

Show Me The Evidence – Who’s Making The Grade On Emissions? Comparing Jurisdictions: Oregon, California & British Columbia

Tom Bowerman, PI Research; Revised Feb.5, 2020

This analysis is prepared for any individual interested in factual evidence from the three most relevant jurisdictions aim to reduce greenhouse gas emissions: 1) Oregon, because this document is prepared for Oregon policy makers; 2) California, because numerous uninformed or maliciously false claims being made about CA’s policy contaminates good policy consideration, and 3) British Columbia, because BC employs a revenue neutral carbon tax which continues to be misunderstood as a viable emission reduction policy.

Oregon, California and BC employ similar base data and timeline between 1990 and 2020 for tracking progress. Therefore, their notably different policy approaches may be usefully compared for effectiveness.

- Oregon's 2007 Legislature set an emission reduction goal of 10% below 1990 level by 2020. Oregon’s primary emission policy includes a renewable energy standard and low carbon fuels standard and no cap and trade policy.
- California’s 2006 Legislature passed a law to reduce emissions to 1990 level by 2020 with implementation beginning in 2013. California’s keystone policy is a hybrid cap and trade policy with money raised for investments.
- BC’s 2008 Parliament set a goal of 33% below 2008 levels by 2020 with enactment of a “revenue neutral” carbon tax equivalent to \$30/ton CO₂e emission (\$0.30/gal. gasoline cost). British Columbia is the only north American jurisdiction with a revenue neutral carbon tax.

Key takeaways from data on reverse page are summarized here first:

Emission Evidence: California is the only state with observed state-wide emission reductions:

1. California’s cap and trade policy has exceeded its goal of reductions to 1990 levels by 2020.
2. Oregon’s will not meet its non-binding goal, overshooting the reduction target by over 20%.
3. British Columbia emissions are going up, currently up 2.5% from 2016 to 2017, trending to put BC 40% above their 2020 goal.
4. California has reduced emissions per capita faster than Oregon & BC, faster than any known US state.
5. After experiencing cap and trade for six years, California committed to reduce emissions by an additional 40%.

Economic Evidence: California Chamber of Commerce claim since 2006 that cap and trade policy “would ruin California’s economy” was blatantly false:

1. From 1990-2012 Oregon slightly outperformed CA GDP/capita. Since CA implemented cap and trade in 2013, GDP has outpaced Oregon GDP/capita by 40%, refuting the claims that it would “kill CA’s economy.”¹³
2. From 2013-2018, California employment grew by 16.8%, Oregon employment grew by 10%.¹³
3. From 2013-2018, California unemployment fell by 55%, Oregon unemployment fell by 43%.¹³

Note: Economic causation is complex but localized job creation from C&T investments likely contributed to CA’s superior GDP per capita growth.

Well-being and the pursuit of happiness. GDP is an established economic measure which misses many social well-being measurements. Gallup-Healthways measurement of five broad social categories finds California significantly higher than Oregon in well-being.

Bottom Line: California’s cap and trade policy exhibits goal success on emissions reductions compared to Oregon and British Columbia while simultaneously exhibiting significantly higher economic vitality. While rebuttal of false claims with reliable evidence is difficult in the current political environment, the results of the overleaf asks that open-minded citizens ask objectors for comparable evidence that the cap and trade policy is ineffective or economically harmful. The overleaf tables offer clarity that cap and trade reduces emissions with parallel social and economic vitality.

Comparison tables and citations overleaf:

DATA & Citations

Table 1. Oregon's per capita* sector-based emissions compared to other jurisdictions (metric tons per person):

Jurisdiction	1990	1995	2000	2005	2010	2011	2012	2013	2014	2015	2016	2017
Oregon ¹	19.7	20.3	20.5	18.3	16.8	16.1	15.6	15.5	15.3	15.7	15.2	15.5
California ¹	14.4 ²	-	14.0	13.4	12.0	11.8	11.8	11.7	11.5	11.3	10.9	10.7
British Col. ³	16.9	16.5	16.4	15.5	13.4	13.4	13.4	13.5	13.2	13.0	13.1	13.1
United States ¹	26	26	26	25	22	22	21	21	21	21	20	20
European Union ¹	12	11	11	11	10	9	9	8	8	9	8	9

*Note: Use of per capita data neutralizes population growth or GDP variance between jurisdictions.

Table 2. Summary of Selected Data % Change: Emissions, Population, GDP, & Well-being

1.	2.	3.	4.	5.	6.	8.	9.	10
Jurisdiction	Jurisdiction total emission GHG /year 1990	Jurisdiction total emission GHG/year 2017	Total % GHG change 1990-2017 ⁷	Population % Change 1990-2016 ⁸	GHG Mt/capita % change 1990-2017 ⁹	GDP per capita 1990-2012 per year average (inflation indexed)	GDP per capita 2012-2018 per year average* (inflation indexed)	Gallup 2018 Wellbeing Index Ranking (1=highest wellbeing)
Oregon	56.4MMt ⁴	64.4**	+14.2%	+45.1%	-23.9%	4.2% ¹⁰	2.0% ¹⁰	28
California	431 MMt ⁵	424.1MMt ⁶	-1.6%	+32.0%	-25.8%	3.9% ¹⁰	2.8% ¹⁰	14
British Col.	56MMt ³	64.5MMt ³	+15.1%	+49.5%	-22.4%	4.4% ¹¹	1.2% ¹¹	N.A.

*Column 9, 2012-2018 distinguishes period of California cap and trade policy implementation **2017 OGWC estimate

Table 3. While Table 2 above displays emission reporting available through 2017 due to available documentation, Table 3 adds almost three years of evidence using federal Energy Information Agency fuel use as a proxy for emissions through September 2019. Transport fuels are especially important to observe because the electric, industrial and commercial sector emissions have been declining while transportation fossil fuels have been increasing. The shorter 2012-2019 period is more specific to the implementation period of California Cap and trade policy:

EIA Total Prime Supplier Motor Gasoline Use 1990-2019 (thou.gal/day) ¹² and % Mean Annual Change						
Jurisdiction	1990	2012	2018	2019*	% change 1990-2019	% change 2012-2019*
Oregon	3889	3956	4275	4271	+10%	+8%
California	40676	38821	39453	38777	-3%	-.01%

*Recent EIA 2019 data is January - September annualized for 2012-2019 column

Citations:

- Oregon Global Warming Commission 2018 Report to Legislature, Table 4, <https://www.keeporegoncool.org/reports/>
- CA 1990 emission year (<https://ww3.arb.ca.gov/cc/inventory/1990level/1990level.htm>) divided by CA 1990 Census total population
- Trends in Greenhouse Gas Emissions in BC 1990-2017: <http://www.env.gov.bc.ca/soe/indicators/sustainability/ghg-emissions.html>
- Oregon Global Warming Commission 2018 Report to legislature
- CARB 1990 revision explanation: <https://ww3.arb.ca.gov/cc/inventory/1990level/1990level.htm>
- CARB Inventory 2000-2017: <https://ww3.arb.ca.gov/cc/inventory/data/data.htm>
- Table 2 Col. 4 = change in GDP 1990 - 2016 (col.2 - col.3) in percent
- US Census and Statistics Canada
- Combination of citation #1&2, calculation: 1990 minus 2017 emission divided by 1990 emission = per capita emission change in %
- Bureau of Economic Analysis data: <https://apps.bea.gov/itable/itable.cfm?ReqID=70&step=1#reqid=70&step=1&isuri=1>; use tool: SAGDP10N; Per capita real GDP by state for Oregon & California
- Canada GDP 2012-2016: <https://www.statista.com/statistics/577563/gdp-of-british-columbia-canada/>
- US Energy Information Agency (thousands of gallons per day): https://www.eia.gov/dnav/pet/pet_sum_mkt_dcu_SCA_m.htm
- US Bureau of Labor Statistics: <https://data.bls.gov/timeseries/> (access Oregon & California)

Recommended: Lessons Learned from 30 years of Experience with Cap and trade, Schmalensee (MIT) & Stavins (Harvard) 2017, <https://academic.oup.com/reep/article-pdf/11/1/59/11117111/rew017.pdf>