October 2018

Economic Sense - Nineteenth Edition

Carbon emissions in Washington

On Tuesday, Gov. Inslee touted a new executive action to purchase a portion of state agency energy needs with non-carbon sources, announcing the proposal would reduce carbon emissions by 22,000 metric tons per year.[1] Building on the governor's continuing laser-like focus, this Economic Sense takes a closer look at how Washington is doing on carbon emissions.

Bottom line up front:

(1) Washington's carbon emissions, in total and on a per-person basis, have declined significantly in the 21st century;

(2) Our emissions have declined at a faster rate than our West Coast neighbors (Oregon, California and British Columbia). Another significant decline is forecast over the next decade, mainly due to scheduled changes in regional energy supply; and

(3) Washington is a clean energy leader. Our per capita emissions are one of the lowest 10 in the country and our energy supply is the most carbon free in the nation.

To put this in perspective:

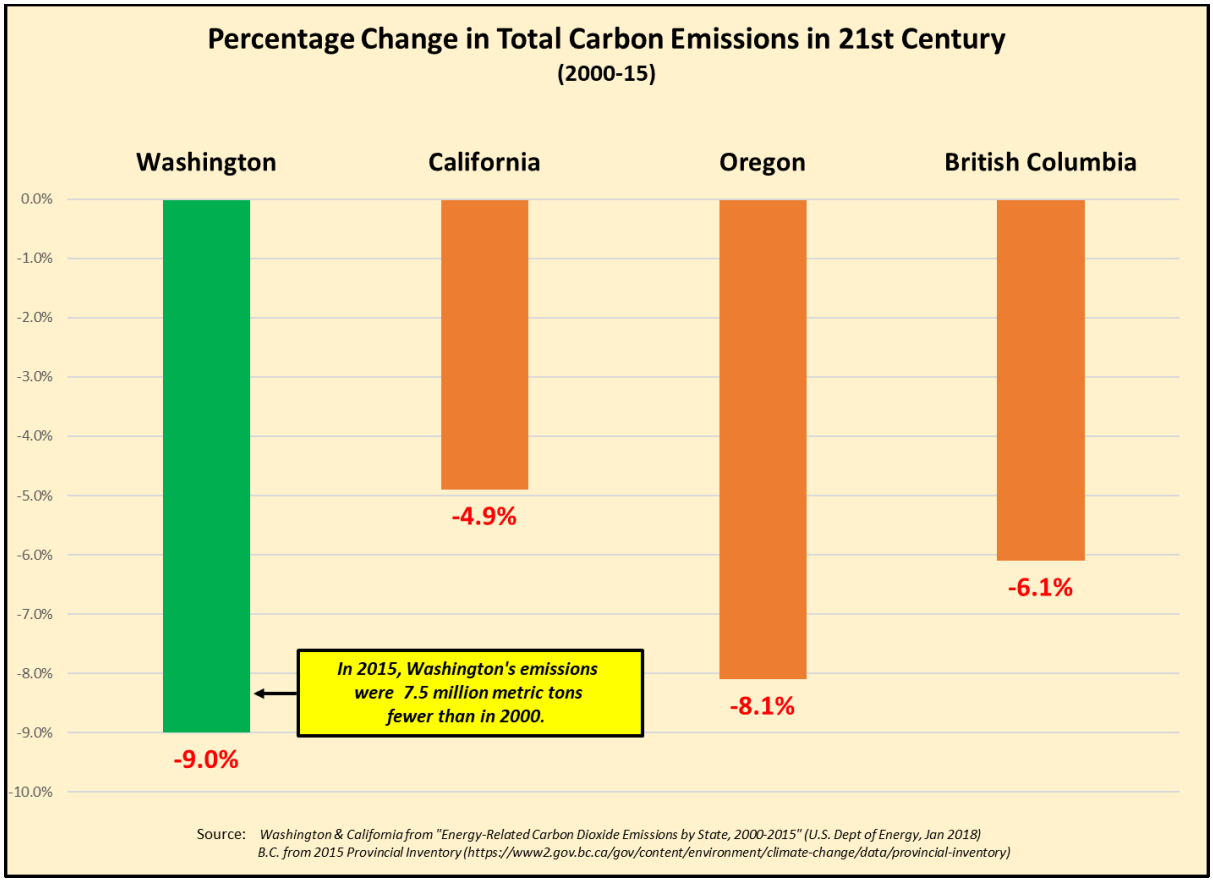
If the rest of the world experienced Washington's 21st-century emissions decline to-date and forecasted decline over the next decade, carbon emissions worldwide would be 40% lower than they are today, reducing emissions by over 16 billion metric tons a year.

1) Washington emits 7.5 million fewer metric tons of carbon than in 2000

Earlier this year, the U.S. Dept. of Energy issued a report looking at carbon dioxide emissions by state in the 21st century.

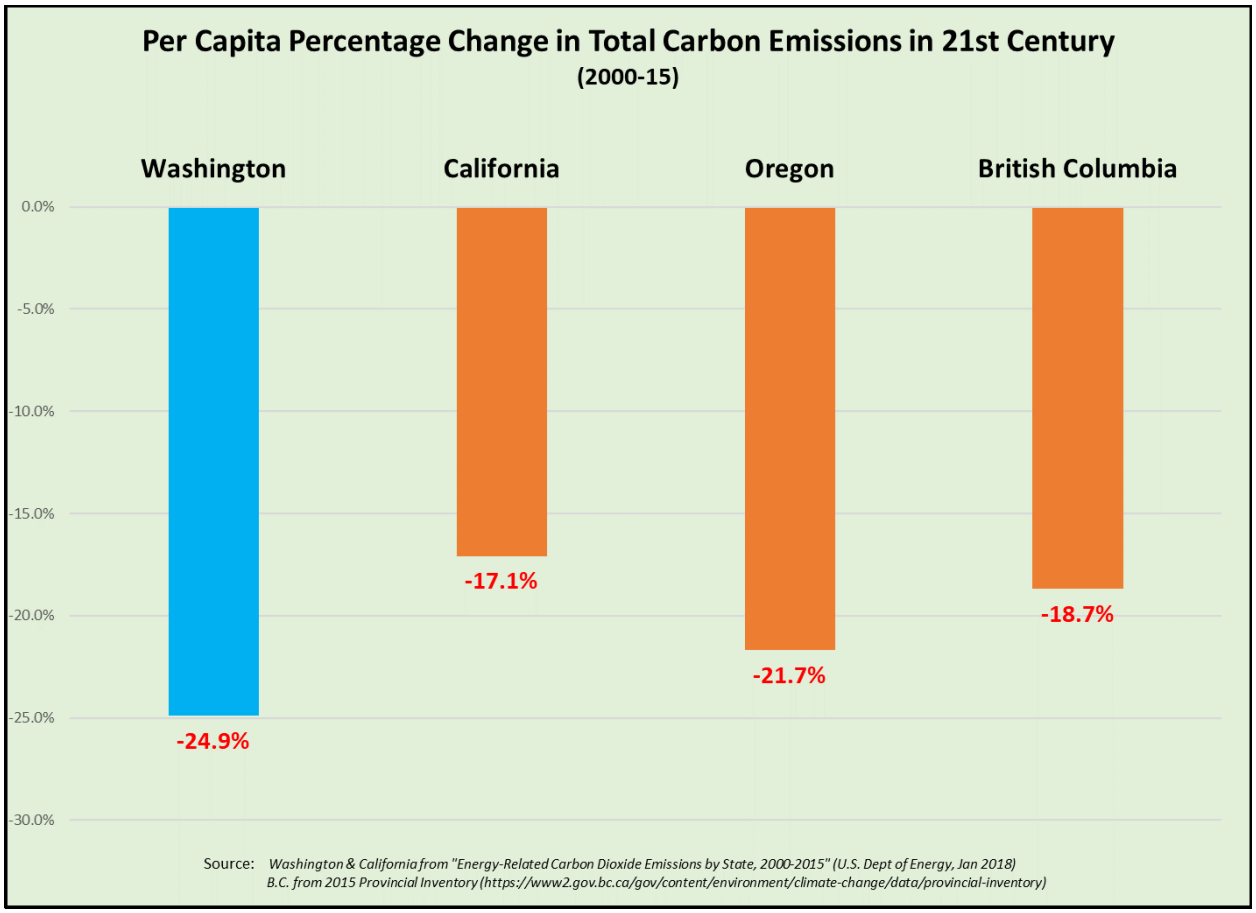
A. Total emissions change

The report found that Washington emitted 75.7 million metric tons of energy-related carbon dioxide in 2015. This was 7.5 million tons less than the state emitted in 2000, a 9% decline. The percentage reduction exceeded that of our West Coast compatriots (British Columbia, Oregon, and California).[2]



B. Per capita emissions change

The U.S. Dept of Energy, as well as British Columbia's government, also report emissions on a per capita basis:



In per capita emissions, Washington ranks 9th lowest in the country, according to DOE.[3]

2) State's model forecasts further 7 million ton decline over the next decade

The Washington State Dept. of Commerce maintains a carbon emissions projection model, which based on current law forecasts another 7 million ton reduction by 2028.[4] The largest single contributor to the forecasted decline is from scheduled reductions of coal, most notably from the TransAlta facility in Centralia, in the state's energy supply.

3) Washington has the cleanest energy supply in the country

Another component of the U.S. Dept. of Energy report was a look at the "Carbon Intensity of the Energy Supply" in each state. This measure reflects the energy fuel mix within a state; basically, how much carbon is needed to produce a unit of energy in a given state? States that rely on coal would have a high carbon intensity score, while those reliant on non-carbon sources, such as hydropower and nuclear power, would have a low carbon intensity score.

By this measure, Washington had the cleanest energy supply in the country, due to our reliance on carbon-free hydropower. For every million British Thermal Units of energy, our state utilized 36 kilograms of carbon. This was over 50% lower than the national average.

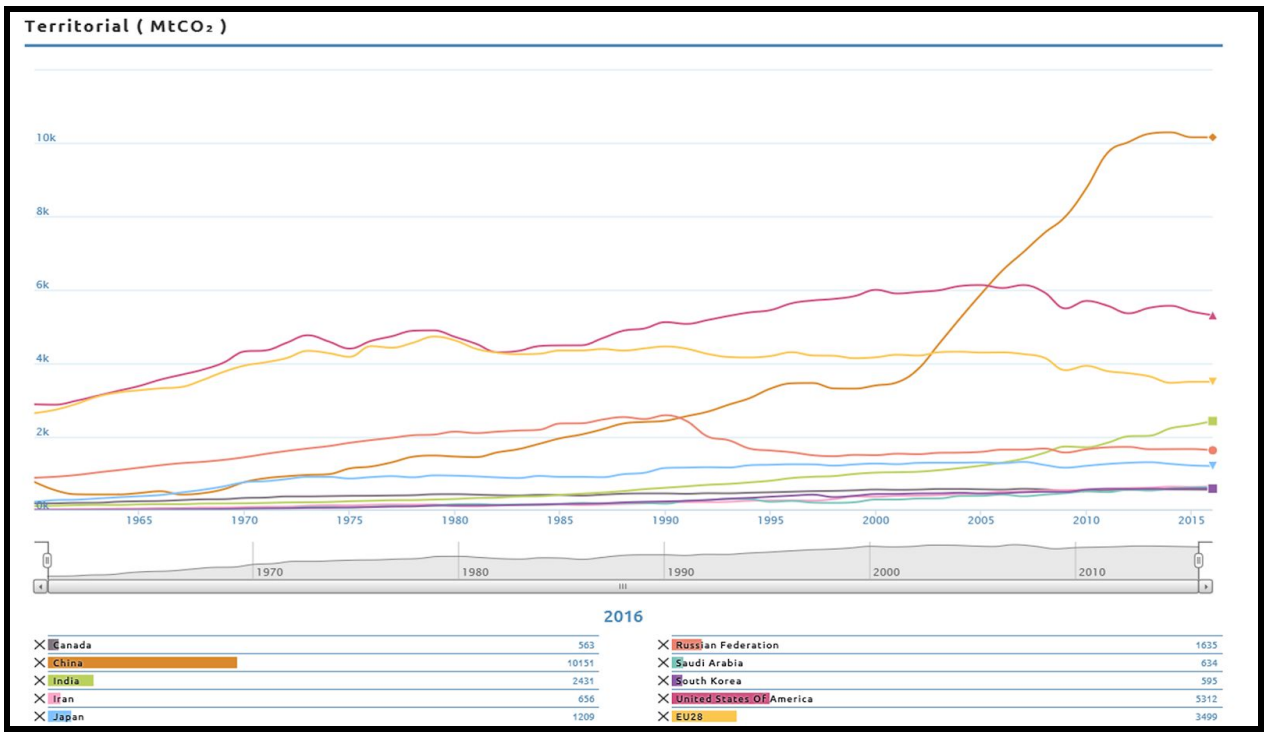
4) Global emissions in the 21st century

A useful resource for examining carbon emissions throughout the world is the "Global Carbon Atlas," which shows emissions by country and region over the last 50 years.

Here is a look at emissions by major region:[5]

Million Metric Tons of CO2 Emissions								
	1965	2015	Increase	% Increase	2000	2015	Increase	% Increase
U.S.	3,388	5,312	1,924	57%	6,001	5,312	-689	-11%
Europe	3,269	3,499	230	7%	4,166	3,499	-667	-16%
Russia	1,165	1,635	470	40%	1,504	1,635	131	9%
China	476	10,151	9,675	2033%	3,402	10,151	6,749	198%
Japan	387	1,209	822	212%	1,276	1,209	-67	-5%
Canada	252	563	311	123%	570	563	-7	-1%
India	166	2,431	2,265	1364%	1,031	2,431	1,400	136%

And, for those more graphically inclined, here is a chart:



Interestingly, the United States, Europe, Canada, and Japan have all seen a decline in overall emissions in the 21st century. Those declines, however, have been dwarfed by emissions growth in China and India, both of which have seen their emissions more than double in the last 15 years.

For context, China started out this century with roughly half the emissions of the United States; now, they emit twice as much carbon as our country.

Footnotes:

1. Gov. Jay Inslee: “Inslee announces largest-ever purchase of green power for state operations.” https://medium.com/wagovernor/inslee-announces-largest-ever-purchase-of-green-power-for-state-operations-4795ac192741
2. Washington, Oregon, and California from "Energy-Related Carbon Dioxide Emissions by State, 2000-2015" (U.S. Dept of Energy, Jan 2018) B.C. from 2015 Provincial Inventory (https://www2.gov.bc.ca/gov/content/environment/climate-change/data/provincial-inventory).
3. Ibid.
4. Washington State Department of Commerce CTAM, July 15, 2018 (Emissions Data Tab) - 2016 emissions.
5. Global Carbon Atlas: http://www.globalcarbonatlas.org/en/CO2-emissions