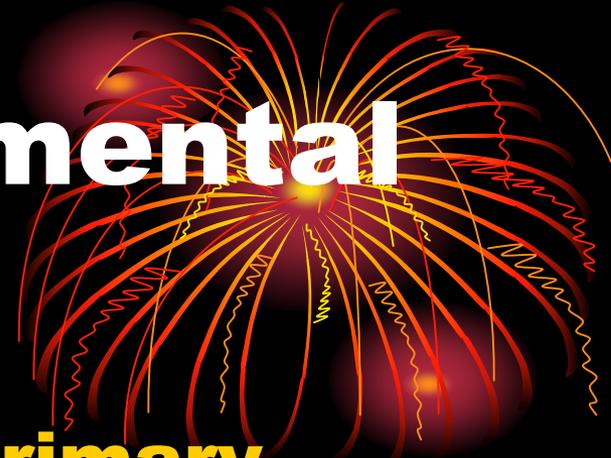




Energy & the Environment

The Story of an Addict

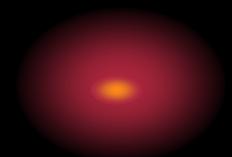
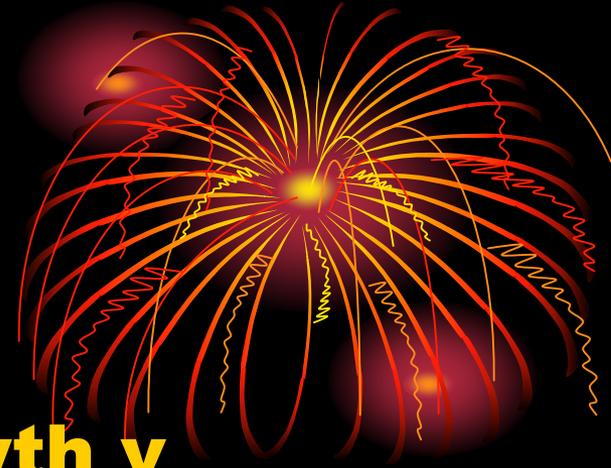
Energy & Environmental Politics



- **Energy consumption is a primary source of pollution**
- **Energy production is a primary source of habitat destruction**
- **Patterns of Energy Consumption & Production**
 - **Economic Implications**
 - **Stability of supply & price**
 - **Industry sensitivities**
 - **Regional/geographic sensitivities**

Clash of Values

- **Unfettered economic growth v environmental regulation**
- **Pollution control v. pollution avoidance**
- **Conservation v supply**
- **land use values: economic exploitation v preservation**
- **government v market**
- **liberty v government social regulation**





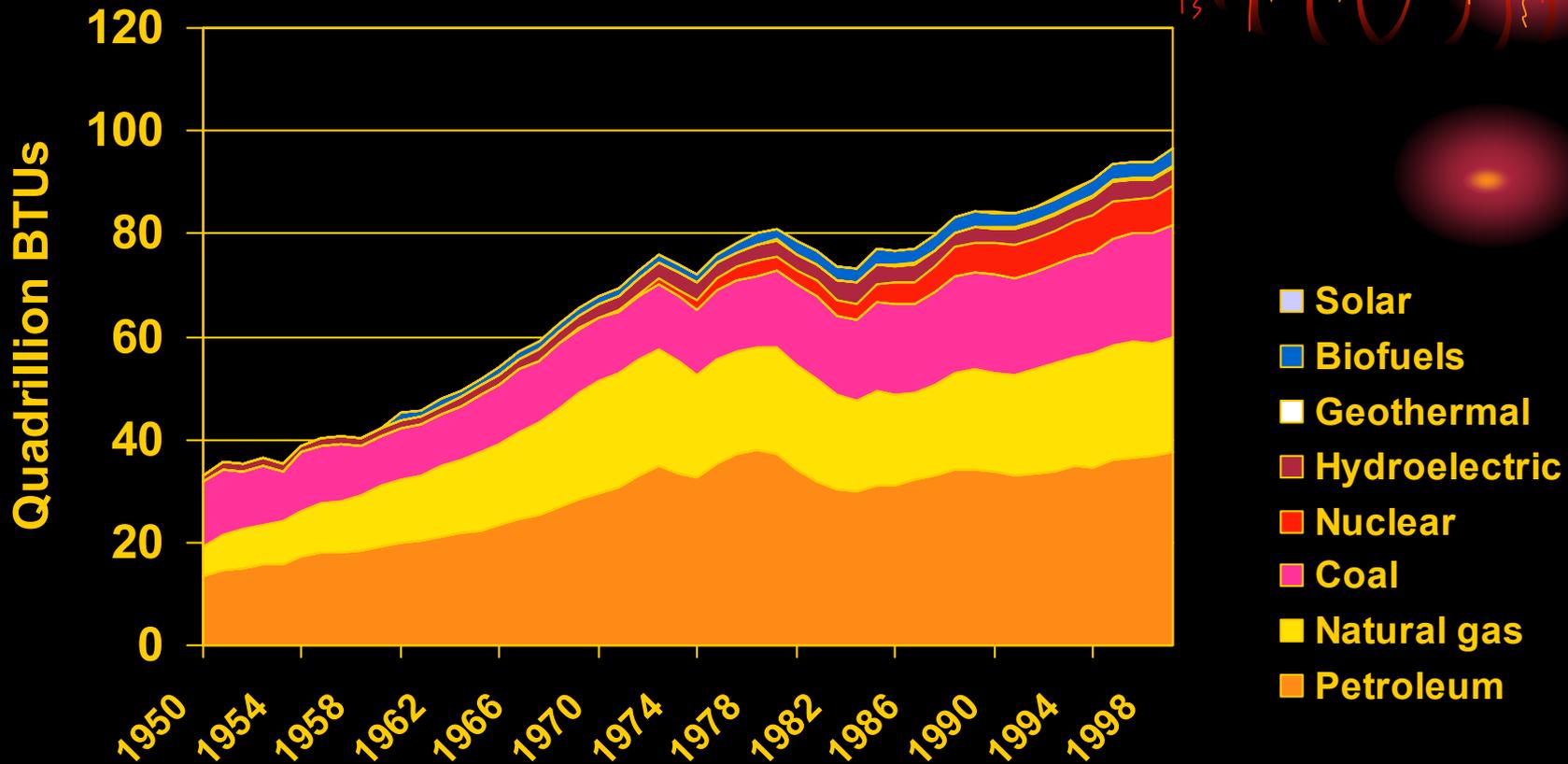
Consumption & Production Patterns

How Do We Use Energy?

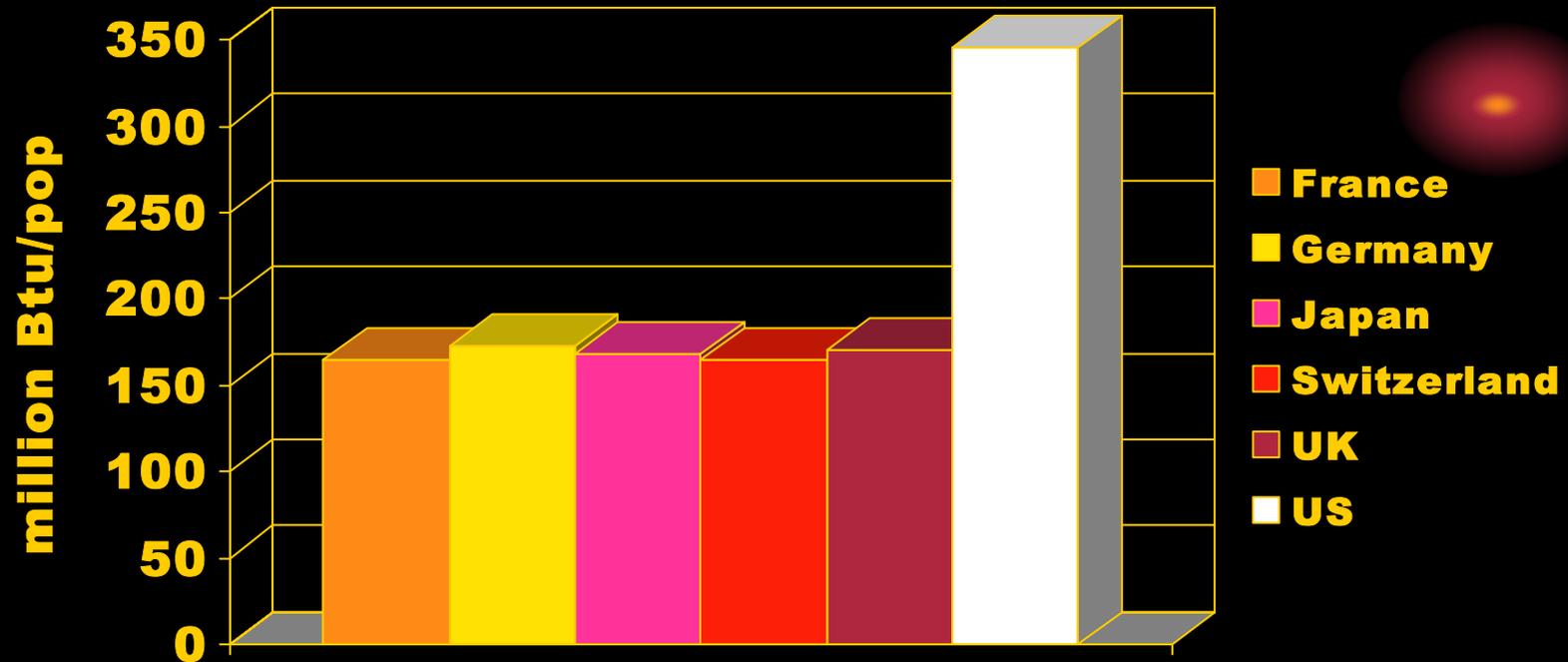


- **Residential/Commercial = 35%**
- **Industrial = 37%**
- **Transportation = 28%**

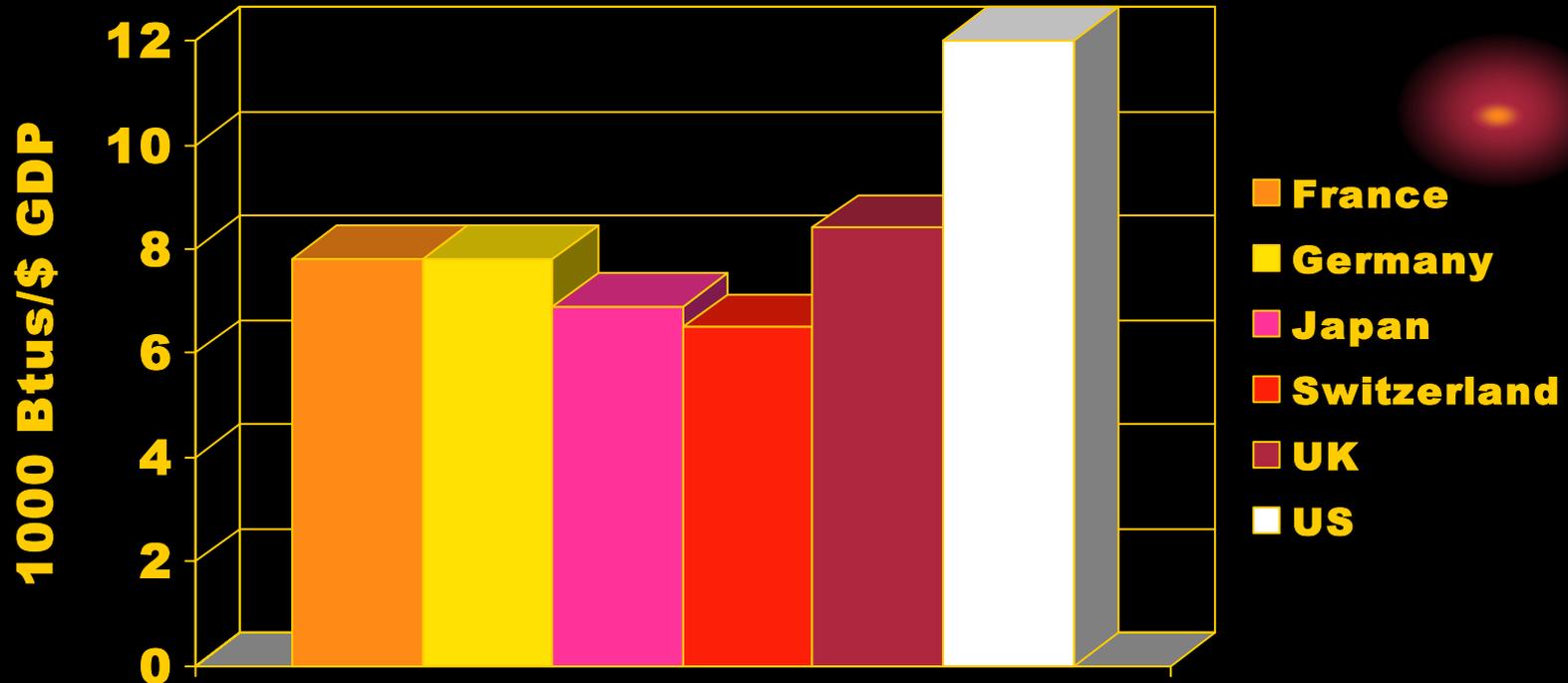
U.S. Domestic Energy Consumption by Source



Comparative Consumption per Capita (1997)



Comparative Consumption per GDP (1997)





**What do we Pay for
Energy?**

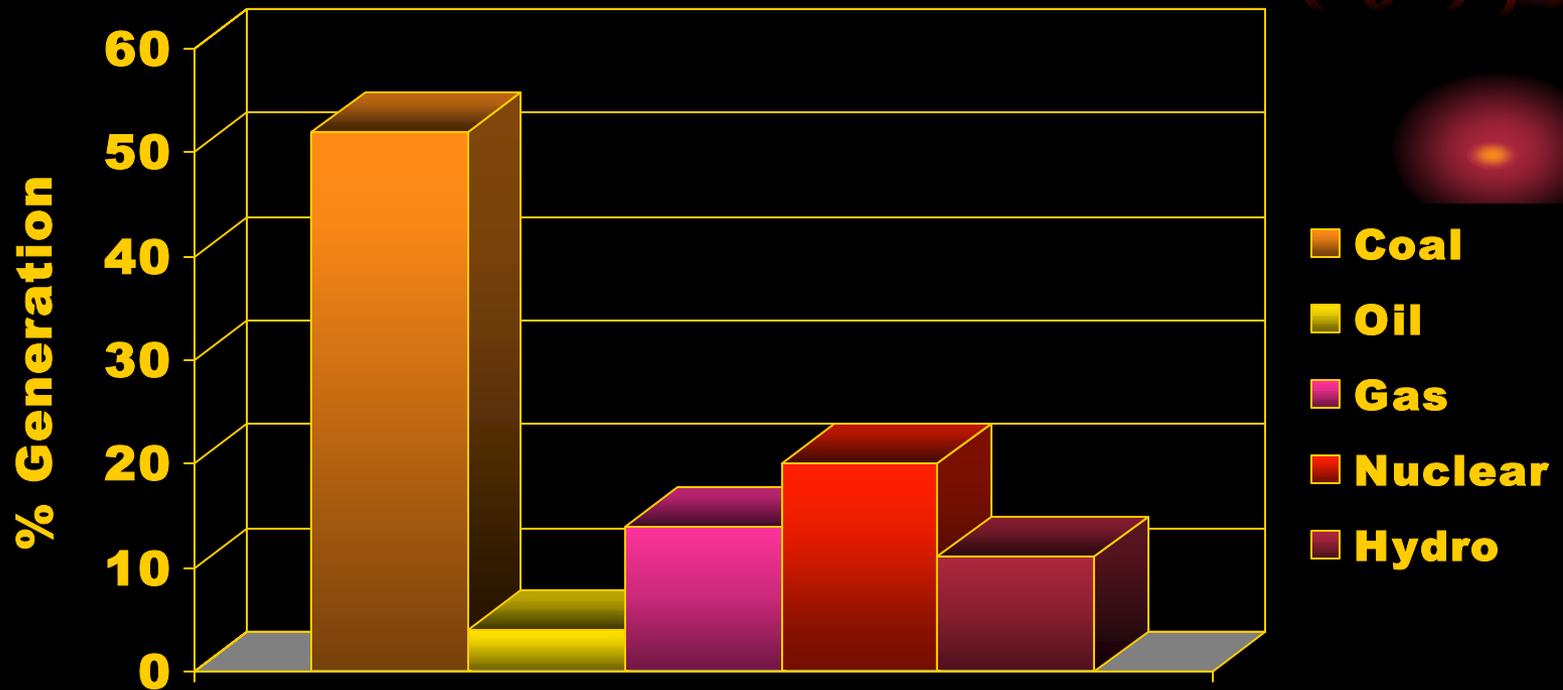
**What Difference Does it
Make?**

Comparison of Fuel Prices per Gallon (\$1999)



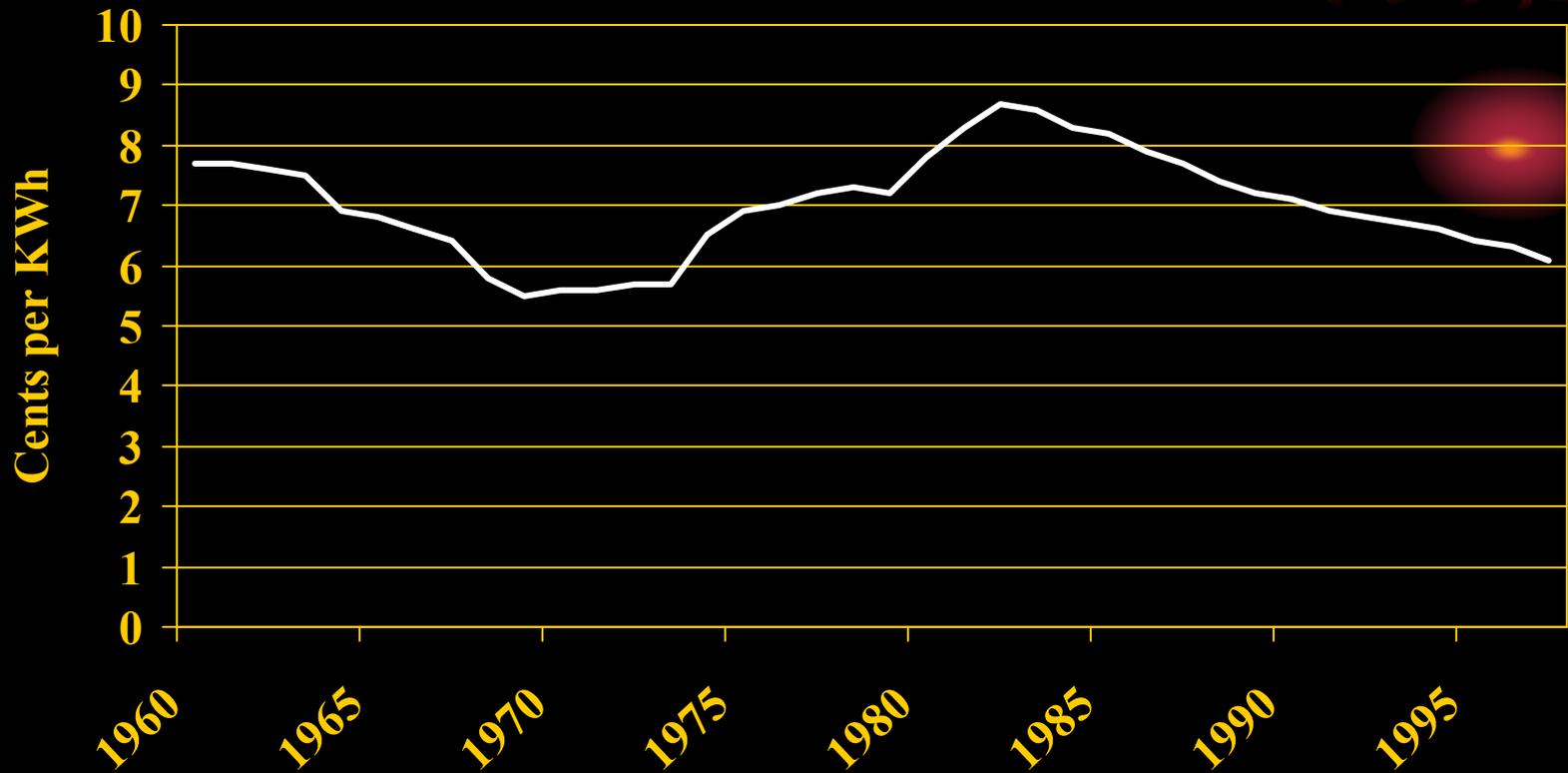
	Gasoline	Diesel	Industrial Heavy Oil
US	1.47	1.36	36.33
Canada	2.04	1.68	36.67
Mexico	1.92	1.36	
Germany	3.78	2.90	40.48
UK	5.13	4.77	39.81
Japan	3.65	2.89	43.65
Korea	4.09	1.95	

Sources of Electricity



Price of Electricity

(constant \$)



Impact of Cheap Energy

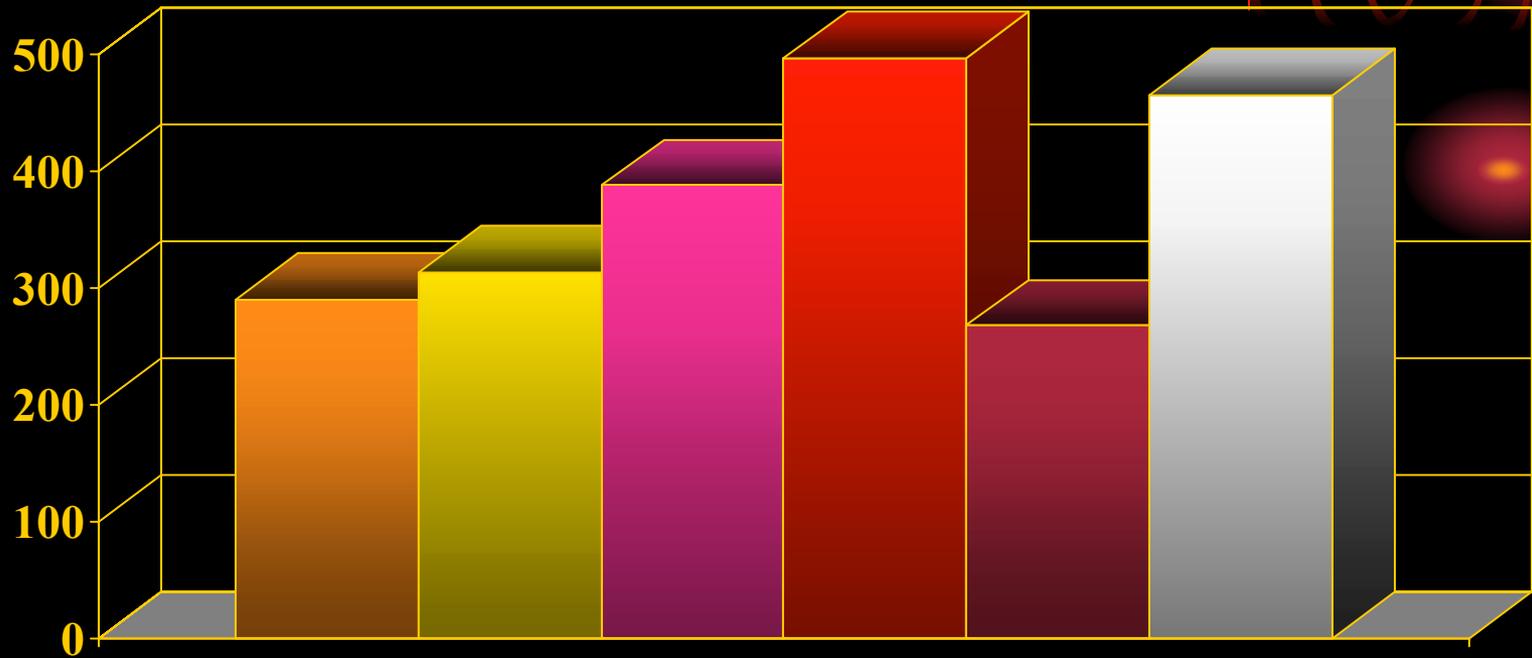


- **wasteful use of energy resources**
 - **ignoring conservation & energy efficiency**
 - **Increases pollution**
- **blocks entry of alternative, non-fossil fuel**
- **decreases US production (where extraction costs are high)**
 - **increase is dependence on foreign suppliers**

Pollution Impact



Particulate Emissions by Energy Source



Electrical Utilities

Industrial

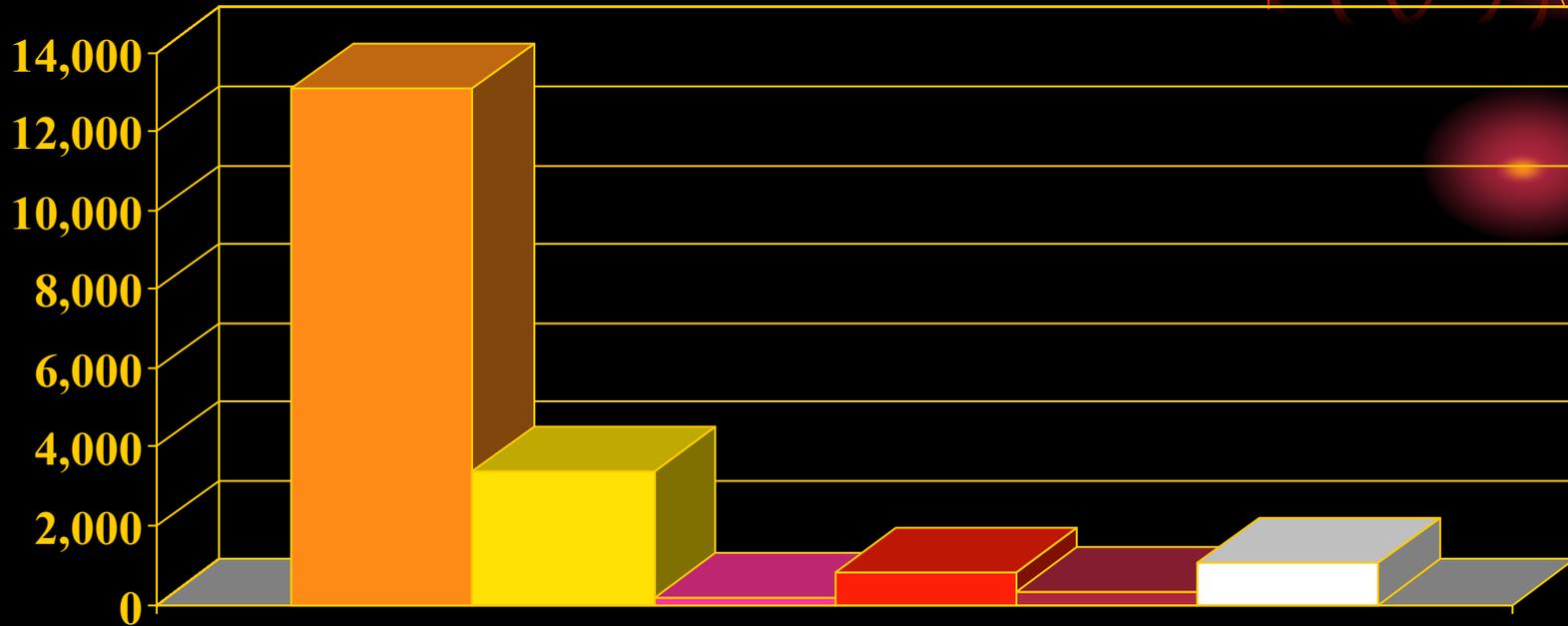
Residential

Other

Motor Vehicles

Off Highway Vehicles

SO₂ Emissions by Energy Source



■ Electrical Utilities

■ Industrial

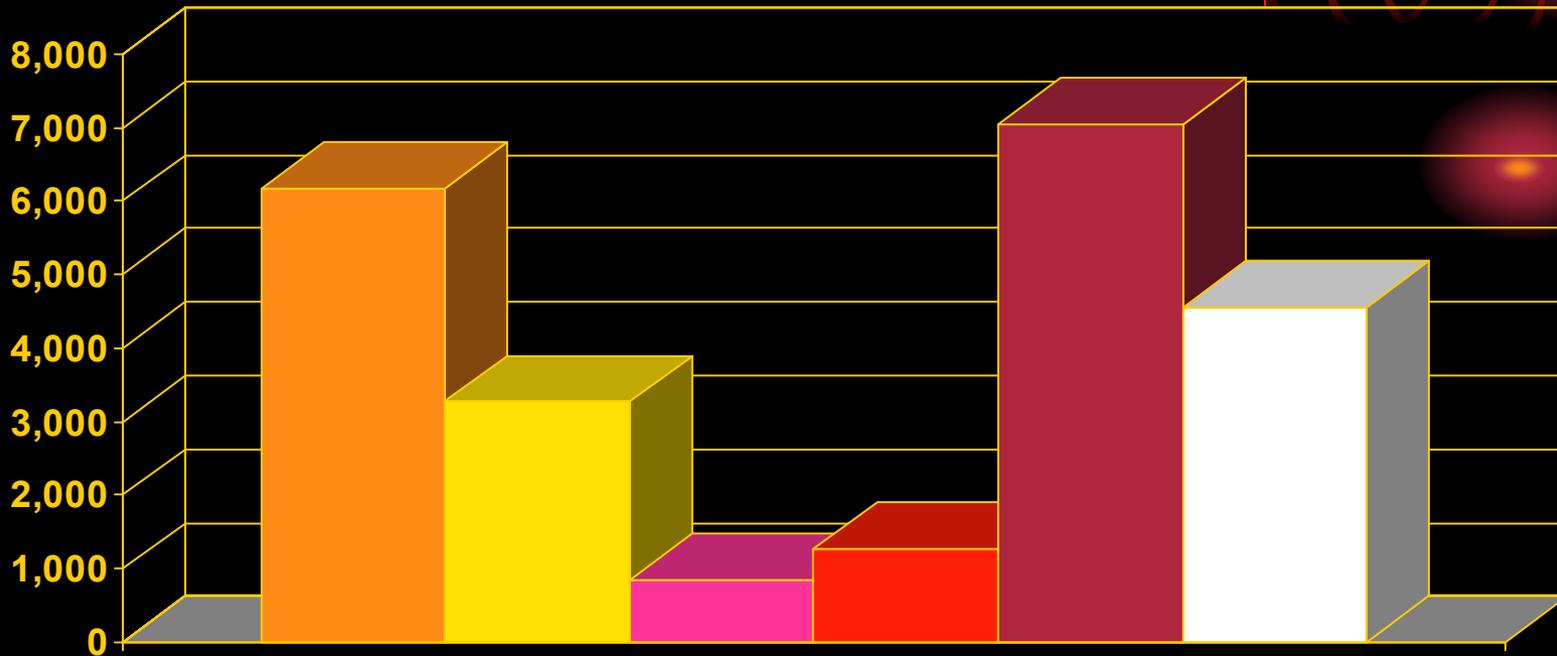
■ Residential

■ Other

■ Motor Vehicles

■ Off Highway Vehicles

NO_x Emissions by Energy Source



■ Electrical Utilities

■ Industrial

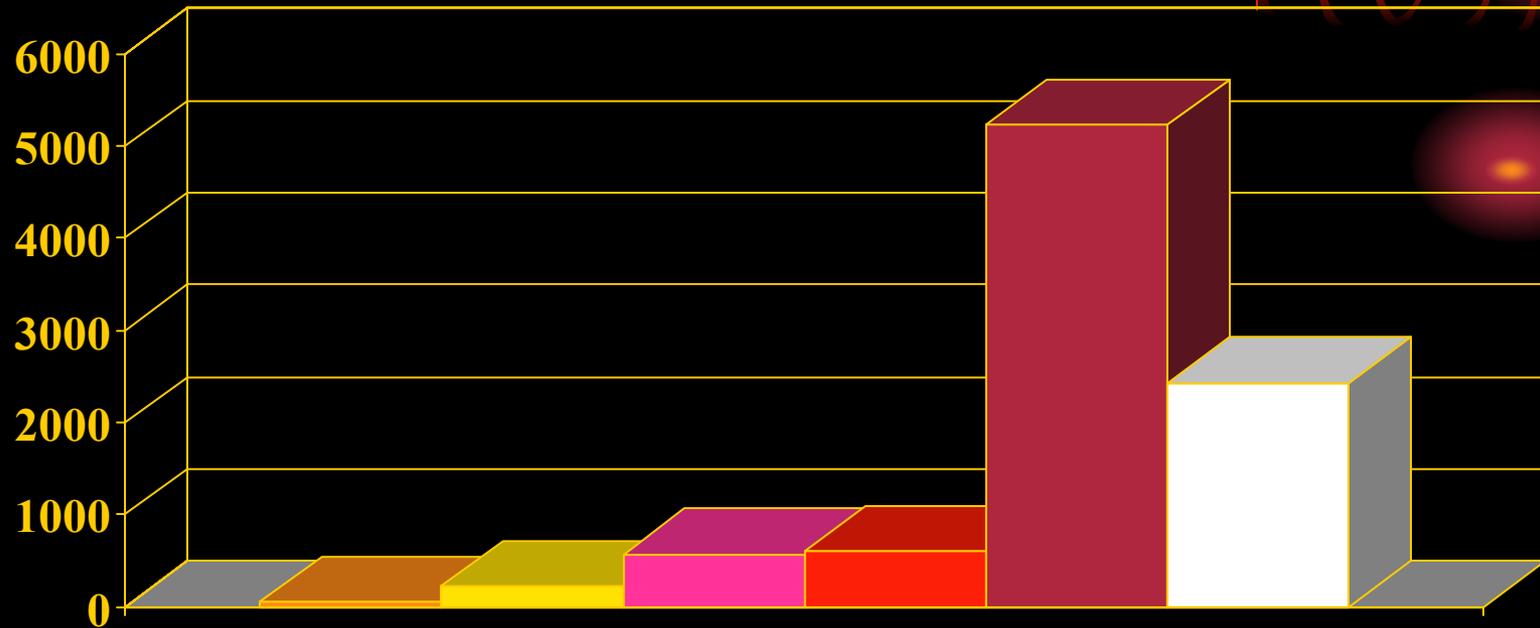
■ Residential

■ Other

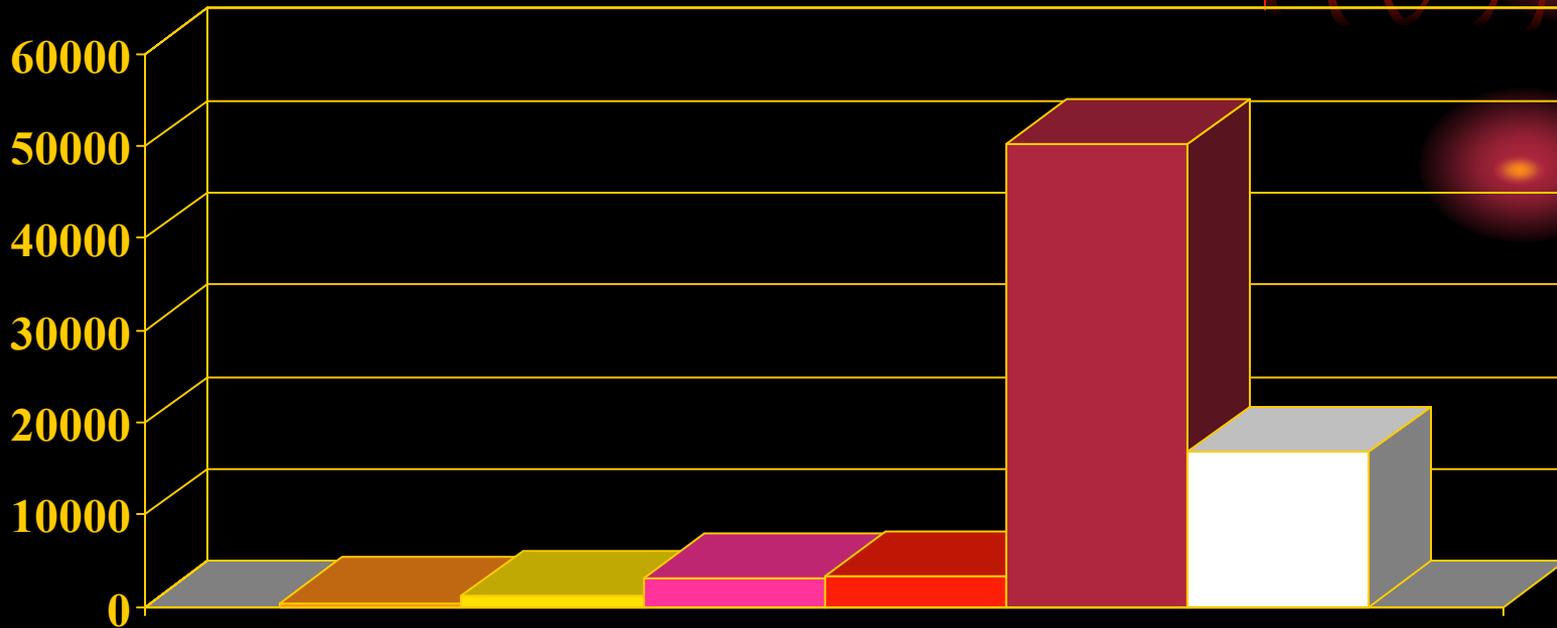
■ Motor Vehicles

■ Off Highway Vehicles

VOC Emissions by Energy Source



CO Emissions by Energy Source



Coal

- **Extraction**

- **Habitat destruction**
- **Spoils**
- **acid leaching**
- **landscape leveling**
- **hydrological disruption**

- **Processing & Use**

- **Air Pollution**
- **Water pollution**
- **Climate Change**



Oil & Gas

- **Extraction**

- **Habitat destruction**
- **drilling structures, pipelines, & access roads**

- **Processing & Use**

- **Air Pollutants**
- **Water Pollution**
- **Climate Change**
- **Oil Spills**



Nuclear

- **Extraction**

- **Habitat destruction**
- **Spoils**
 - **radioactive**

- **Processing & Use**

- **radioactive waste**
- **radiation**
- **thermal pollution**



Hydro Power



- **Extraction**

- **Habitat destruction**
- **Water Pollution**

- **Processing & Use**

- **Habitat/ecological destruction**
- **hydrologic disruption**
- **Landscape change**

Wind

- **Extraction**

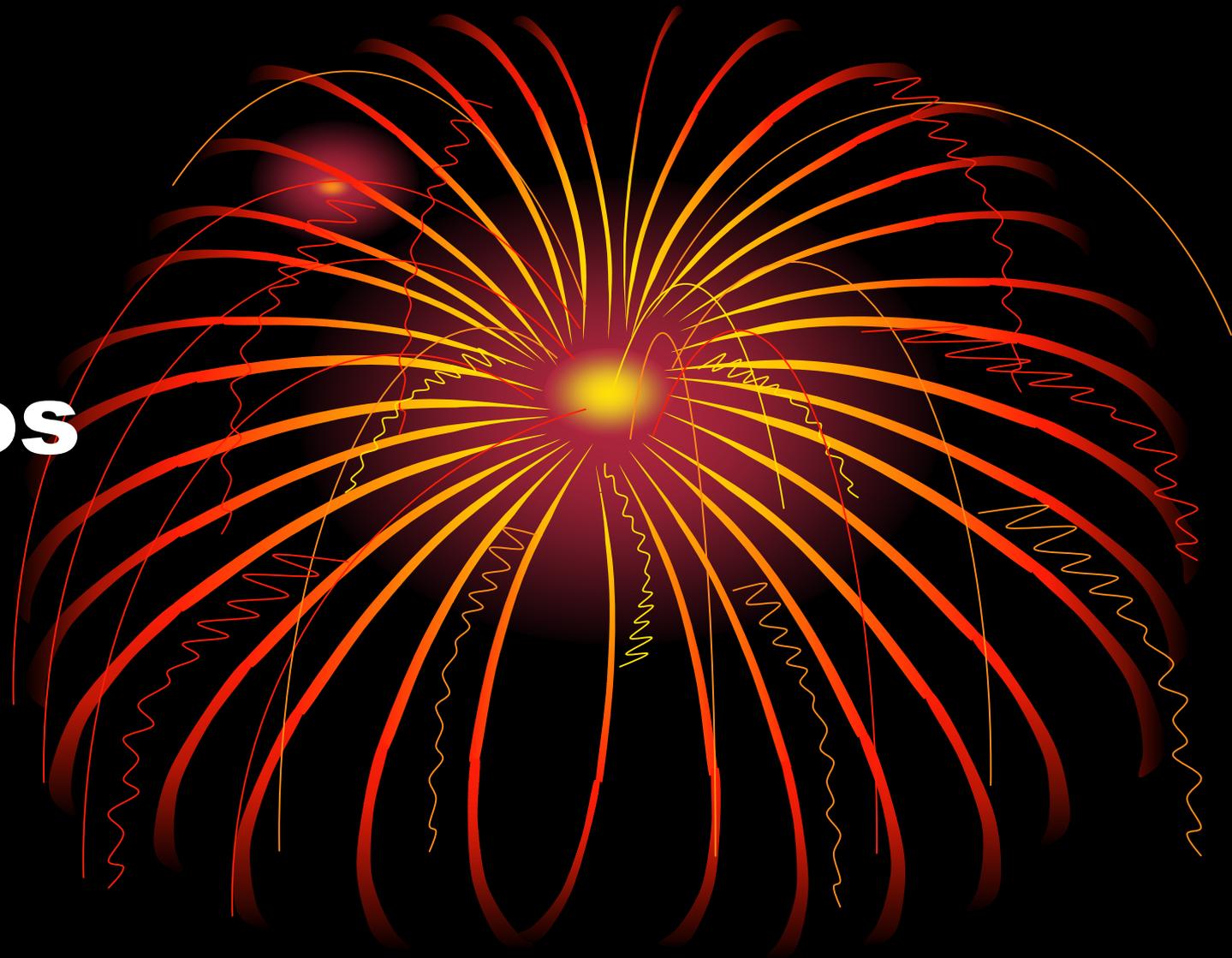
- **Habitat destruction**
- **Water Pollution**

- **Processing & Use**

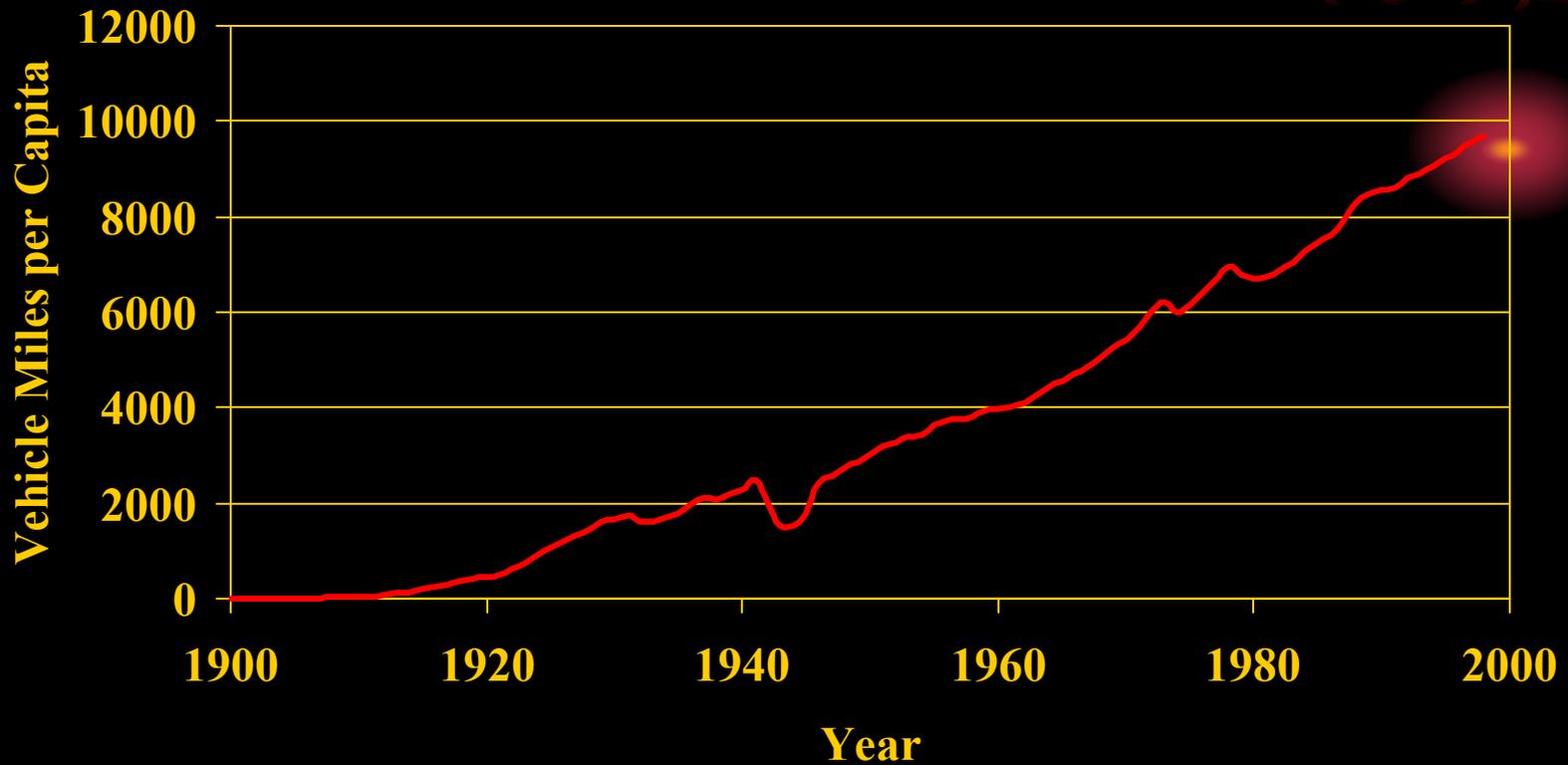
- **Habitat/ecological destruction**
- **Wildlife kills**



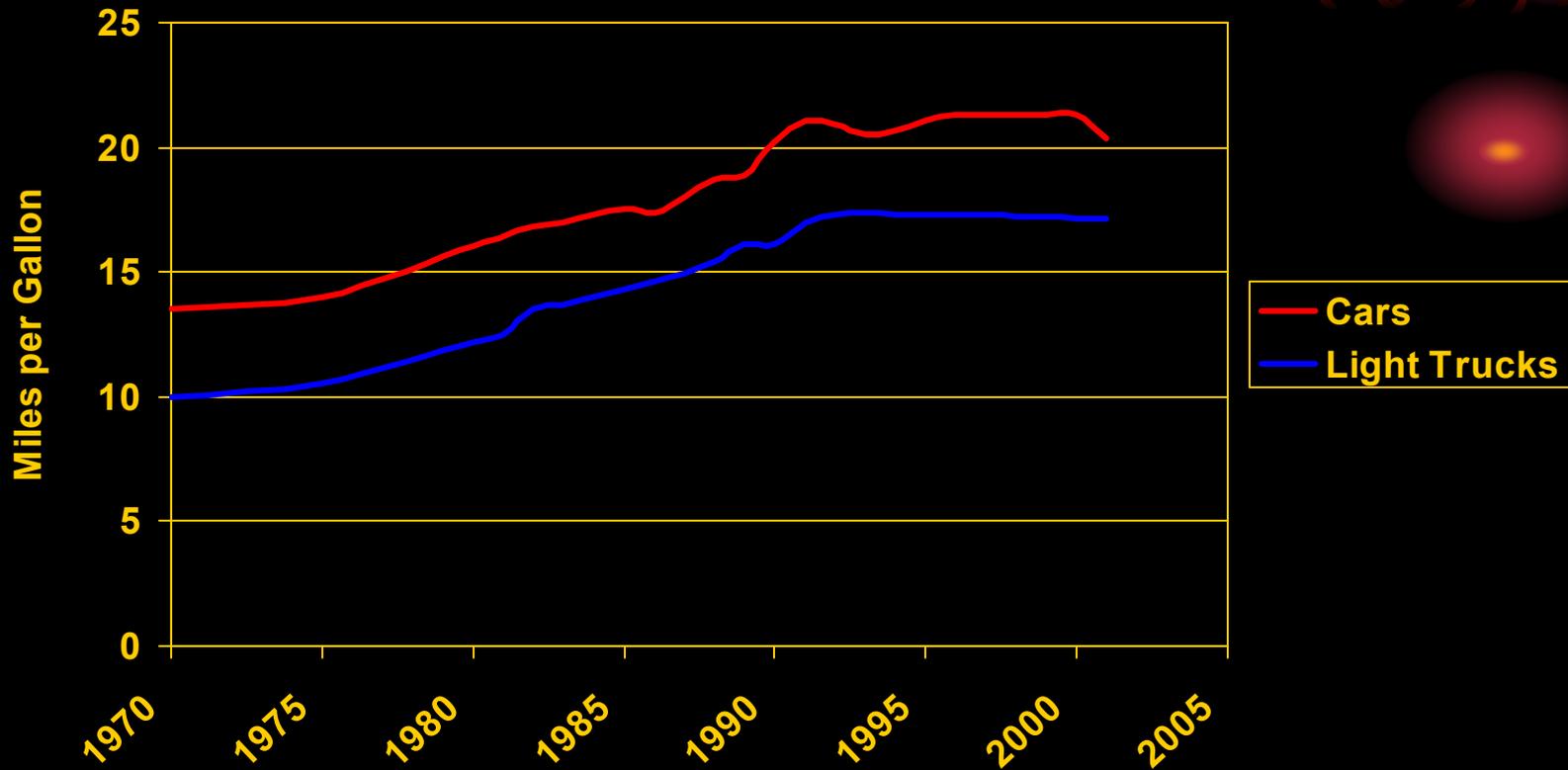
Autos



US Vehicles Miles per capita



Auto Fuel Efficiency



Environmental Impact of Cars & Trucks



- **Air Pollution**
 - **20% Greenhouse Gases**
 - **1 mpg increase in efficiency**
 - → **6400 pound reduction in GHG**
 - → **\$300 increase in car cost for fuel**
 - **USPIRG Report**
- **soil & water pollution from fueling stations, lubricants, etc.**

Environmental Impact of Cars & Trucks

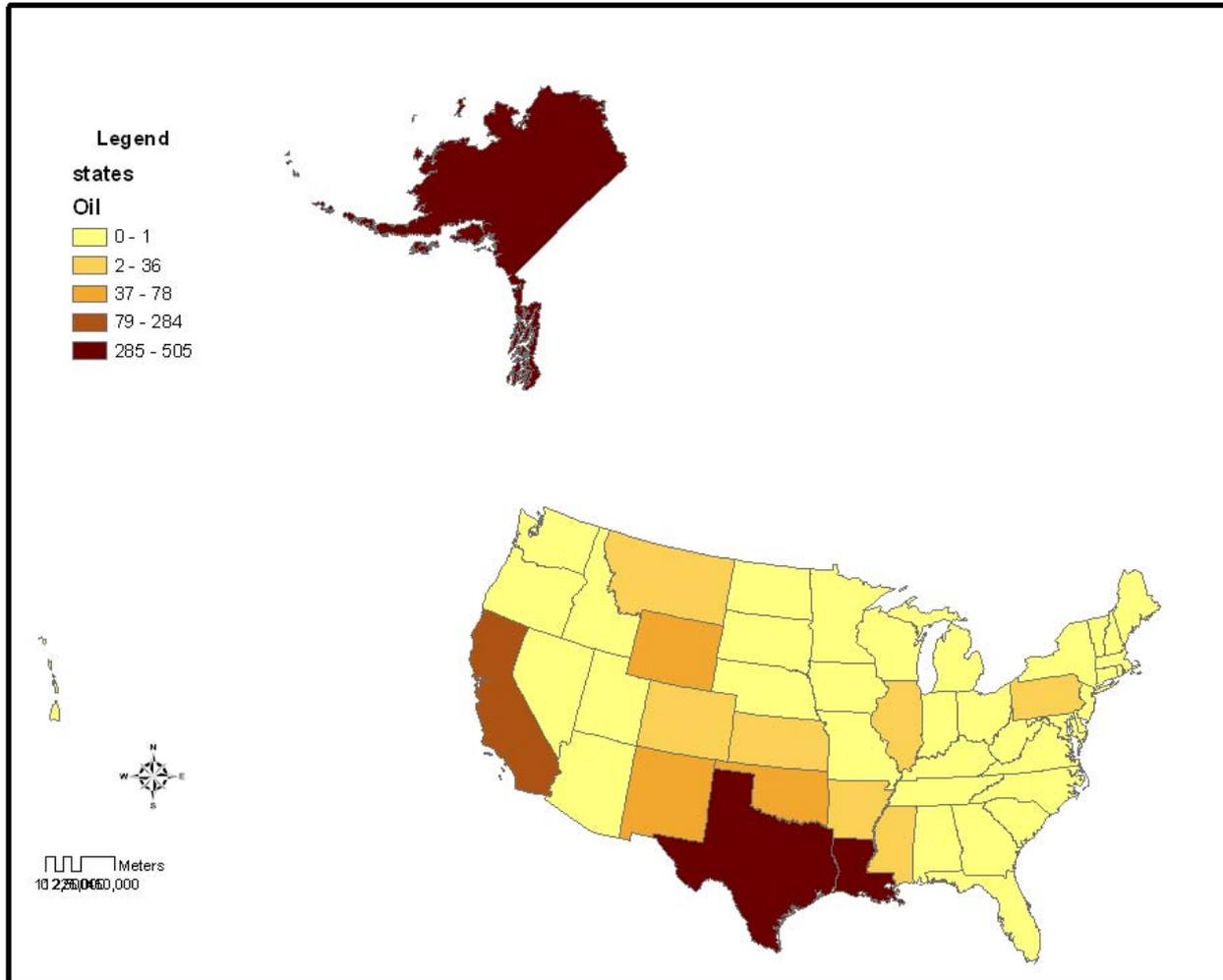
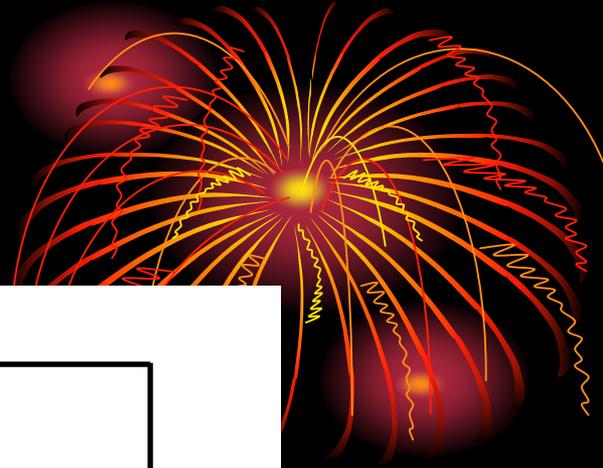


- **Fossil fuel demand**
 - **10 mpg increase in fuel efficiency → 7 bb oil reduction over ten years**
 - ANWR = ~ 7-14 bb oil
 - **10 mpg increase in fuel efficiency → 380 million ton annual decrease in CO₂ emissions**
 - ~ 7 % of US total
- **Roadways (> 6 million miles)**
 - **Use up land**
 - **Fragment landscape**

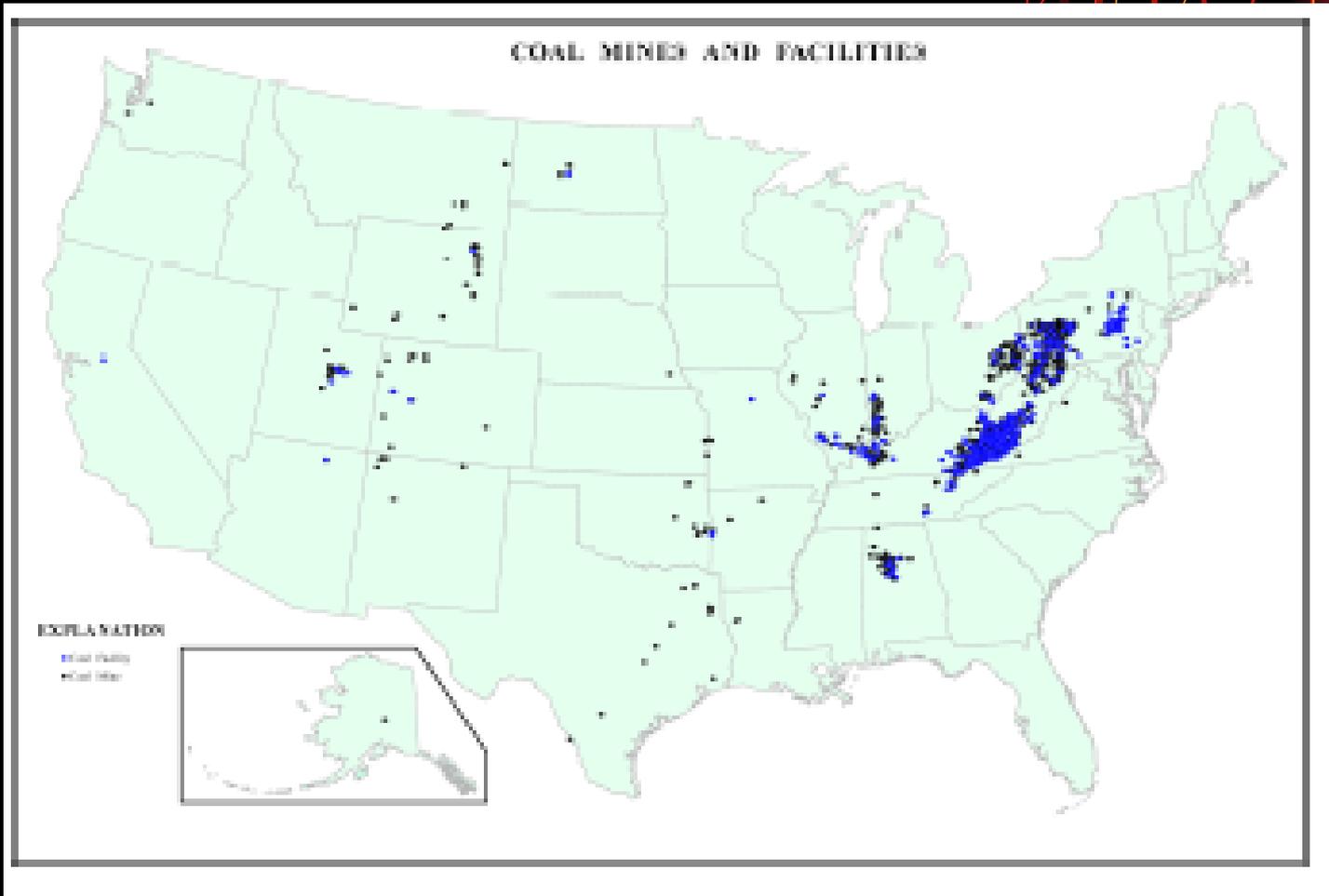


Energy Resource Politics

U.S. Oil Fields



U.S. Coal Mines



U.S. Nuclear Fuel Storage

