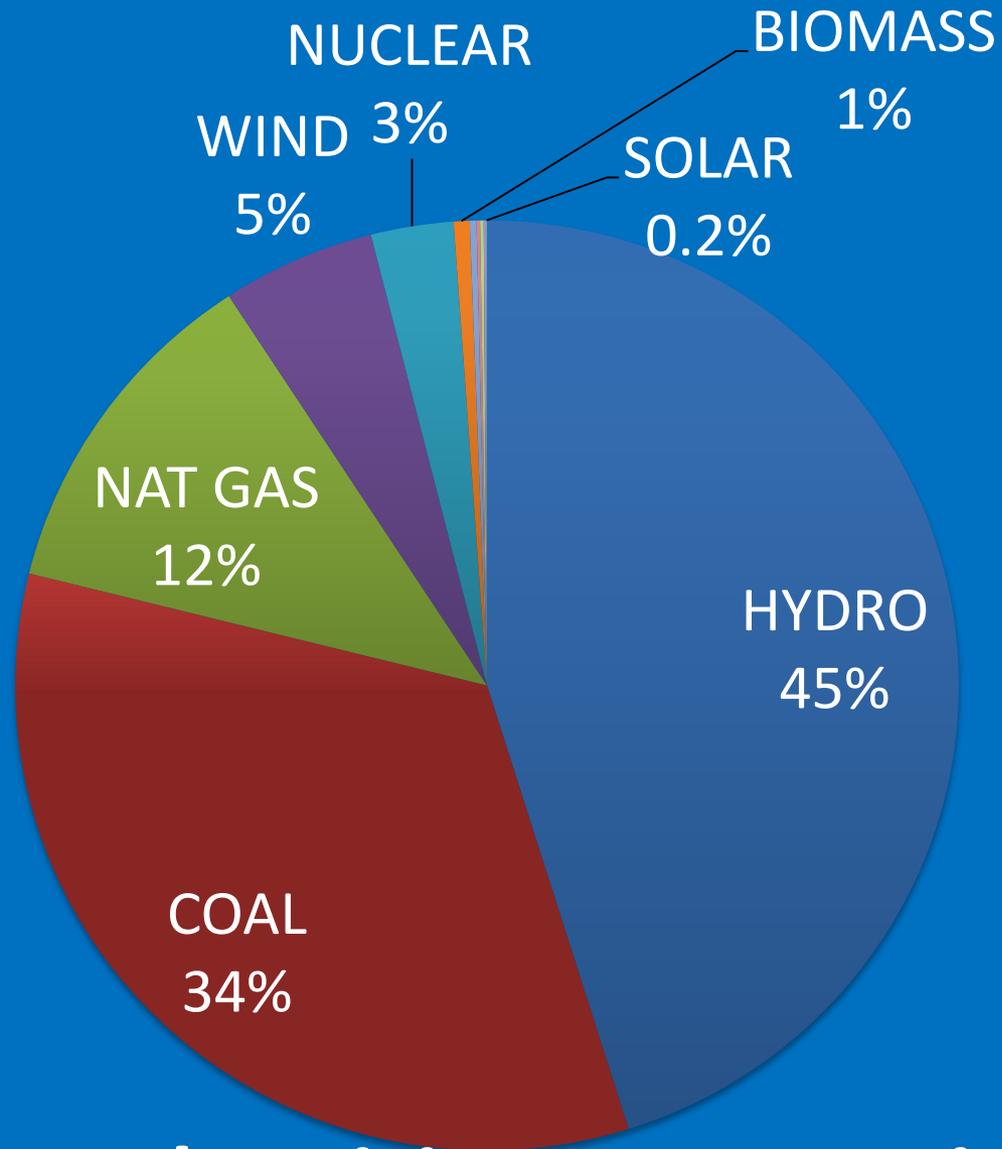


WHY SOLAR?

WHY DISTRIBUTED SOLAR?

1. Diversify our energy mix to meet future stream flow and temperature conditions
2. Avoid cost and environmental impact of new transmission
3. Provide disaster resiliency in the built environment
4. Provide broad ownership opportunities
5. How big is a hundred?

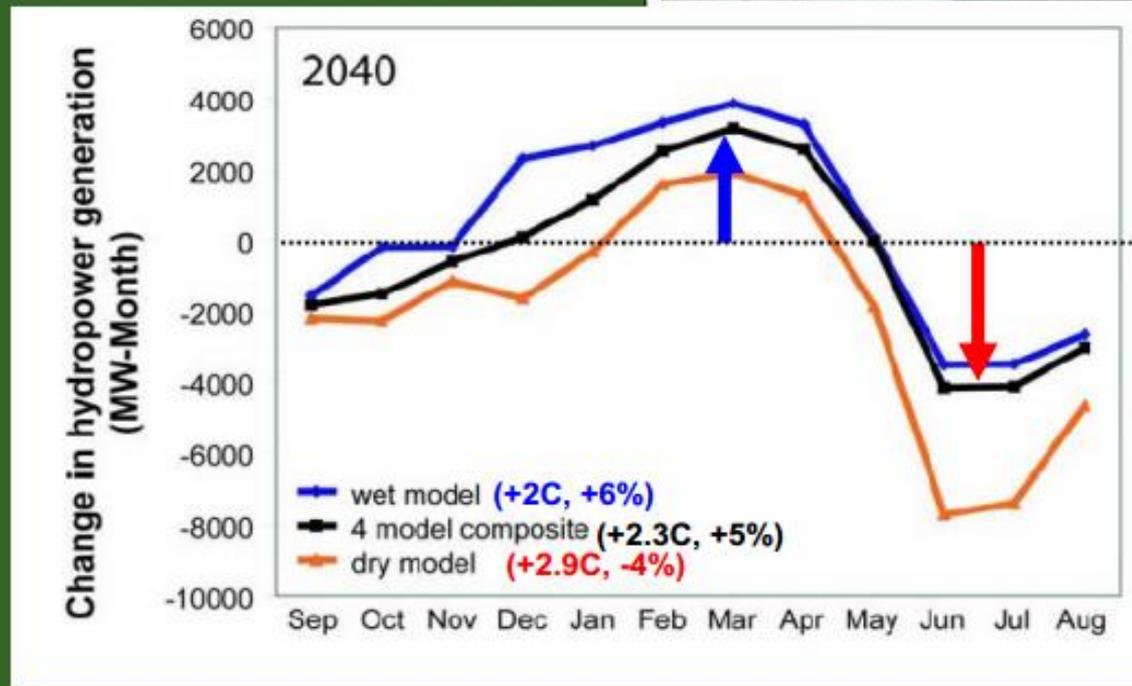


Oregon Electricity Consumption

Impacts on Columbia Basin hydropower supplies

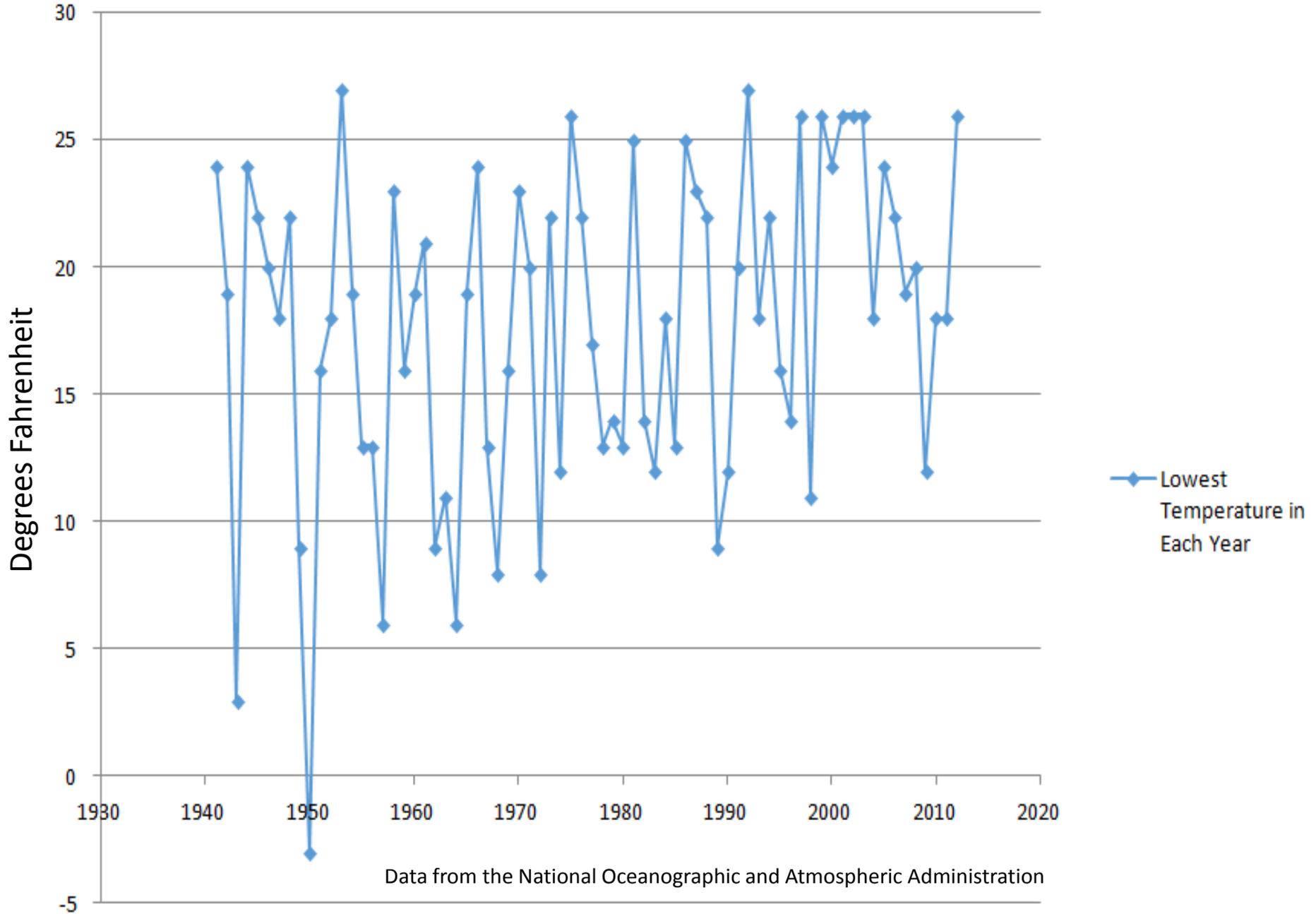


- **Winter and Spring:** increased generation
- **Summer:** decreased generation
- **Annual:** total production will depend primarily on annual precipitation



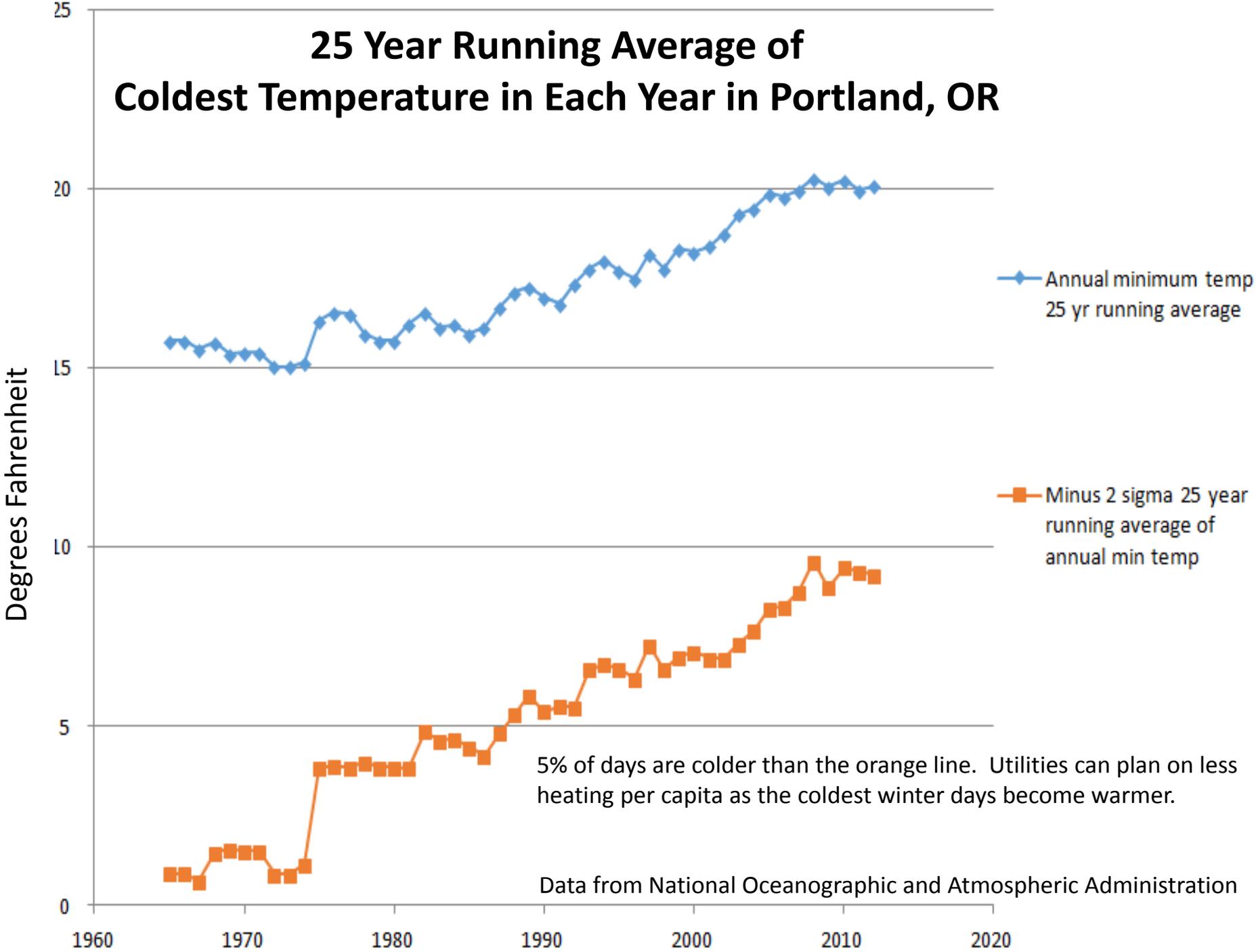
NWPCC (2005)

Lowest Temperature in Each Year in Portland, OR



Data from the National Oceanographic and Atmospheric Administration

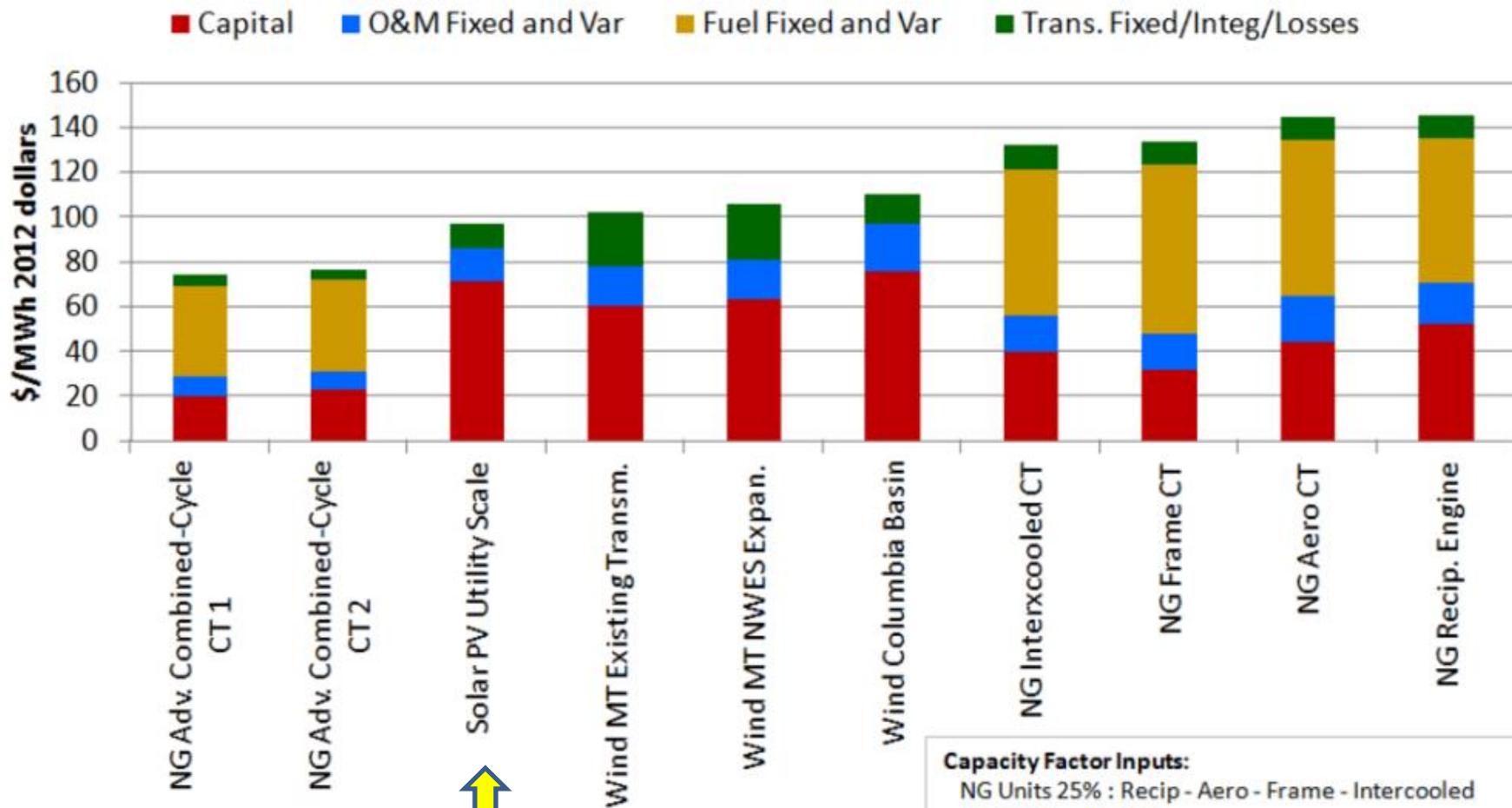
25 Year Running Average of Coldest Temperature in Each Year in Portland, OR



5% of days are colder than the orange line. Utilities can plan on less heating per capita as the coldest winter days become warmer.

Data from National Oceanographic and Atmospheric Administration

Levelized Cost of Energy - Generating Resources In Service 2020

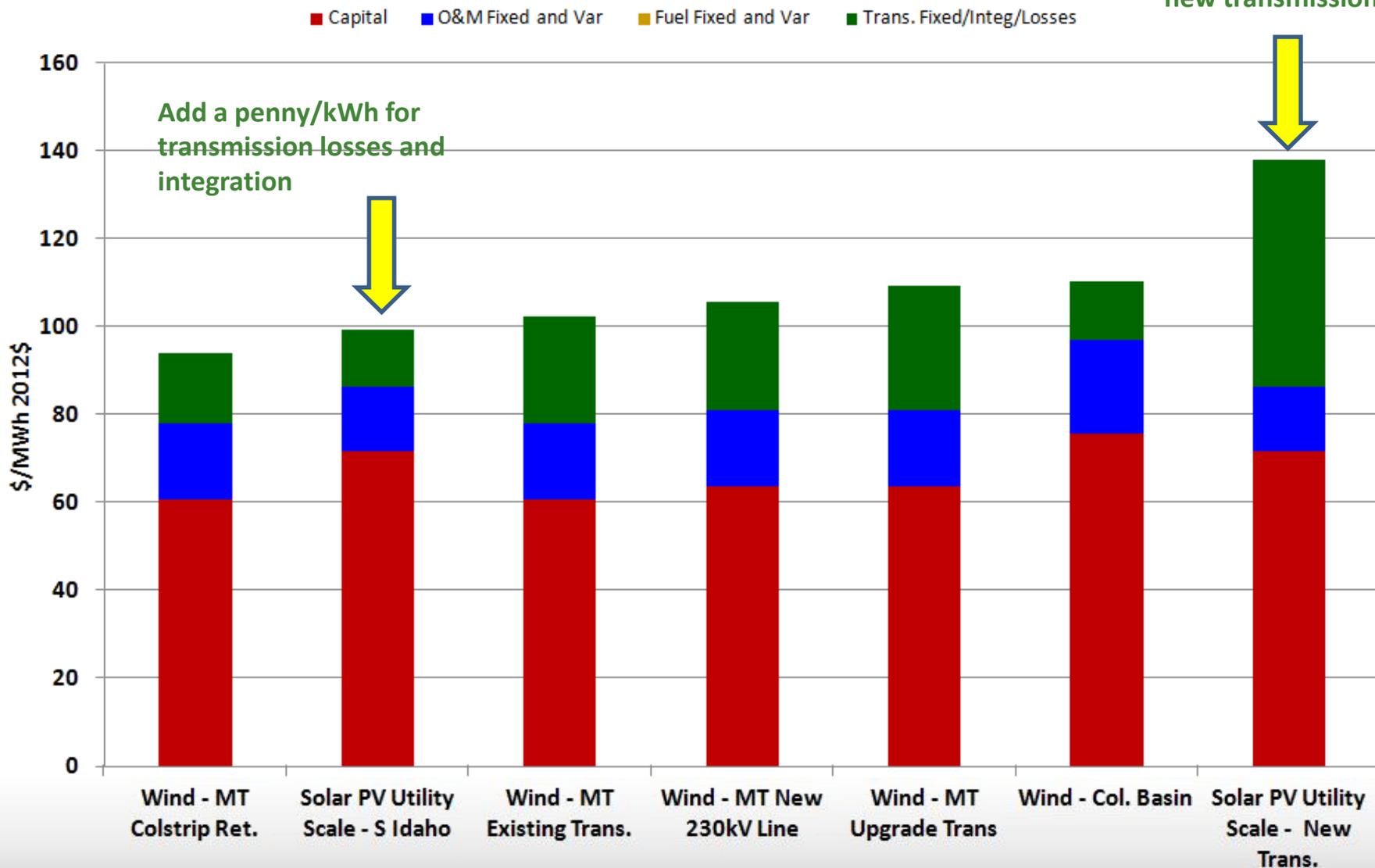


Capacity Factor Inputs:
 NG Units 25% : Recip - Aero - Frame - Intercooled
 NG CCCT units 60%
 MT Wind 40%
 Col. Basin Wind 32%
 Solar PV 26.2%

Fuel Price: Medium Natural Gas Price Forecast

Levelized Cost of Energy - Wind & Solar Generating Resources In Service 2020

Add 4 cent/kWh for
new transmission



June Key Delta Community Center

18.4 kW meets 100% of load
With self-islanding inverters



How Big is 100kW?

REI stores – **29kW** to **130kW**

Gladstone – 3 schools @ **100kW** each

Walmart stores average **342kW** per store

Intel, Hillsboro – 2 carport projects @ **400kW** each plus **100kW** on roof

Ikea stores vary from **250kW** to **540kW** to **5MW** for MD dist. center

Toys R US, NJ – **5.4MW**

Las Vegas Mandalay Bay Resort Convention Center – **6.4MW**



100 kW Array on Springville School in Beaverton