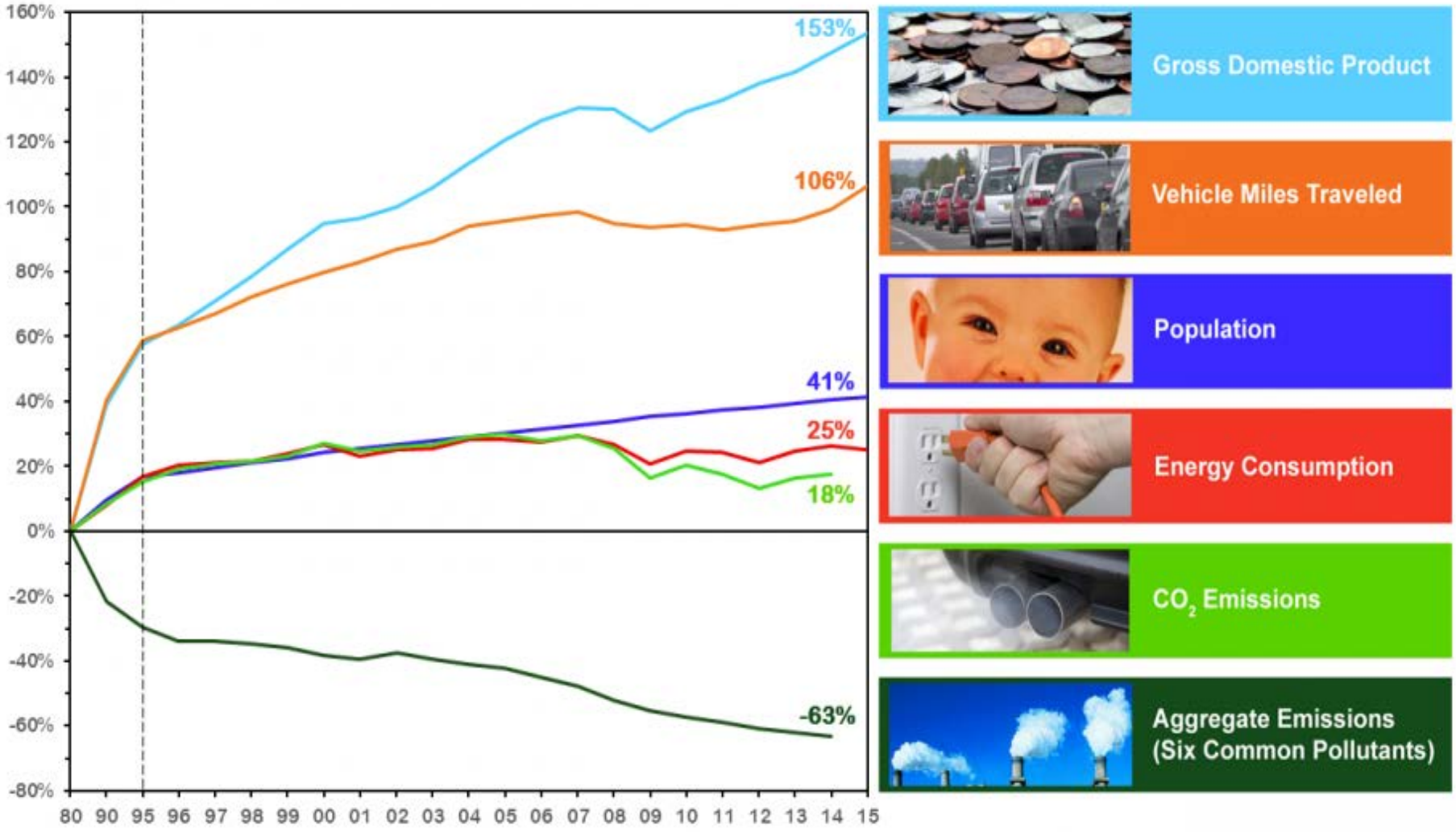
CENTER FOR THE NEW ENERGY ECONOMY

Western States Clean Power Plan Initiative

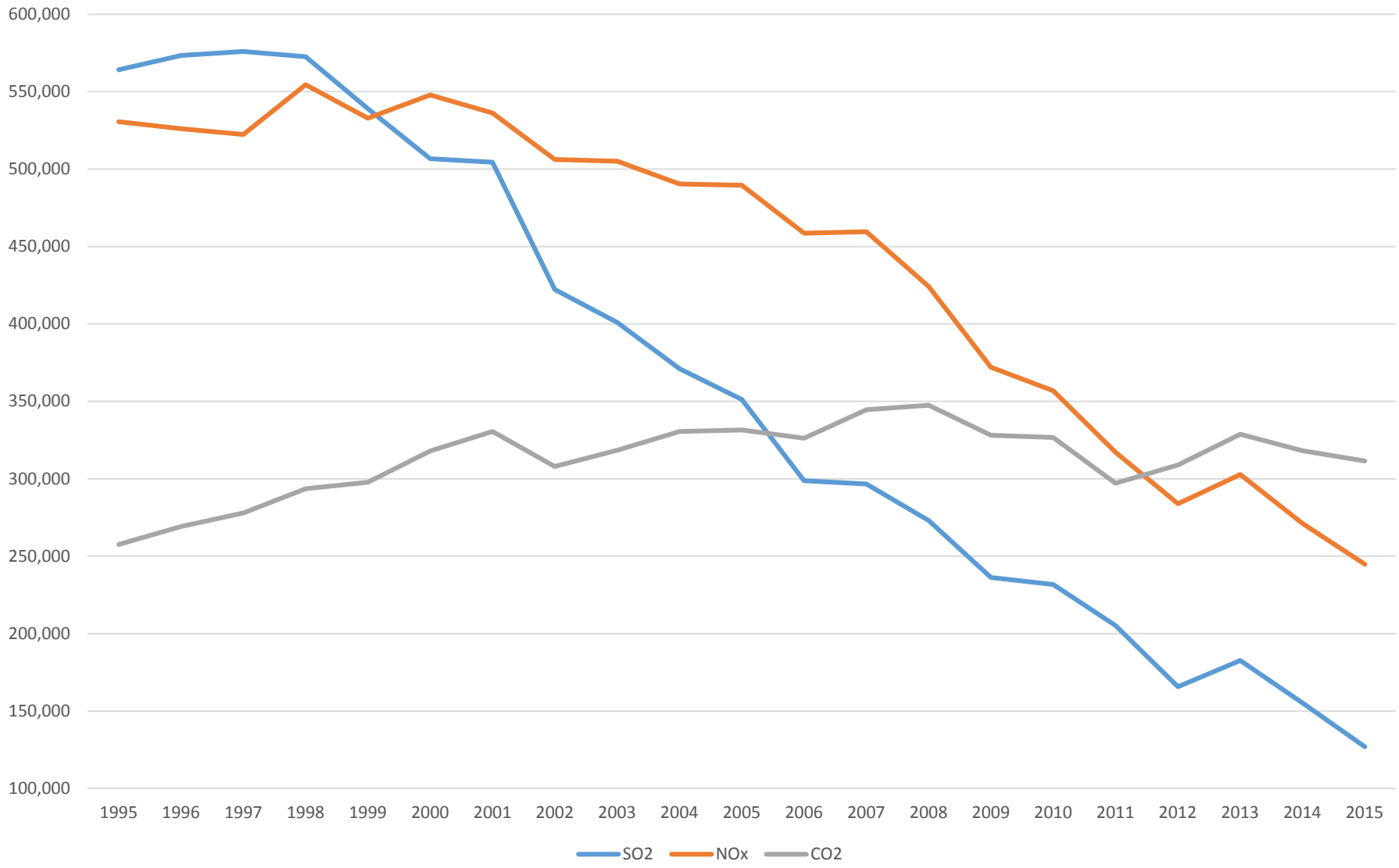
Convening state officials, utilities, and other stakeholders from 13 Western states since June 2014

CNEE's goal is to support the development and implementation of approvable state plans

Comparison of Growth Areas and Emissions, 1980-2015



Power Sector Emissions in the Western United States – 1995-2015



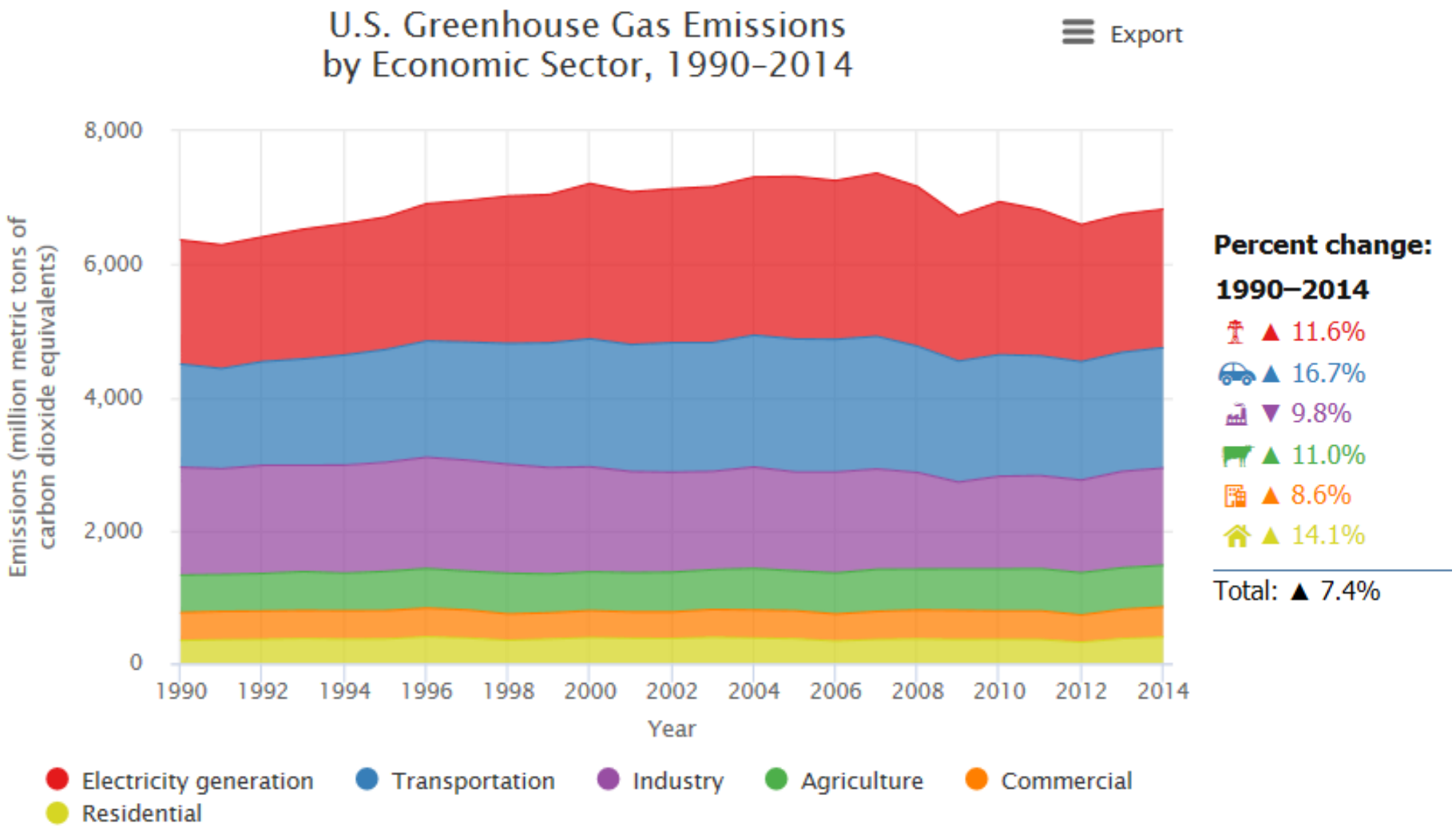
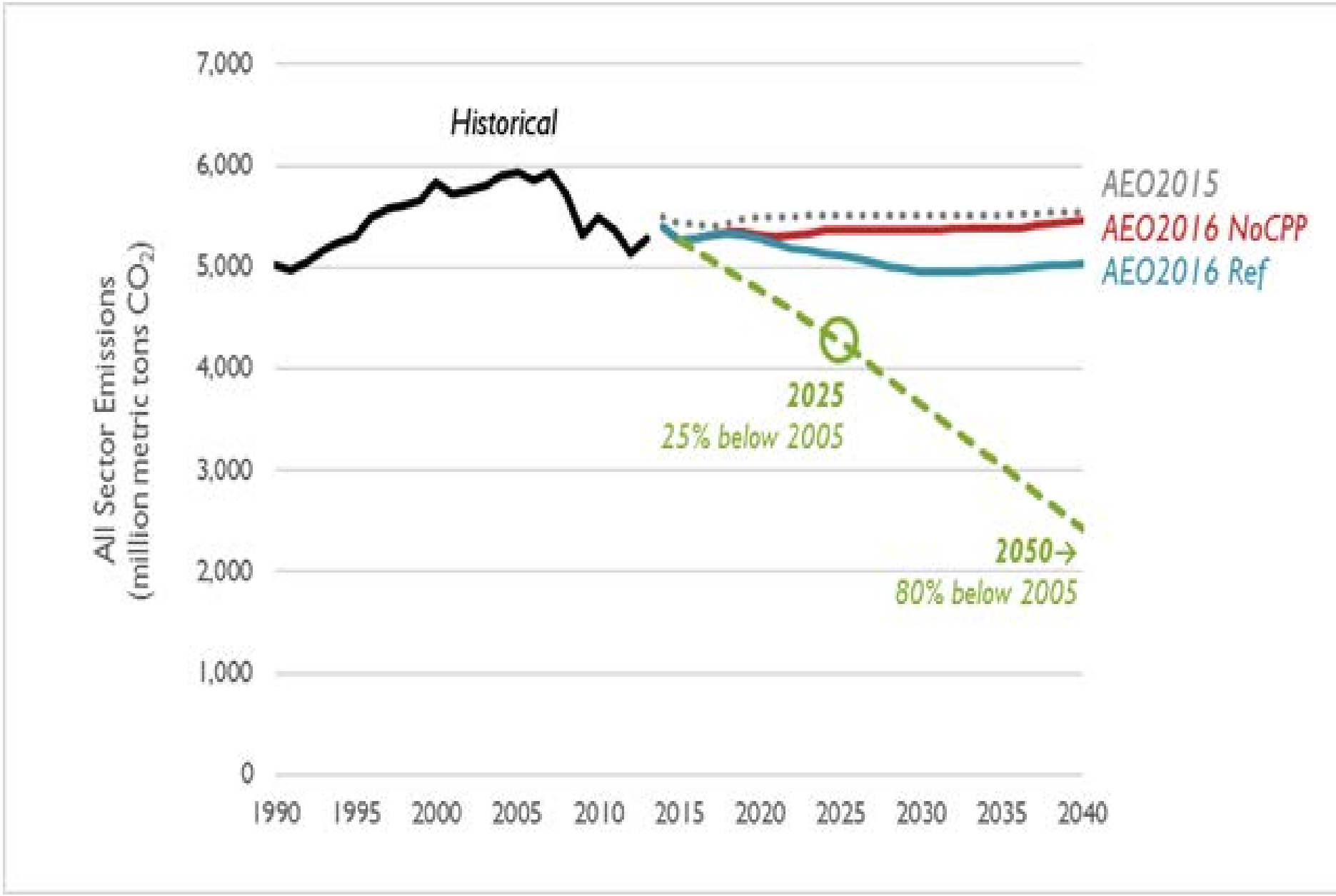
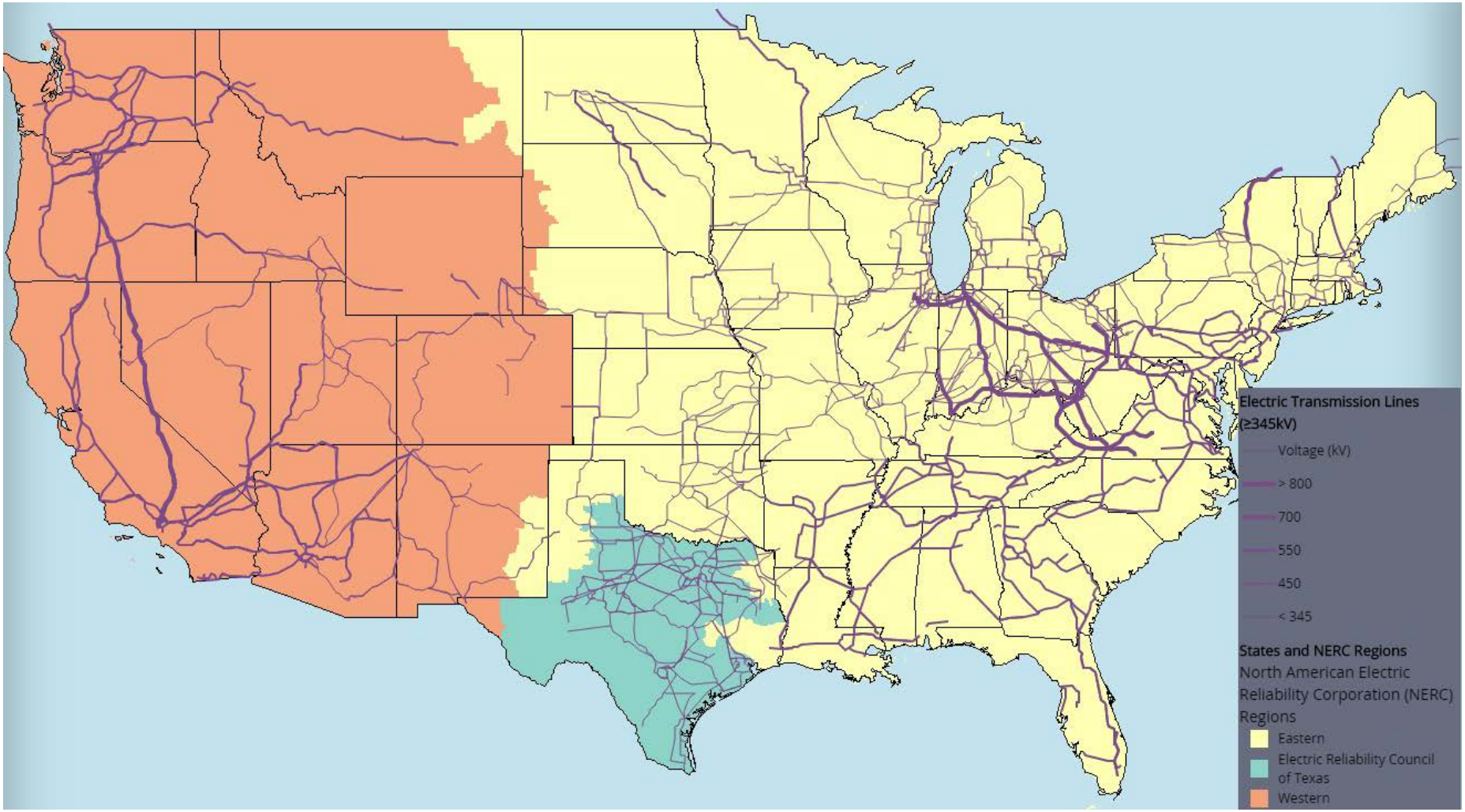
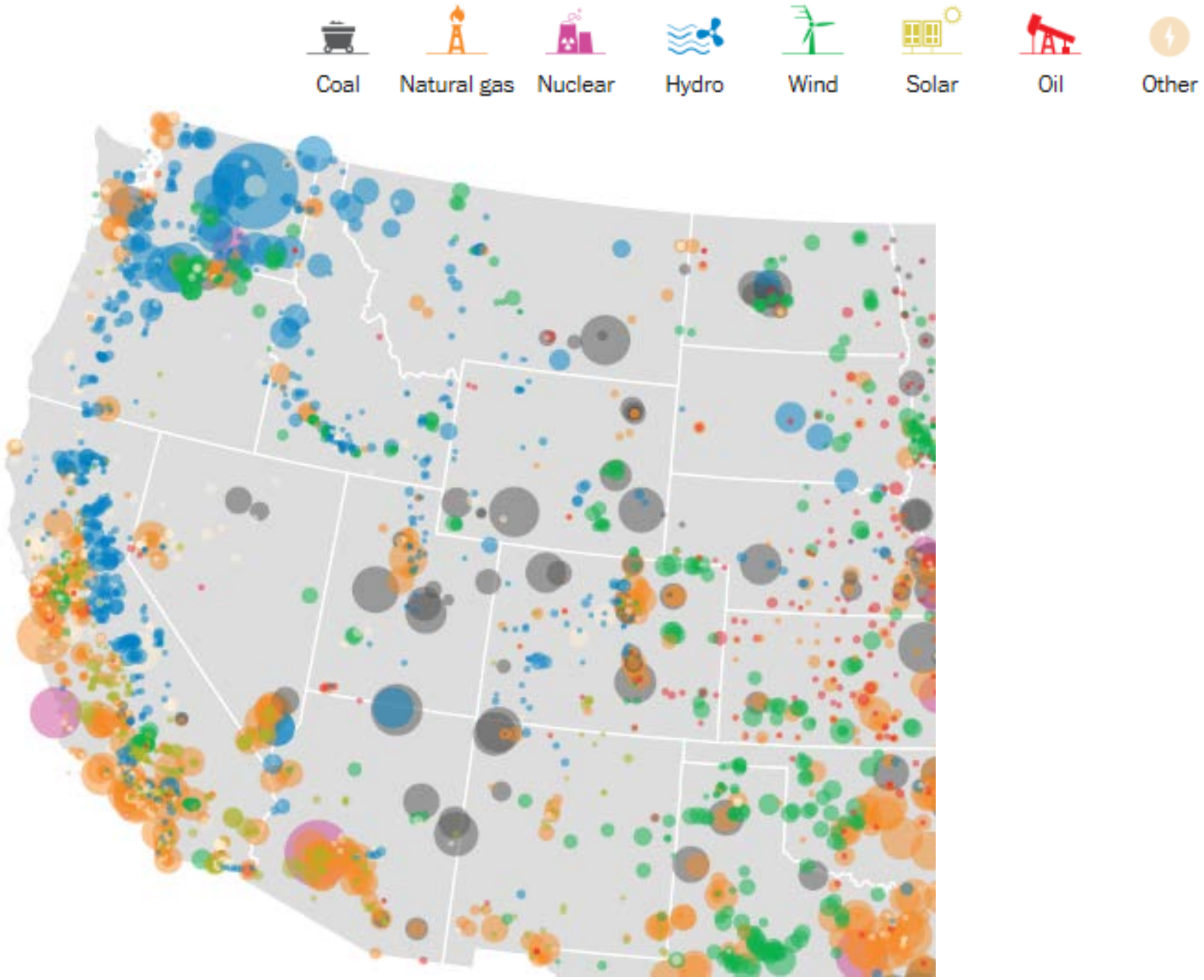

U.S. Greenhouse Gas Emissions
by Economic Sector, 1990–2014
Export
Emissions (million metric tons of carbon dioxide equivalents)
8,000
6,000
4,000
2,000
0
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
Year
Percent change:
1990–2014
▲ 11.6%
▲ 16.7%
▼ 9.8%
▲ 11.0%
▲ 8.6%
▲ 14.1%
Total: ▲ 7.4%
Electricity generation
Transportation
Industry
Agriculture
Commercial
Residential

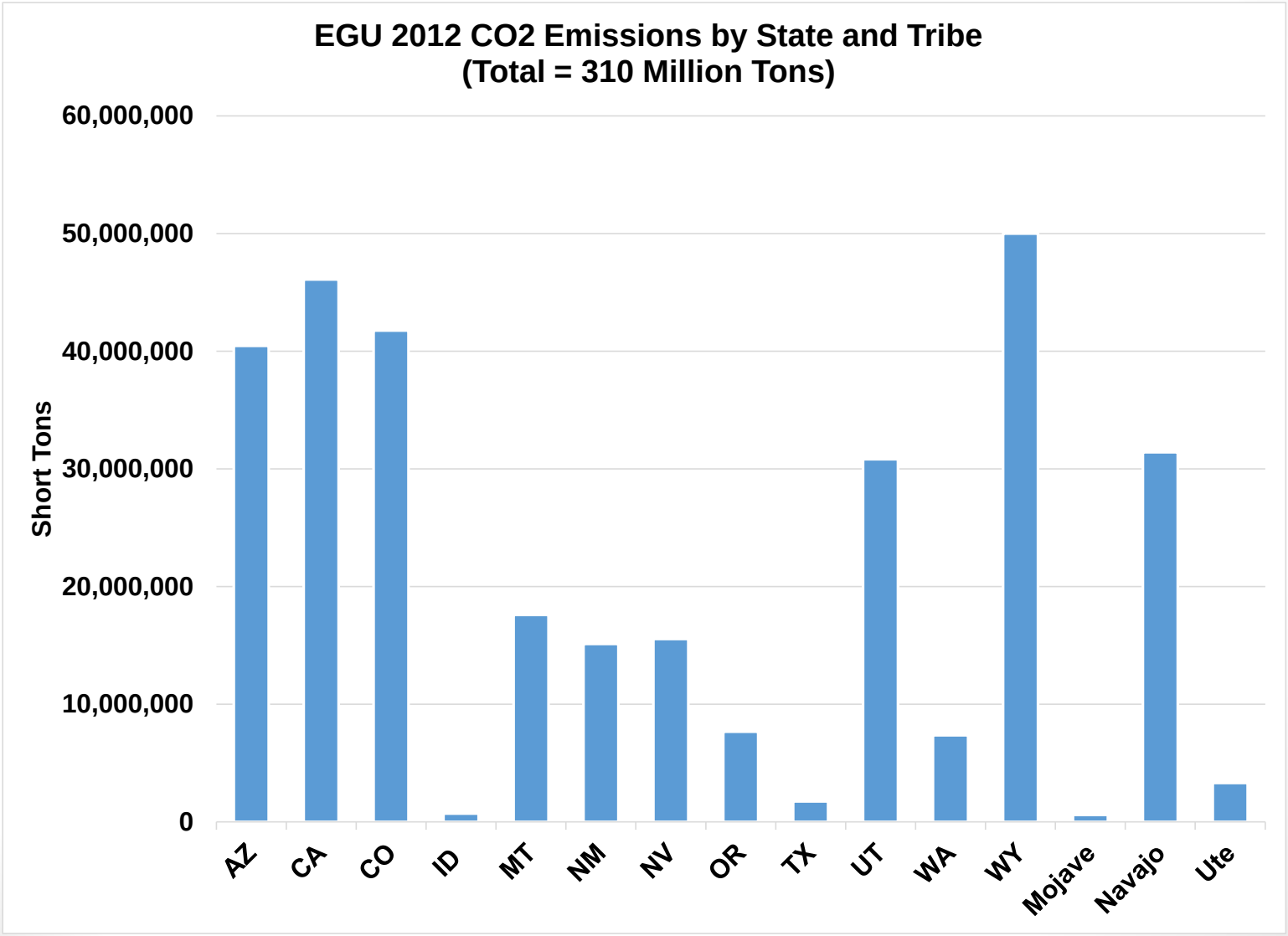
Figure 4: Comparison of all-sector CO_2 emission projections through 2040



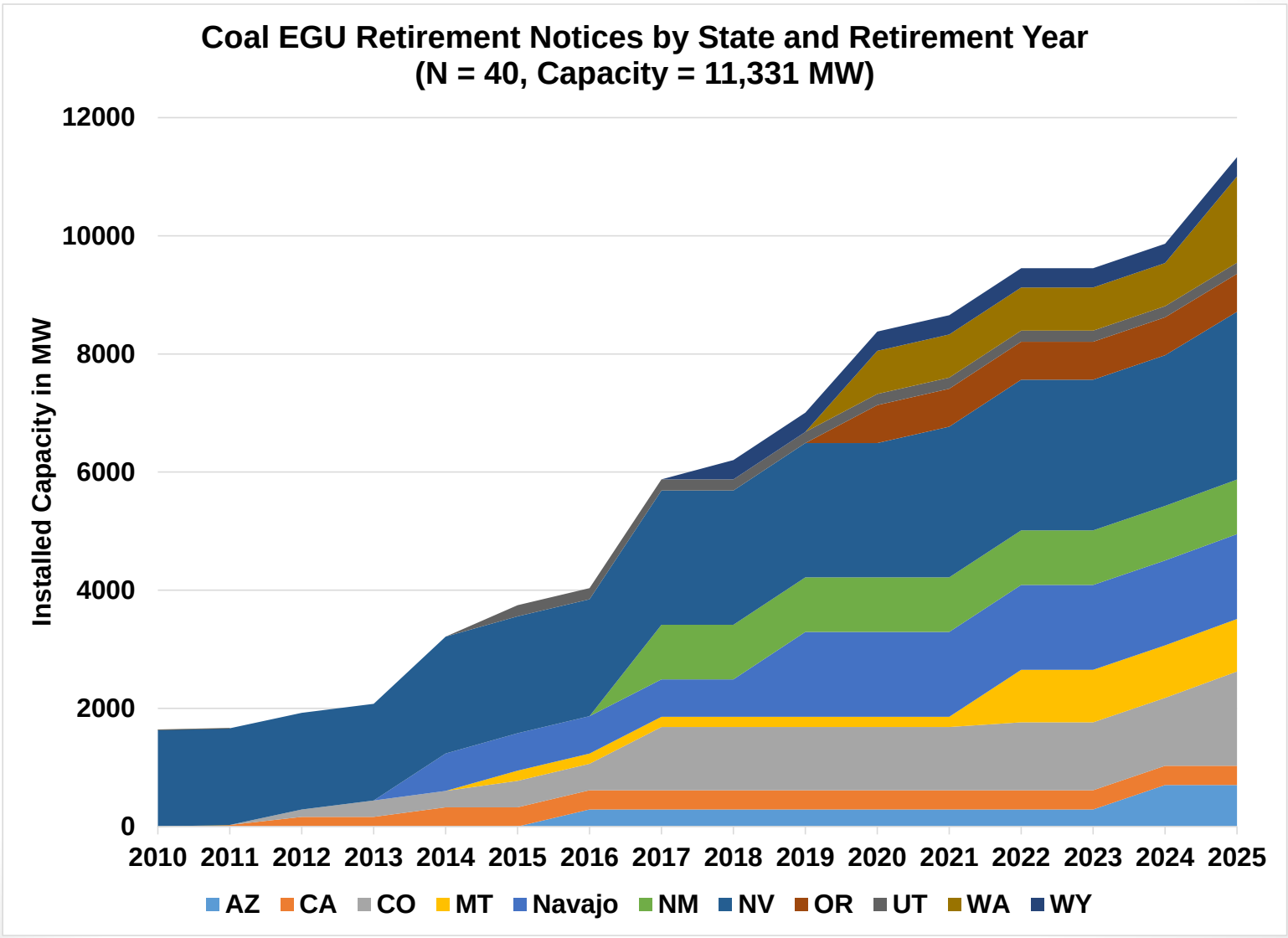

Electric Transmission Lines (≥345kV)
Voltage (kV)
> 800
700
550
450
< 345
States and NERC Regions
North American Electric Reliability Corporation (NERC) Regions
Eastern
Electric Reliability Council of Texas
Western


Coal
Natural gas
Nuclear
Hydro
Wind
Solar
Oil
Other

EGU Emissions in 2012



Coal EGU Retirement Notices



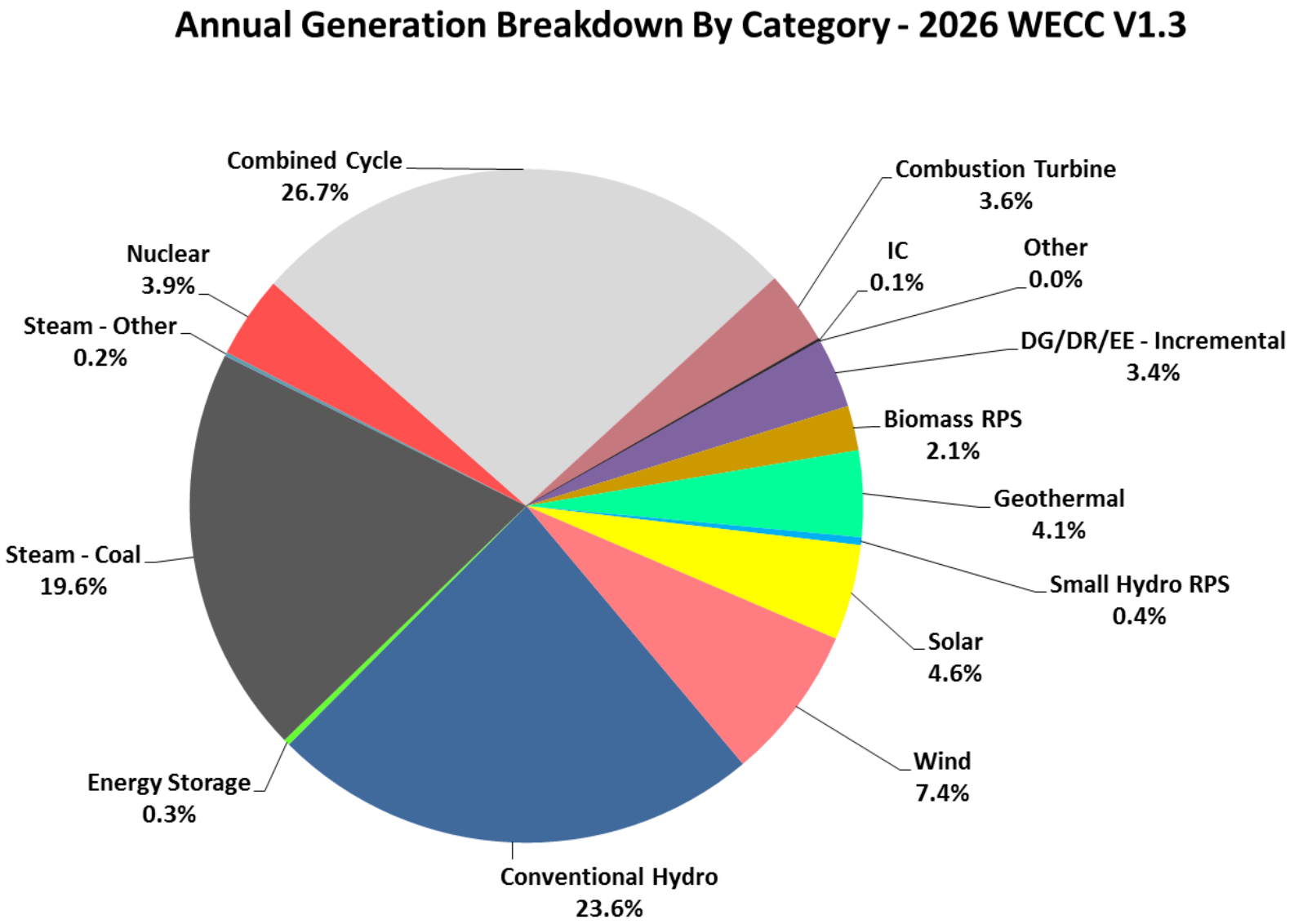
Announced Retirements Represent:

- 31% of 2012 Coal Generating Capacity

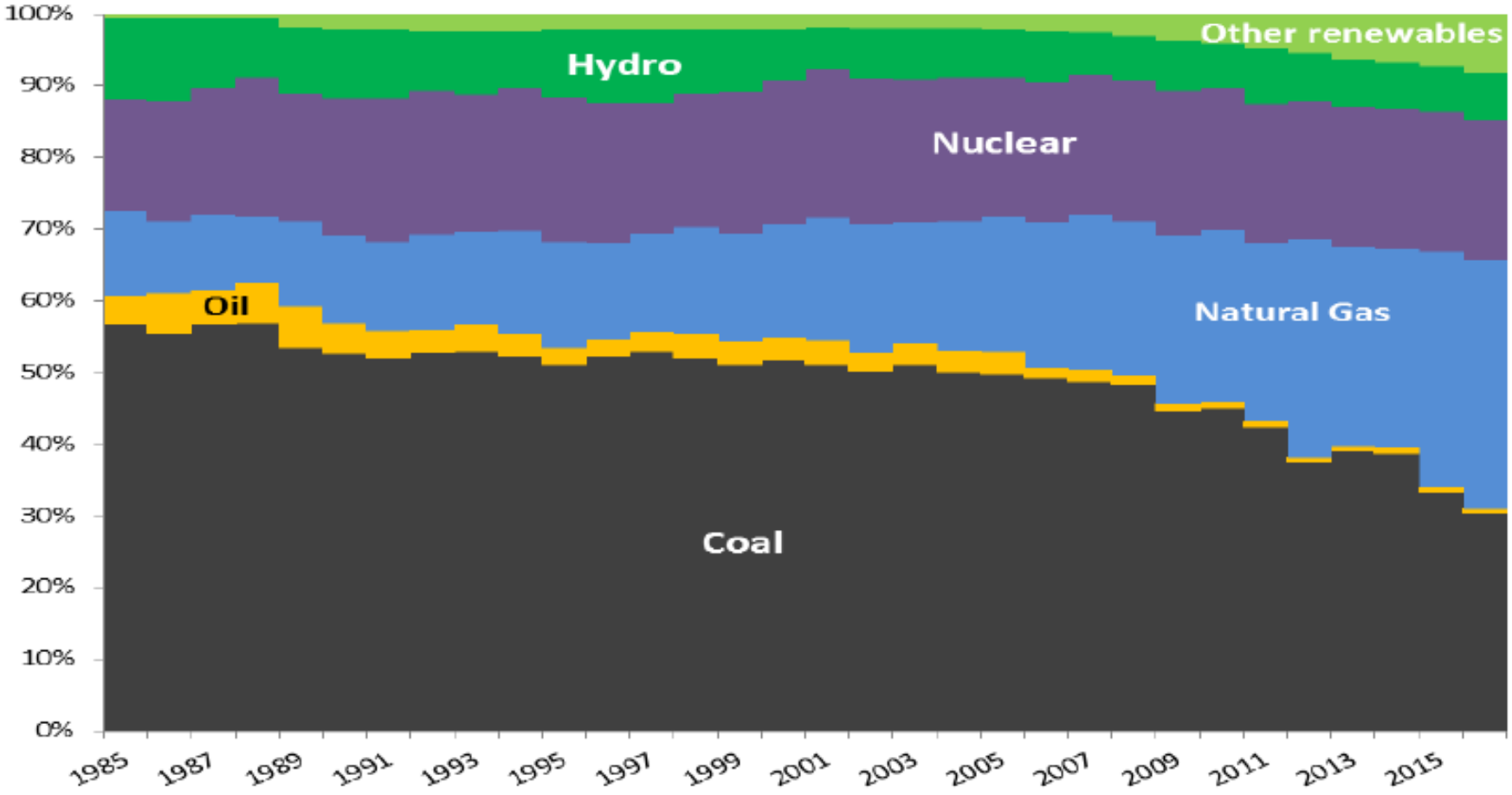
- 65% of the Western 2030 emission reduction target

  (if replaced with zero-carbon generation)

Annual Energy Breakdown



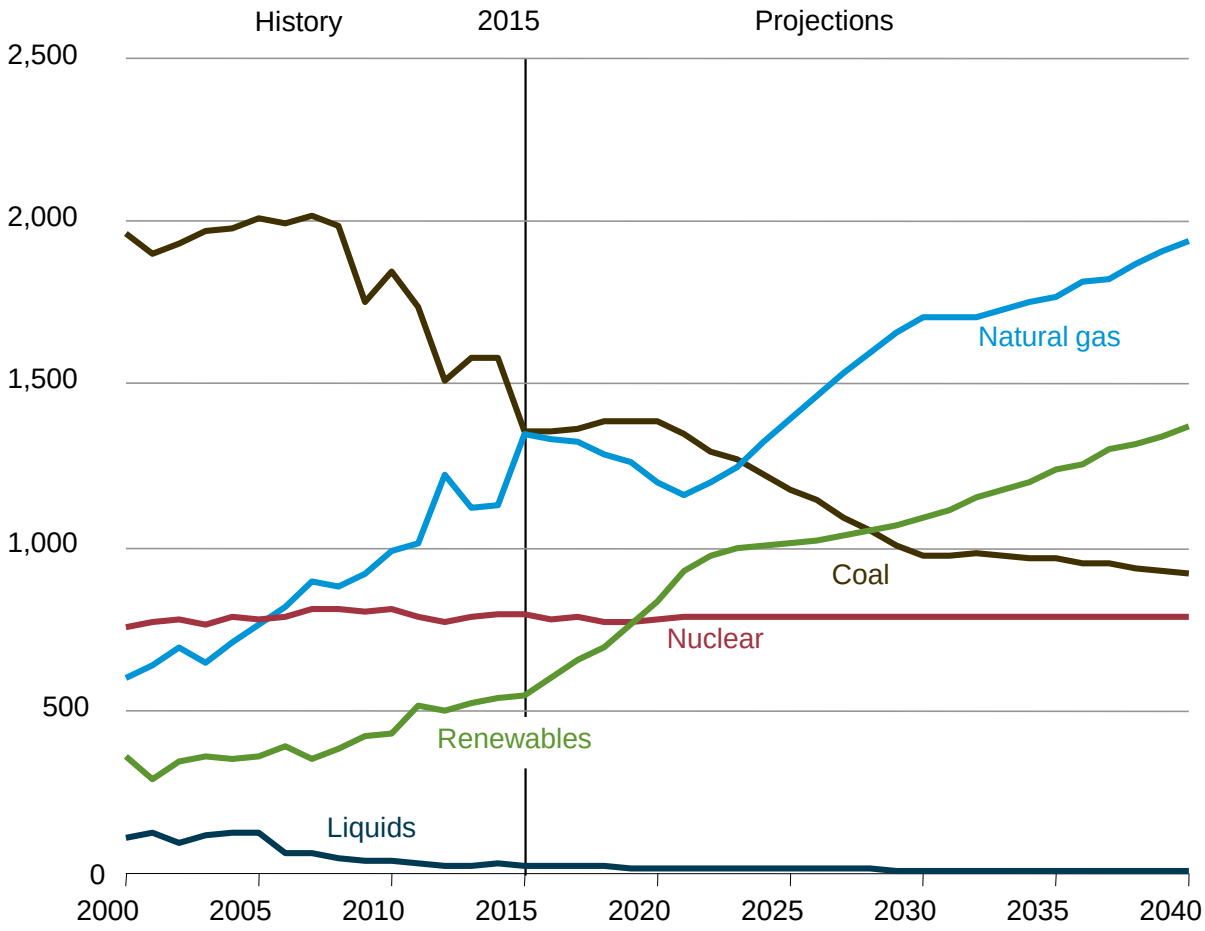
Erosion of market share of coal-fired generation

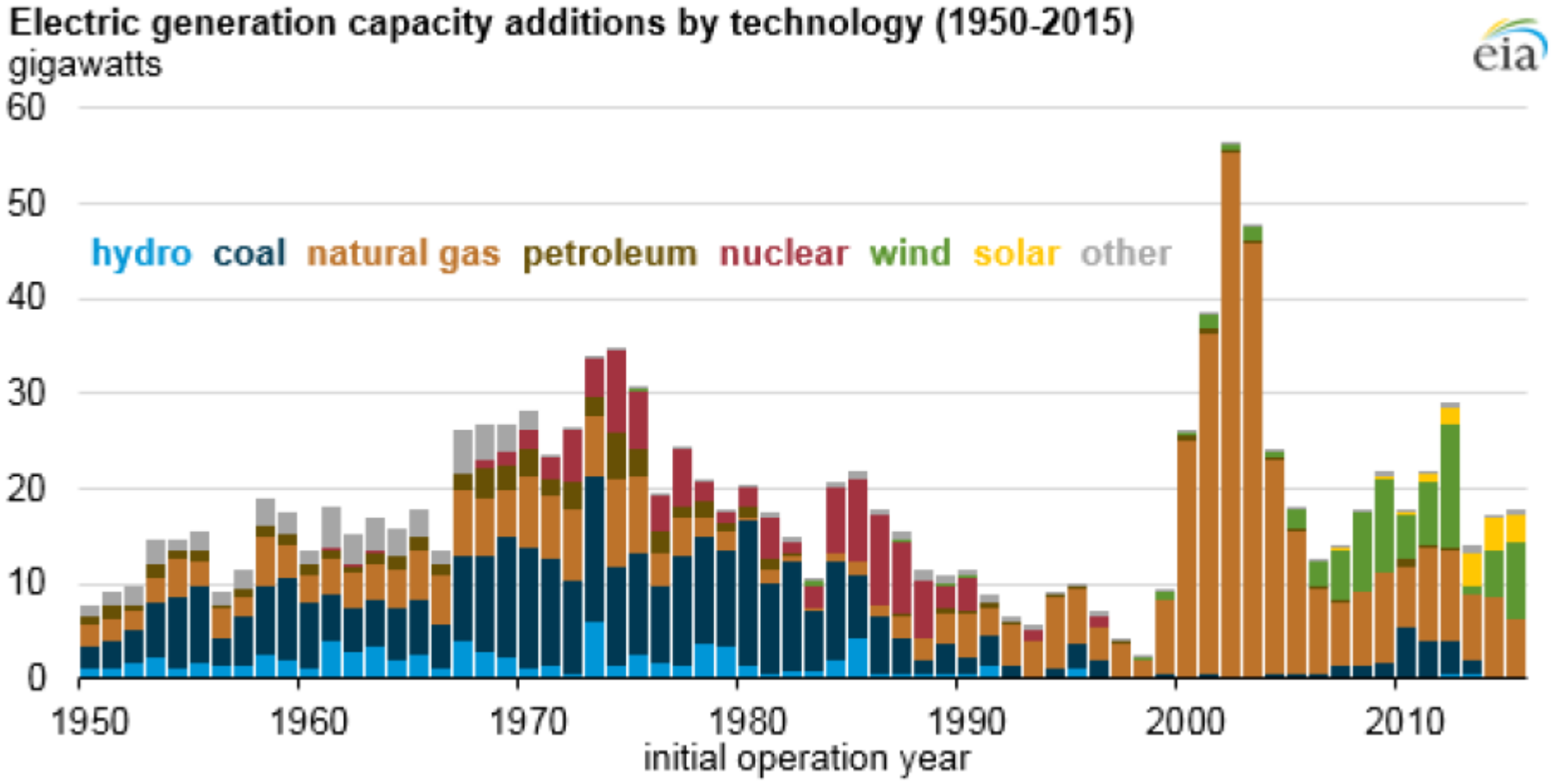


Tierney, "The U.S. Coal Industry: Challenging Transitions in the 21st Century," September 26, 2016. EIA energy price data

Clean Power Plan accelerates shift from coal to natural gas and renewables

(US - billion kilowatt thours)

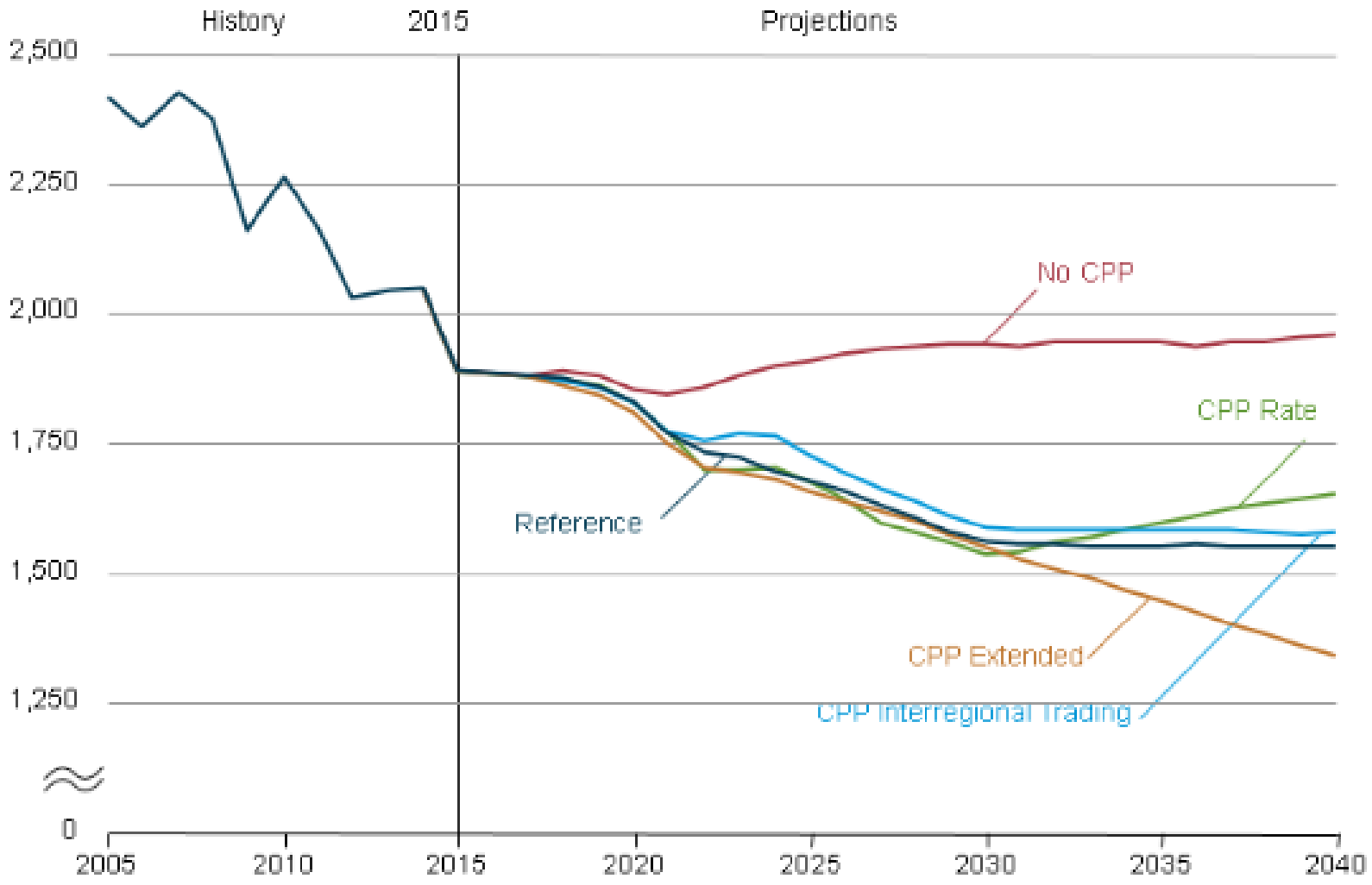




EIA, "Demand trends, prices, and policies drive recent electric generation capacity additions," Today in Energy, March 18, 2016.

Figure IF1-1. CO_2 emissions from the electric power sector in five cases, 2005–40

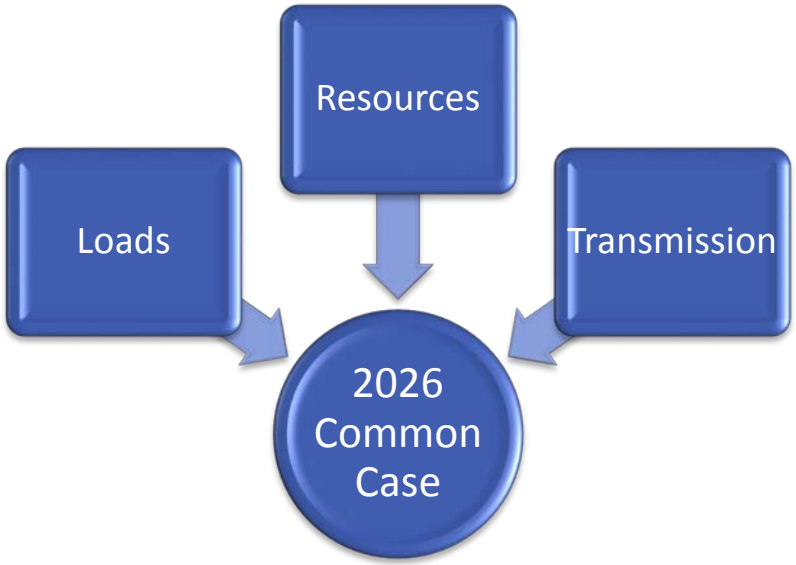
million metric tons



eia

WECC 2026 Common Case

Data Set



WECC's view of the most likely combination of loads, resources and transmission topology 10 years in the future

Model

- Production Cost Model (PCM)
- Security Constrained Economic Dispatch (SCED)
- Resource dispatch for each of the 8,760 hours in the study year

State or Tribe	Cummulative Allowance Balance 2022-30	% of 2022-30 emissions covered by allowances
Nevada	52,259,505	138.5%
Washington	40,910,737	137.4%
Utah	42,507,855	117.3%
Idaho	1,853,484	112.5%
New Mexico	13,286,892	110.4%
Oregon	8,163,045	110.0%
Colorado	-22,721,000	92.6%
Montana	-9,374,602	92.0%
Wyoming	-43,114,726	86.9%
Arizona	-44,689,684	85.5%
Total	39,081,507	102.2%
	Balance lasts	10.6 years