

# **EIA's Coal Outlook Through 2030**

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## Energy Information Administration

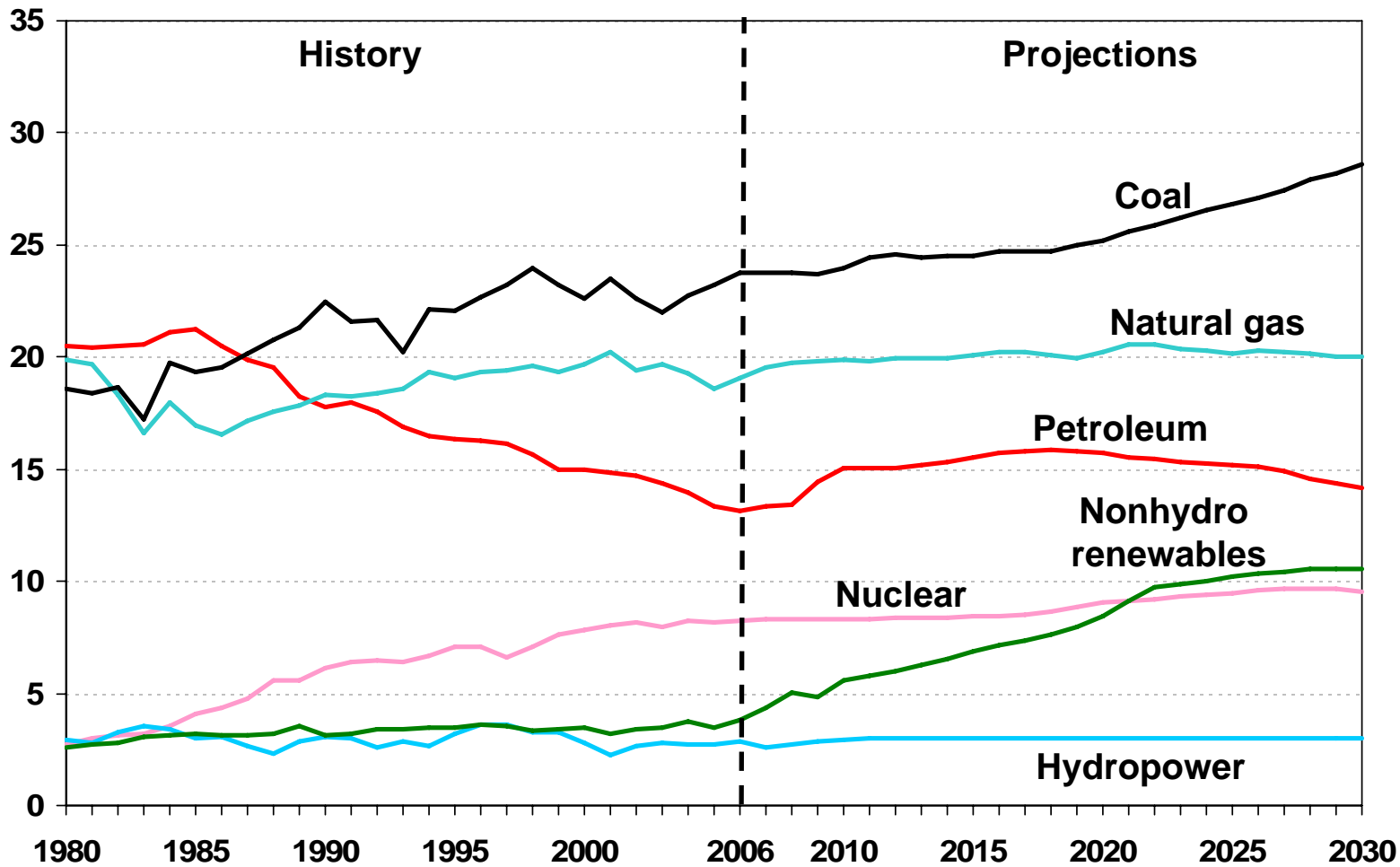
- Independent statistical agency within the Department of Energy
  - [www.eia.doe.gov](http://www.eia.doe.gov)
- Produce monthly short-term and annual long-term forecasts of U.S. and world energy markets
- Short Term Energy Outlook
  - <http://www.eia.doe.gov/emeu/steo/pub/contents.html>
- Annual Energy Outlook, 2008
  - <http://www.eia.doe.gov/oiaf/aeo/index.html>
- International Energy Outlook, 2008
  - <http://www.eia.doe.gov/oiaf/ieo/index.html>
- Produce special analyses of emerging issues and the impacts of regulatory/legislative changes
  - [http://www.eia.doe.gov/oiaf/service\\_rpts.htm](http://www.eia.doe.gov/oiaf/service_rpts.htm)
  - <http://www.eia.doe.gov/oiaf/analysis.htm>
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# Topics

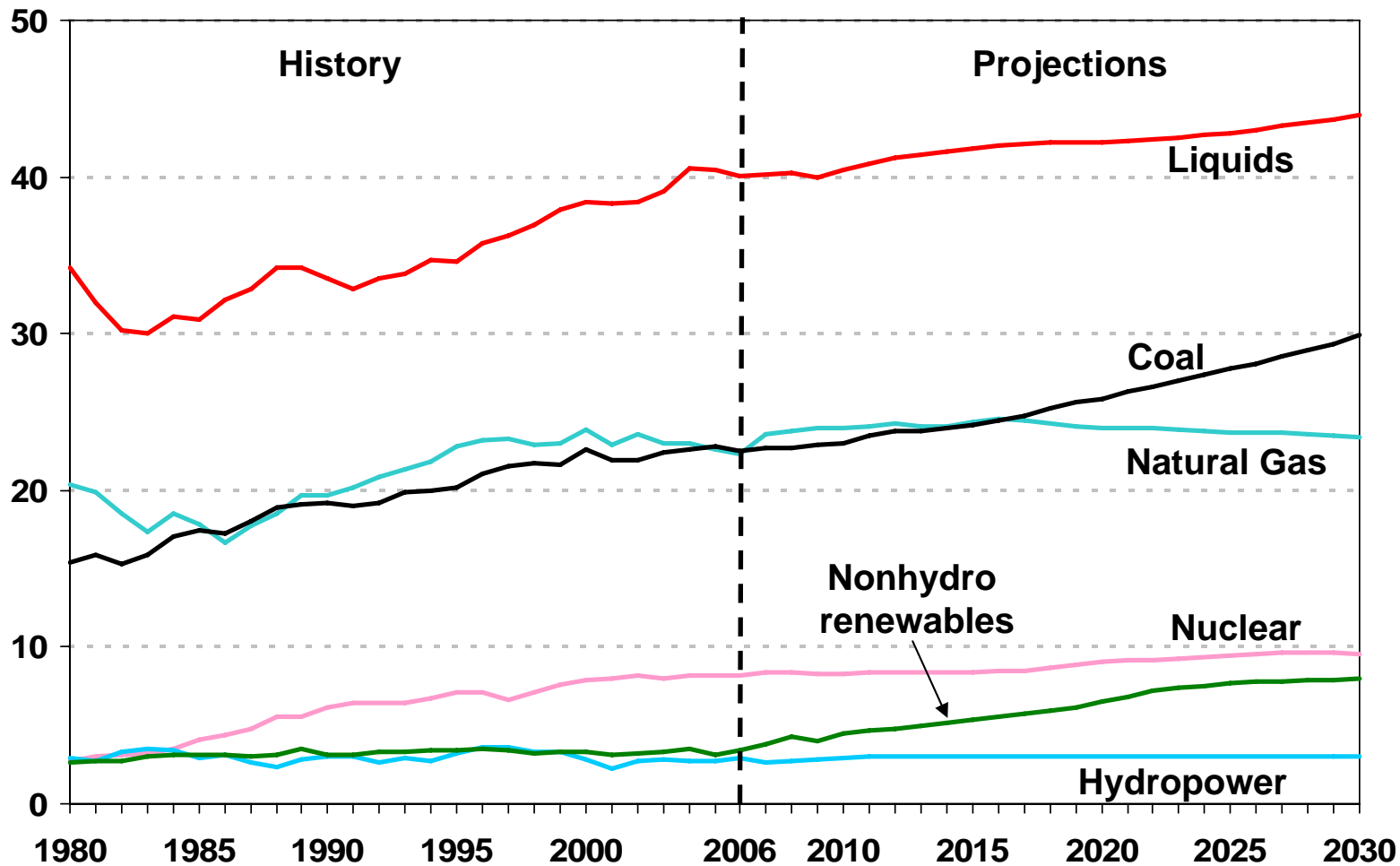
- AEO2008 Overview
- Coal distribution and transportation prices

# AEO2008 Overview

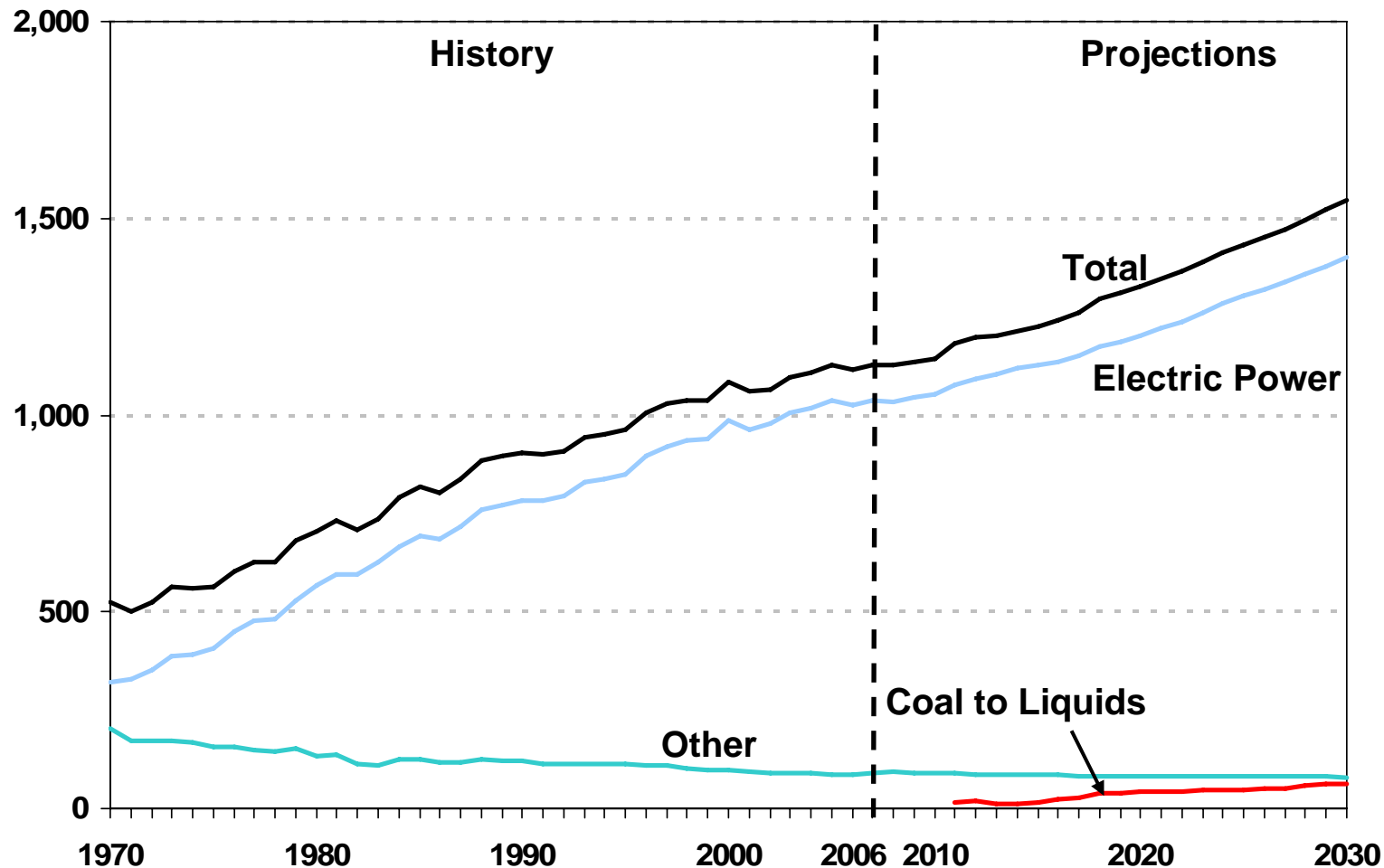
# Energy Production by Fuel, 1980-2030 (quadrillion Btu)



# Energy Consumption by Fuel, 1980-2030 (quadrillion Btu)



# Coal Consumption by Sector, 1970-2030 (million short tons)



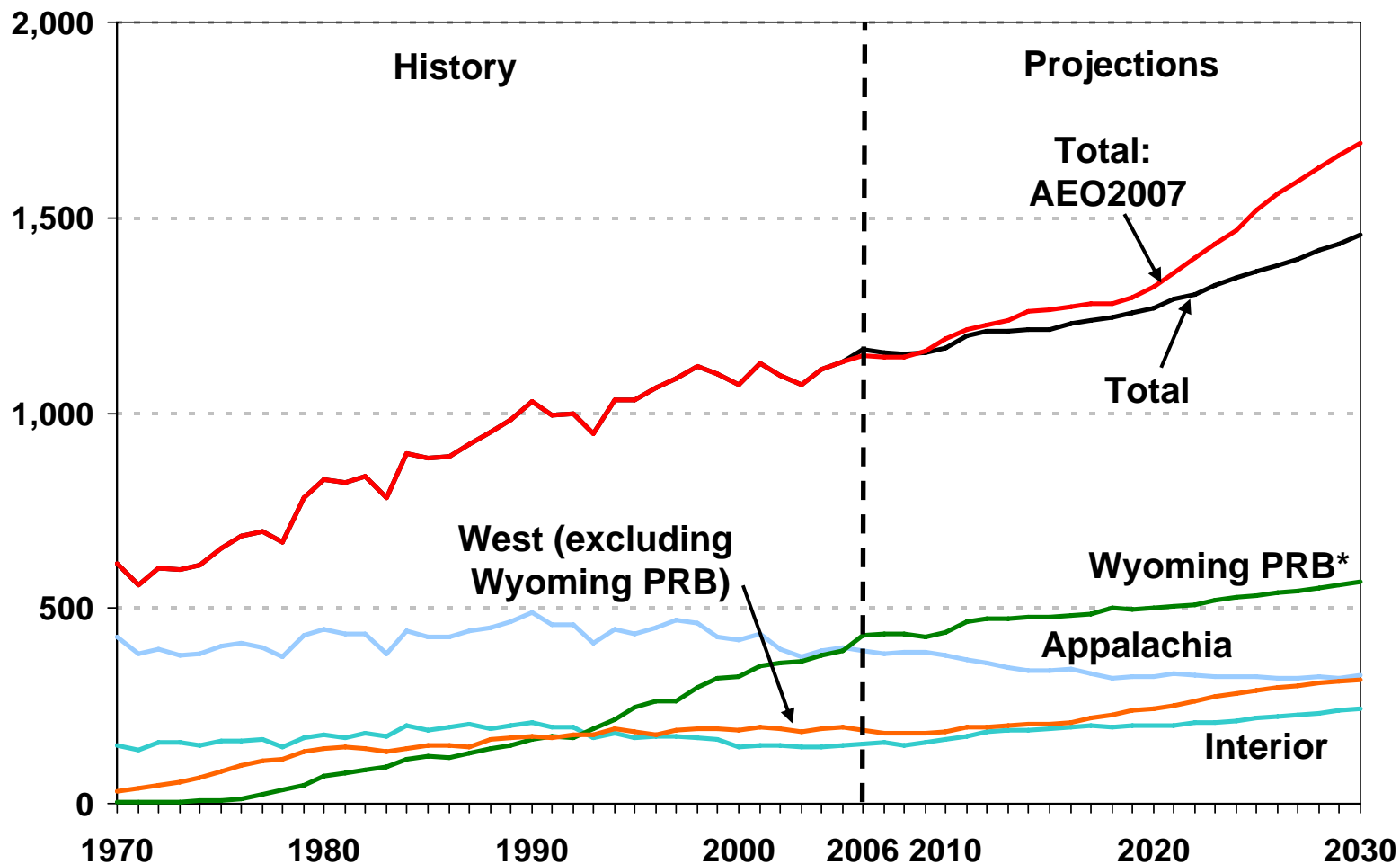
# AEO2008 Reference Case

## Top 4 Growth Demand Regions, Growth in Select Years Compared to 2006 (million short tons)

	2015	2030
<b>Mountain</b> AZ,NM,CO,UT,NV,MT, WY,ID	+12	+88
<b>West South Central</b> TX,LA,OK,AR	+14	+66
<b>West North Central</b> MN,IA,ND,SD,NE,MO,KS	+5	+53
<b>East South Central</b> AL,MS,KY,TN	+12	+45



# AEO2008: Coal Production by Region, 1970-2030 (million short tons)

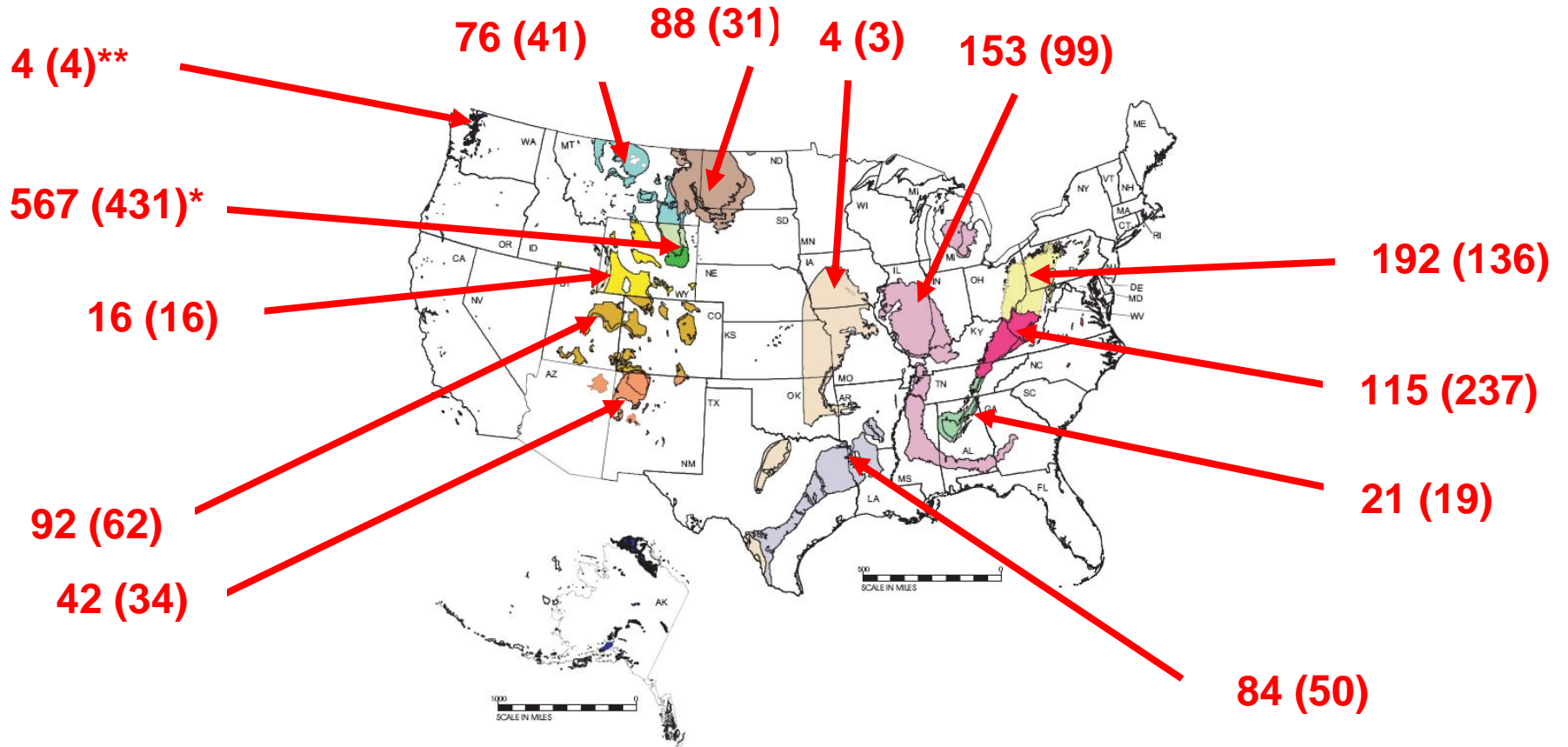


\* Wyoming PRB data for 1970 through 1976 are based on data reported by the U.S. Bureau of Mines and the U.S. Mine Safety and Health Administration.

Source: Annual Energy Outlook 2008, Reference Case (June 2008); and Annual Energy Outlook 2007 (February 2007)

# Coal Production, 2030 (and 2006)

(million short tons)



**U.S. Total:**  
**1,455 (1,163) million short tons**

- |                       |                      |                                        |                                        |
|-----------------------|----------------------|----------------------------------------|----------------------------------------|
| <b>APPALACHIA</b>     |                      | <b>NORTHERN GREAT PLAINS</b>           |                                        |
| ■ Northern Appalachia | ■ Central Appalachia | ■ Dakota Lignite                       | ■ Western Montana                      |
| ■ Southern Appalachia |                      | ■ Wyoming, Northern Powder River Basin | ■ Wyoming, Southern Powder River Basin |
|                       |                      | ■ Western Wyoming                      |                                        |
| <b>INTERIOR</b>       |                      | <b>OTHER WEST</b>                      |                                        |
| ■ Eastern Interior    | ■ Western Interior   | ■ Rocky Mountain                       | ■ Southwest                            |
| ■ Gulf Lignite        |                      | ■ Northwest                            |                                        |

Source: Energy Information Administration, Office of Integrated Analysis and Forecasting

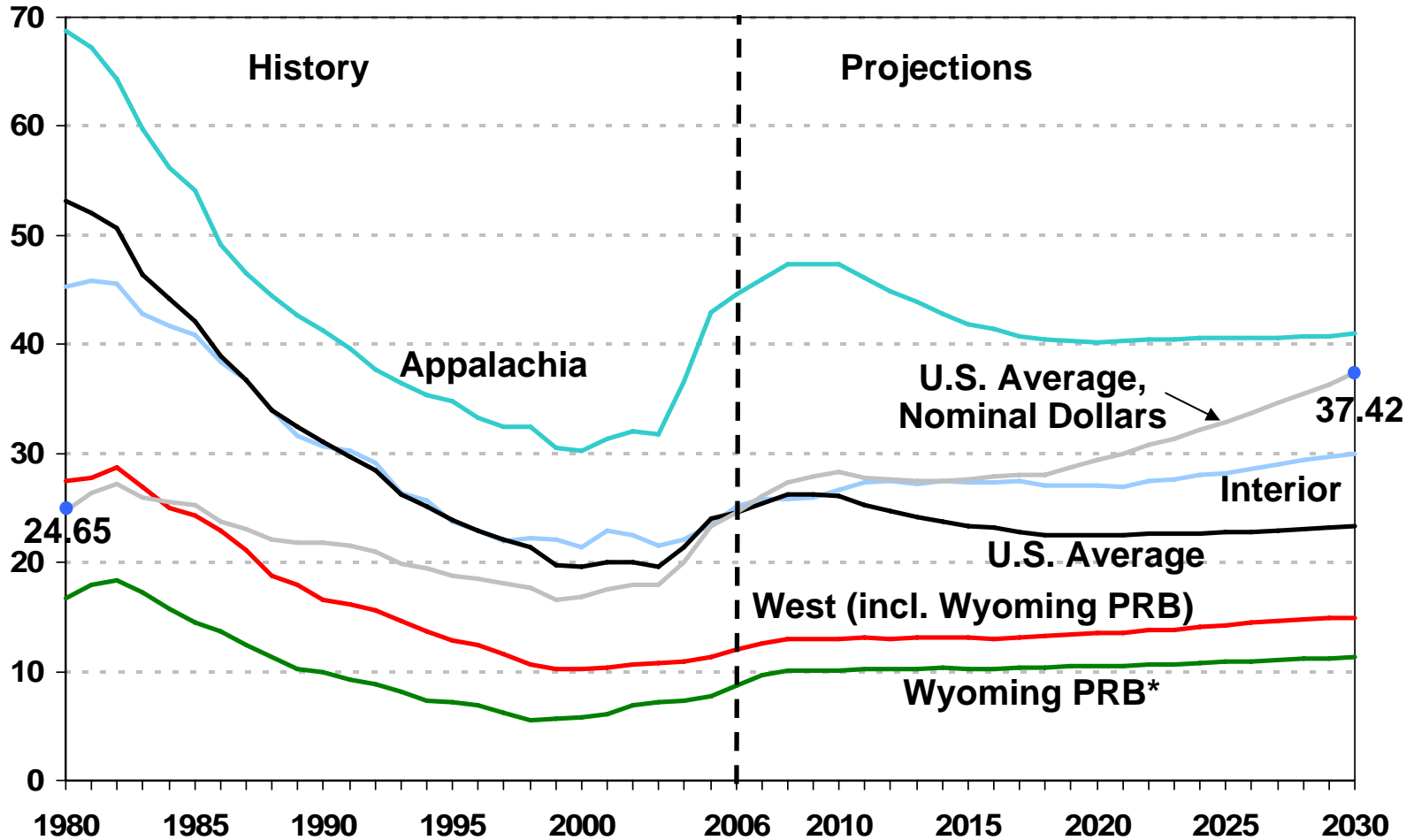


\* Includes production from all mines in Wyoming's Powder River Basin.

\*\* Includes production from mines in both Alaska and Washington.

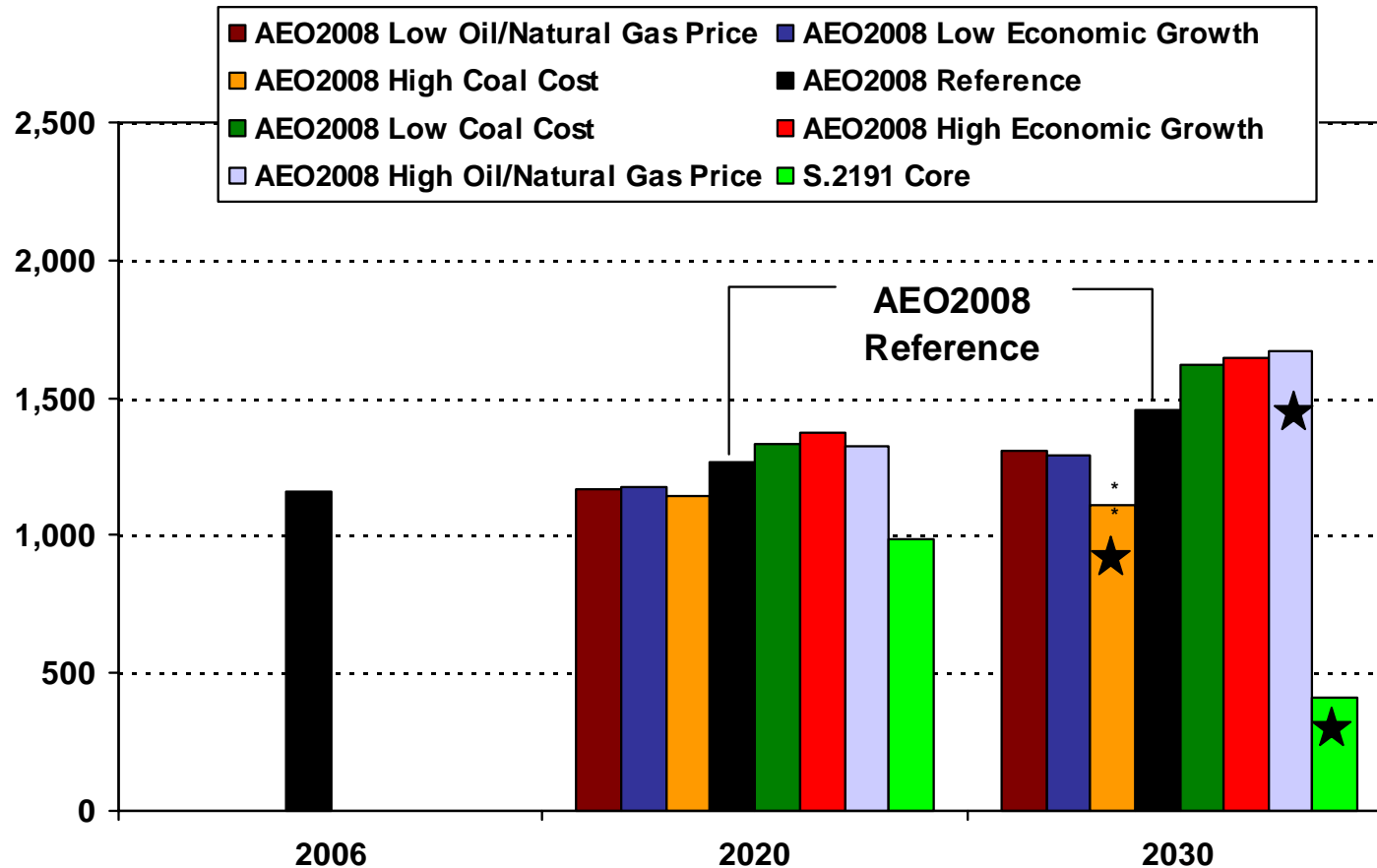
Source: Annual Energy Outlook 2008, Reference Case (June 2008)

# Average Minemouth Price of Coal by Region, 1980-2030 (2006 dollars per short ton)



\* Wyoming PRB price data for 1980 through 2006 represent shipments from mines in Campbell county Wyoming. Source: Annual Energy Outlook 2008, Reference Case (June 2008)

## U.S. Coal Production, 2006, 2020 and 2030 (million short tons)



Source: Annual Energy Outlook 2008 (June 2008); and Energy Market and Economic Impacts of S.2191, the Lieberman-Warner Climate Security Act of 2007 (April 2008).

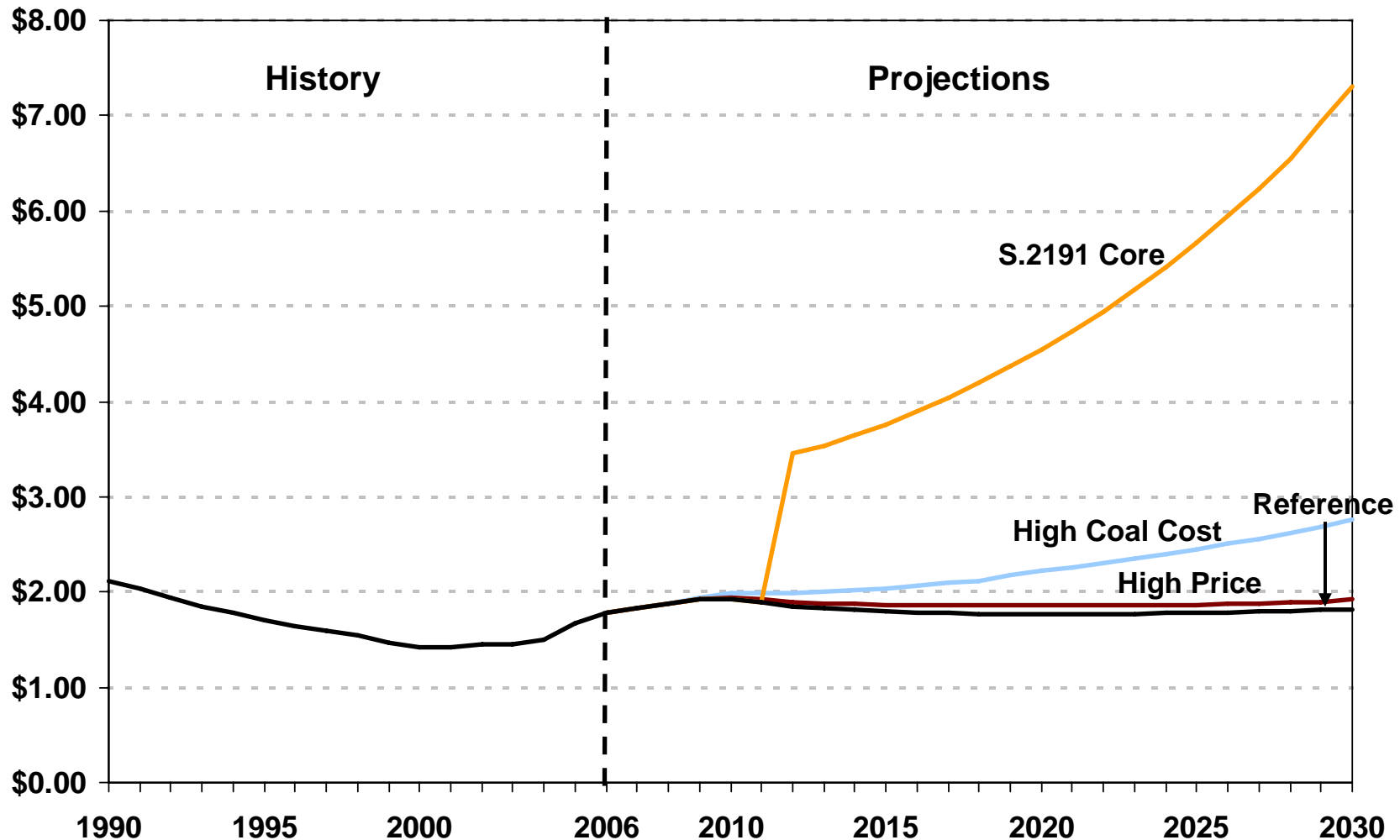
# Key Differences between Alternative Cases

	<b>GDP Growth</b> (avg. annual change from 2006)	<b>World Oil Price, 2030</b> (2006 dollars per barrel)	<b>Wellhead natural gas price, 2030</b> (2006 dollars per Mcf)	<b>Eastern Coal Rail Rates*, 2030</b> (percent change from 2006)	<b>Western Coal Rail Rates*, 2030</b> (percent change from 2006)	<b>Mining Productivity</b> (avg. annual change from 2006)	<b>Greenhouse Gas Cap</b>
<b>Reference</b>	2.4%	\$70	\$6.63	1%	2%	0.6%	
<b>High Oil/Gas Price</b>		\$119	\$7.77				
<b>Coal High Cost</b>				8%	8%	-3%	
<b>S. 2191 Lieberman-Warner</b>							39% below 2006 levels in 2030

All cases include representation of the Clean Air Interstate Rule and Clean Air Mercury Rule.

\*Constant dollars.

# Average Delivered Coal Prices, 1990-2030 (2006 dollars per million Btu)



Source: Annual Energy Outlook 2008 (June 2008); and Energy Market and Economic Impacts of S.2191, the Lieberman-Warner Climate Security Act of 2007 (April 2008).

# Coal Distribution and Transportation Prices

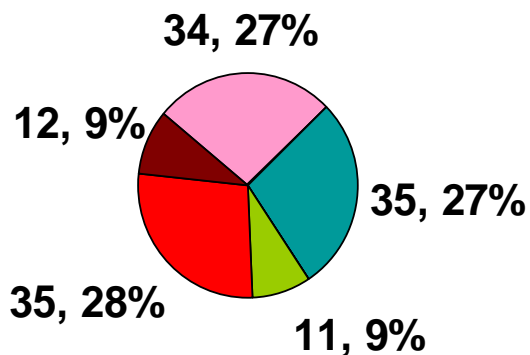
# General Assumptions

- Base transportation rates are derived from the difference between delivered prices and minemouth prices
- Transportation rates are modeled for origin region to destination region pairs
- Base year transportation rates are modified over time with an econometrically derived escalator (in 2030, 1% higher for East and 2% higher for West compared to 2006)
- Representation of fuel surcharge program
- The model satisfies coal demand by choosing the least cost solution

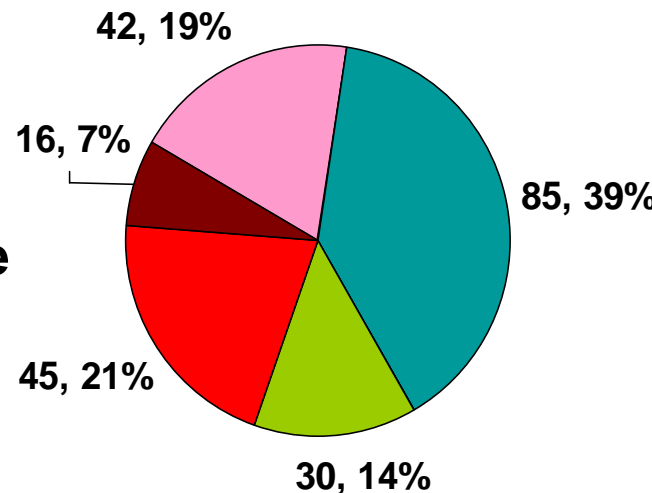


# Distribution of coal to the Mountain Census Division, 2006\* and 2030 (million short tons, percentage)

**2006\***

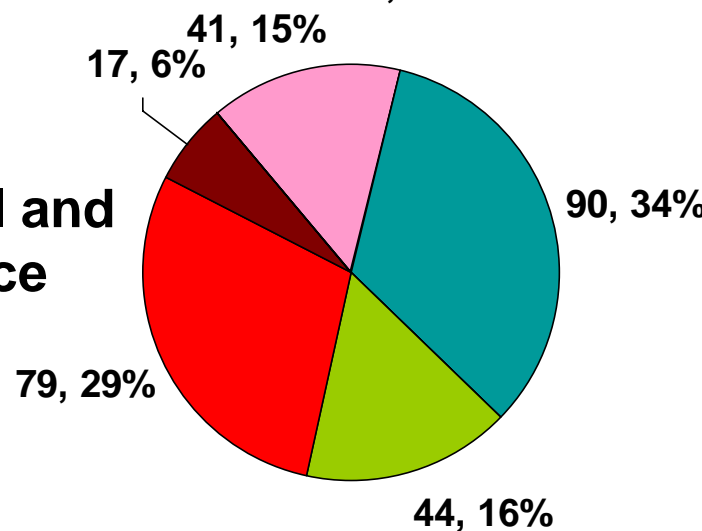


**AEO2008 Reference**



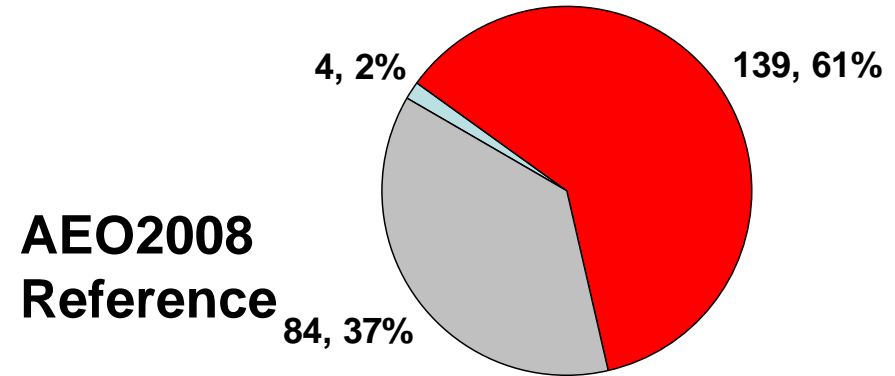
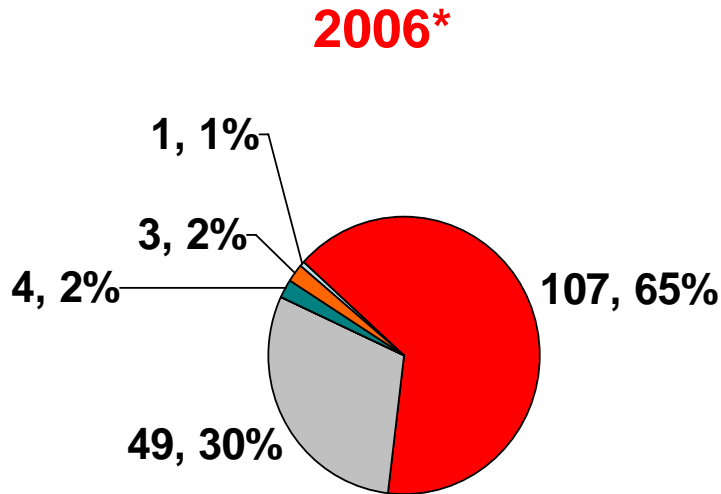
**2030**

**High Oil and Gas Price**

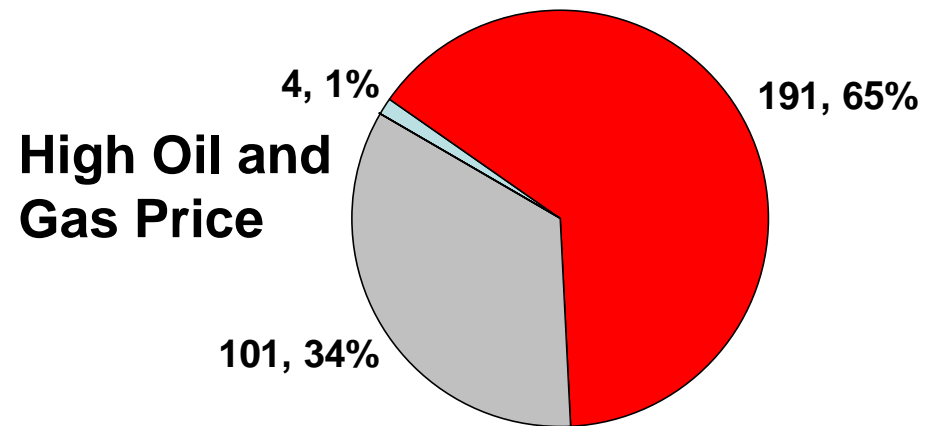


\*Volumes with unknown destinations or origins are excluded. Source: EIA-6 "Coal Distribution Data". For 2006, 12 million tons is estimated to be sourced from Western Wyoming. Waste coal is excluded.

# Distribution of coal to the West South Central Census Division, 2006\* and 2030 (million short tons, percentage)



**2030**

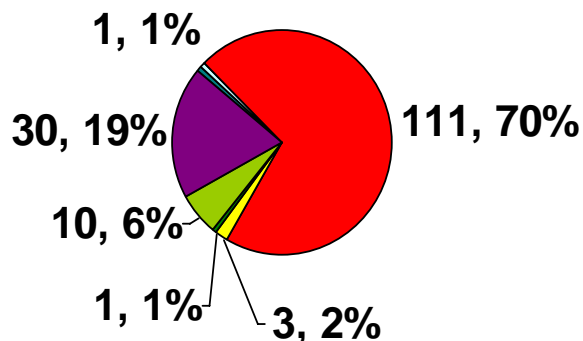


\*Volumes with unknown destinations or origins are excluded. Source: EIA-6 "Coal Distribution Data". Waste coal is excluded.

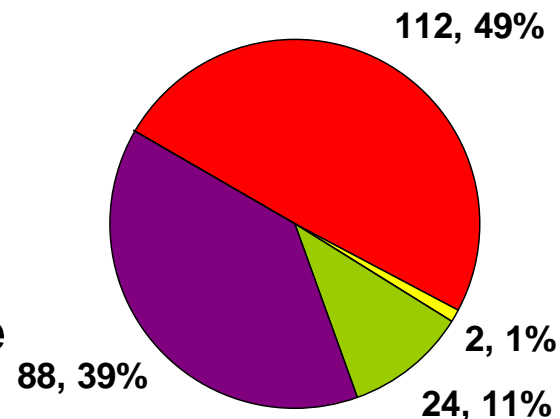
# Distribution of coal to the West North Central Census Division, 2006\* and 2030

(million short tons, percentage)

**2006\***

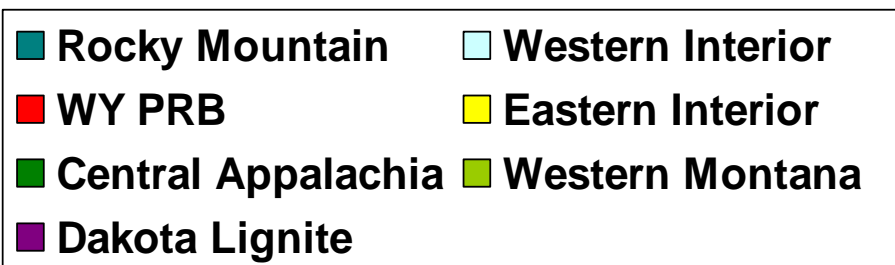
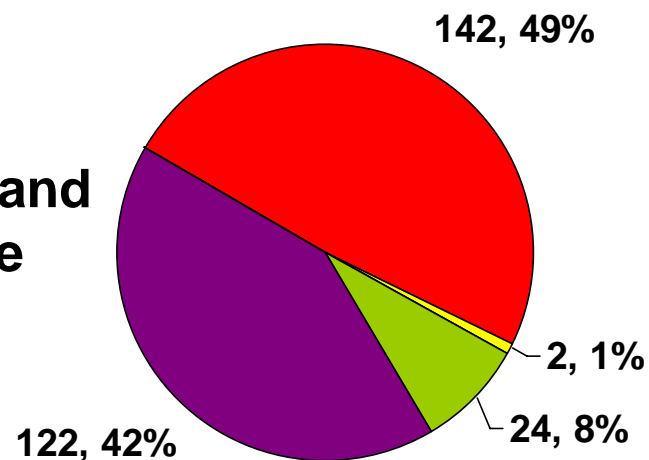


**AEO2008 Reference**



**2030**

**High Oil and Gas Price**

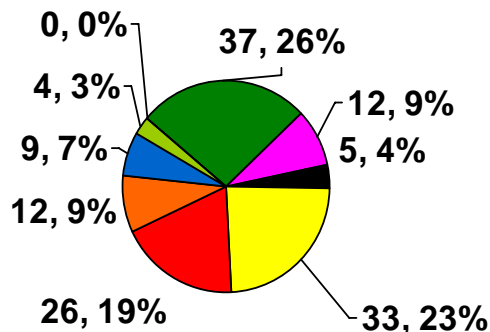


\*Volumes with unknown destinations or origins are excluded. Source: EIA-6 "Coal Distribution Data". Waste coal is excluded.

# Distribution of coal to the East South Central Census Division, 2006\* and 2030

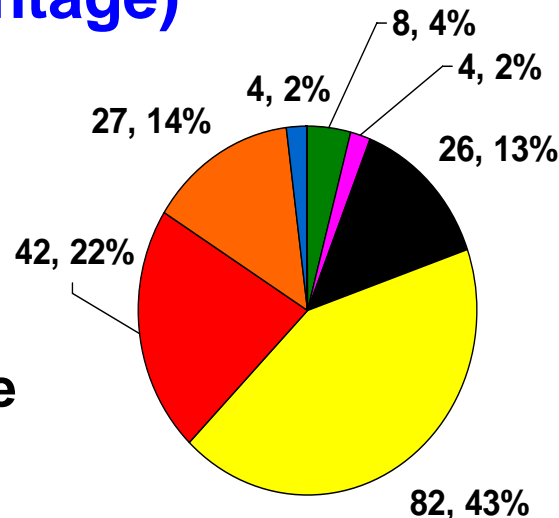
(million short tons, percentage)

**2006\***

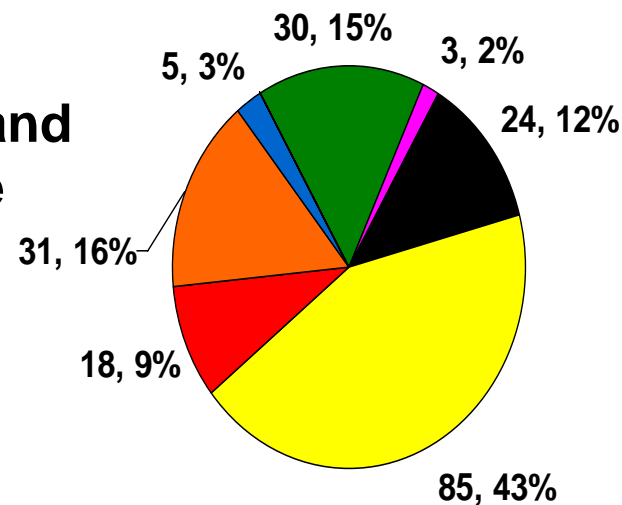


**AEO2008 Reference**

**2030**



**High Oil and Gas Price**

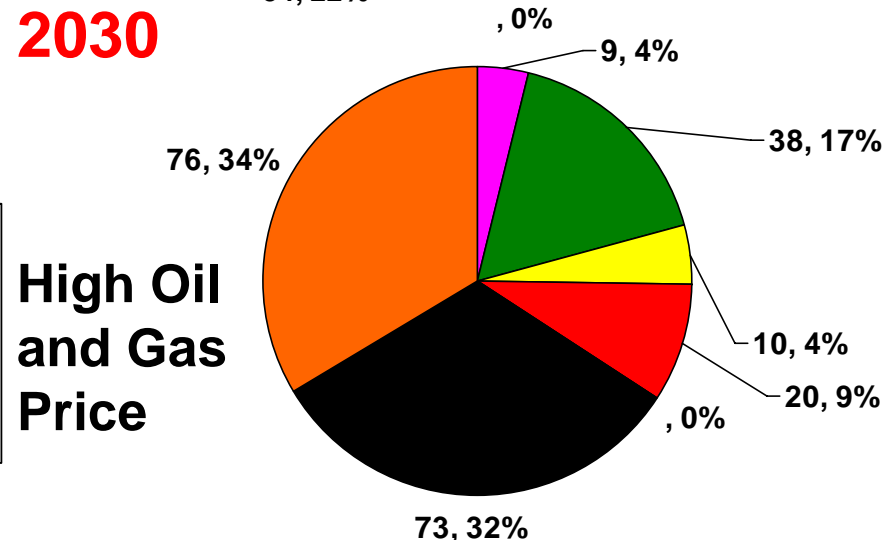
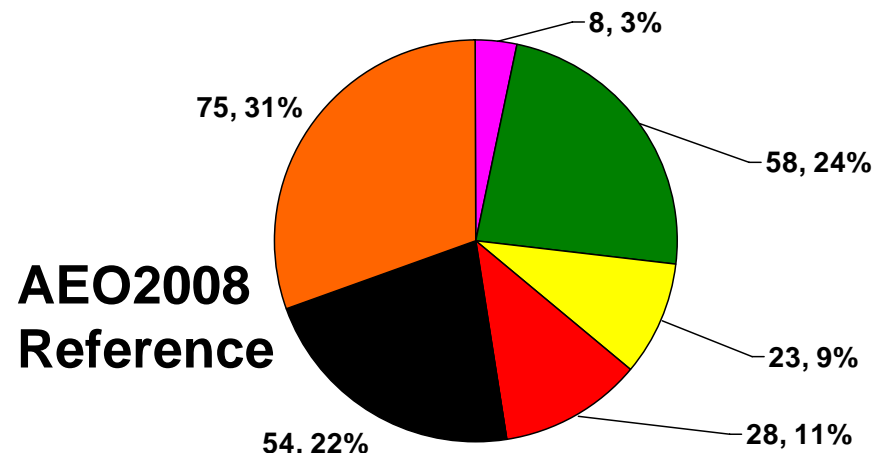
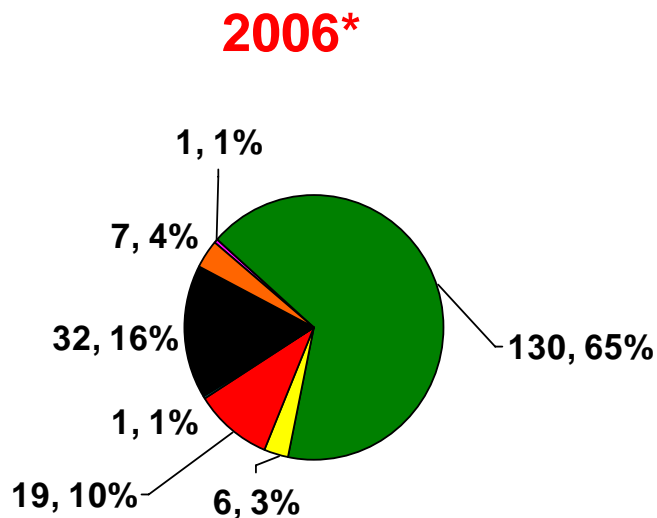


- Central Appalachia
- Northern Appalachia
- WY PRB
- Rocky Mountain
- Western Interior
- Southern Appalachia
- Eastern Interior
- Imports
- Western Montana

\*Volumes with unknown destinations or origins are excluded. Source: EIA-6 "Coal Distribution Data". Waste coal is excluded.

# Distribution of coal to the South Atlantic Census Division, 2006\* and 2030

(million short tons, percentage)

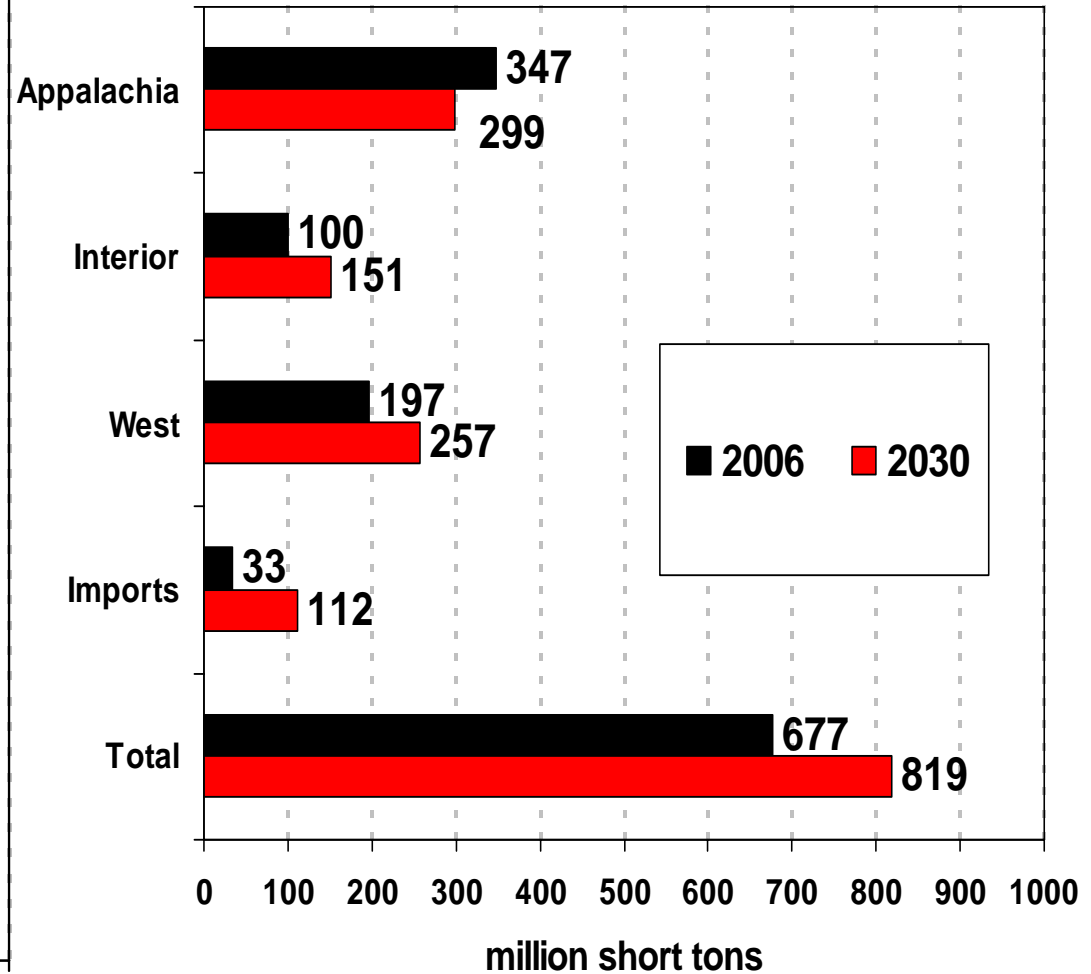
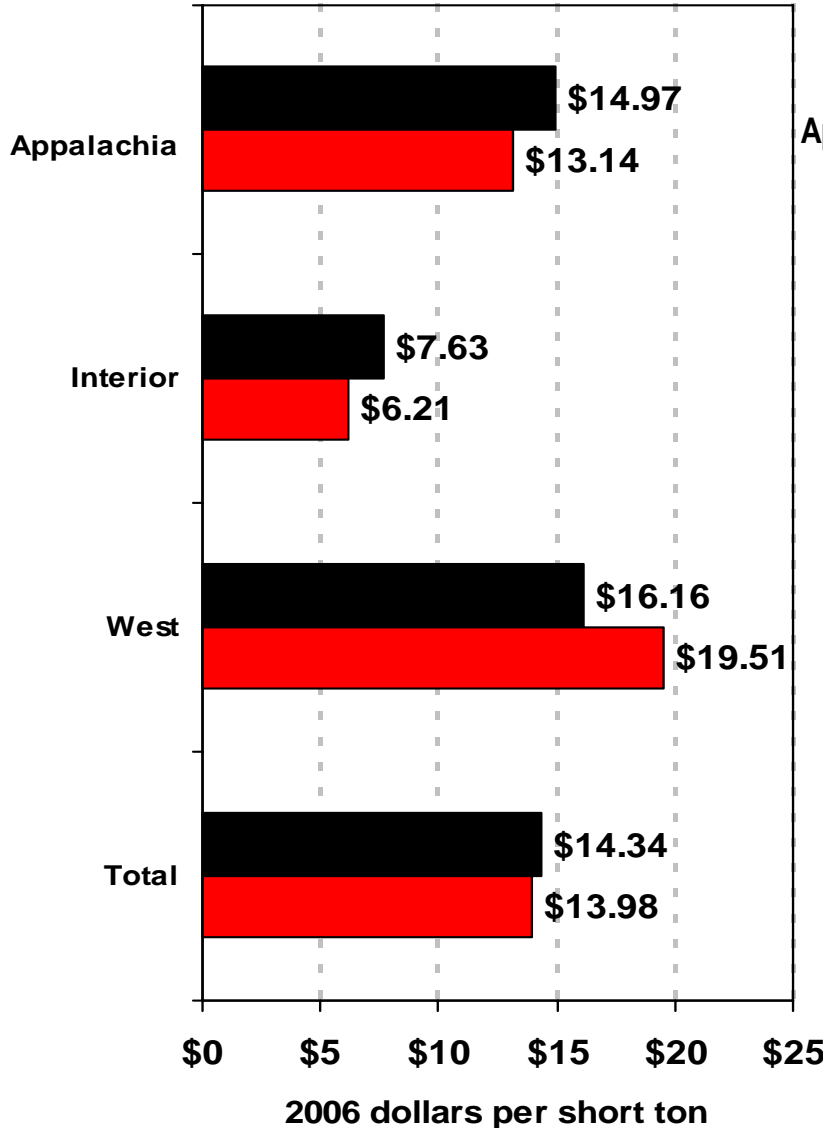


- Southern Appalachia
- Central Appalachia
- Eastern Interior
- Wyoming PRB
- Rocky Mountain
- Northern Appalachia
- Imports

\*Volumes with unknown destinations or origins are excluded. Source: EIA-6 "Coal Distribution Data". Waste coal is excluded.

# Demand located East of the Mississippi

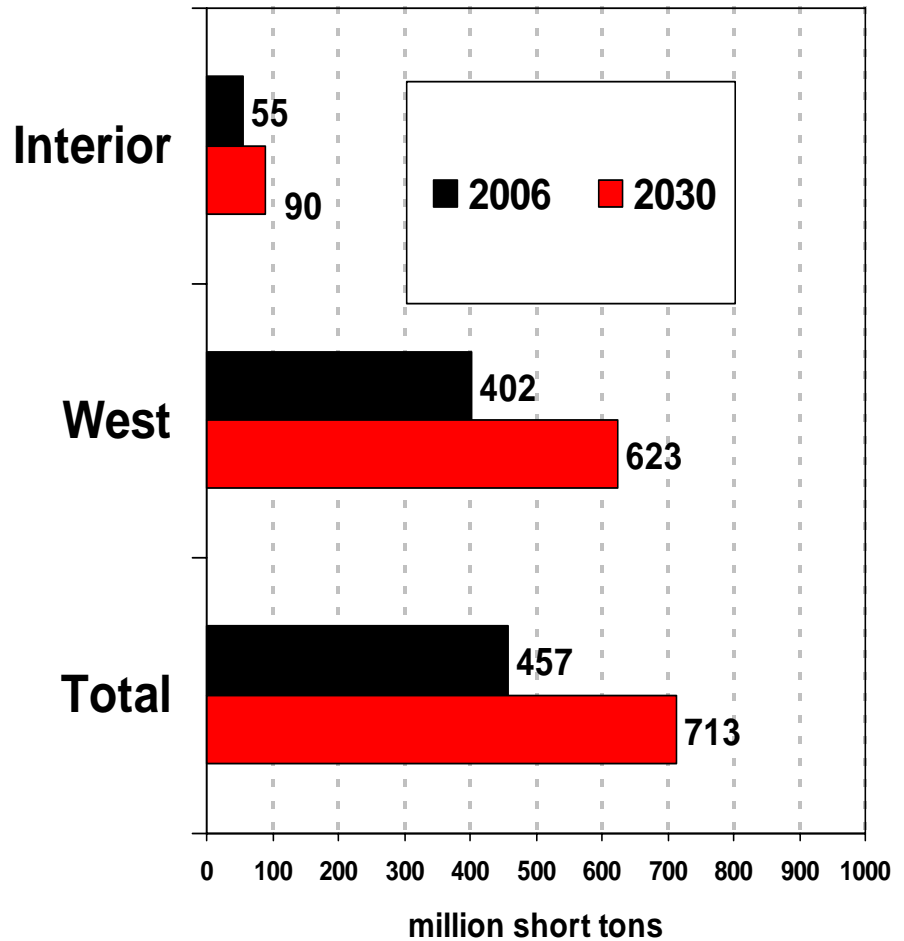
## Transportation Rates and Volumes by Supply Region



\*Rates exclude exports. National Energy Modeling System run: AEO2008.d030208f.

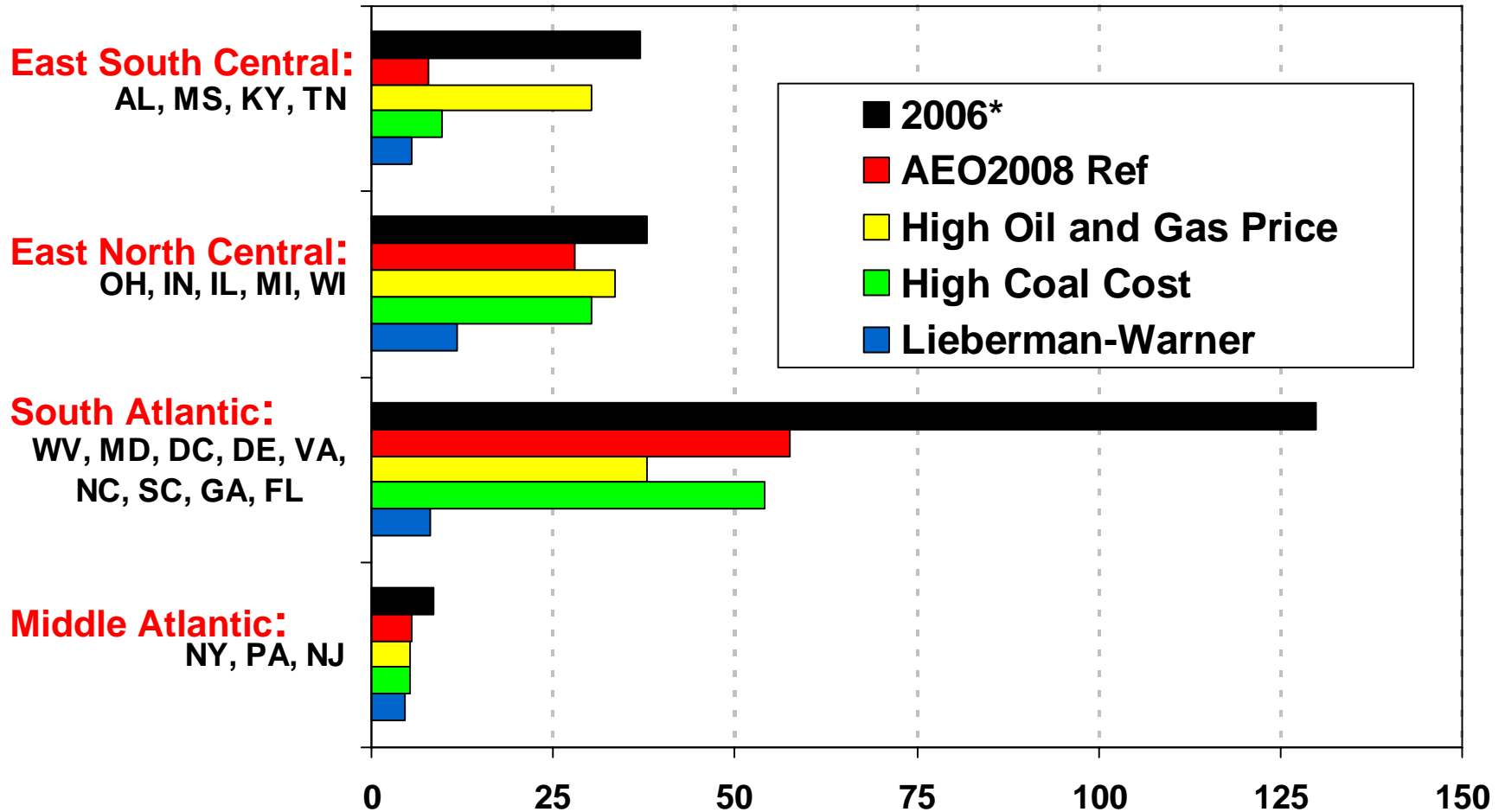
# Demand located West of the Mississippi

## Transportation Rates and Volumes by Supply Region



\*Rates exclude exports. National Energy Modeling System run: AEO2008.d030208f.

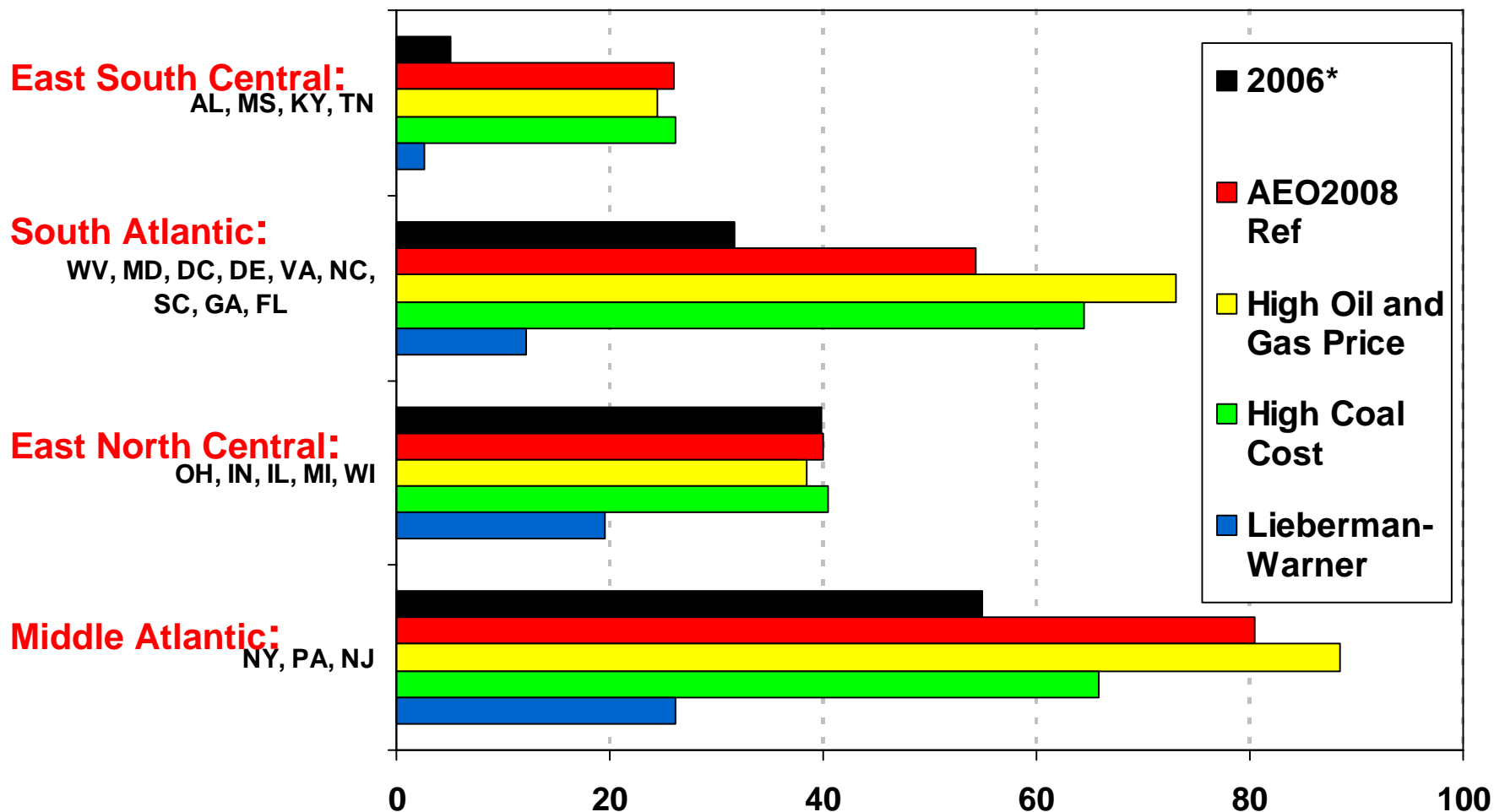
# Distribution of coal from Central Appalachia, 2006 and 2030 (million short tons)



\*Volumes with unknown origin, or unknown destination are not shown. Source: EIA-6 "Coal Distribution Data". Projected volumes of less than 1 million tons are not included.

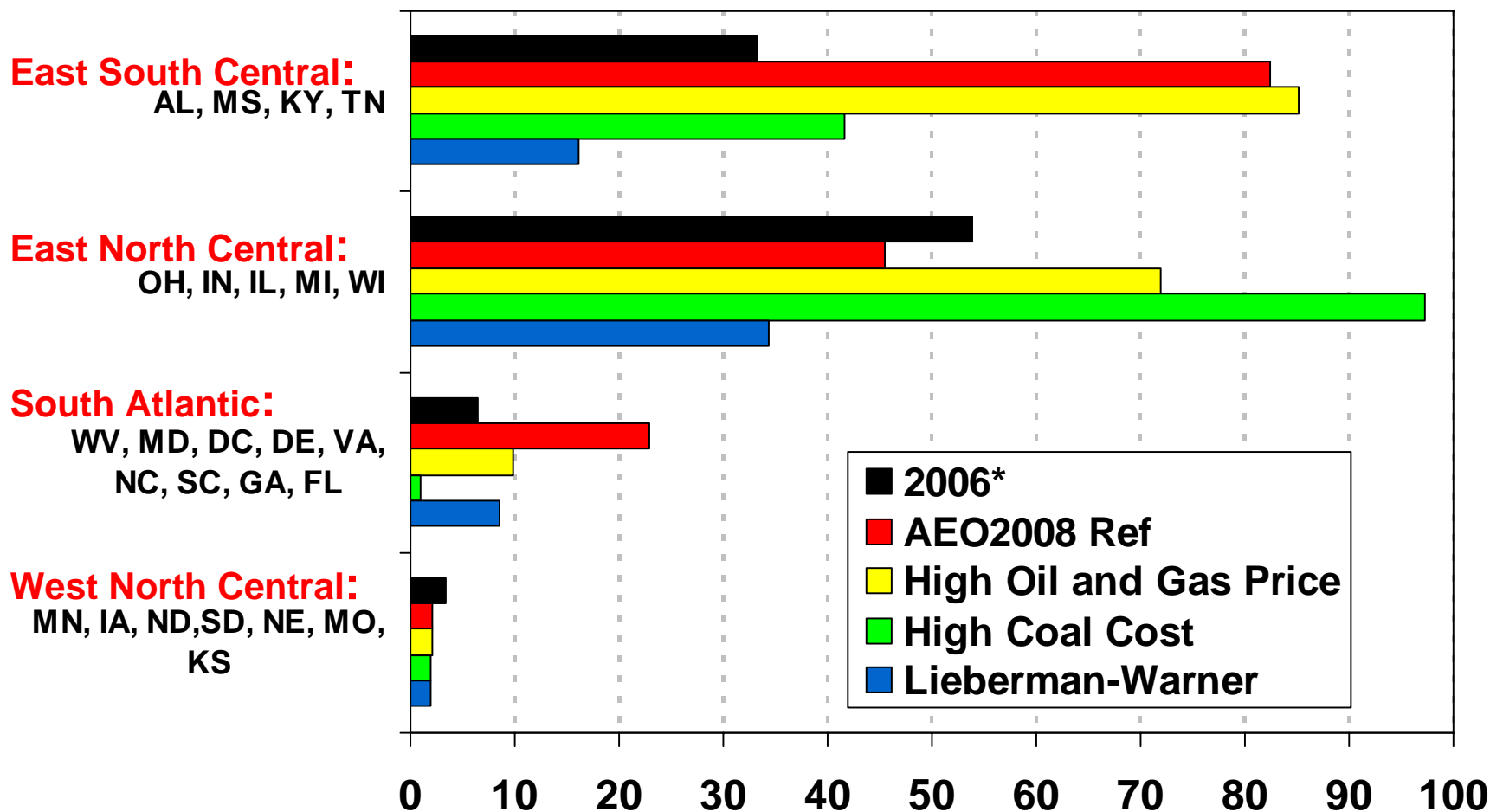


# Distribution of coal from Northern Appalachia, 2006\* and 2030 (million short tons)



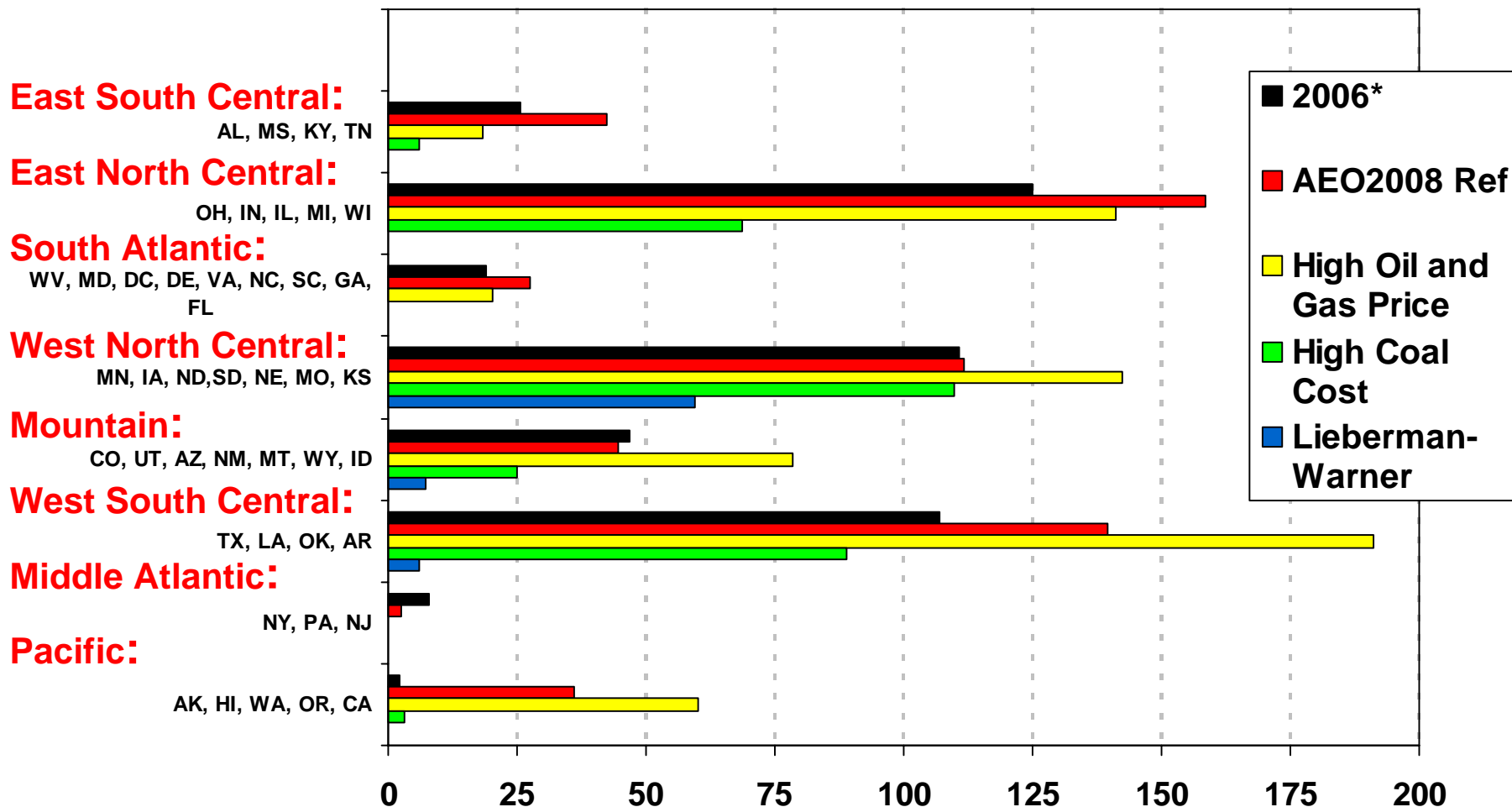
\*Volumes with unknown origin, or unknown destination are not shown. Source: EIA-6 "Coal Distribution Data". Projected volumes of less than 1 million tons are not included.

# Distribution of coal from Eastern Interior, 2006\* and 2030 (million short tons)



\*Volumes with unknown origin or unknown destination are not shown. Source: EIA-6 "Coal Distribution Data". Projected volumes of less than 1 million tons are not included.

# Distribution of coal from WY PRB, 2006\* and 2030 (million short tons)



\*Volumes with unknown origin, or unknown destination are not shown. Source: EIA-6 "Coal Distribution Data". Projected volumes of less than 1 million tons are not included.

# Contact Information

- Energy Information Administration
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