Greater Efficiency Today
Blue Skies Tomorrow

Innovation for a Sustainable Built Environment

Kent W. Peterson, PE, Fellow ASHRAE

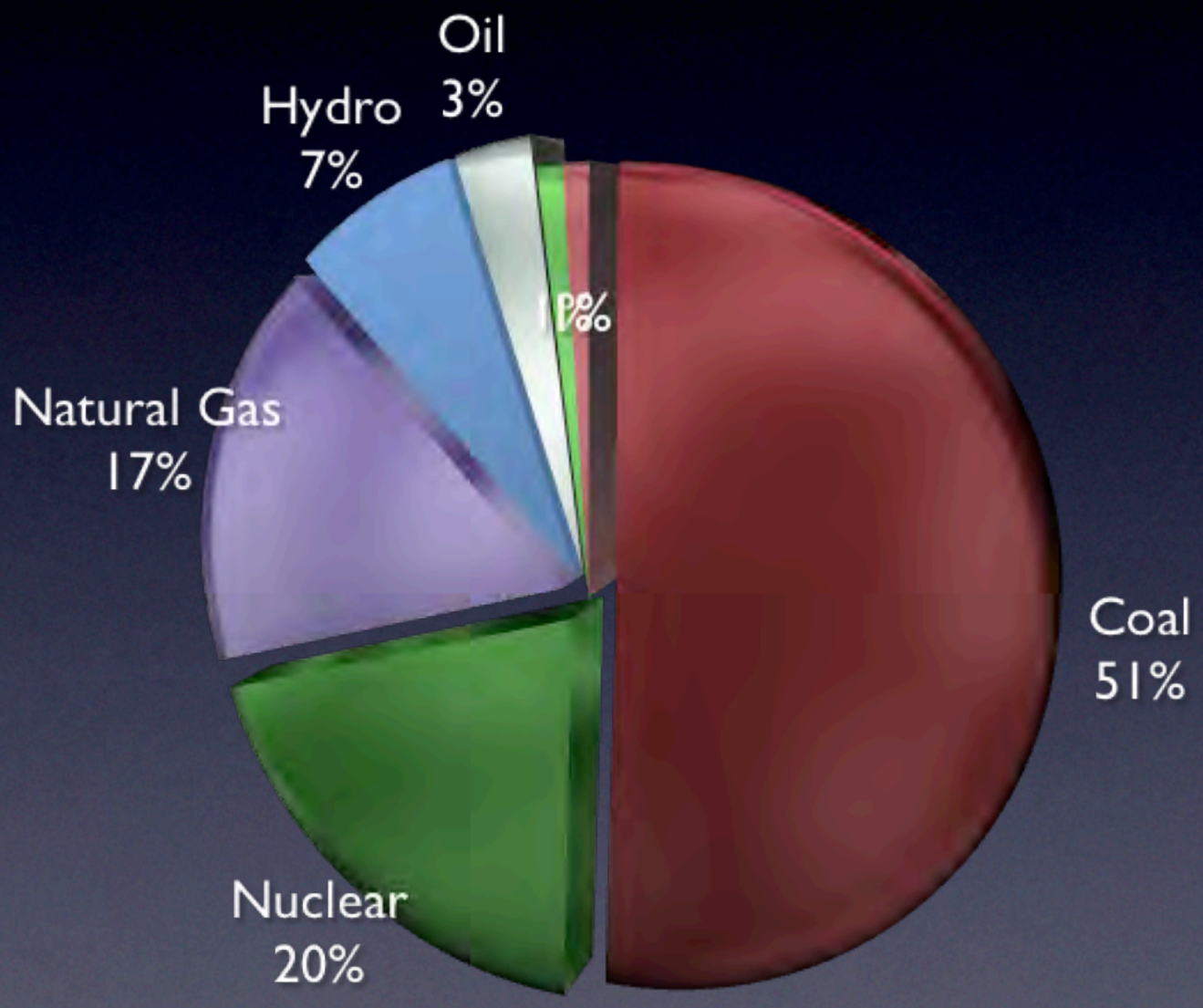
Think globally, act locally

Global greenhouse gas emissions have increased by 70% between 1970 and 2004

Largest growth in global GHG emissions between 1970 and 2004 has come from the energy supply sector

2005 U.S. Electricity Generation

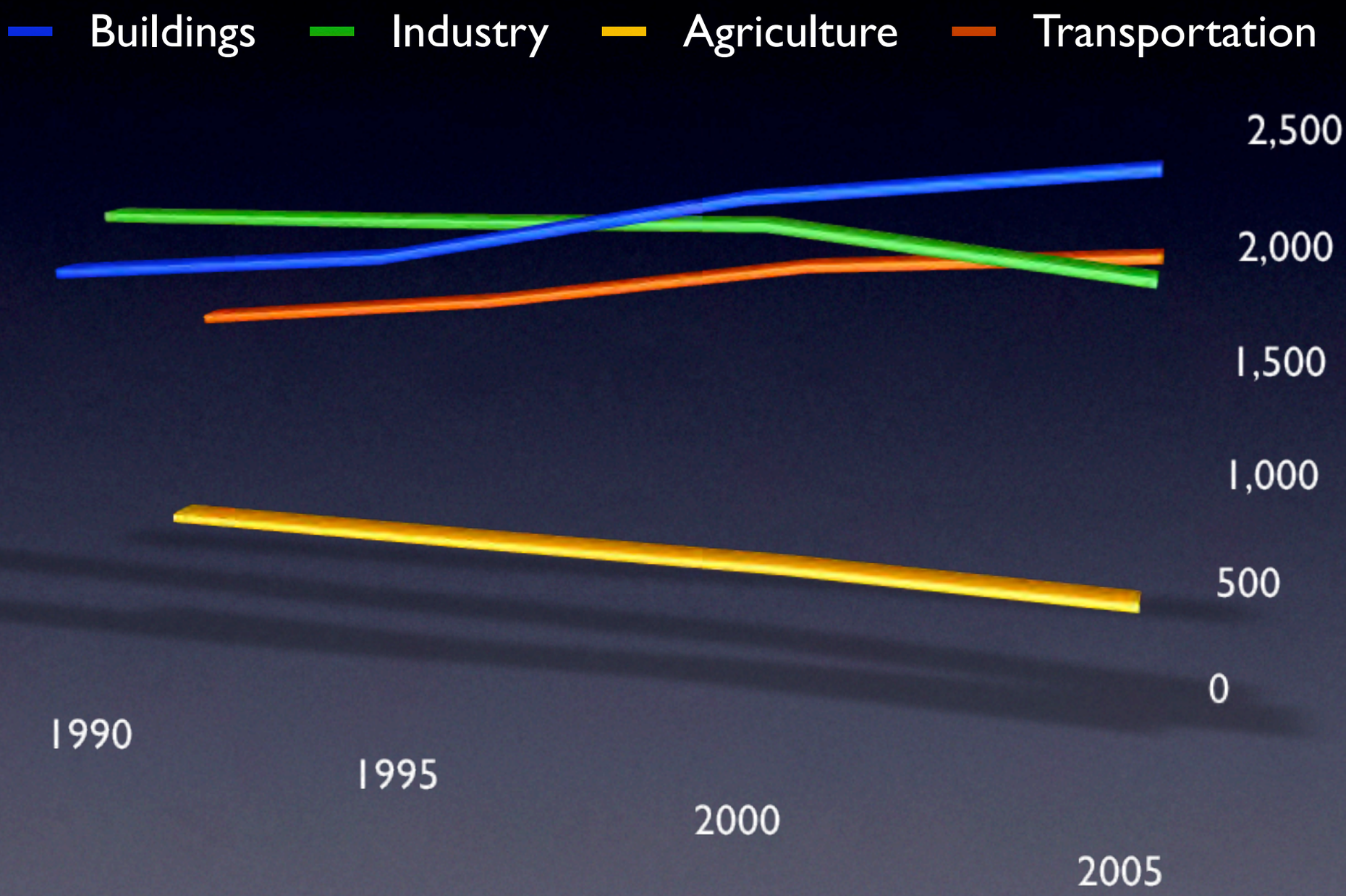
By Energy Source



U.S. EPA Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990 – 2005

U.S. GHG Emission Trend by Sector

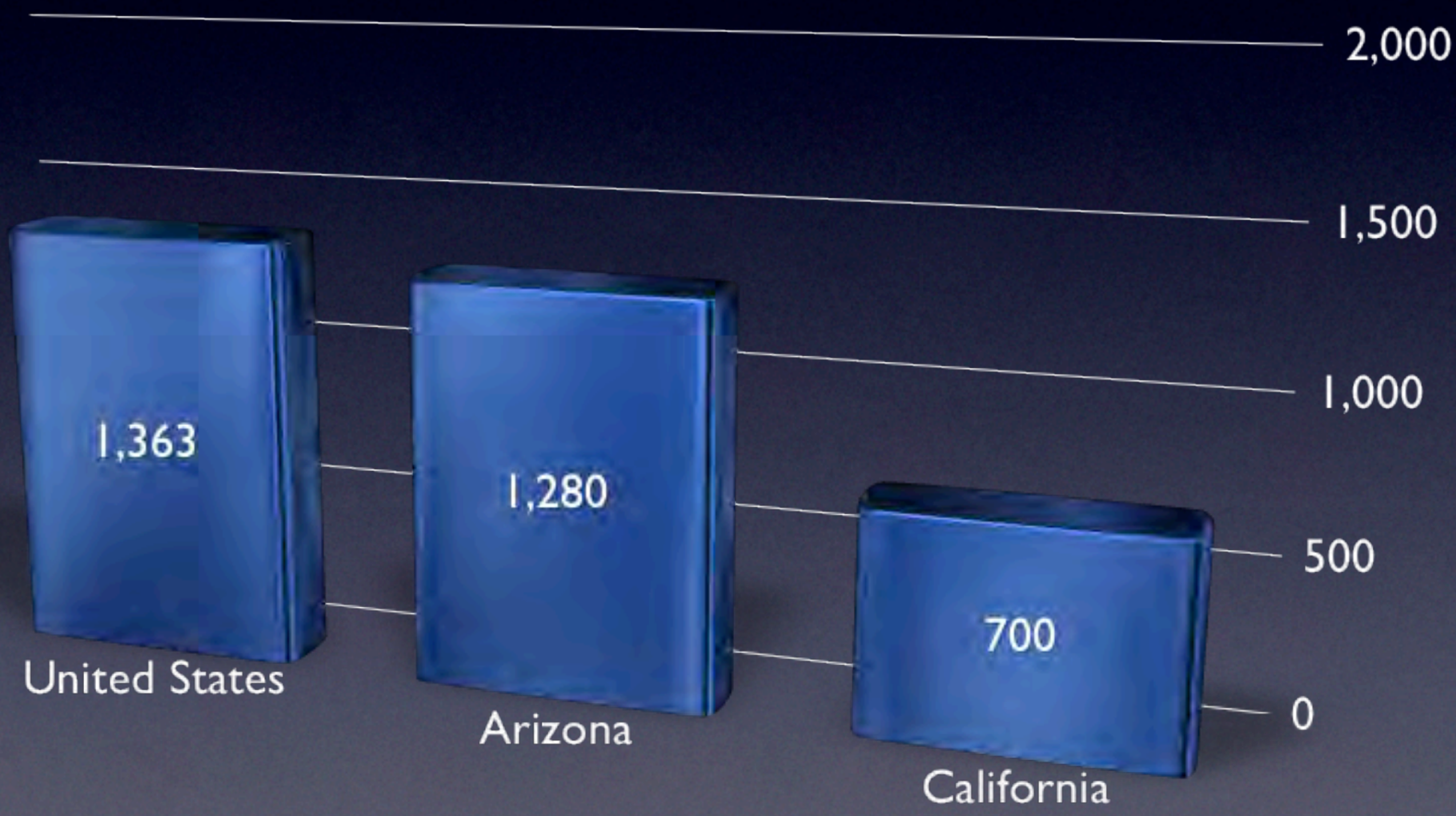
Teragrams of CO2 Equivalents



U.S. EPA Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990 – 2005

2004 Carbon Emission Rates

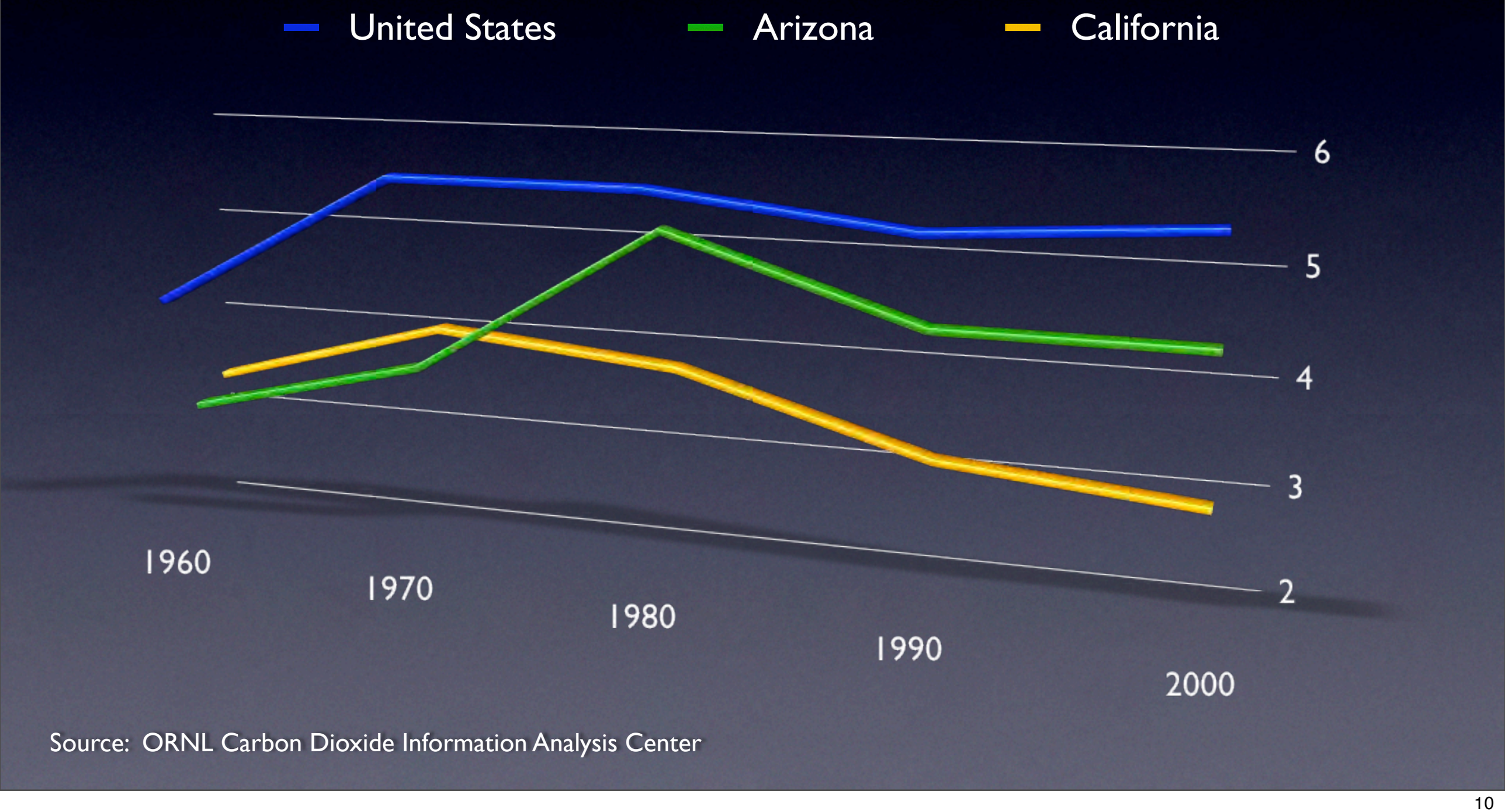
lb/MWh CO_2 from Electric Power Sector



U.S. EPA Emissions & Generation Resource Integrated Database (eGRID2006 Version 2.1)

Per Capita Carbon Emission Rates

Metric Tons of Carbon



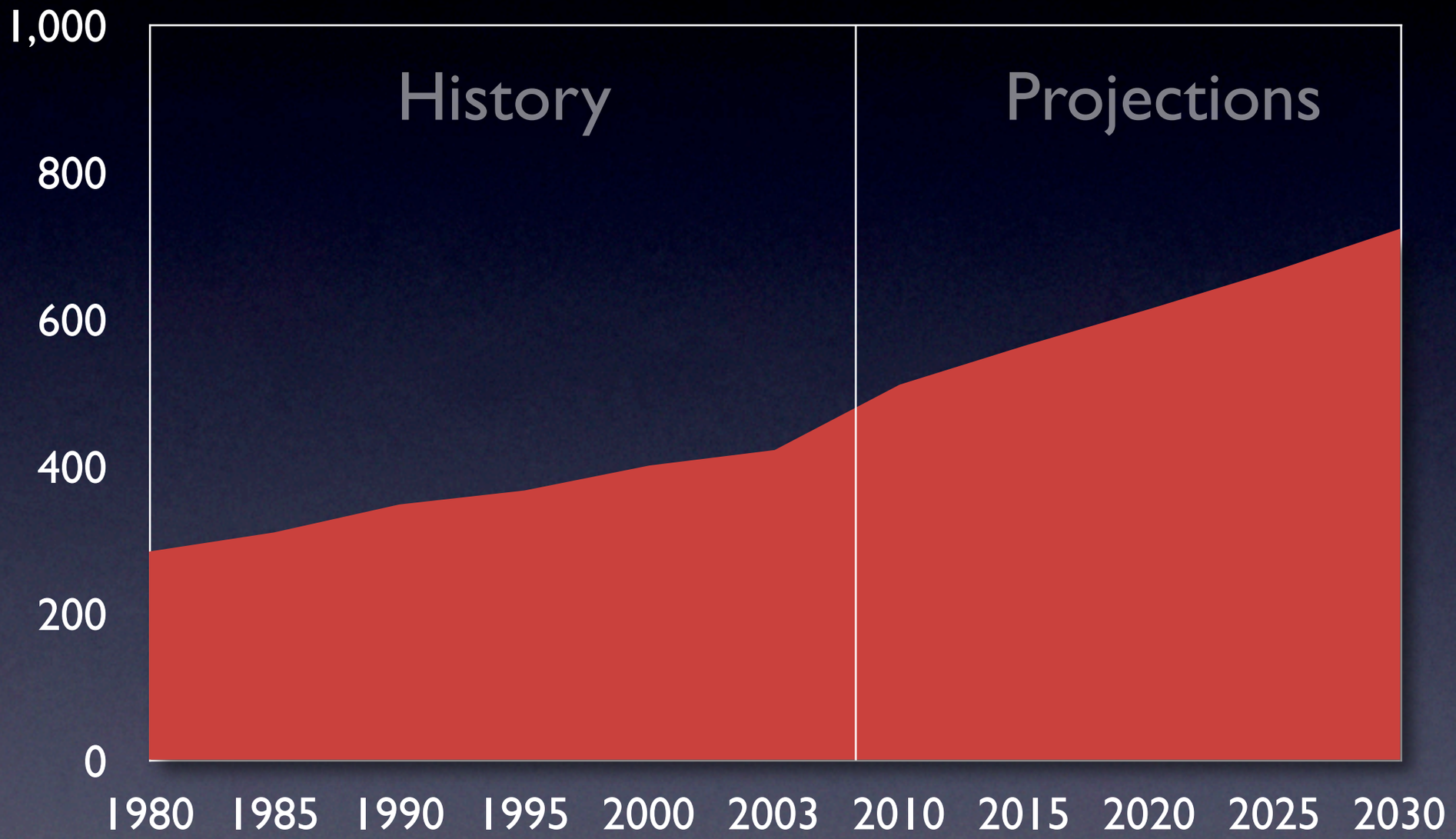
Source: ORNL Carbon Dioxide Information Analysis Center

Why

We Should Care

World Energy Consumption

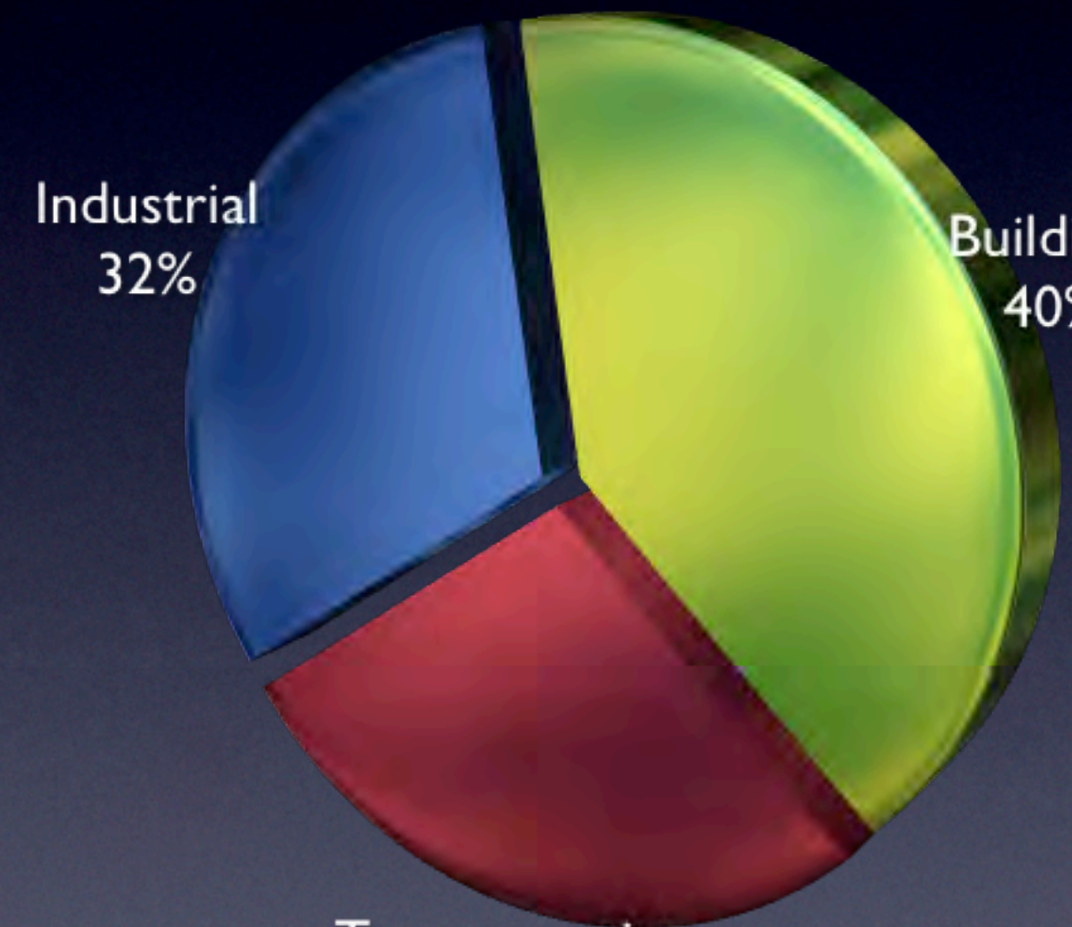
Quadrillion Btu



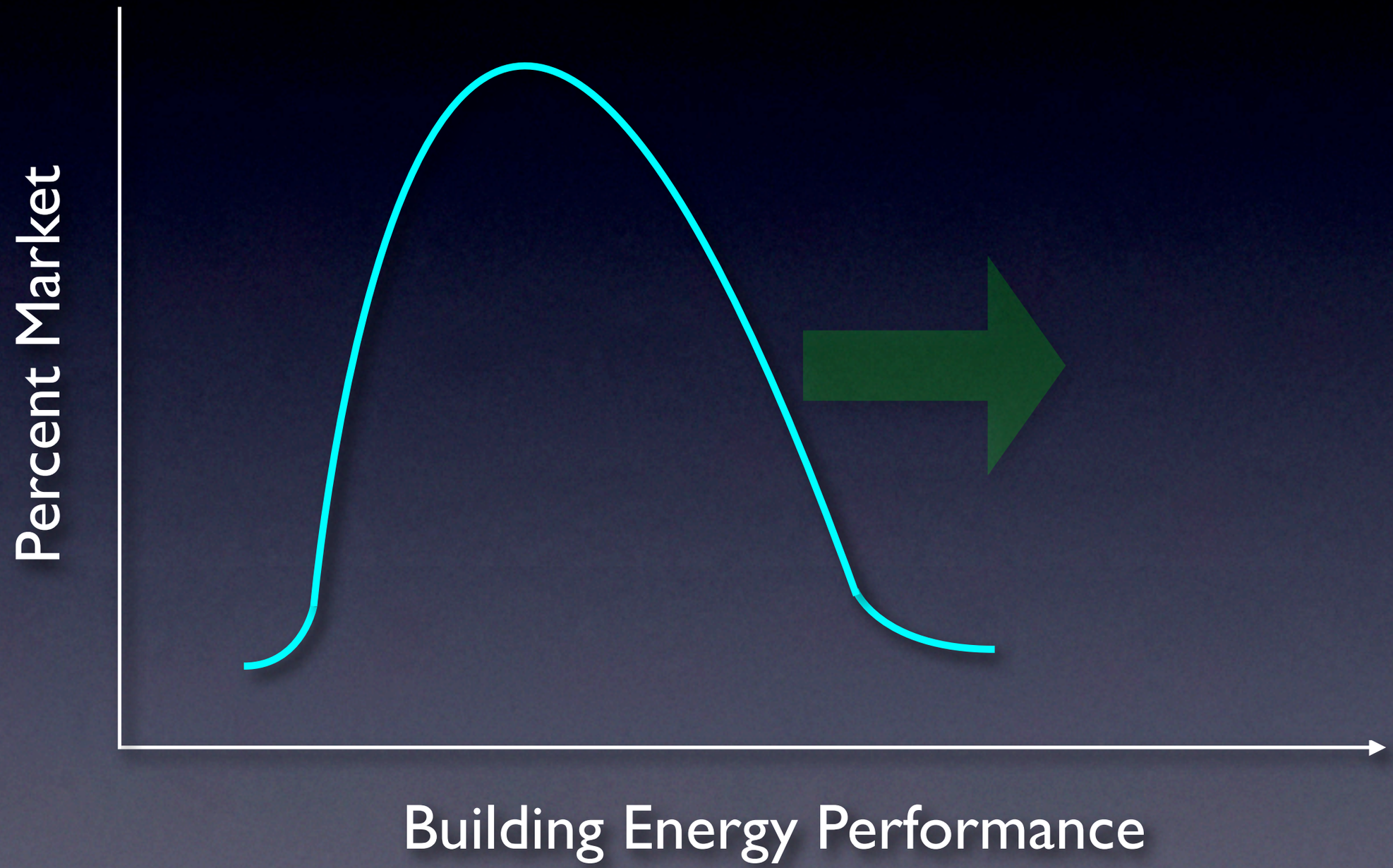
Source: Energy Information Administration (EIA), International Energy Annual Report 2004

Total Primary Energy Consumption

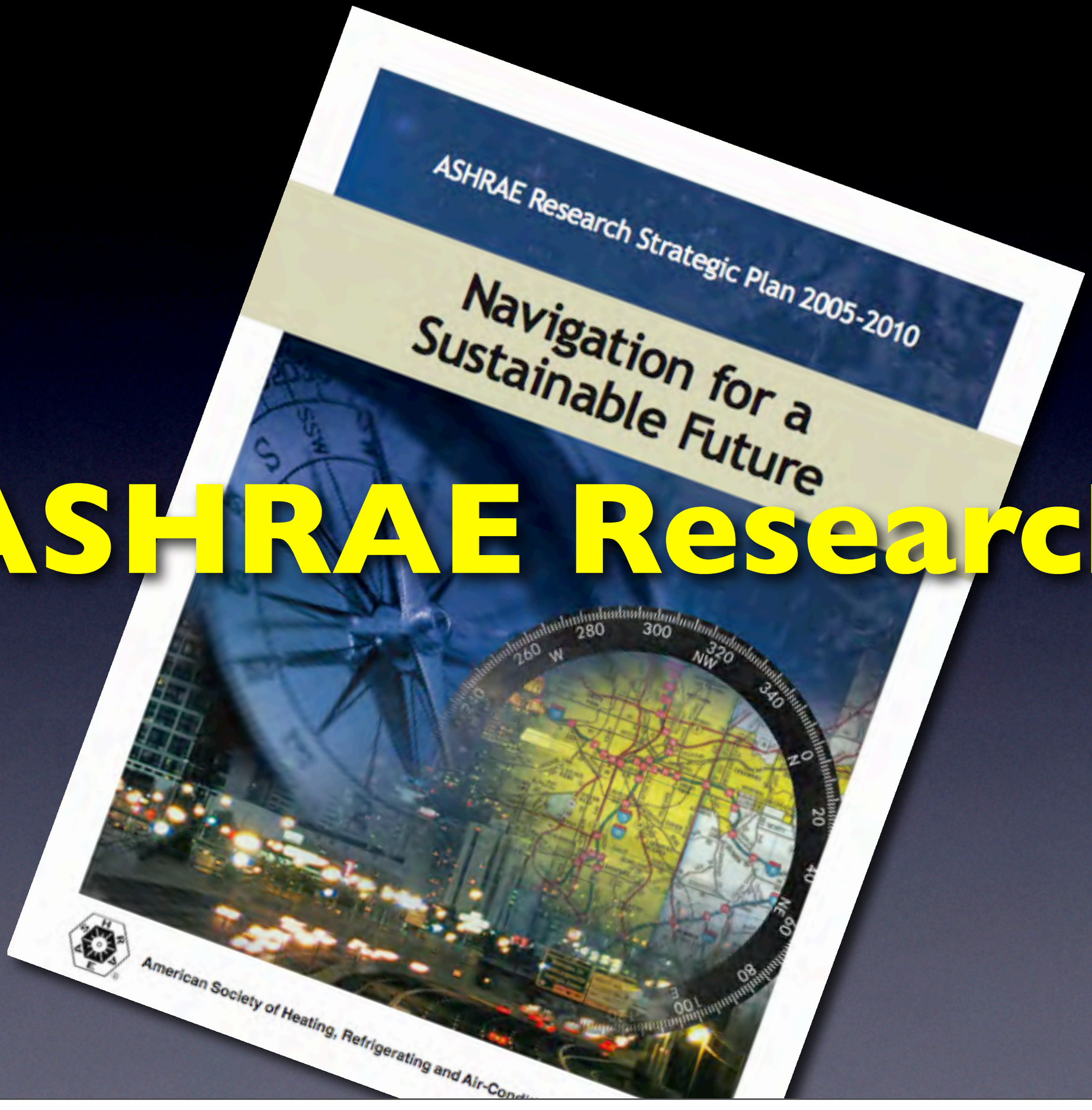
United States



Building Performance Challenge



ASHRAE Research



ASHRAE Standards

Standard 189.1P

Standard for the Design of High-Performance Green Buildings Except Low-Rise Residential Buildings


BSR/ASHRAE//USGBC/IESNA Standard 189P

Public Review Draft

ASHRAE® Standard

Proposed Standard 189, *Standard for the Design of High-Performance Green Buildings Except Low-Rise Residential Buildings*

First Public Review (May 2007)
(Complete Draft for Full Review)

This draft has been recommended for public review by the responsible project committee. To submit a comment on this proposed addendum, use the comment form and instructions provided with this draft. The draft is subject to modification until it is approved for publication by the ASHRAE Board of Directors and ANSI. Until this time, the current edition of the standard remains in effect. The current edition of any standard may be purchased from the ASHRAE Bookstore @ http://www.ashrae.org or by calling 404-636-8400 or 1-800-527-4723 (for orders in the U.S. or Canada).

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AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR-CONDITIONING ENGINEERS, INC.
1791 Tullie Circle, NE Atlanta GA 30329-2305

- Sustainable Sites
- Water Use Efficiency
- Energy Efficiency
- Impact on Atmosphere, Materials and Resources
- Indoor Environmental Quality
- Construction and Operation

It is all about

Performance

The stated intent for energy efficiency at the design stage must transcend into the build and operate stages

New ASHRAE Magazine

Satellite Broadcast

- *Integrated Building Design*
- April 16, 2008

ASHRAE Certification

- New certification programs from ASHRAE
  - Healthcare Facility Design Professional (HFDP)
  - High-Performance Building Design Professional (HBDP)
  - Commissioning
  - Building Operations & Management

Advanced Energy Design Guides

1999

2020

Std 90.1

30% AEDG

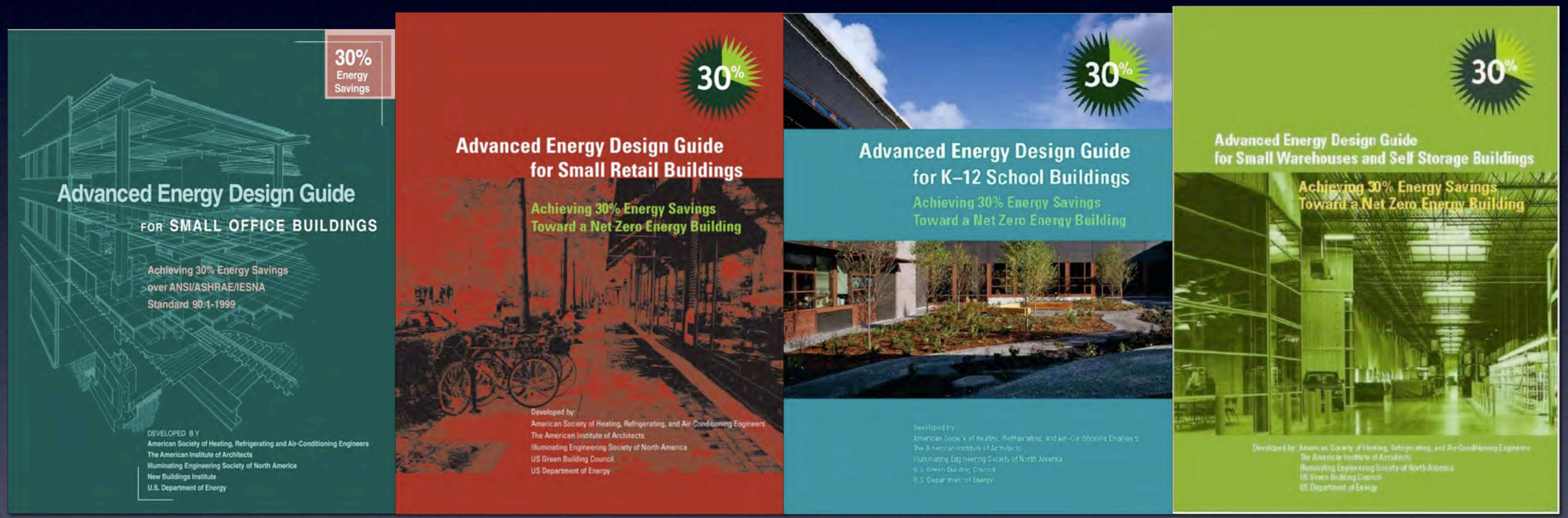
50% AEDG

Net Zero Energy Bldg

AIA

IES The LIGHTING AUTHORITY

Advanced Energy Design Guides



AEDG - What's Next?

- Goal to produce two guides per year
- 30% AEDG for Highway Lodging
- AEGs for Existing Buildings
- 50% and beyond towards NZEB

Consider the Possibilities

What If

Energy was treated as a valuable limited resource
and not as a commodity that simply follows
the laws of supply and demand?

What If

We were able to drive innovation through improved building research and development?

What If

We could incorporate the ethics of energy responsibility and environmental responsibility into every building decision we make?

What If

We could provide a culture for continuous innovation in each of our organizations?

What If

We actually measured and reported the energy performance of all buildings?

What If

Each of us accepts our responsibility to aggressively incorporate energy efficiency and could deliver better energy performance, year-after-year?

Make a Positive Difference