Robert Marino

Dear Mr. Grice,

I write in reference to: Rulemaking - Chapter 173-446 WAC, Climate Commitment Act Program.

CCA rules must maintain the integrity of the cap. The ultimate goal of this law is to achieve our greenhouse gas limits and improve air quality, especially in overburdened communities. Ensuring that emissions do not exceed the cap is critical. When designing program details, maintaining the cap should be one of the primary goals.

CCA investments must prioritize significant improvements in air quality of overburdened communities, especially Black, Indigenous and communities of color. For too long, these communities have borne the brunt of air pollution and climate impacts. The CCA requires that a minimum of 35% of overall investments directly benefit these communities. These investments must be thoughtfully designed with community input to ensure benefits are meaningful.

CCA's implementation process must collaborate with the Environmental Justice (EJ) Council and with overburdened communities. The rule should provide more clarity on how the Council and communities will be engaged in the development and implementation of the full program. Ecology should work with the EJ Council to determine the best processes for collaboration. If implementation of the cap-and-invest program needs to be paused so that the EJ Council has time to thoughtfully advise rulemaking and design, then that is what needs to happen. Rushing the EJ Council and the frontline communities that they represent, is more of the same old racist colonialism-despite whatever good intentions one may have-that got us here in the first place, and is unacceptable.

Lastly, I attach a new report from Front and Centered on the weaknesses of the EITE allowance giveaways that benefit the ultra rich and hurt regular, everyday people, especially in overburdened communities.

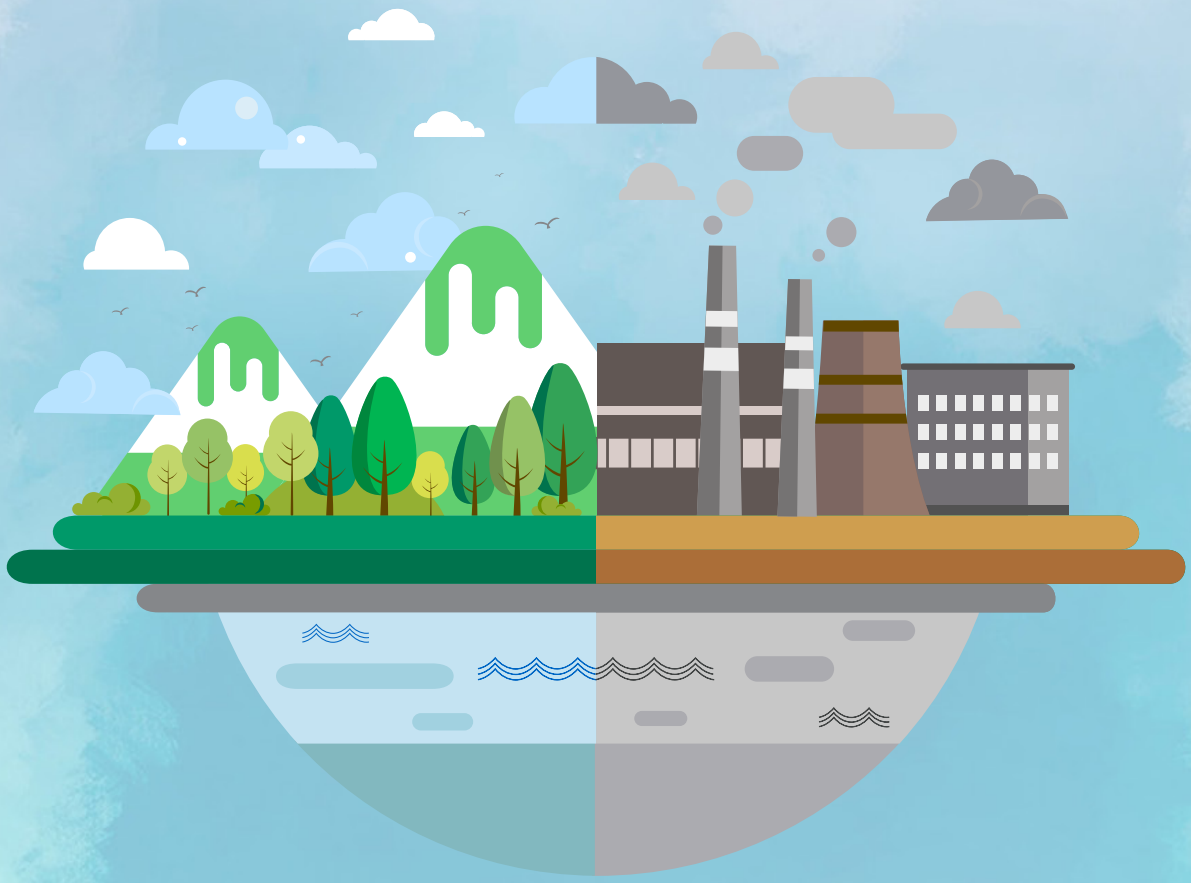
Thank you for considering my comments.

Sincerely,

Robert Marino

Exposing
False Solutions

How Washington's Cap and Trade Program Gives Industrial Polluters a Free Pass



JUNE 2022

FRONT AND CENTERED

A Front and Centered Report

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CONTENTS

OVERVIEW

This report looks into the "emissions-intensive [and] trade-exposed" (EITE) policy that the State of Washington plans to implement as part of its cap-and-trade scheme. The policy would give industries in the state that use carbon intensive technologies and compete in global products markets no-cost allowances to emit carbon, measured as carbon dioxide equivalents (CO2e).[1]

An "allowance" is a permit to emit one metric ton of carbon (CO2e). The carbon trading scheme that the state plans to launch next year generally requires polluters that do not cut emissions to buy allowances from those that do cut emissions, under a declining statewide emissions cap. No-cost allowances for industries deemed EITE are exemptions from this requirement.

Stated reasons for such exemptions are coded in jargon; "to create a climate policy that recognizes the special nature of emissions-intensive, trade-exposed industries by minimizing leakage and increased life-cycle emissions associated with product imports … and avoid leakage of emissions from manufacturing to other jurisdictions."[2] Decoding the jargon, the emissions-intensive, trade exposed industrial policy reflects *inherent* limitations of carbon trading.

Carbon trading prioritizes incremental change, not structural change in carbon-intensive industries. This is by design. Creating a market that trades in carbon emissions requires 'commodifying' the emissions at a price lower than some polluters will pay to clean up their own acts, if the trading is to occur at all. Then, since buyers seek the cheapest allowances, structural change—such as tearing down a profitable coal plant to build a zero-emission solar powered hydrogen plant—is not even on the table at the carbon traders' auction. Owners of the emissions-intensive industrial infrastructure that this leaves in place then seek to further minimize their costs.

Carbon trading also exports emissions. Where emissions-intensive technologies make products traded globally, carbon trading leaves these technologies in place, which favors exports of those polluting products from the carbon trading jurisdiction hosting the emissions-intensive production. Thus, the intent to minimize emissions associated with product imports[2] by giving no-cost allowances to emissions-intensive industries that export to other states and nations reflects inherent limitations in carbon trading, and aligns with minimizing 'home' industry costs.

[1] SB 5126 (2021) §§ 1(6), 8(2)(k), 13; SHB 1682 (proposed, 2022); WAC Chapter 173-446A (proposed, 2022).

[2] SB 5126 (2021) §§ 1(9), 9(5).

1 A THREE-PART LOOPHOLE

Industries deemed emission-intensive and trade-exposed (EITE) would first get allowances for some 97 percent of their emissions at no cost, for at least twelve years. Second, they could increase emissions at no cost by increasing production rates. Third, *if*—as is predictable—switching to a structurally cleaner technology will be the only feasible way to make deeper cuts in their emissions, they may continue to seek no-cost allowances for uncut emissions, potentially for an indefinite time. Table 1 lists the industries already deemed EITE and those which may apply for EITE status.

TABLE 1. Washington State Industries with Proposed & Open Emission Intensive Trade Exposed Status

Status[a]	Sector Description	NAIC[b]	Facilities[c]
EITE	Paper products; pulp, paper & paperboard mills	322XXX	13
EITE	Petroleum refining, including asphalt production	324XXX	6
EITE	Metals: aluminum, iron, steel, smelting, except forging	331XXX	4
EITE	Wood Products: sawmills, softwood veneer and plywood mfg.	321XXX	17
EITE	Minerals: Glass, cement, concrete & gypsum mfg.	327XXX	7
EITE	Food products: fruit, potato, dairy, meat, other mfg.	311XXX	20
EITE	Chemicals: fertilizer, other organic & inorganic chemical mfg.	325XXX	7
EITE	Aerospace: aircraft and aircraft parts & auxiliary eqpt. mfg.	3364XX	7
EITE	Semiconductor & related device mfg.	334XXX	3
OPEN	Solid waste collection & landfills	562XXX	14
OPEN	Government: education, admin., national security & airport ops.	61, 92, 488119	10
OPEN	Cattle feedlots	112112	5
OPEN	All other nonmentallic mineral mining	212399	1
OPEN	Carbon and graphite product mfg.	335991	1
OPEN	Iron and steel forging	332111	1

a. EITE: sector is designated as Emissions-Intensive, Trade-Exposed. Open: facilities in other sectors may petition for EITE status. see SB 5126(2021) § 13: SHB 1682 (proposed, 2022) § 1; WAC Chapter 173-446A (proposed Dept. of Ecol., 2021). **b. NAIC:** North American Industrial Classification. Example: the three-digit NAIC 324 (324XXX) includes the petroleum refining subsector (324110) as well as the asphalt paving mixture and block mfg. subsector (324121). **c.** The number of facilities in a sector during 2019 in the detailed greenhouse gas emissions inventory published by the WA Dept. of Ecology: https://data.wa.gov/Natural-Resources-Environment/GHG-Reporting-Program-Publication/idhm-59de/data

[3] SB 5126 (2021) §§ 13(2), 13(3)(a), 13(3)(b); SHB 1682 (proposed, 2022) §§ 1(2), 1(3)(a), 1(3)(b), 1(3)(e); WAC Chapter 173-446-220 (proposed, 2022) §§ 1(b), 2(a).

1.1 BASELINE PERMITS TO POLLUTE THROUGH 2034

Each industrial facility deemed EITE that emitted in the period from 2015 through 2019—some 84 facilities or more (Table 1)—would be given no-cost allowances for a percentage of its 2015–2019 baseline emissions.[3] Allocations would occur in four-year periods: 2023–2026, 2027–2030, 2031–2034, etc.[3] The percentages of their total baseline emissions that EITE facilities would be allowed to emit at no-cost would not be lower than 100 percent in the first period, 97 percent in the second, and 94 percent in the third four-year period.[3] Averaged over those twelve years, these industries would be allowed to emit at no less than 97 percent of prior rates at no cost through 2034.

Thus, emissions-intensive, trade-exposed (EITE) industrial facilities that keep emitting as much carbon as they did during 2015–2019 would be required to buy emission allowances for no more than three percent of their emissions during 2023–2034.

1.2 EMISSIONS ADDER FOR PRODUCTION GROWTH

EITE facilities would be allowed, and encouraged, to use their emission *intensity*—emissions per unit of production—as their baseline for calculating no-cost allowances.[4] This means that their no-cost allowances could increase if and when their production increases.[4]

For example, an oil refinery that refines three percent more crude during the period from 2027–2030 than it refined in the period from 2023–2026 could get the same number of no-cost allowances in the second four-year period as it did during the first four-year period. The three percent reduction in baseline no-cost allowances, from 100 to 97 percent, would be canceled out by the three percent increment of its production increase, in this example.

1.3 THE BEST AVAILABLE TECHNOLOGY *FOR WHAT?*

After 2034 EITE industries would get no-cost allowances in substantial, or very substantial, amounts, depending on whether a switch from inherently polluting to inherently cleaner technology is required. Legislative proposals in February 2022 range from setting the 2035–2050 no-cost allowance schedule now to studying it for future legislative action, but either way, EITE facilities could seek additional no-cost allowances based on future determinations of what is the "best available technology."[5]

[4] SB 5126 (2021) §§ 13(2), 13(3)(a), 13(3)(b), 13(3)(c), 13(3)(d), 13(3)(e); SHB 1682 (proposed, 2022) §§ 1(2), 1(3)(a), 1(3)(b), 1(3)(e); WAC Chapter 173-446-220 (proposed, 2022) §§ 1(b)(v)(A), 2(b).

[5] SHB 1682 (proposed, 2022): Substute House Bill §§ 1(3)(b), 1(3)(e), 1(3)(f); Proposed Second Substitute House Bill §§ 1(3)(f), 1(4)(a).

State climate law appears to define “best available technology” (BAT) in reference to “the fuels, processes, and equipment used in the facilities … while not changing the characteristics of the good being manufactured.”[6] Is the BAT determination for an EITE facility limited to incremental improvements in the inherently polluting technology it already built, or will BAT require switching to inherently cleaner technology which has been proven in an analogous setting to be feasible?

This is, at least in part, a question for legal analysis that is beyond the scope of this report. As a factual matter, however, in other contexts BAT has been ‘applied’ for decades while solar and wind power did not replace on-site industrial electricity generation from fossil fuels. In effect, BAT has been used for incremental improvements to fossil-fueled technologies, not switching to inherently cleaner non-fossil technologies. There is a loophole in applying BAT that has not yet been closed.

For these reasons, EITE industries might get very substantial no-cost allowances through 2050.

[6] SB 5126 (2021) §§ 2(10).

2 CLIMATE DANGERS

Climate impacts that could result from the emissions-intensive, trade-exposed (EITE) policy include, at a minimum, impacts from (1) direct industrial emissions, (2) risky reliance on deeper emission cuts in other sectors, and (3) systemic emissions associated with production for export. This chapter reviews these potential impacts based on plausible assumptions about the future that should be noted when interpreting results of the analysis:

Collective EITE industry emissions remain unchanged.

This assumption is plausible since no-cost allowances incentivize no change, facilities could buy allowances more cheaply than rebuilding for inherently cleaner technology, and production growth could offset incremental carbon cuts. Allowances will likely be cheaper than replacing already-built industrial technologies due to the limitations of carbon trading (Overview). And without that structural change, further incremental cuts would likely be small as 'mature' fossil fuel industrial technologies already have approached their theoretical maximum efficiencies. Indeed, this no-increase assumption may be conservative since production growth might increase industry-wide emissions before 2050.

Unconstrained exports.

This assumes that limits on exports will remain beyond the state's jurisdictional control, is consistent with the functional intent of the EITE policy, and is factually demonstrated in the oil sector example reviewed herein (CBE, 2020; CEJA, 2022).

A carbon-trading-only approach to industrial climate policy.

This assumption, while it may be true for manufacturing industries in the state at present, does not apply to other sectors wherein the state is using direct emission reduction measures. Further, it is not recommended herein as it clearly conflicts with the 'all the tools in the toolbox' approach that is warranted for grappling with our climate crisis. Rather, for purposes of this chapter's analysis, this assumption allows us to focus on EITE impacts separately from potential effects of direct industrial emission reduction measures. Importantly, it thus helps to clarify the extent to which direct measures, which are excluded from carbon trading and EITE policies, are needed.

2.1 INDUSTRY-WIDE EMISSIONS

Table 2 summarizes state data for carbon (CO2e) emissions from industrial sectors that are designated EITE or might petition for EITE status. Emissions from 2015–2019 are shown.

TABLE 2. CO_2e Emitted by Manufacturing Industries in the State of Washington, 2015-2019

Mt: Megaton; 1 million metric tons **NAIC:** North American Industrial Classification

Status[a]	Sector Description	NAIC	Emissions (Mt CO_2e/yr)	Industries CO2e percent (sector)	Industries CO2e percent (cumulative)
EITE	Pulp, paper & paperboard mills	322XXX	7.157	35.88%	35.9%
EITE	Petroleum refining	324XXX	6.292	31.54%	67.4%
EITE	Metals mfg. except forging	331XXX	1.549	7.76%	75.2%
EITE	Wood Products mfg.	321XXX	1.240	6.21%	81.4%
EITE	Glass, cement, concrete & gypsum mfg.	327XXX	0.705	3.53%	84.9%
EITE	Food products mfg.	311XXX	0.688	3.45%	88.4%
EITE	Chemicals & fertilizer mfg.	325XXX	0.426	2.13%	90.5%
EITE	Aircraft and aircraft parts mfg.	3364XX	0.233	1.17%	91.7%
EITE	Semiconductor & related mfg.	334XXX	0.162	0.81%	92.5%
OPEN	Waste collection & landfills	562XXX	0.997	5.00%	97.5%
OPEN	Government facilities	61, 92, 488119	0.364	1.82%	99.3%
OPEN	Cattle feedlots	112112	0.102	0.51%	99.8%
OPEN	Other nonmentallic mineral mining	212399	0.020	0.10%	99.9%
OPEN	Carbon and graphite product mfg.	335991	0.009	0.05%	100%
OPEN	Iron and steel forging	332111	0.004	0.02%	100%

Data from Washington Department of Ecology detailed greenhouse gas emissions inventory reporting publication; https://data.wa.gov/Natural-Resources-Environment/GHG-Reporting-Program-Publication/idhm-59de/data

[a] **EITE:** Designated as emissions-intensive, trade-exposed (Open; facilities in other sectors may seek EITE status). Electric and gas utilities excluded based on SB 5126 (2021) § § 13, 14, 15. Figures may not add due to rounding.

Emissions from these industry sectors totaled approximately 19.95 million metric tons/year (Mt/yr), according to the data shown in Table 2 (WSDE, 2022). Energy-intensive, trade-exposed (EITE)- designated sectors account for 18.45 Mt/yr (92.5%) of this industrial emissions total. *Id.*

Some sectors emit much more than others, and EITE-designated sectors top the very high-emitters list. Just four sectors—pulp and paper mills, petroleum refining, metals manufacturing, and wood products manufacturing—account for more than 81 percent of industrial emissions. *Id*. Only two sectors, pulp and paper and oil refining, emit more than 67 percent of industrial emissions. *Id.*

Overall, as measured by direct emissions impact, the EITE policy could give industries responsible for at least 18.45 Mt/yr, fully 92.5 percent of industrial emissions, no-cost permits to pollute.

2.2 RELIANCE ON DEEPER CUTS IN OTHER SECTORS

Achieving the same total emissions cut when some polluters do not cut emissions forces deeper cuts from others. The EITE policy thus increases the risk of climate protection failure. The inescapable math behind this risk may best be illustrated by examples pegged to Washington's statewide all source carbon emission limits of 50 Mt in 2030, and 5 Mt in 2050.[7] Achieving the 2030 limit will require cutting statewide emissions approximately 49 percent from a pre-COVID 2015–2018 baseline, as estimated by the state, of 97.91 Mt/yr. (WSDE, 2021a.)

What if electric utilities make deeper cuts to compensate for uncut EITE industry emissions through 2030? The state estimates Washington electricity emissions of 17.18 Mt/yr during 2015–2018, on a net power consumption basis. *Id*. Cutting that 17.18 Mt in proportion to the 49 percent statewide emission cut needed, the state's electricity emissions in 2030 would fall to approximately 8.8 Mt. But without such a cut in EITE industry emissions (49% of the 18.45 Mt/yr in Table 2), approximately 9.0 Mt of uncut EITE industry emissions would need to be cut elsewhere to meet the 2030 limit. Thus, assuming that the state-reported emission estimates are correct, achieving zero-emission electricity by 2030 would not quite be enough to make up for uncut EITE industry carbon.

What if EITE industry emissions remain uncut through 2050? EITE industry emissions of 18.45 Mt in 2050 *alone* would far exceed the 5 Mt statewide emissions limit in 2050. Moreover, cutting industrial emissions from 18.45 to below 5 Mt/yr would almost certainly require phasing out and replacing inherently polluting industrial technologies which the EITE and carbon trading schemes, by themselves, risk locking in place.

2.3 SYSTEMIC EMISSIONS AND CARBON LOCK-IN

Emissions-intensive manufacturing technologies are linked to raw materials and products supply chains. The components of these supply chains are mutually interdependent. This makes them mutually reinforcing systems. Here, EITE-designated industries' supply chains have global scope. Thus, if climate

[7] RWC 70A.45.020 § 1(a)

policies reduce in-state demand for polluting products, instead of phasing down production, industries here can export. Supporting their role in trade while leaving their carbon intensive technologies in place, the EITE policy could reinforce this systemic carbon lock-in.

Consider the petroleum fuel chain, for example. Washington refineries are net exporters of gasoline, and especially jet fuel and diesel-distillates (EIA, 2015). Besides supplying most of the regional domestic transportation fuels market in Oregon as well as Washington, refineries on Puget Sound exported ten percent of their gasoline, 28 percent of their jet fuel, and 32 percent of their distillate diesel production in 2013. *Id*. The estimated value of total refined product exports from the state to other nations averaged $3.11 billion per year during 2011–2019, more than double the $1.34 billion per year average during the prior nine years (U.S. Census trade data). Crucially, declining domestic demand for petroleum fuels across the U.S. West Coast—Alaska, Arizona, California, Hawaii, Nevada, Oregon, *and* Washington—is a major driver of this refining for export.

West Coast demand for total refined products fell by 15 billion gallons in the decade ending 31 December 2019 compared with the decade before (EIA, Supply and Disposition data). Instead of ramping down production, the refiners bumped it up a bit; West Coast exports of total refined products rose by 15.5 billion gallons in the decade ending 31 December 2019 compared with the decade before. *Id*. This is crucial because cutting refined fuels demand here while leaving refineries here alone may only shift more and more fuel combustion emissions to growing export markets across the Pacific Rim. Those transportation fuel emissions are very large (WSDE, 2021a). And refining is but one of eight EITE industries increasing its exports (U.S. Census, trade data).

3 ENVIRONMENTAL INJUSTICE

Environmental harms of industrial technologies disproportionately befall Black, Brown, First Nations, and poor people. That is widely known. This chapter reviews three mechanisms by which coupling the emissions-intensive, trade exposed (EITE) policy with carbon trading could prolong and worsen environmental injustice in the State of Washington.

3.1 TOXIC CO_2e CO-EMISSIONS

Despite many decades of air pollution control effort, toxic and smog-forming pollutants still emit from fossil-fueled industrial technologies in significant amounts along with their major combustion co-product by mass, CO_2. Table 3 presents estimates for how much of even the longest-regulated “criteria” air pollutants co-emit with each million tons of CO_2e from EITE industries statewide. No-cost allowances would contribute to prolonging this health-threatening exposure to greenhouse gas co-pollutant emissions in communities near EITE industries.

TABLE 3. Estimated CO_2e co-emission factors for six criteria air pollutants and seven EITE industrial sectors based on available State of Washington data[a]

in tons of co-pollutant per Mt of CO_2e **t** (ton)**:** metric ton **Mt** (megaton)**:** 1 million metric tons

		Co-emissions of pollutants (t/Mt CO_2e)					
	NAIC	PM_{10}	$PM_{2.5}$	SO_2	NO_x	VOC	CO
Pulp, paper & paperboard mills[b]	322XXX	150	139	198	849	168	922
Petroleum refining[c]	324XXX	70	69	131	842	413	222
Metals mfg. except forging[d]	331XXX	521	513	2,570	306	307	19,370
Wood Products mfg.[e]	321XXX	269	172	49	627	757	843
Glass, cement, concrete & gypsum mfg.[f]	327XXX	232	452	2,400	2,300	94	1,990
Chemicals & fertilizer mfg.[g]	325XXX	50	47	17	399	135	156
Aircraft & aircraft parts mfg.[h]	3364XX	99	87	7	1,270	5,140	613

a. Data from WSDE (2021b) and WSDE (2022). Data coverage for the food products and semiconductor sectors was judged insufficient for these estimates. **Notes b-h** give coverage for sectors shows as % of facilities (year or years) by copollutant. **Particulate matter (PM_{10}): b.** 77%(2019); **c.** 100% (2019); **d.** 50% (2017-2019); **e.** 71% (2019); **f.** 71% (2017-2019); **g.** 71% (2019) and 57% (2018); **h.** 71% (2018) and 14% (2017). **($PM_{2.5}$): b.** 77% (2019); **c.** 83% (2019); **d.** 50% (2017-2019); **e.** 65% (2019); **f.** 71% (2017-2019); **g.** 71% (2019) and 57% (2018); **h.** 57% (2019) and 14% (2018). **Sulfur Dioxide (SO_2): b.** 77% (2019); **c.** 100% (2019); **d.** 75% (2017-2019); **e.** 65% (2019); **f.** 57% (2017-2019); **g.** 57% (2019) and 43% (2018); **h.** 71% (2018) and 14% (2017). **Nitrogen oxides (NO_2): b.** 77% (2019); **c.** 100% (2019); **d.** 75% (2017-2019); **e.** 85% (2019); **f.** 71% (2017-2019); **g.** 71% (2019) and 57% (2018); **h.** 57% (2019), 71% (2018) and 43% (2017). **Volatile organic carbon (VOC): b.** 77% (2019); **c.** 100% (2019); **d.** 75% (2019) and 50% (2017-2019); **e.** 71% (2019); **f.** 57% (2018-2019) and 71% (2017); **g.** 71% (2019) and 57% (2018); **h.** 71% (2017-2019). **Carbon Monoxide (CO): b.** 77% (2019); **c.** 100% (2019); **d.** 75% (2017-2019); **e.** 65% (2019); **f.** 71% (2017-2019); **g.** 71% (2019) and 57% (2018); **h.** 29% (2019, 2017) and 43% (2018).

3.2 HEALTH RISK TRADING

Review of Table 3 also reveals that some industries emit more tons of various co-pollutants with each million tons of CO_2e emitted than others emit. The high carbon intensities of EITE-designated industries further amplify these high emissions per million tons carbon emitted (compare tables 2, 3). Allowances to emit carbon are traded without accounting for the additional toxic co-pollutants. However, in effect, carbon trading is also trading in *where* CO_2e co-pollutant emissions will create disparately severe health risks—and no-cost allowances tip the scales toward more disparately severe health risks in communities near emissions-intensive EITE-designated industries.

3.3 TOXIC PRODUCTION FOR EXPORT

Doubling down on this toxic injustice, more co-pollutants emit along with CO_2e when industries increase production for export. Their emissions of both CO_2e and its co-pollutants increase when their production rates increase. Thus, no-cost allowances that help industries here to maintain or increase export sales using emissions-intensive technologies could prolong, and worsen, the environmental injustice here from producing exports which people here do not, in fact, need or use. Statewide exports by EITE-designated industries *have* increased, as shown in Table 4—a trend that the EITE policy could help to continue, and may help to accelerate.

TABLE 4. Exports from EITE-designated Industries in the State of Washington, 2002-2019

Mt (megaton)**:** 1 million metric tons **MM:** million **NAIC:** North American Industrial Classification

		Vessel exports (Mt/year)		
	NAIC	2002-2010 mean	2011-2019 mean	Growth (%)
Pulp, paper & paperboard mills	322XXX	0.891	1.024	15%
Petroleum refining	324XXX	3.055	4.653	52%
Metals mfg. except forging	331XXX	0.044	0.091	105%
Wood Products mfg.	321XXX	0.626	0.669	7%
Glass, cement, concrete & gypsum mfg.	327XXX	0.059	0.152	156%
Food products mfg.	311XXX	1.784	2.862	60%
Chemicals & fertilizer mfg.	325XXX	0.189	0.323	71%
Aircraft & aircraft parts mfg.	3364XX	<0.001	0.001	53%
Semiconductor & related mfg.	3344XX	<0.001	<0.001	31%

		Total exports (MM$/year)		
	NAIC	2002-2010 mean	2011-2019 mean	Growth (%)
Pulp, paper & paperboard mills	322XXX	918	1,157	26%
Petroleum refining	324XXX	1,354	3,106	131%
Metals mfg. except forging	331XXX	864	1,237	43%
Wood Products mfg.	321XXX	411	662	61%
Glass, cement, concrete & gypsum mfg.	327XXX	148	235	59%
Food products mfg.	311XXX	1,956	3,342	71%
Chemicals & fertilizer mfg.	325XXX	805	1,127	40%
Aircraft & aircraft parts mfg.	3364XX	21,599	40,461	87%
Semiconductor & related mfg.	3344XX	723	692	-4%

Data from U.S. Census, trade data. State Exports by NAICS: State of Washington; U.S. Census Bureau, Economic Indicators Division, USA Trade Online. https://usatrade.census.gov/data/Perspective60/View/dispview.aspx

In fact, the data in tables 3 and 4 indicate that emissions from industrial production for export have worsened environmental justice impacts in Washington. Communities near the exporting industrial facilities were exposed to additional air pollution caused by increased production for export.

Now the same communities face the prospect of prolonged environmental injustice—even when demand reduction measures reduce in-state demand for polluting industrial production. In an absence of direct emission reduction standards, industries that use emissions-intensive technologies which EITE carbon trading leaves in place would be incentivized to increase export sales when those measures reduce their in-state sales. Emissions from production for export could grow substantially.

The opportunity to protect trees and forest carbon sinks by speeding the shift from paper to paperless technologies, such as those which allow reading this report on-line, is one example. What if in-state paper use declines in line with statewide emission limits? Pulp and paper mills could then meet in state demand while cutting their particulate matter ($PM_{2.5}$) emissions by approximately 450 tons per year (49%) from 2019 to 2030.[8] But in the absence of direct emission reduction standards, the mills could maintain 2019 production rates by increasing exports, and that 450 tons/yr could continue to emit into nearby communities.

Production for export could increase $PM_{2.5}$ emissions from pulp and paper mills into communities here by approximately 450 tons during 2030, in this example.

Another example: What if needs to cut transportation emissions and opportunities to expand public transit and electric vehicles cut in-state petroleum fuels use in line with statewide emission limits? Petroleum refineries could then meet in-state demand while cutting their emissions of nitrogen oxides by at least 2,680 tons per year (49%) from 2019 to 2030.[9] But without direct emission reduction standards, the refiners could maintain 2019 rates to protect their otherwise stranded oil refining assets by increasing production for export. Then, exposures of nearby communities to that 2,680 tons per year of NOx could continue in 2030.

Production for export could increase NOx emissions from oil refineries into communities here by approximately 2,680 tons per year during 2030, in this example.

[8] Pulp and paper mills emitted an estimated 924 metric tons of $PM_{2.5}$ in 2019 (WSDE, 2021b). See Chapter 2 for documentation of the 49% in-line cut to the statewide emission limit from 2019–2030.

[9] Refineries emitted an estimated 5,473 metric tons of NOx in 2019 (WSDE, 2021b). The 49% in-line cut while meeting in-state demand is an undercount that does not account for existing refining for export (Chapter 2).

4 COMPARISON DATA

Can the emissions-intensive, trade-exposed industrial carbon trading policy be fixed? How does the EITE policy compare with directly applying emission standards to industrial sectors and facilities? Several comparisons may help to define underlying causes of the problems with the EITE policy that inform how best to fix them: comparisons with the limitations of carbon trading, approaches to other sectors in Washington, and outcomes to date in California.

4.1 USE ALL OF THE TOOLS IN THE TOOLBOX

To ensure the deep emission cuts state climate goals require, industries that are emissions-intensive, the "EI" in EITE, generally must switch to decarbonized electricity or hydrogen made from it by splitting water, or phase down and be replaced by alternative technologies now proven in practice. This switch from already-built fossil fuel and combustion technologies requires *structural* change. But as described in our Overview and Chapter 2, carbon trading is inherently limited to incremental rather than structural change, and the EITE policy reflects this limitation of carbon trading. Even if required by carbon trading rules to do so, the owners of already-built paper mills, oil refineries, and other EITE industries could buy cap-and-trade allowances as long as that remains the most profitable use of those capital-intensive assets—which could be as long as it takes for most other emitters statewide to make very deep cuts that deplete all cheaper allowances. Thus, carbon trading alone locks in EITE emissions. Therefore other, and different, policy tools will be needed as well.

Further, their trade exposure, the "TE" in EITE, allows emissions-intensive industries to export rather than phase down in response to reduced in-state demand for their products that may result from carbon trading here. While EITE policy reflects and amplifies it, this is another inherent limitation of carbon trading. Applying direct emission standards to industrial facilities here does not have this limitation.

The question about technology-forcing standards raised in Chapter 1 may be pivotal. Defining "best available technology" in reference to clean electricity and hydrogen as industrial fuels and, in energy sectors, as manufactured products—and in the context of what can be done to meet each sector's and facility's emissions limit—could leverage the needed technology change. In contrast, answering the 'best available technology *for what?*' question in reference to existing, inherently-polluting industrial technologies, in the context of policy to protect their trade positions, may lead to the opposite result. Again, direct emission reduction standards address key limitations of EITE carbon trading policy.

4.2 WASHINGTON USES OTHER TOOLS IN OTHER SECTORS

In addition to its carbon trading measures,[10] the state of Washington is applying direct technology forcing measures in its utility and transportation sectors. The state requires utilities to first replace coal-fired, then fossil gas-fired, electricity with renewables, and uses the equivalent of power plant emission limits—expressed in megawatt-hours of fossil fueled generation—to backstop the coal fired, then gas-fired, electricity generation phaseout.[11] Its transportation sector measures include tailpipe emission standards, direct zero-emission vehicles growth measures, and requirements for utilities that can target funds toward electric vehicle charging infrastructure growth.[12]

These direct technology-forcing measures are to be applied regardless of and along with its cap-and-trade scheme and Low Carbon Fuels Standard. Accordingly, the state's approach to its manufacturing industries appears to be the anomaly, rather than the norm, in its climate policy. In any case, the state's use of them in other sectors further supports considering direct measures to address the limitations of EITE industrial carbon trading.

4.3 RELEVANT OUTCOMES TO DATE IN CALIFORNIA

California is not Washington. And yet there is something to be learned. California is the nearest U.S. jurisdiction to implement a cap-and-trade scheme. It shares electricity, petroleum fuels, and other markets with Washington as well as other West Coast states. Like Washington, it has adopted a Low Carbon Fuels Standard; a direct measure like Washington's to phase out fossil fueled electricity through its Renewables Portfolio Standard; a separate power plant emissions limit to, in effect, phase out coal-fired electricity (CEC, 2006), and similar direct measures to phase out petroleum vehicles and phase in zero-emission vehicles (ZEVs).[12] Moreover, the California cap-and-trade scheme gives free-of-charge allowances to many of its major industries. In some ways, the big difference is that except for its more recent ZEV standards, the state of California has been implementing all of this for many years.

What happened there? During the period from 2013, when California's cap-and-trade scheme launched, through 2019, the year before the COVID-19 pandemic disrupted energy, economic and emission conditions, four factual points stand out:

First, structural change began to cut emissions in the electricity sector. As renewables began to squeeze out coal and gas-fired power, electricity generation emissions fell by approximately 32.5 Mt/yr from 2013 to 2019. (CBE, 2020, *see* Chapter 5; CEJA, 2022, *see* Supporting Material.)

[10] Cap-and-trade, and the Low Carbon Fuel Standard, which uses a separate emission credit trading market.

[11] SB 5116 (2019). See esp. §§ 1(1), 3, 4, 9.

[12] WAC 173–423; SB 5116 (2019) §§ 2(18)(b)(ii), 4(1)(b).

Second, emissions from manufacturing industries were not cut overall. Instead, total emissions in California from industries that Washington would designate as emissions-intensive, trade-exposed (EITE) increased slightly. *See* Table 5.

TABLE 5. Emission in California from Industries the state of Washington would designate EITE

Mt (megaton)**:** 1 million metric tons **NAIC:** North American Industrial Classification **NR:** Not Reported

		No-Cost allowances		Emissions (Mt CO_2e/yr)		
	NAIC	CA	WA	2013-2015	2017-2019	Change
Total for sectors below	—	—	—	49.25	50.31	+1.06
Petroleum Refining	324XXX	Yes	Yes	31.67	32.21	+0.54
Glass, cement, concrete & gypsum mfg.	327XXX	Yes	Yes	8.65	9.01	+0.36
Chemicals & fertilizer mfg.	325XXX	Yes	Yes	3.64	3.94	+0.30
Hydrogen mfg. subsector	325120	Yes	Yes	3.14	3.29	+0.15
Food products mfg.	311XXX	Yes	Yes	2.32	2.20	-0.12
Wood Products mfg.	321XXX	NR	Yes	1.35	1.53	+0.18
Pulp, paper & paperboard mills	322XXX	Yes	Yes	0.93	0.81	-0.12
Metals mfg. except forging	331XXX	Yes	Yes	0.53	0.49	-0.04
Aircraft & aircraft parts mfg.	3364XX	Yes	Yes	0.11	0.09	-0.02
Semiconductor & related mfg.	334XXX	NR	Yes	0.04	0.04	+<0.00

Data from CARB, 2021. The first three years from the launch of carbon trading under California's cap-and-trade scheme in 2013 are compared with the last three years before the COVID-19 pandemic. Refinery emissions shown exclude those from hydrogen production used by refineries from adjacent third-party hydrogen plants, which are broken out as NAIC 325120 in the table.

Table 5 compares the first three years after the launch of California's cap-and-trade scheme, 2013– 2015, with the last three years before the COVID-19 pandemic hit the U.S. West Coast, 2017–2019. Total CO_2e emitted in California by industries Washington would designate as EITE increased by approximately 1.06 Mt/yr (Table 5). Larger increases from high-emitting EITE industries there exceeded smaller decreases from some of the lower-emitting ones to drive this net increment *(Id.)*.

Third, exports of petroleum fuels refined in California increased (CBE, 2020; CEJA, 2022). Again, we compare the periods from 2013–2015 and 2017–2019. Excluding jet fuel, much of which is 'exported' via fueling interstate and international flights, California-refined fuels exports increased by nearly 18 percent (CEJA, 2022). Burning that 18 percent increment in other states and nations emitted approximately ten million tons of CO_2e annually *(Id.)*. Including jet fuel, emissions from end-use combustion of total California refinery exports increased by approximately 13 Mt/yr *(Id.)*.

Fourth, total in-state burning of petroleum fuels did not decrease. Instead, it rose slightly, from 50.6 million gallons per day during 2013–2015 to 51.3 million gallons per day during 2017–2019 (CEJA, 2022). Note that while California's cap-and-trade scheme and Low Carbon Fuel Standard were in effect from 2013–2019, its more recent zero-emission vehicle standards were not yet in effect then.

Among other things, these factual observations are real-world results of a climate policy experiment. Direct emission reduction standards and structural transformation measures were effective in the electricity sector. In contrast, carbon trading alone *without* direct emission reduction measures was not effective. Without sectoral or facility-specific carbon emission standards, major industrial emitters increased their direct emissions and emitted still more by increasing inherently polluting exports. These results further support the need to apply direct emission standards to industrial facilities.

This need for direct emission standards was evident in California communities that host power plants and refineries—and was raised by environmental justice groups there—before California launched its carbon trading programs. Importantly, the state's Emission Performance Standards for power plants (CEC, 2006) and technology-forcing Renewables Portfolio Standard for electricity were first adopted before 2013, when its cap-and-trade scheme launched. But then, as analysis for the California Environmental Justice Alliance describes:

> A bias against using all the tools in the toolbox in our climate crisis crept into state policy since carbon trading, which has not cut oil refining rates, launched here in 2013. [The California Air Resources Board] prioritized its cap-and-trade scheme over direct emission reduction measures. By mid-2017, when this bias was codified in a political trade-off between cap-and trade and direct emission reduction, no refinery in the state had an enforceable limit to cut its carbon emissions. AB 398 (2017) constrained, and is interpreted by many to prohibit, direct emission reduction measures at refineries under cap-and-trade. *CEJA, 2022*.

In fact, California's continued use of a carbon-trading-only approach to oil refining even after the state's own data showed it was not working (CBE, 2020) does reflect a policy bias. Ominously for the state of Washington, this bias itself examples the type of institutional path dependence that reinforces carbon lock-in (Seto et al., 2016). Thus, outcomes to date in California may serve as a warning that the time for direct industrial carbon emission standards in Washington is now.

FINDINGS AND TAKEAWAYS

FINDING 1

The State of Washington's carbon trading policy provides "emissions intensive, trade-exposed" industries cap-and-trade allowances at no cost, allowing at least nine-tenths of total current industrial carbon emissions to continue free of charge through 2034.

TAKEAWAY

These permits to pollute free of charge let owners of inherently polluting industrial technologies delay the essential switch to low-carbon technology during the critical period when now-feasible paths to climate stabilization could be irreversibly foreclosed.

FINDING 2

Designed to protect Washington industries from imports, this policy further increases no-cost allowances for emissions-intensive industries that increase production, without protecting communities here from emissions caused by increasing industrial production for export.

TAKEAWAY

Under this policy toxic carbon co-emissions from industrial production for export of products that Washingtonians do not need or use can be expected to prolong and worsen environmental justice impacts in communities near emissions-intensive industries here.

FINDING 3

This policy has failed to reduce industrial emissions elsewhere. Carbon trading with industrial allowances provided free of charge has resulted in emission increases from petroleum refining; glass, cement, and gypsum manufacturing; chemical and fertilizer manufacturing; wood products manufacturing; semiconductor and related device manufacturing—and from emissions-intensive, trade exposed industries overall.

TAKEAWAY

Another, and different, policy tool will be needed to ensure climate stabilization and environmental justice.

FINDING 4

Facility-specific emissions standards, tailored to switch from existing to low-carbon technology portfolios in specific sectors, have achieved deep emission cuts. Emission performance standards and renewables portfolio standards for electric power generation have cut electricity emissions by 32.5 million tons per year in California—a mass emissions cut equivalent to one third of total carbon emissions in Washington—over seven years.

TAKEAWAY

Having applied this approach in its electricity sector, the State of Washington should consider using this 'all the tools in the toolbox' approach in its manufacturing sectors as well.

Direct industrial emission standards will be necessary to ensure that state climate and environmental justice goals may be achieved.

REFERENCES

CARB, 2021. *Mandatory Greenhouse Gas Reporting Data*; data for multiple years as revised and reported in 2021. California Air Resources Board: Sacramento, CA. https://ww2.arb.ca.gov/mrr-data

CBE, 2020. *Decommissioning California Refineries: Climate and Health Paths in an Oil State;* Communities for a Better Environment (CBE): Huntington Park, Oakland, Richmond and Wilmington, CA. Prepared by Greg Karras, Community Energy reSource. Includes Supporting Material Appendix. www.energy-re-source.com/decomm

CEC, 2006. *SB 1386 Emission Performance Standards*; Baseload electric power plant limit of 1,100 pounds CO2/MWh. California Energy Commission: Sacramento, CA; and California Public Utilities Commission: San Francisco, CA. www.energy.ca.gov/emission_standards

CEJA, 2022. *Climate Pathways in an Oil State–2022*; A California Environmental Justice Alliance (CEJA) report. Prepared by Greg Karras, G Karras Consulting, Community Energy reSource. (February 2022).

EIA, 2015. *West Coast Transportation Fuels Markets*; U.S. Energy Information Administration: Washington, D.C. PADD 5 Transportation Fuels Markets. September 2015. Available from: https://www.eia.gov/analysis/transportationfuels/padd5

EIA, Supply and Disposition data. *Supply and Disposition: West Coast (PADD 5)*; Finished Petroleum Products data. U.S. Energy Information Administration: Washington, D.C. Downloadable database. https://www.eia.gov/dnav/pet/pet_sum_snd_d_r50_mbbl_m_cur.htm

Seto et al., 2016. Carbon lock-in: Types, causes, and policy implications. *Annual Review of Environment and Resources* 41: 425–452. https://www.annualreviews.org/doi/abs/10.1146/annurev-environ-110615-085934

U.S. Census, trade data. *State Exports by NAICS: State of Washington;* U.S. Census Bureau: Washington, D.C. Economic Indicators Division, USA Trade Online. Data as of 16 Feb 2022. https://usatrade.census.gov/data/Perspective60/View/dispview.aspx

WSDE, 2021a. *Washington State Greenhouse Gas Emissions Inventory: 1990–2018*; Washington State Department of Ecology: Olympia, WA. January 2021, Publication 20-02-020. Available at: https://apps.ecology.wa.gov/publications/SummaryPages/2002020.html

WSDE, 2021b. *Washington Reported Point Source Emissions (2009–2019)*; Washington State Department of Ecology: Olympia, WA. Last updated Jan 2021. Spreadsheet in short tons per year at: https://ecology.wa.gov/Air-Climate/Air-quality/Air-quality-targets/Air-emissions-inventory

WSDE, 2022. *Greenhouse Gas (GHG) Reporting Program Publication*; Washington State Department of Ecology: Olympia, WA. Dataset contains data reported to WSDE as of 12 January 2022. Includes preliminary data that have not been fully verified by the Department. https://data.wa.gov/Natural-Resources-Environment/GHG-Reporting-Program-Publication/idhm-59de/data