

Oregon CUB

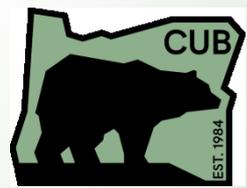
Oregon's Path to a Clean, Flexible Energy Future & Reduced Emissions Goals

Mike Goetz

Oregon Citizens' Utility Board - Staff Attorney

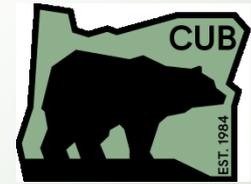
Go Clean Energy Conference

Bend, Oregon – July 13, 2018



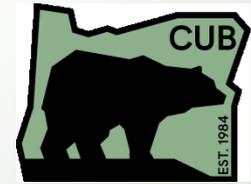
Oregon Citizens' Utility Board

- Independent non-profit founded in 1984 that “represent[s] the interests of utility consumers before legislative, administrative, and judicial bodies.” ORS 774.030(3)(b)
- Oregon’s IOUs serve over 70% of the state
 - Portland General Electric
 - PacifiCorp (dba Pacific Power)
 - Idaho Power Company



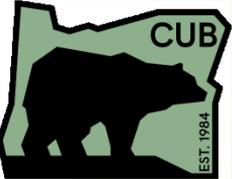
Historical Utility Model

- Around for well over 100 years
- Rely on large capital investments to earn a rate of return for shareholders
- Slow moving – lack innovation
- Built out system based on growing electricity demand
- Heavy investment in fossil fuel generation

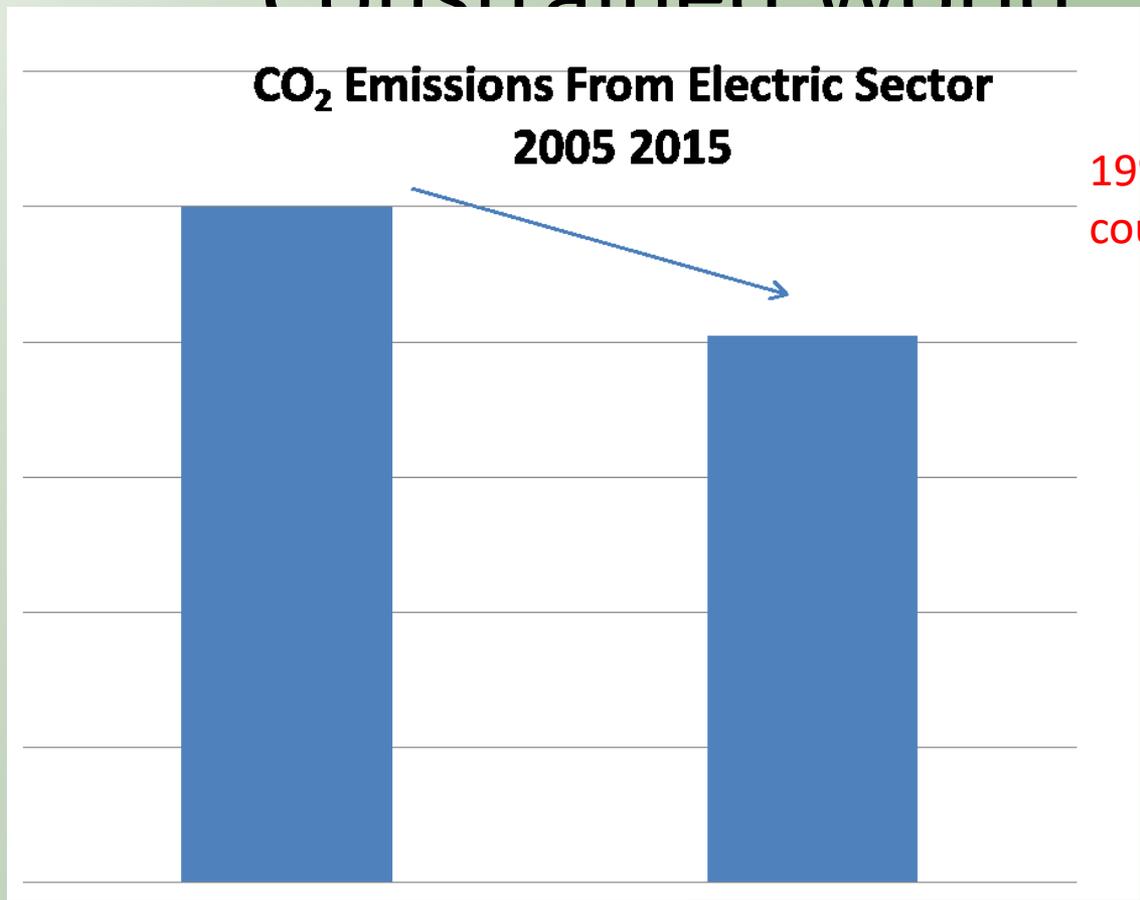


Where are we now?

- Demand has been flat or declining
- Need to adapt to a carbon constrained world
 - Turn away from fossil fuel baseload generation
 - Economy wide—beyond electricity
- Legislative mandates are creating change
 - SB 1547 – Oregon’s RPS is up to 50% by 2040
 - SB 978 – Change utility regulation/biz model?
- State goals as well – reduce GHG emissions 75% below 1990 levels by 2050
- New technologies are disrupting old
 - EVs, demand response, energy storage, smart grid technologies, distributed generation.

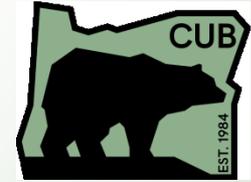


We are Responding to a Carbon Constrained World



19% Reduction and counting

Source: Congressional Research Service, April 2016



Big Factor: Coal Phase Out

- SB 1547 requires coal out of Oregon by 2030
- Boardman was the first baseload coal plant to announce retirement in 2010
- In Boardman's Footsteps:

Carbon 1

Centrailia 1

Colstrip 1

Cholla 4

Dave Johnston 2

Dave Johnston 4

Naughton 2

North Valmy 1

Wyodak

Carbon 2

Centrailia 2

Colstrip 2

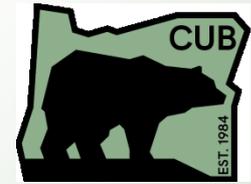
Dave Johnston 1

Dave Johnston 3

Naughton 1

Naughton 3

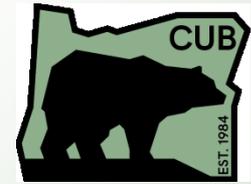
North Valmy 2



Coal Out + Renewables In

- SB 1547 seeks to do both – 50% RPS by 2040
 - 20% by 2020; 25% by 2025; 35% by 2030; 45% by 2035.
- Legislature’s intent – sufficient time for utility planning processes to ensure coal supplanted with clean energy—i.e., not natural gas
- Drive investment in clean energy in a manner that benefits ratepayers—careful planning



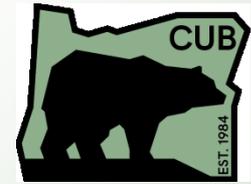


Can We Do It?



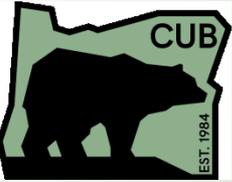
- YES!
- CUB at the table for utility planning processes
 - IRPs examine resource needs over long horizons
 - Math pencils out under different carbon scenarios
 - Utilities must procure all cost effective EE
- IRPs target “least cost/least risk” resources
 - Fossil fuel risk: fuel price volatility, carbon pricing
 - Renewables: zero fuel cost, not subject to carbon taxes/pricing





Renewables are Intermittent

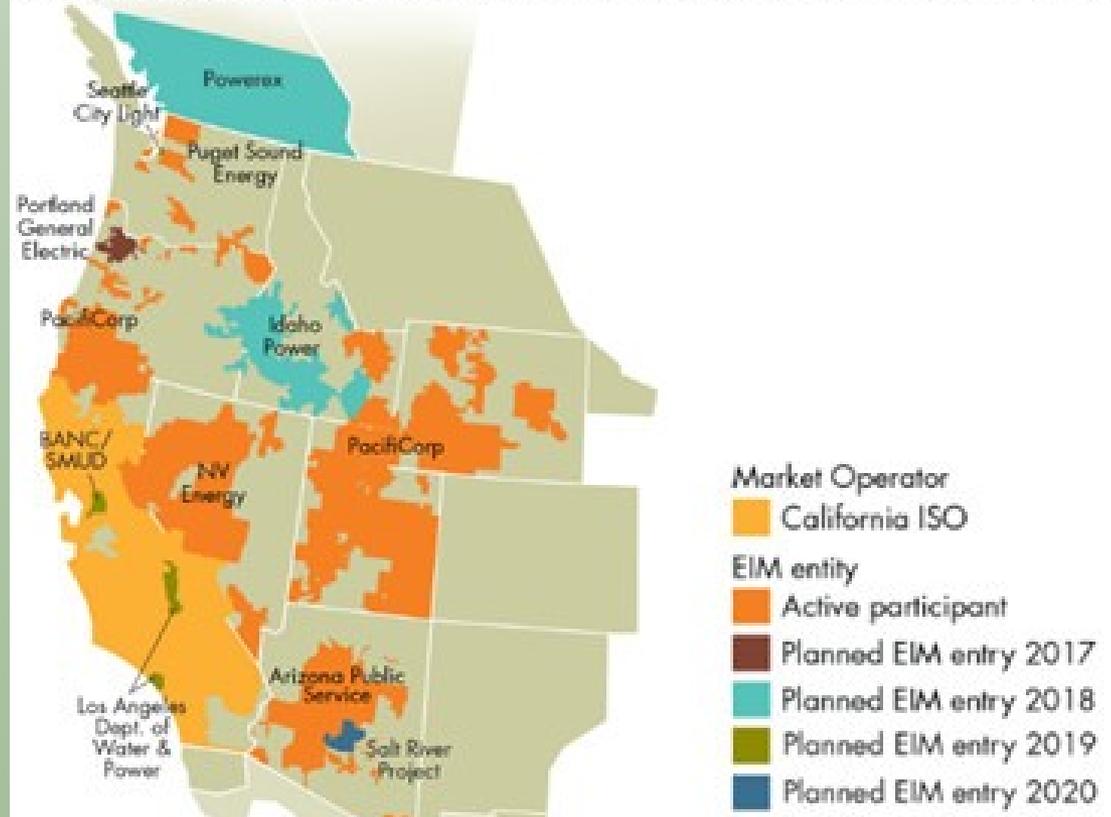
- Real need will be flexibility in modernized grid
- Traditionally – natural gas peaker plants
- PNW – Robust hydro system to lean on
- Emerging technologies will help!
 - EVs with TOU rates and managed charging
 - Energy storage applications – many use cases
 - Demand response – water heaters, etc.
- Proliferation of regional markets

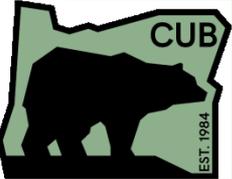


A Regional Grid

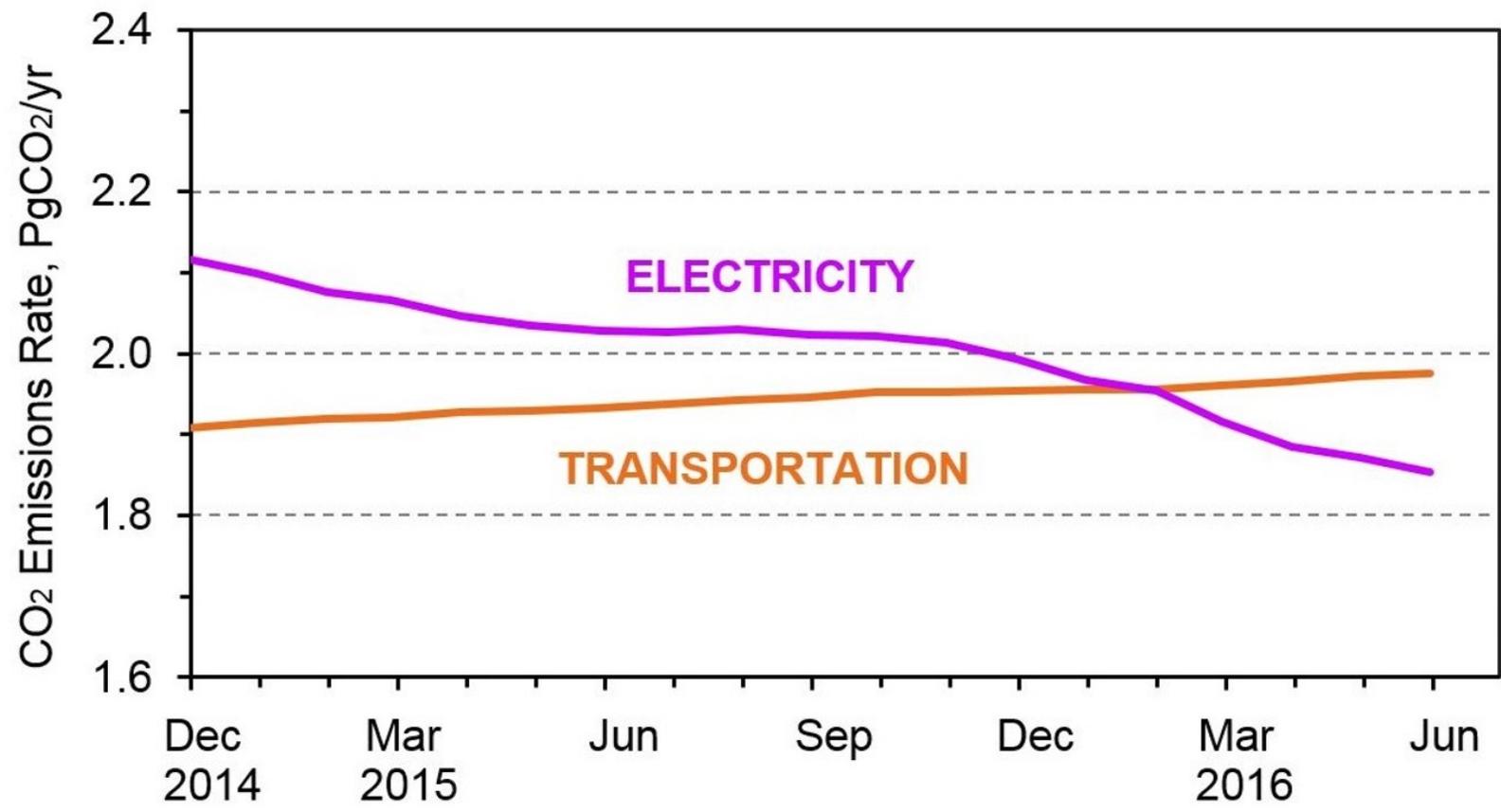
- CAISO's EIM:
 - PacifiCorp
 - PGE
 - Idaho Power
 - SCL
 - NV Energy
 - Arizona Public Service
 - More and more!
 - Source: eia.gov

Active and planned participants in CAISO's energy imbalance

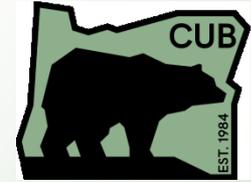




Decarbonize the Economy

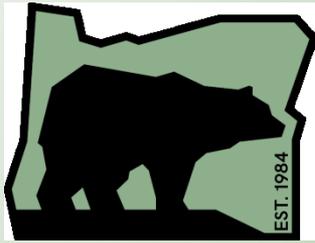


Recent trends in CO₂ emissions from electricity generation and transportation in the United States, 12-month running average in petagrams (billion metric tons) of carbon dioxide per year. SOURCE: DERIVED FROM EIA MONTHLY ENERGY REVIEW



Deep Decarbonization

- Detailed studies have shown it is possible
- Three pillars:
 - Energy efficiency;
 - Decarbonization of electricity generation;
 - Increasing share of electricity and electric fuels.
- Requires consumer and producer participation
- Must be well-planned
- Future is bright! We need the collective will.



Oregon CUB

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