Electricity Generation Trends on the 11-State Western Grid

- No increase in total generation since 2008
- 2017 vs. 2008
  - Coal -26%
  - Nuclear -18%
  - Hydro + Natural Gas -4%
  - Renewables +205% (3X)

The decline in coal and nuclear generation in the West since 2008 has all been offset by growth in renewables
Western US Electricity Generation
EIA 1000 MWhrs

Coal
Renewables
Western US Power Sector Emissions 1997-2017
Source: US EPA (11 WECC states)

SO2: -83%  NOX: -64%  CO2: -2% (-22% since 2008)
The Role of Coal in the West

Western Interstate Energy Board

Benjamin Lim and Max Vilgalys
How It Breaks Up in the West

**Coal Heat Input Distribution in the West**
- WY: 24%
- AZ: 19%
- CO: 18%
- UT: 14%
- NM: 11%
- MT: 9%
- WA: 3%
- OR: 1%
- NV: 1%

**Natural Gas Heat Input Distribution in the West**
- CA: 42%
- AZ: 19%
- NV: 14%
- NM: 6%
- CO: 7%
- OR: 8%
- TX: 2%
- MT: 0%
- ID: 2%
Generation Patterns of Western Coal Plants - 2001

52% of the Unit-Days were baseload generation
Generation Patterns of Western Coal Plants - 2016

In the last 15 years, coal unit operation has shifted dramatically.
Generation and Percent Baseload Days

2001

2016

= 300 million MWh

= 0% of the time like this:

= 100% of the time like this:

Size is Total Generation (MWh)

Saturation is Percent Baseload Days
11 Western States - Electricity Sector CO2 Emissions  
2008 to 2016 Actual (CAMD)  
2017 to 2030 = current - planned coal unit retirements