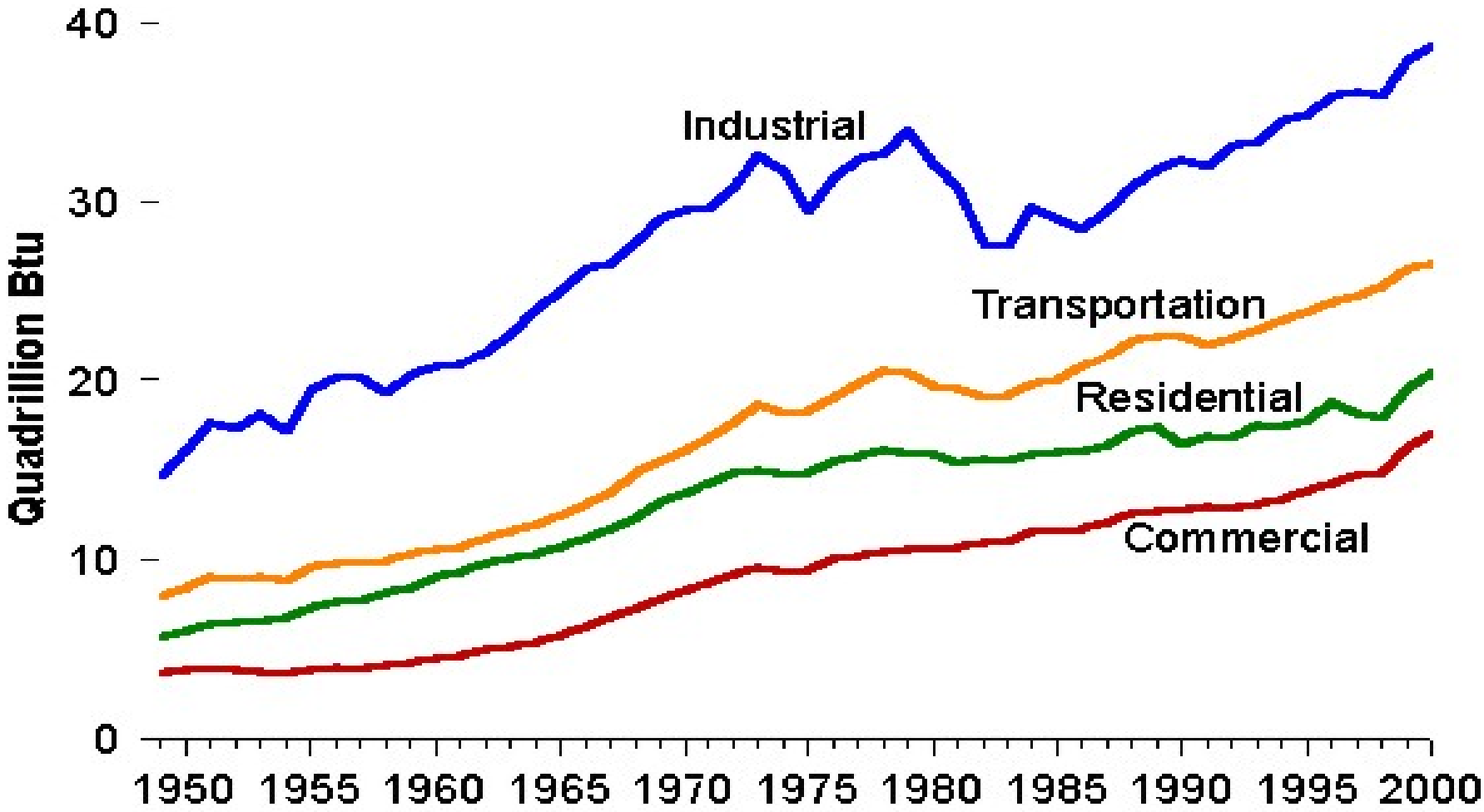
Energy Consumption in the U.S. 1775 -- 1999



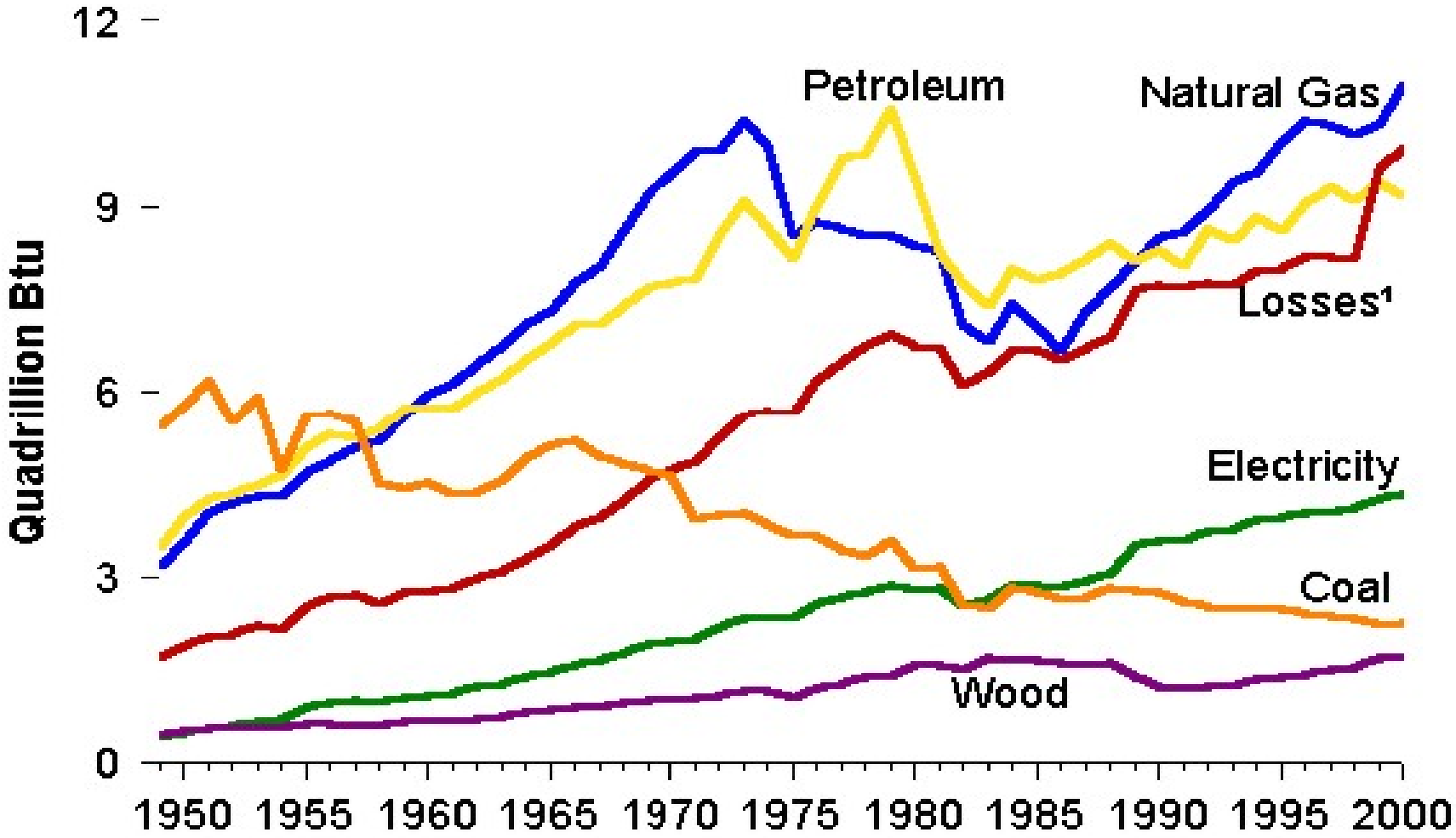
Energy Consumption History and Outlook, 1949-2020



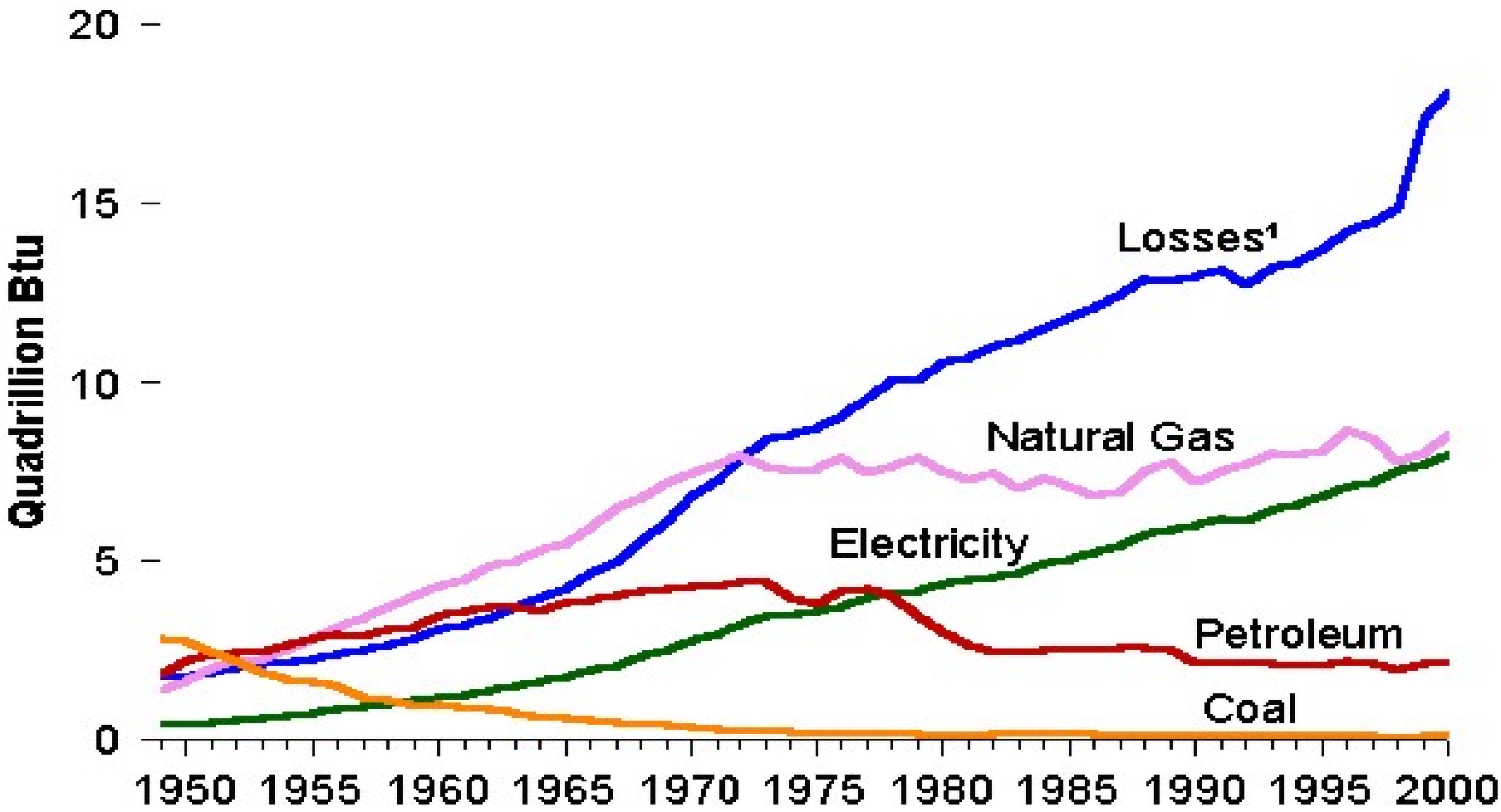
Energy Consumption by End Use



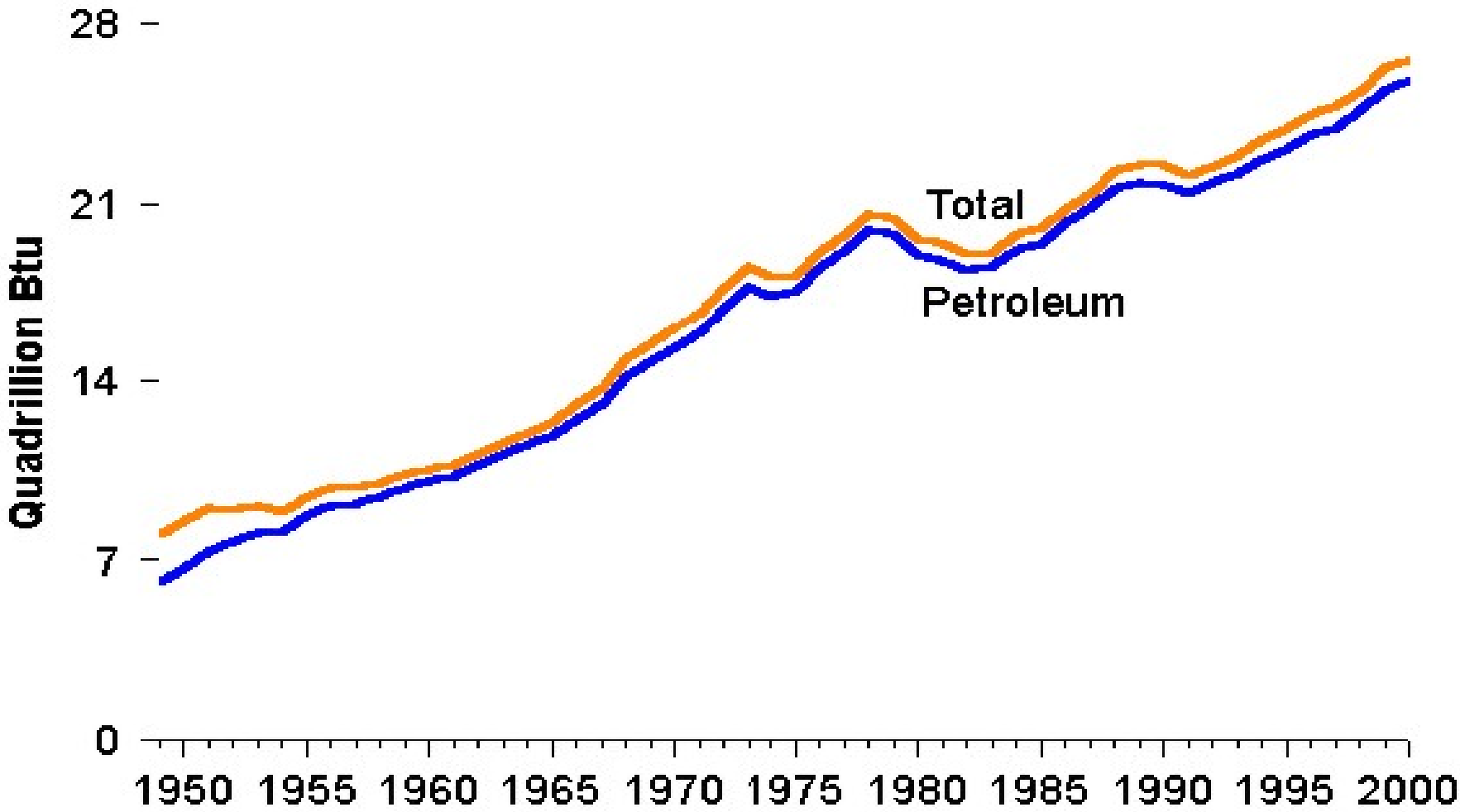
Industrial Energy Consumption



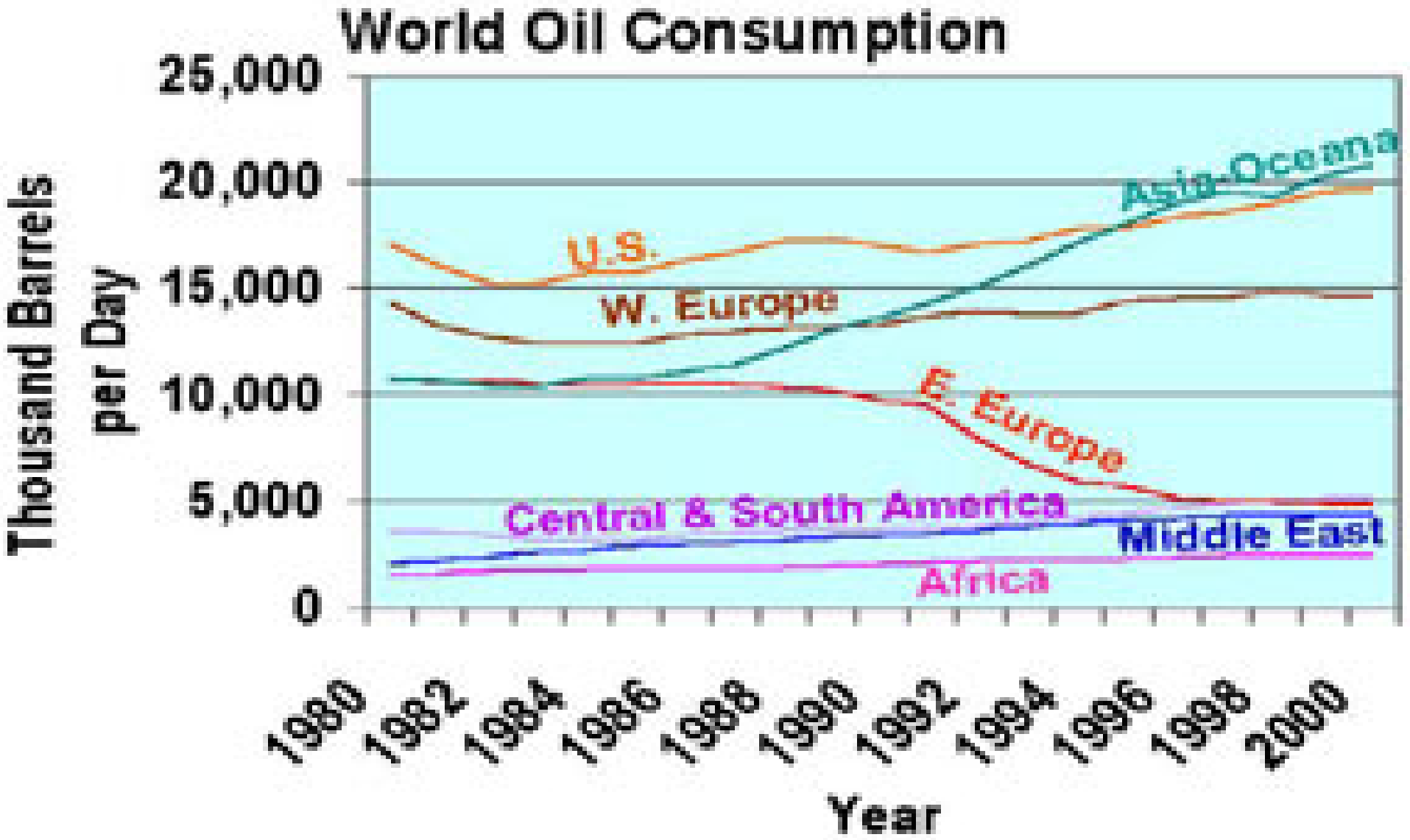
Residential and Commercial Energy Consumption



Transportation Energy Consumption



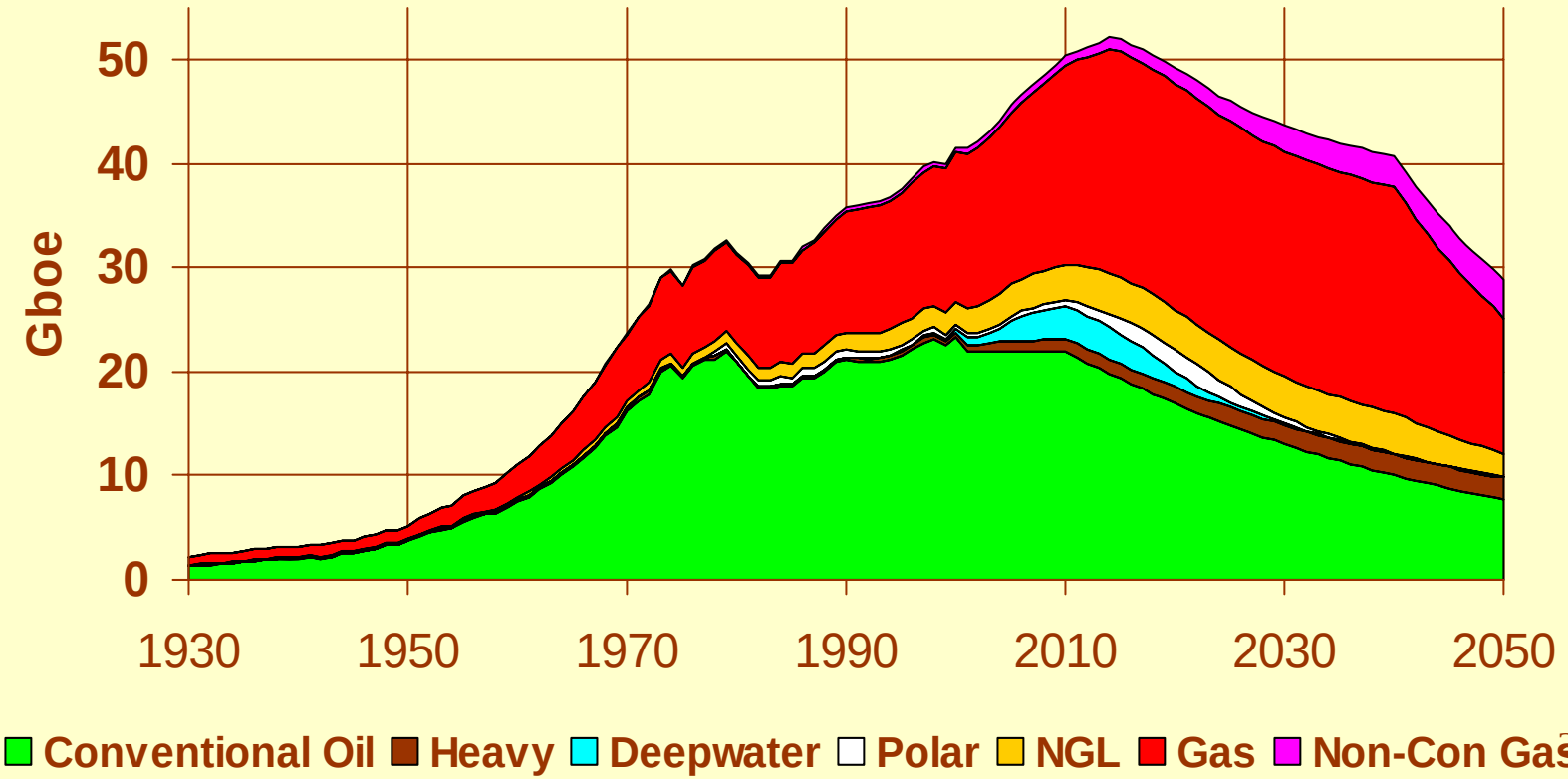
Some Other Trends



Crystal Ball Time

Production Forecast

2002 Base Case Scenario



EPAct 2005 Titles

I Energy Efficiency
II Renewable Energy
III Oil and Gas
IV Coal
V Indian Energy
VI Nuclear Matters
VII Vehicles and Fuels
VIII Hydrogen
IX Research and Development

EPAct 2005 Titles

X Department of Energy Management

XI Personnel and Training

XII Electricity

XIII Energy Policy Tax Incentives

XIV Miscellaneous

XV Ethanol and Motor Fuels

XVI Climate Change

XVII Incentives for Innovative Technologies

XVIII Studies

Why energy management in the Federal Sector?

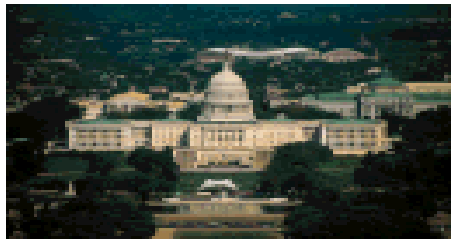
- Government is the largest energy user
- Lead by example
- Save energy and money
- Market transformation for energy efficient, renewable energy, and water-conserving products
- Technology demonstration and deployment

The Federal Energy Management Program

- The U.S. Federal government is the largest energy user in the U.S.:
- $11.3 billion Federal annual energy bill
  - 500,000 facilities
    - Standard Buildings: $4.0billion
    - Energy Intensive Operations: $0.7 billion
    - Exempt Buildings: $0.4 billion
  - Vehicles & Equipment: $6.2 billion
- Federal floor space 1.4% of national residential, commercial, and industrial space

Federal Buildings

- Office Buildings
- Laboratories
- Housing
- Border stations
- Parks and historic sites
- Post Offices
- Court Houses
- Hospitals
- Warehouses
- Space launch buildings



Energy Performance Targets

- 2-percent annual improvement:
  - 10 percent through 2010
  - 20-percent improvement through 2015
- Based on energy per gross square foot
- Baseline changed from 1985 to 2003
- DOE to issue guidelines for exclusion of certain types of buildings from targets
- Source versus site energy -- DOE to commission study by NAS (within one year)

Metering

- Install electric meters in “all federal buildings” by FY 2012
- To “maximum extent practicable” -- 60-minute interval data with logging
- DOE guidance now available
  - Electric only, both standard and advanced
  - Must provide actionable data in a sensible application
  - Cost-effective, 10 year simple payback, 2% annual savings assumed
- DOD draft guidance on web

Procurement

- Must purchase ENERGY STAR or FEMP-designated products
- Exceptions must be justified in writing
- Federal procurement guidelines must be changed to incorporate this requirement
- Includes purchases from federal schedules

Purchasing: Tools

ENERGY STAR®

A trusted symbol that identifies products with superior energy performance

Over 40 product categories and 14,000 product models

- Lighting
- Appliances
- Consumer Electronics
- Office Equipment
- Food Service Equipment
- Heating & Cooling
- Windows & Roofing
- Transformers
- Traffic Lights

Compact Fluorescent Light Bulbs : ENERGY STAR - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Search Favorites Media

Address http://www.energystar.gov/index.cfm?c=cfls.pr_cfls

ENERGY STAR®

SEARCH Go

BUY PRODUCTS THAT MAKE A DIFFERENCE

PRODUCTS | HOME IMPROVEMENT | NEW HOMES | BUSINESS IMPROVEMENT | PARTNER RESOURCES | + WHAT IS ENERGY STAR? + NEWS ROOM

Home > Products > Lighting > CFLs

email this page print view PDF Reader

- Appliances
- Heating & Cooling
- Home Electronics
- Lighting
  - + CFLs
  - + Light Fixtures
  - + Advanced Lighting Package
  - + Ceiling Fans
  - + Exit Signs
  - + Traffic Signals
- Office Equipment

- Purchasing & Procurement

Interested in

Compact Fluorescent Light Bulbs

If every household in the U.S. replaced one light bulb with an ENERGY STAR qualified compact fluorescent light bulb (CFL), it would prevent enough pollution to equal removing one million cars from the road. CFLs provide high-quality light, smart technology, and design, requiring less energy while lasting longer than typical incandescent bulbs.

find a store

special offers

Earning the ENERGY STAR

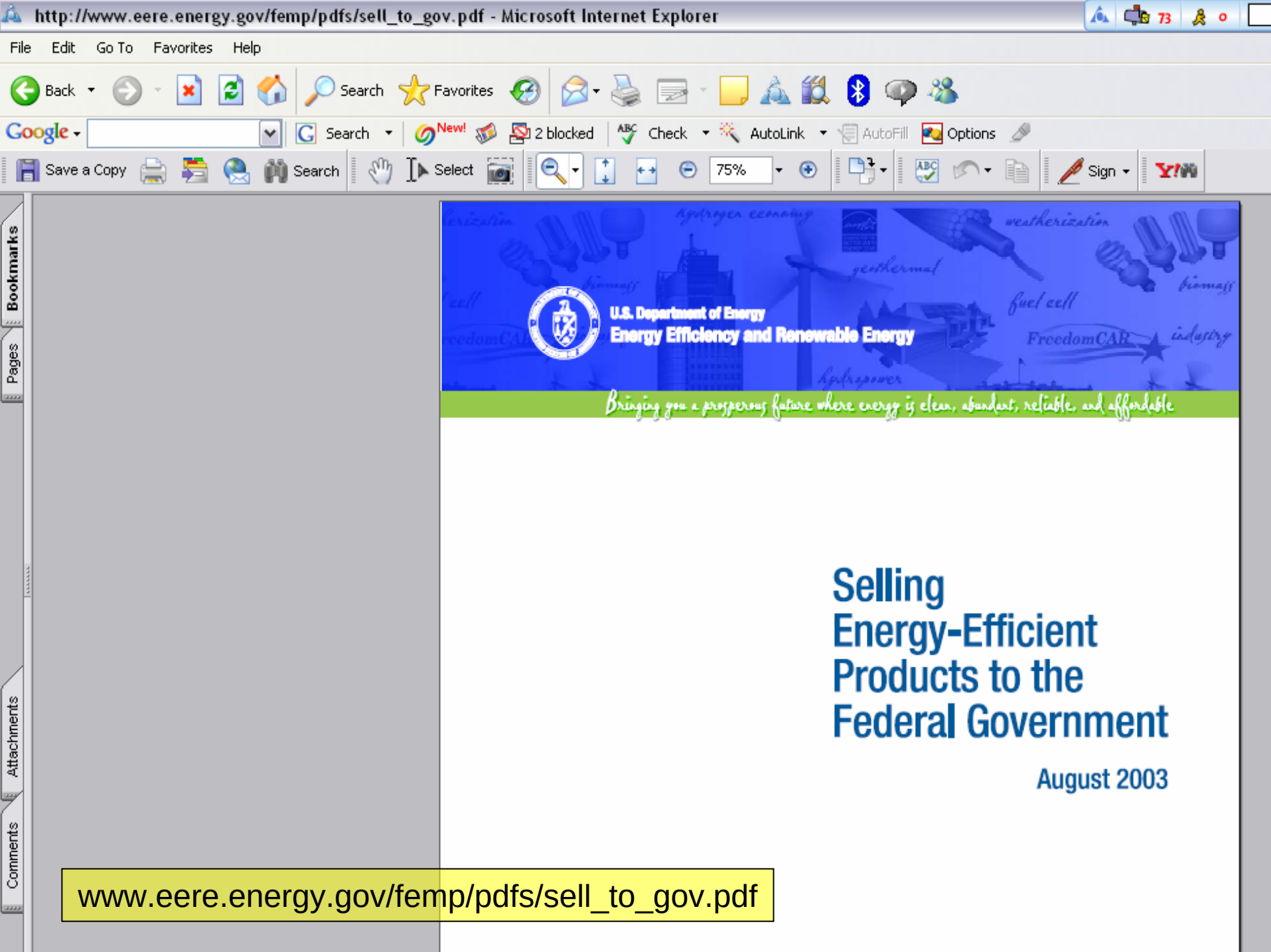
+ ENERGY STAR qualified CFLs use 66% less energy than a standard incandescent bulb and last up to 10 times longer. Replacing a 100-watt incandescent with a 32-watt CFL can save you at least $30 in energy costs over the life of the bulb.

Lighting Buyers Guide

Take the ENERGY STAR Quiz

For Consumers

+ Basic Product Search | Advanced
+ Purchasing Tips
+ Manufacturer List


http://www.eere.energy.gov/femp/pdfs/sell_to_gov.pdf - Microsoft Internet Explorer
File Edit Go To Favorites Help
Back Search Favorites
Google Search New! 2 blocked Check AutoLink AutoFill Options
Save a Copy Search Select 75% Sign
Bookmarks
Pages
Attachments
Comments
U.S. Department of Energy
Energy Efficiency and Renewable Energy
Bringing you a prosperous future where energy is clean, abundant, reliable, and affordable
Selling Energy-Efficient Products to the Federal Government
August 2003
www.eere.energy.gov/femp/pdfs/sell_to_gov.pdf

http://www.eere.energy.gov/femp/pdfs/green_vendors_read_sprd.pdf - Microsoft Internet Explorer

File Edit Go To Favorites Help

Back Search Favorites

Google www.eere.doe.gov Search New! 2 blocked Check AutoLink AutoFill Options www

Save a Copy Search Select 53% Sign

Pages

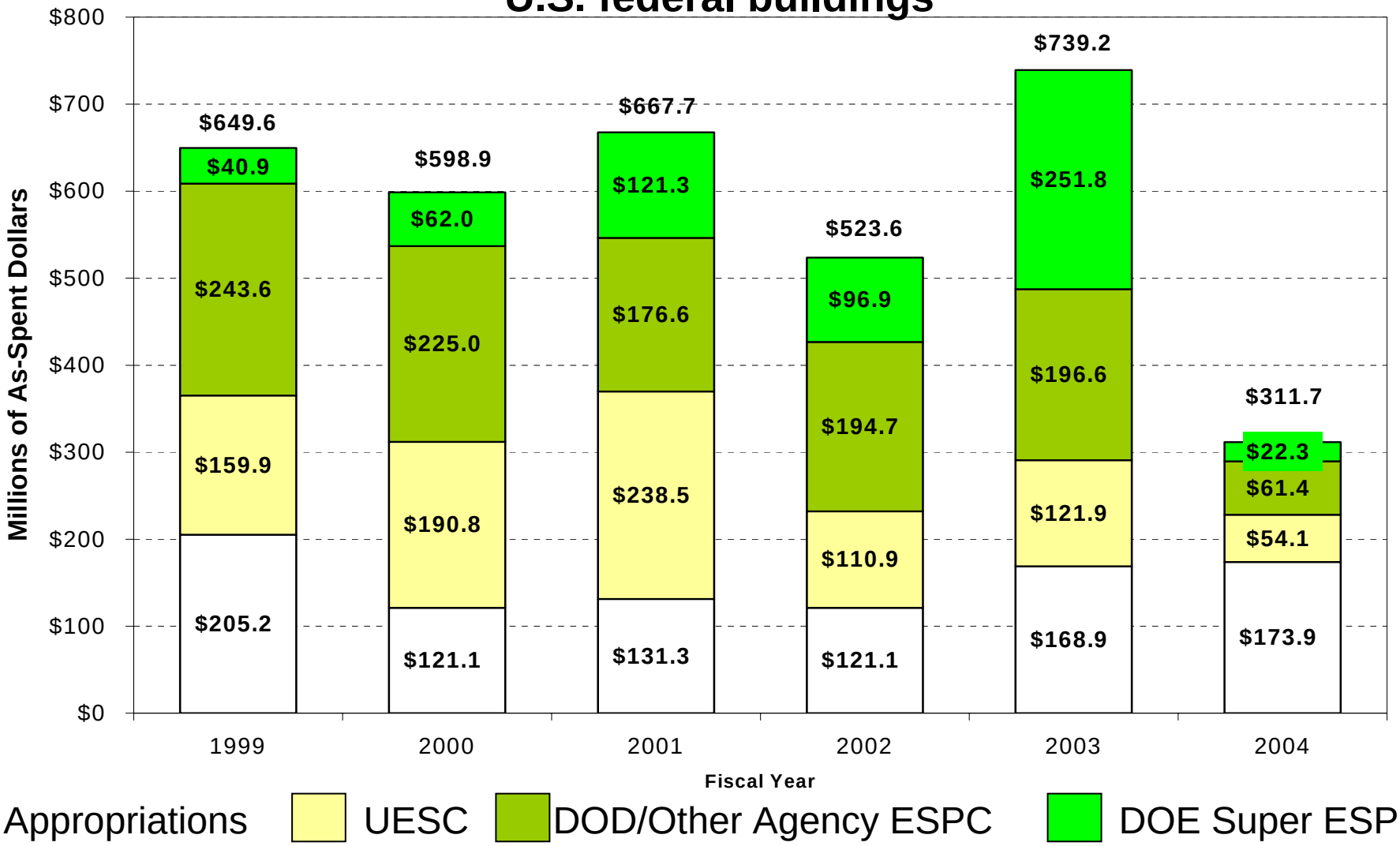
www.eere.energy.gov/femp/pdfs/green_vendors_read_sprd.pdf

Federal Procurement Opportunities for "Green" Vendors



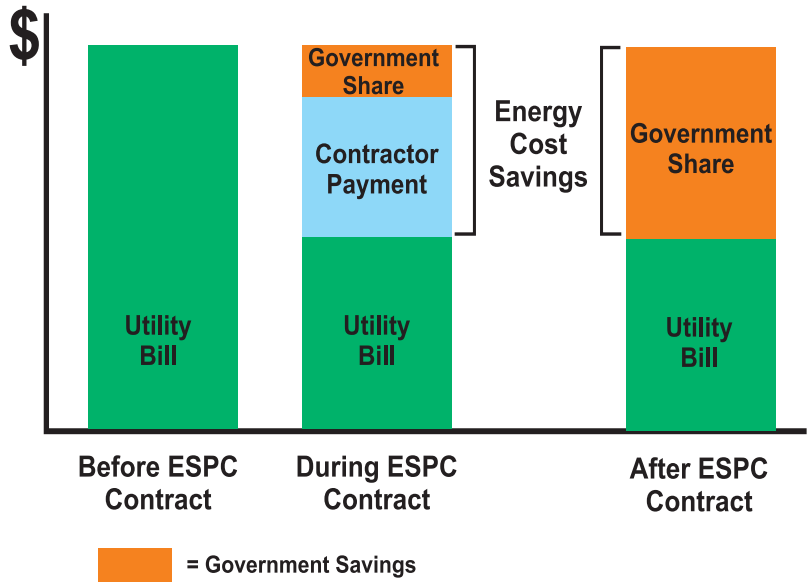
Energy Savings Performance Contracts (ESPC)

Alternative financing funds 74% of efficiency improvements in U.S. federal buildings



Energy Savings Performance Contracts

- ESPCs reallocate the Government's utility bill
  - Pay a lower utility bill
  - Pay the contractor
  - Achieve cost savings for the government
- Benefits of ESPCs:
  - Sites reduce their energy use/$
  - Improves the environment
  - Saves taxpayer dollars



Federal renewable energy requirement

- **Of the total electrical energy consumed by the Federal government, the percentage of renewable energy will be no less than:**
  - **3% in FY 2007 – 2009**
  - **5% in FY 2010 – 2012**
  - **7.5% in FY 2013 and thereafter**
- **Renewable energy definition expands to include ocean energy, municipal solid waste, and incremental hydro**
- **Renewable energy produced at a Federal facility or produced on Federal or Indian land and used at a Federal facility counts double**

APPROACHES TO MEET THE RENEWABLE ENERGY GOAL

Projects*

Low energy design or on-site power generation

R.E. Electricity Purchases

Green power or green tags

Facilitated Projects

R.E. power production on Federal lands

*On-site generation, used by a Federal facility counts double towards the goal

Sec 1254: Interconnection

- Utility company shall make grid interconnection available for any consumer with on-site generation
- Each State regulatory authority & all un-regulated utilities shall:
  - Commence consideration NLT 1 year
  - Make a determination NLT 2 years

Use of photovoltaic energy in public buildings

- GSA may establish a photovoltaic energy commercialization program
  - 20,000 buildings by 2010
  - At least 150 megawatts (peak) cumulative during the 5 years of the program
  - Funds authorized for projects for 5 years ($50m/yr) and for evaluation studies ($10m/yr)

Renewable energy security

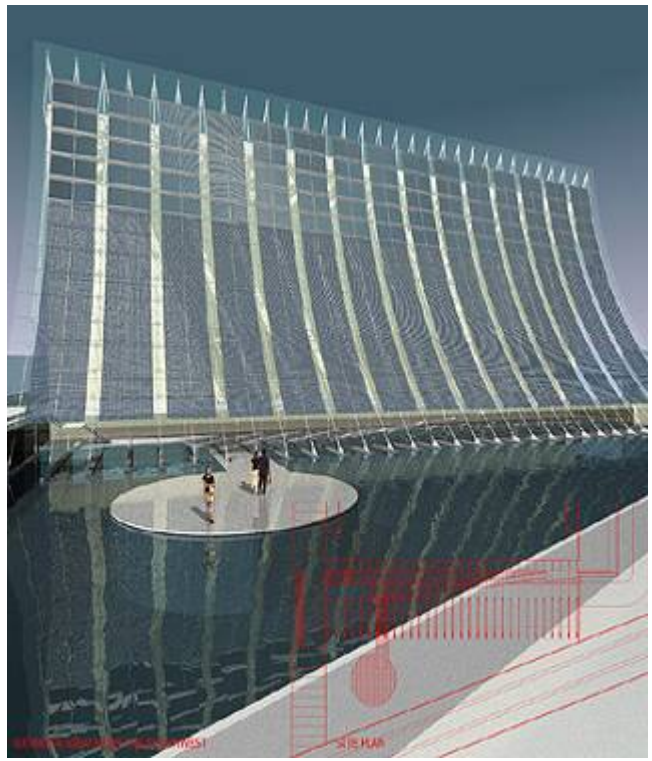
- Weatherization program will include financial assistance for renewable energy systems up to $3,000 per unit
- DOE shall establish a consumer rebate program for the installation of a renewable energy system for a dwelling unit or small business of up to $3,000. Appropriations authorized for 5 years

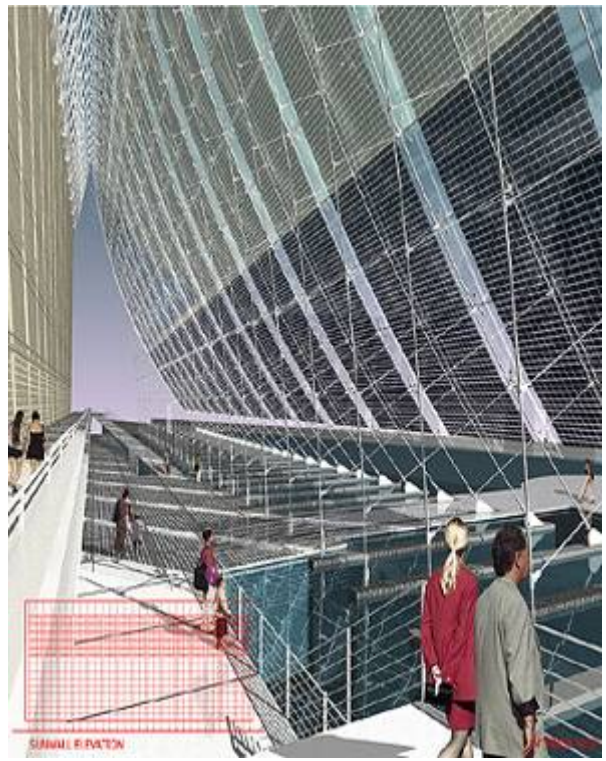
Installation of photovoltaic system

- Appropriations authorized for GSA to install Sun Wall Design Project system on DOE HQ

Installation of Photovoltaic System

DOE HQ - Sun Wall Competition





Federal Building Performance Standards

- EPAct ’05, Sec. 109: DOE, within one year, will establish, by rule, Federal building energy efficiency performance standards
  - Life-cycle cost-effective
  - Energy consumption at least 30% below current ASHRAE/IECC standard
  - Use sustainable design principles
  - Incorporate water conservation technologies
  - Agencies must certify compliance in budget

Current Federal Sustainability Policy (E.O. 13123)

- Maximize the potential of the site;
- Minimize the energy and resource consumption;
- Protect and conserve water;
- Use environmentally preferable products and materials;
- Enhance indoor environmental quality; and
- Optimize operational and maintenance practices.

Whole Building Design Guide

- Meets EO 13123, Section 403.(d) requirement for DOD and GSA, in consultation with DOE and EPA,
  to develop sustainable design principles.

- Provides principles along with access to a wide range of Federal and private sector building-related guidance, criteria, and technology.

- http://www.wbdg.org

WBDG
Whole Building Design Guide

WBDG Design Objectives

- Accessible
- Aesthetics
- Cost-effective
- Functional/operational
- Historic Preservation
- Productive
- Secure/safe
- Sustainable

What About LEED?

- U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) Green Building Rating System

- LEED™ can be used as a checklist and guide and will provide a start for quantifiable/realistic sustainable goals and targets for the design and development team.

LEED Topic Areas = WBDG +1

- LEED Topic areas:
  - Sustainable sites
  - Water efficiency
  - Energy and atmosphere
  - Materials and resources
  - Indoor environmental quality (IEQ)
  - Design process and innovation
- WBDG topics:
  - Optimize site potential
  - Minimize energy consumption
  - Protect and conserve water
  - Use environmentally preferable products
  - Enhance indoor environmental quality (IEQ)
  - Optimize operational and maintenance practices

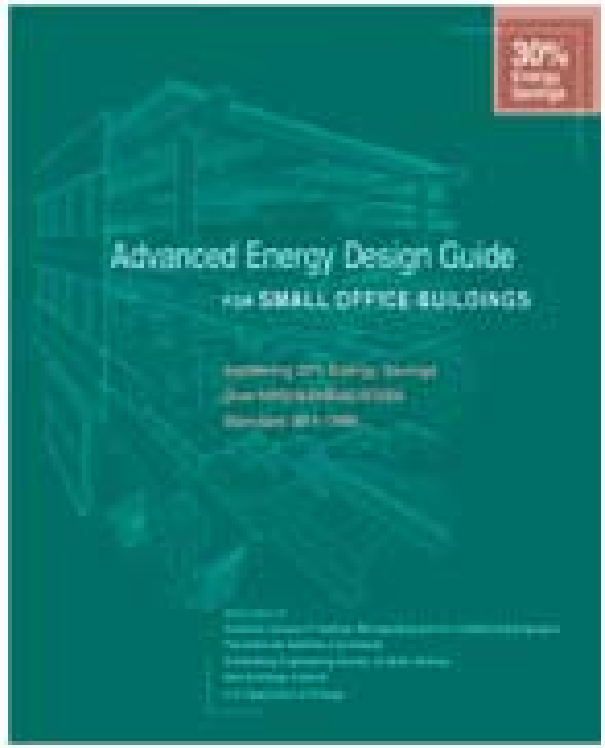
Getting Good Buildings: FEMP recommends:

1. Set your sustainability goals early in the planning stages
2. Set up a cross-functional, integrated design team
3. Conduct sustainability charrettes
4. Pick a qualified architecture and engineering firm
5. Integrate architectural and engineered systems
6. Maintain commitment to integrate sustainability throughout the process
7. Achieve recognition

ASHRAE Design Guide and LEEDS

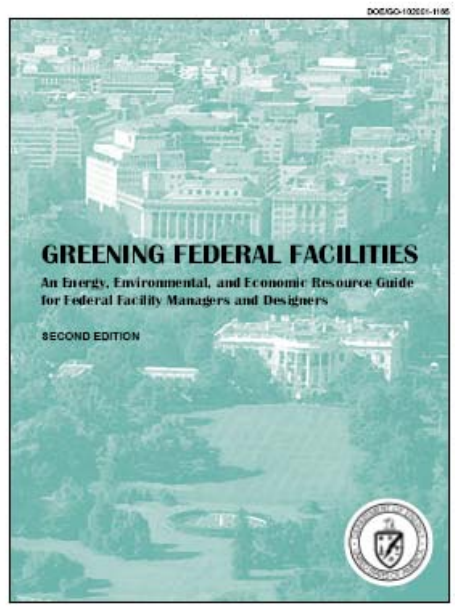
Advanced Energy Design Guide for Small Office Buildings

- 30% energy savings when compared to ASHRAE Std. 90.1-1999
- Following this guide prescriptively will get you 4 LEED credits – and you don't have to model the building at all.



Greening Federal Facilities Guide

- Highlights practical, cost-effective practices to:
  - Invest in improvements that have quick paybacks and make economic sense
  - Increase the productivity, comfort, and health of employees and building occupants
  - Maximize innovative financing and partnering opportunities
  - Facilitate interagency cooperation
  - Work within the ongoing operations and procedures of facilities management staff
  - Reduce environmental impacts



- http://www.eere.energy.gov/femp/pdfs/29267-0.pdf

Low-Energy Building Design Guidelines

- Provides practical information for applying principles of low-energy, whole-building design in new Federal buildings
- Teaches energy managers how to be advocates for renewable energy and energy-efficient technologies
- Shows how to apply specific strategies during each phase of a project's time line
- www.eren.doe.gov/femp/prodtech/low-e_bldgs.html

Sec. 914: Building Standards

- Definition of High Performance Building (HPB): Integrates and optimizes all major high-performance building attributes, including energy efficiency, durability, life-cycle performance, and occupant productivity (WBDG?)
- NIBS will assess voluntary consensus standards and rating systems for HPBs, determine additional research needs, recommend next steps to accelerate development of voluntary consensus-based performance standards
- DOE to establish grant and technical assistance program to support development of standards for HPBs

DOE's High Performance Buildings

U.S. Department of Energy

Office of Energy Efficiency and Renewable Energy Bringing you a prosperous future where energy is clean, abundant, reliable, and affordable

DOE supports the development of commercial buildings that are energy efficient, healthy and comfortable places to learn, work, and play.

High Performance Buildings

An Initiative of the U.S. Department of Energy Building Technologies Program

Related Topics

Performance Metrics

See Residential building information

About High Performance Buildings

- **Design Approach** — Whole-building design, costs and benefits
- **Toolbox** — Design guidelines, software, weather data, papers, brochures, and resources
- **Technologies** — Methods, materials, and equipment

About the High Performance Initiative

- **About our Research** — Goals & objectives, how to participate, research projects, and contact information
- **Process Change Research** — Design and technologies that target 50% energy cost savings
- **Performance Metrics Research** — Standardized metrics and procedures for measuring building performance

News & Events

Oberlin College Lewis Center Energy Performance Report Available

Public housing

- Authorizes 20-year ESPCs (“third party contracts”) for public housing.
- Must deploy ENERGY STAR or FEMP products unless not cost-effective
- Rehab and construction using Hope VI revitalization grants must meet IECC 2003.
- Within one year of enactment and every 2 years after, HUD Secretary shall report on energy use and efficiency plans for public housing

Commercial Building Tax Deduction

- Tax years 2006-2007
- $1.80 per square foot tax for new buildings and major renovations that achieve energy cost at least 50% less than ASHRAE 90.1-2001.
- Eligible subsystems include shell, lighting and HVAC improvements – each of which is individually worth $0.60 per square foot.
- For public property, deduction may be used by “the person primarily responsible for designing the property in lieu of the owner of the property.”

New Home Tax Credit

- Available to builders for homes sold in tax years 2006-07
- $2,000 if heating and cooling consumption at least 50% below 2004 IECC model energy code
- $1,000 for modular home at least 30% below the 2004 IECC.
- No specific reference to public entities -- implications for federal purchases?

Title XVIII: Studies

- Sec 1803: Telecommuting study
  - Energy conservation implications of widespread adoption of telecommuting by Federal employees in the U.S.
- Sec 1826: Passive solar technologies
  - Determine avoided costs and energy savings of passive solar over time and the effect of incentives
- Sec 1829: Energy and water saving measures in congressional buildings

- Questions?