California Cap & Trade Policy Outcomes

CCA Recommendations for the **Washington State Environmental Justice Council**

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CARDINAL POLICY GROUP

California Cap & Trade Policy Outcomes for WA CCA

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Executive Summary

The term intersectional environmentalism, pushed forth by activists such as Leah Thomas, is defined to be an “inclusive form of environmentalism that advocates for the protection of all people and the planet.” Climate change disproportionately impacts vulnerable populations, like communities of color or low-income communities, but especially those who hold multiple vulnerable identities, such as race or gender identity. These effects are especially exacerbated after the pandemic affected these communities both in terms of physical health but also socioeconomic inequality. These concepts are highly important to the work we address in this report.

In 2021, WA passed the Climate Commitment Act (CCA) into law which aims to reduce greenhouse gas emissions through a Cap and Trade program, with revenue being invested in climate mitigation efforts. The law establishes a cap on greenhouse gas emissions, with increasingly ambitious reduction targets every 10 years. As part of the HEAL act, WA attempts to address disparities in climate efforts via the Environmental Justice Council (EJC) to provide recommendations and guidance to the state and an Interagency Workgroup to assist with technical coordination among the state agencies, essentially a voice for disproportionately affected communities and centering environmental justice.The intention of this project is to look into CA’s preexisting Cap and Trade program and to provide recommendations on what WA can take away from CA’s model, with heavy considerations to how environmental justice can be incorporated into WA’s Cap and Trade program.

We leveraged resources on California's Cap and Trade program and pre-existing papers on the relationship between environmental justice on Cap and Trade to conduct an extensive literature review. Furthermore, we reached out to the California Air Resources Board (CARB) for additional data and information to support our recommendations.

Our findings confirm that the CA Cap and Trade framework can be replicated in many parts in WA's CCA. There are many similarities in between the two programs meaning similar policies can be repeated along with improving on CA's gaps. We found that CA has good policies for both addressing overburdened communities and also identifying them which should be repeated. However, CA supports out-of-state offset programs which does lead to less incentives for in-state emission reductions. Finally, while the linkage program did prove to be economically beneficial, in the context of overburdened communities, it appeared to result in too many offsets within CA. Thus, we followed up on these in our policy recommendations.

Our policy recommendations only provide a beginning to incorporating environmental justice into economic climate solutions. See the Conclusion section for a final review of our policy recommendations.

Overview of California Cap & Trade

Major Takeaways / Recommendations

- California law, overall, mirrors much of WA CCA. There are differences in some specifics (ex: offset programs) we discuss later
- Cap & Trade legislation and designation of overburdened communities had good community testimony, input
- Little engagement from underserved communities in public "workshops" and testimony in California; few recommendations from them were adopted
- WA should devote attention and outreach to groups often underrepresented in environmental decision-making processes, for example disabled persons, the unhoused and the incarcerated

California's Cap and Trade program began in 2013 and seeks to limit businesses' greenhouse gas (GHG) emissions by establishing a state-wide limit ("cap") on emissions and allowing businesses to trade compliance instruments. Businesses that emit over 25,000 tons of carbon dioxide equivalent (CO_2e) are subject to the program's regulations; this covers over 450 businesses—mostly power plants, industrial manufacturers, and fuel distributors—that make up 85% of the state's emissions.[1][2] This program is in

[1] https://ww2.arb.ca.gov/sites/default/files/cap-and-trade/guidance/cap_trade_overview.pdf
[2] https://www.c2es.org/content/california-cap-and-trade/

place to assist California in meeting its climate goals: 40% below 1990 GHG levels by 2030, 85% below 1990 GHG levels by 2045, and carbon neutrality also by 2045.[3]

How the program works

Businesses can comply with California's Cap and Trade program using two instruments: allowances and offset credits.[4] An allowance is a credit allowing businesses to emit one megaton of CO2.[5] An offset credit is a verifiable emission reduction or sequestering.[6] The state both distributes allowances directly to businesses and holds auctions once a quarter to let businesses buy additional allowances if their emissions exceed their allotted allowances. The sum total of these allowances– the cap– decreased by 3% annually from 2015-2020, will decrease by 5% from 2021-2031, and will decrease by 6.7*(number of years since 2031) million allowances from 2032-2050.[7]

Offsets can also help businesses meet their compliance obligations. Projects that reduce or sequester emissions and are not subject to the state's Cap and Trade program can serve as sources of offsets. California's Air Resources Board verifies the legitimacy of these projects and issues offset credits.[8] Through 2020, offsets could make up as much as 8% of a business's compliance obligations; from 2021-2025, they can make up 4%, and from 2026-2030, they can make up 6%.[9]

Economic Components of California's Cap & Trade Program

All of the revenue gained from California's Cap and Trade program is deposited into the state's Greenhouse Gas Reduction Fund. The revenues are allocated through California Climate Investments. To date, the Greenhouse Gas Reduction Fund has allocated $22.6 billion to California Climate Investments.[10] 35% of these investments must be spent on projects that benefit "priority communities:" 25% of all revenues must go to disadvantaged communities, and 10% must go to low-income communities. The remaining 65% can be allocated anywhere else in the state.[11] CalEPA is responsible for the designation of disadvantaged communities, as will be addressed later in the report. Low-income communities are those whose incomes are 80% below the median in California or are otherwise designated by California's Department of Housing and Community Development.[12] 73% of all California Climate Investments programs are directly benefiting these communities, collectively known as Priority Communities.[13] Programs that most directly impact Priority Communities include Affordable Housing and Sustainable

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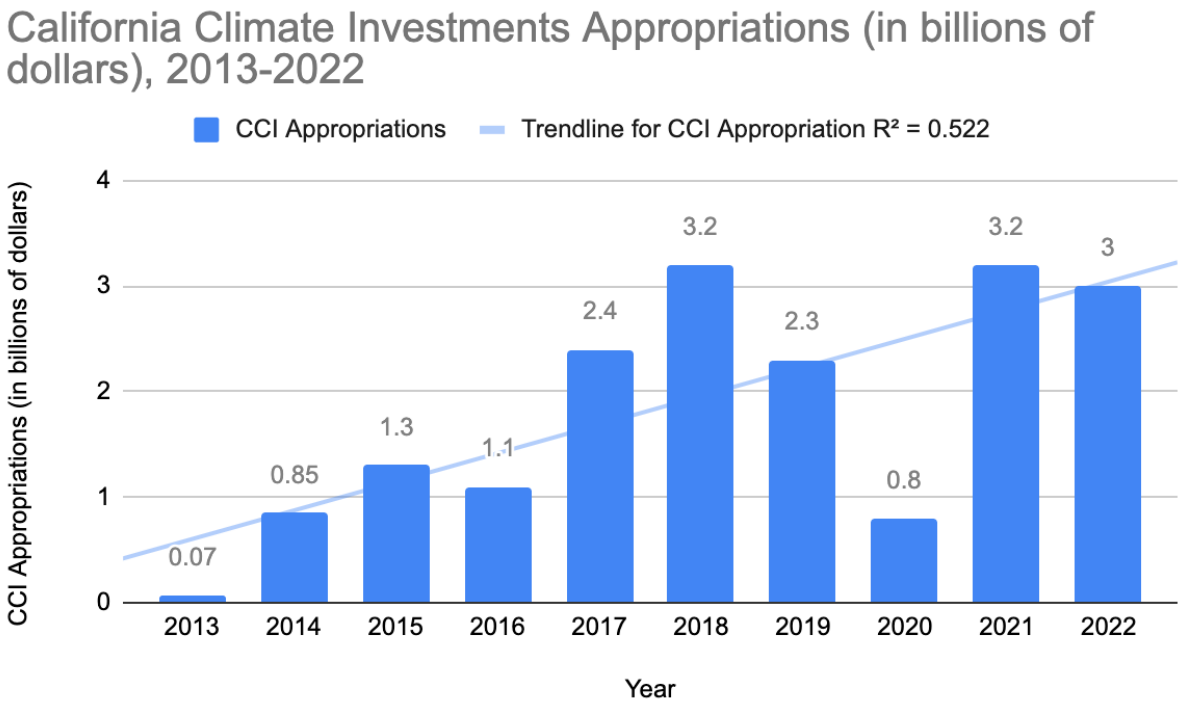
[3] https://ww2.arb.ca.gov/sites/default/files/2022-12/2022-sp.pdf
[4] https://www.law.berkeley.edu/wp-content/uploads/2019/12/Fact-Sheet-Cap-and-Trade.pdf
[5] https://www.law.berkeley.edu/wp-content/uploads/2019/12/Fact-Sheet-Cap-and-Trade.pdf
[6] https://www.edf.org/sites/default/files/OffsetsPercentagesFAQFinal%20041612.pdf
[7] https://ww2.arb.ca.gov/sites/default/files/2021-02/ct_reg_unofficial.pdf
[8] https://ww2.arb.ca.gov/sites/default/files/2021-02/ct_reg_unofficial.pdf
[9] https://ww2.arb.ca.gov/sites/default/files/2021-02/ct_reg_unofficial.pdf
[10] https://www.caclimateinvestments.ca.gov/about-cci
[11] https://www.caclimateinvestments.ca.gov/priority-populations
[12] https://www.caclimateinvestments.ca.gov/priority-populations
[13] https://www.caclimateinvestments.ca.gov/priority-populations

Communities, Transit and Intercity Rail Capital, and Community Air Protection.[14] Projects within these programs include building new housing, creating environmentally-cleaner passenger trains, and improving indoor air quality by replacing high-polluting home appliances.[15]



(Note: the annual appropriations do not sum to the total amount appropriated to California Climate Investments, $22.6 billion. The discrepancy may be due to special legislation such as trailer bills.)[16]

California has linked its Cap and Trade program with that of Quebec. This means that allowance and offsets trading can occur across jurisdictions.[17] The increased number of businesses that fall under the cap as a result of the linkage program means that compliance costs lower and the emission trading market's liquidity and reductions opportunities increase.[18]

Environmental Components of California's Cap & Trade Program

As noted above, California seeks to reduce its emissions by 40% below 1990 levels by 2030, 85% below 1990 levels by 2045, and also achieve carbon neutrality by 2045. The state's 1990 GHG emissions were 431 MMTCO2e.[19] The state's goal had been to reach this level by 2020, but it lowered its emissions

[14] https://www.caclimateinvestments.ca.gov/cci-data-dashboard
[15] https://www.caclimateinvestments.ca.gov/profiles-by-year
[16] https://ww2.arb.ca.gov/sites/default/files/auction-proceeds/cci_annual_report_2023.pdf p17
[17] https://www.c2es.org/content/california-cap-and-trade/
[18] https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2012/capandtrade12/ctlinkagenoticefinal.pdf
[19] https://ww2.arb.ca.gov/news/climate-pollutants-fall-below-1990-levels-first-time

below 1990 levels in 2016.[20] In 2019, GHG levels had dropped to 404.5 $MMTCO_2e$.[21] It is difficult to attribute causality in the reduction of GHG emissions to the Cap and Trade program, but by steadily reducing the allowances to the businesses under its purview, the program undoubtedly contributed to this decrease. The emission allowances from the Cap and Trade program were 334.2 MMTCO2e in 2020, will be 200.5 MTCO2e in 2030, and will be 66.5 MMTCO2e in 2050. 85% of all the state's emissions are from businesses that fall under the purview of the Cap and Trade program, meaning that as the emissions allowances decrease, a large majority of the state's big emitters will need to comply.

Rulemaking Process

The California Air Resources Board (CARB) worked with a wide range of entities and stakeholders during the development of California's Cap and Trade program. This allowed significant input from stakeholders to be factored into the program's rulemaking process. Some of the specific entities/stakeholders that CARB worked with, along with the strategies CARB employed in these negotiations, are listed below.

1. Businesses: CARB engaged with businesses from various industries, including utilities, manufacturing, and transportation, to understand their emissions reduction challenges and identify ways to incentivize and support emissions reductions. In regard to businesses, CARB also:
    a. Consulted with businesses and industry groups during the development of the program to better understand their needs and concerns, allowing CARB to design a program that was effective in reducing greenhouse gas emissions while also being practical and feasible for businesses to implement
    b. Designed the Cap and Trade program to be flexible, allowing businesses to comply with the program in a way that made sense for their operations. For example, businesses have the option to purchase emissions allowances or offset credits, or to reduce their own emissions in order to comply with the program
    c. Worked with businesses and industry groups to develop a trading platform for emissions allowances and offset credits
    d. Reviews the Cap and Trade program periodically to ensure that it remains effective and equitable across all business entities
2. Environmental organizations: Environmental organizations played a critical role in advocating for the program and providing input on how to ensure that emissions reductions were environmentally effective and equitable. The main ones included:
    a. Natural Resources Defense Council (NRDC): a nonprofit environmental advocacy group that provided technical expertise on the Cap and Trade program's design

[20] https://ww2.arb.ca.gov/news/climate-pollutants-fall-below-1990-levels-first-time
[21] https://ww2.arb.ca.gov/sites/default/files/classic/cc/inventory/2000-2020_ghg_inventory_trends.pdf

b. Environmental Defense Fund: EDF worked with CARB to design the program's offset provisions, which allow companies to offset some of their emissions by investing in projects that reduce emissions elsewhere.[22]

c. California League of Conservation Voters (CLCV)

d. The Greenlining Institute: a nonprofit organization that works to promote racial and economic justice

3. Community groups: Community groups, particularly those representing low-income and minority communities, were engaged to ensure that the benefits of emissions reductions were distributed equitably and that vulnerable communities were protected from any negative impacts of the program.

    a. Held a series of community meetings throughout California to engage with local residents and community groups and gather input on the design of the Cap and Trade program. These meetings were designed to provide an opportunity for residents to voice their concerns and provide feedback on the program's potential impacts on their communities.

    b. Formed an Environmental Justice Advisory Committee (EJAC) to provide ongoing input on the program's design and implementation; included representatives from community groups, environmental justice organizations, and other stakeholders, and helped to ensure that the program was designed equitably

    c. Included a number of equity provisions in the Cap and Trade program's design, including a requirement that a portion of the revenues generated by the program be invested in projects that benefit disadvantaged communities.[23] CARB also included provisions to prevent emissions hot spots in low-income and minority communities.[24]

    d. Provided a public comment period during which community groups and other stakeholders could provide feedback on the program's design. CARB reviewed all of the comments received and made changes to the program's design in response to the feedback.

4. Academic and scientific experts: CARB also worked with academic and scientific experts to better understand the potential impacts of the program on the environment, the economy, and public health.

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[22] https://www.edf.org/sites/default/files/californias-cap-and-trade-program-step-by-step_0.pdf
[23] https://ww2.arb.ca.gov/sites/default/files/2021-01/proposedplan-ejaccommentsfinaldec10.pdf
[24] https://ww2.arb.ca.gov/sites/default/files/classic/cc/scopingplan/2013_update/final_ejac_recommendations.pdf

5. Other government agencies: CARB collaborated with other government agencies, including the California Energy Commission and the California Public Utilities Commission, to coordinate emissions reduction efforts and ensure that the program was aligned with broader state goals and policies.

Public Feedback and Environmental Justice Concerns

In addition to the public outreach conducted during the initial development of the Cap and Trade Program, California continues to collect public input on the Cap and Trade program through the following three mechanisms: periodic reviews of the Cap and Trade program, legislative amendments made to the Cap and Trade program, and periodic public workshops to determine the allocation of Cap and Trade auction proceeds.

- **Periodic Reviews of the Program**

  CARB conducts a periodic review of its Cap and Trade program every five years (approximately) as part of its Climate Change Scoping Plan.[25] These Scoping Plans lay out a pathway for California to meet its climate goals established by Assembly Bill 32, with the state's current goal being carbon neutrality by 2045. Each Scoping Plan includes a review of CARB's current programs, including Cap and Trade, and policy recommendations for achieving statewide climate goals. There is also a public comment period and public workshops to solicit feedback on each Draft Scoping Plan from stakeholders.

  CARB's Environmental Justice Advisory Committee (EJAC), which is composed of 13 representatives from California's disadvantaged communities, provides its own periodic recommendations on modifying the Cap and Trade Program. The EJAC holds its own community forums with members from disadvantaged communities, and the Committee's recommendations are included in each CARB Scoping Plan. While the EJAC does not have the power to implement their recommendations, there have been past examples of CARB adopting their proposals. For instance, in their 2022 Scoping Plan, CARB committed to reviewing the Cap and Trade program to "determine what potential legislative or regulatory amendments could be necessary to ensure the program continues to deliver GHG reductions" based on the EJAC's recommendations.[26] CARB has also limited the use of offsets and allowances in the Cap and Trade Program in response to concerns raised by the EJAC through legislative amendments, which are discussed in the following section, but has fallen short of adopting the EJAC's recommendations to eliminate the use of carbon offsets or free allowances.

- **Legislative Amendments to the Cap and Trade Program**

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[25] https://ww2.arb.ca.gov/our-work/programs/ab-32-climate-change-scoping-plan/scoping-plan-meetings-workshops

[26] https://ww2.arb.ca.gov/sites/default/files/2023-04/2022-sp.pdf

California's Cap and Trade Program has been amended seven times since it was first adopted in 2011 through legislative action. In order to allow stakeholders to engage with CARB staff, all changes were made through a public process with workshops, informal and formal written comment periods, and a Board hearing where oral comments could also be presented. One of the most significant amendments to the Program was Assembly Bill 398 in 2017, which extended the Cap and Trade program through 2030. AB 398 was particularly important for environmental justice advocates because it limited the amount of carbon offsets that companies could purchase to comply with the Cap and Trade Program instead of reducing local GHG emissions (*see 'The Impacts of California's Offset Program').* In their 2022 Scoping Plan, CARB noted that this decision was made "in recognition of ongoing concerns raised by environmental justice advocates regarding the ability of companies to use offsets for compliance instead of investing in actions on site to reduce GHG emissions that could also potentially reduce criteria or toxic emissions."[27]

- **Public Workshops and Comment Periods**

  CARB holds public workshops and formal and informal comment periods every four years to determine how auction proceeds from the Cap and Trade program should be allocated.[28] All Cap and Trade auction proceeds are deposited into the state's Greenhouse Gas Reduction Fund, with a designated 35% of funds allocated towards benefiting priority populations. CARB has received public comments for each of its four Investment Plan drafts to date. Each plan was then submitted to California's Legislature to identify priority investments for Cap and Trade revenue to be spent on. As previously noted, these investments are also called "California Climate Investments."

  To assess the representation of different stakeholders, we reviewed formal and informal public comments submitted for CARB's Second, Third, and Fourth Investment Plans. We also reviewed the comments left on the Board Hearing of the First Investment Plan, the only publicly available source of input for the First Plan. For the Fourth Investment Plan (the most recent sample), we found that out of 31 public comments submitted, 11 comments were from environmental nonprofits, 9 were from nonprofits representing specific industries, 5 were from local government agencies or associations, 2 represented union workers, 3 were miscellaneous comments from private citizens, and only 1 was from a grassroots, community-based organization that represented environmental justice concerns. We found a similar lack of public comments directly from representatives of overburdened communities in each of the other Investment Plan comment periods.[29] The barriers that explain this lack of participation by overburdened communities, along with the remedies for it, are discussed in the following section.

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[27] https://ww2.arb.ca.gov/sites/default/files/2023-04/2022-sp.pdf
[28] https://ww2.arb.ca.gov/resources/documents/california-climate-investments-investment-plan
[29] https://ww2.arb.ca.gov/resources/documents/california-climate-investments-investment-plan

Participatory Parity In Environmental Decision-Making

Recognizing the importance of public participation in climate decisions, we would like to draw Ecology's attention to a crucial yet frequently neglected element of climate justice: the **stakeholders' ability to meaningfully participate in environmental decision-making.**
As highlighted by Fung (2006) and Newig (2018), participation processes are highly shaped by their social context and tend to favor those who have more privilege and resources.[30,31] This can result in policies that do not accurately reflect the needs of groups, and may even inadvertently deepen existing inequalities.[32] Hence, in identifying vulnerable populations, we would like to encourage Washington to prioritize better ways of involving groups that have historically been overlooked during environmental decision-making processes.

We believe that taking this step would help Ecology move closer to its goal of putting environmental justice and equity at the center of its initiative. As stated on the Ecology and USEPA website[33,34]:

> "Environmental justice is the fair treatment and meaningful involvement of all people, regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. This goal will be achieved when everyone enjoys:
>
> - The same degree of protection from environmental and health hazards
> - **Equal access to the decision-making process to have a healthy environment in which to live, learn, and work.**"

As noted above, access to decision-making is a key component of environmental justice. While Ecology has demonstrated strong recognition of this in their community engagement practices (having conducted workshops, listening and public comment sessions, surveys, and more)[35], we argue that more can be done to more comprehensively embed this principle in their designation of overburdened communities. In particular, we recommend looking into vulnerable stakeholders whose capacity to engage in environmental decision-making is curtailed due to health factors, socioeconomic disadvantages, or unfavorable living conditions.

The following table provides a non-exhaustive list of such stakeholders as outlined by the Centers for Disease Control and Prevention (CDC) in their Environmental Justice Index[36], the rationale for including them, as well as potential data sources Ecology can use to identify these constituencies.

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[30] https://doi.org/10.1111/j.1540-6210.2006.00667.x.
[31] https://doi.org/10.1111/psj.12209.
[32] https://doi.org/10.1080/135457097338799.
[33] https://ecology.wa.gov/About-us/Who-we-are/Environmental-Justice
[34] https://www.epa.gov/environmentaljustice
[35] https://apps.ecology.wa.gov/publications/documents/2302017.pdf
[36] https://www.atsdr.cdc.gov/placeandhealth/eji/index.html

Stakeholder	Justification & Literature [Linkages to Environmental Justice]	Potential Data Sources
Persons living in group quarter conditions	Institutionalized individuals, such as those in prison and correctional facilities, nursing homes, and mental hospitals, are highly susceptible to environmental injustice and **often lack the agency and social capital to influence environmental decision-making processes.**[37]	2020 Census Demographic Data Map Viewer - Group Quarters
Homeless persons	Police sweeps in downtown and residential areas push people into toxic and hazardous environments. **But when these houseless communities attempt to voice out concerns, they risk further eviction and displacement.** Such practices create a cycle of criminalization and homelessness, whilst also exacerbating environmental disparities by magnifying environmental hazards for houseless people along lines of race, gender, age, disability status, and other categories of difference.[38]	National Alliance to End Homelessness State and COC Dashboards - WA (Last 10 Years) Point in Time Count Washington PIT (Available in May)
Persons with disabilities	Those living with a disability **may experience social or physiological barriers that impede their ability to participate in the decision-making processes, and are often neglected in climate planning.**[39,40]	US Census Bureau ACS - Disability Characteristics (2021) 5-year estimates
Access to health insurance	In the US, uninsured populations commonly comprise low-income families (with typically only one person in the household working), people of color, and	OFM Healthcare Research Center County Uninsured Rates (Percent), Washington State, 2012-19 and 2021

[37] https://doi.org/10.1111/anti.12569
[38] https://doi.org/10.1177/2514848619892433.
[39] https://doi.org/10.3390/disabilities1030016.
[40] https://doi.org/10.15353/cjds.v1i3.58.

	undocumented immigrants.[41] Uninsured persons often have to pay high out-of-pocket costs, which can quickly translate into medical debt[42]. Financial burdens associated with healthcare may **reduce their ability to engage in environmental decision-making processes.**[43,44]	Small Area Health Insurance (SAHIE) Estimates Model- Based SAHIE Estimates for Counties and States: 2020 [10.7 MB]

As underscored by the United States Environmental Protection Agency (USEPA), one of the fundamental principles of public participation is the thorough engagement of the *full range* of stakeholders from the community[45], especially vulnerable and marginalized groups. Therefore, we strongly urge WA to begin devoting more attention to impact constituencies that are typically overlooked in climate planning, such as institutionalized individuals, the incarcerated, the homeless, and the disabled.

To meaningfully involve such groups, and truly prioritize their concerns, we echo EPA's assertion that meaningful public participation necessitates more than just conducting meetings or soliciting public comments[46]; genuine trust-building is needed in order to generate sustained support for cap-and-invest as well as developing ongoing relationships that will help in implementing it. In light of the improving COVID-19 situation, we recommend that WA consider adaptable in-person tools for collecting input.

Focus groups, for example, facilitate information gathering on pertinent community concerns within a short timeframe, whilst also allowing people to bounce off ideas of one another. Another example is the World Café model, where participants switch tables several times, discussing the same general topic with a variety of other participants. With each subsequent conversation, they delve deeper into the subject and gradually converge towards a common ground. This was the method employed by the Office of Environmental Health Hazard Assessment (OEHHA) in developing the CalEnviroScreen, which allowed them to capture a comprehensive array of perspectives and voices from the public.[47]

(Click here for more suggestions on tools to generate input)

Listed below are some other resources listed by USEPA that Ecology may find helpful:

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[41] https://www.kff.org/uninsured/issue-brief/key-facts-about-the-uninsured-population/.
[42] https://doi.org/10.1097/SLA.0000000000002254.
[43] https://doi.org/10.1080/08941920120140.
[44] https://www.jstor.org/stable/3542626
[45] https://www.epa.gov/international-cooperation/public-participation-guide-foundational-skills-knowledge-and-behaviors
[46] https://www.epa.gov/international-cooperation/public-participation-guide
[47] https://calepa.ca.gov/wp-content/uploads/sites/6/2022/05/Updated-Disadvantaged-Communities-Designation-DAC-May-2022-Eng.a.hp_-1.pdf

- **National Coalition for Dialogue & Deliberation (NCDD)** – Resource Guide on Public Engagement (PDF) This resource manual provides descriptions of and links to a number of resources recommended by NCDD, including how-to guides and manuals, handy tools for facilitators, articles on public engagement, online engagement resources, as well as information on core principles for public engagement, and information on NCDD's "Streams of Practice."

- **Action Research Resources** – Active Democracy Community Consultation Checklist This document lists some important issues to take into account during the planning and implementation of a community consultation process. It is organized around three themes: contextual issues, style (assessment), and practice (implementation).

- **Victoria, Australia, Department of Sustainability and Environmen**t – The Engagement Toolkit This PDF consists of a list of tools for assisting in the planning, implementation, and evaluation of community engagement activities. Each tool listing includes a detailed description of the tool's objectives, resources required to use the tool, and a discussion of the tool's strengths and weaknesses.

- **Center for Advances in Public Engagement** – Public Engagement (PDF) This document from Public Agenda is a primer on public engagement, which involves creating civic capacity for public problem-solving. The article provides ten core principles for public engagement.

We hope that Ecology will consider extending its efforts to meaningfully incorporate the principles of participatory parity and inclusive civic engagement in the realization of its goals. By developing heightened attunement to groups often overlooked in climate decisions, not only will Ecology enhance the legitimacy of Washington's cap-and-invest program, but it will also ensure that the benefits of the program are shared equitably among all members of society - without leaving anyone behind.

Environmental Outcomes

Major Takeaways / Recommendations:

- Air pollution disproportionately harms CA working class communities of color. California policy intentionally addresses this.
- Cap & Trade likely lowered statewide air pollution slightly, but causation is unclear
- In-state emissions did not meaningfully decrease vs out-of-state CA emissions
- Many California allowed offset programs don't reduce emissions; WA should scrutinize their offset programs especially in overburdened communities
- California allows out-of-state offset programs that don't benefit Californians; WA should eliminate or severely limit out-of-state offsets

Air pollution levels over time

Criteria air pollutants are air pollutants with determined "acceptable levels of exposure" and a set "ambient air quality standard."[48] Upon examining change in measured levels of several air quality indicators in California, between when California's Cap and Trade program was implemented in 2013, and the most recent reported levels in 2020, we can see a clear decrease in several pollutant emissions.

Criteria Air Pollutants	**Amount of Emissions (2013) - millions of tons of CO_2 equivalent[49]**	**Amount of Emissions (2020) - millions of tons of CO_2 equivalent**	**Δ 2013-2020 (%)**
Carbon dioxide (CO_2)	361.3	296.2	-18.02%
Methane (CH_4)	39.2	38.8	-1.02%
Nitrous oxide (N_2O)	14.3	12.9	-9.40%
Hydrofluorocarbons (HFCs)	16.39	20.82	+27.03%
Perfluorocarbons (PFCs)	2.28E-03	2.46E-03	+7.89%
Sulfur hexafluoride (SF_6)	0.31	0.27	-12.90%

[48] https://ww2.arb.ca.gov/our-work/programs/criteria-air-pollutants#:~:text=Criteria%20air%20pollutants%20are%20 air,dioxide%2C%20and%20PM10%20and%20PM2.
[49] https://ww2.arb.ca.gov/sites/default/files/classic/cc/inventory/ghg_inventory_bygas.pdf

Noticeably, there was a significant decrease in CO_2, N_2O, and SF_6; a significant increase in HFCs; and relatively little change in CH_4 and PFCs.

Other than California's criteria air pollutants, there were also significant decreases in several other greenhouse gas emissions. This is shown in the table below.

From California Air Resources Board [CARB][50]	Facility emissions (2013) - tons	Amount of Emissions (2020) - tons	Δ 2013-2020 (%)
Nitrogen oxides (NOx)	46,508.1	32,251.5	-30.65%
Sulfur oxides (SOx)	12,769.8	7,049.7	-44.79%
PM2.5	10,553.6	7,923.3	-24.92%
PM10	19.686.9	10,484.4	-46.74%
VOC	14,334.6	10,225.2	-28.67%

However, analysis of these changes reflects that California's Cap and Trade program was not solely responsible. Thus, we accounted for potential confounding variables which may have affected these statistics. In the following, we will briefly cover the most significant confounding factors we identified. It is also important to note that this list is non-exhaustive.

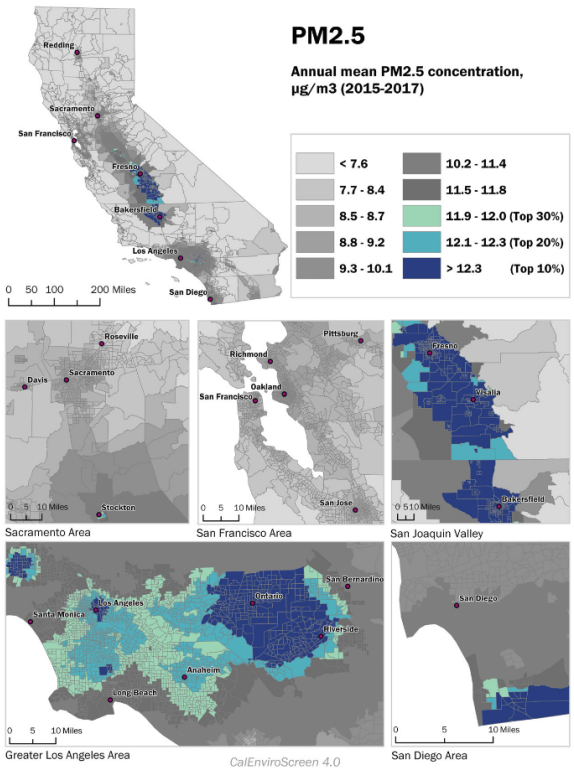
- Post-recession economic recovery
    - A study in the journal Nature Communications demonstrated that the 2008 economic downturn led to more than 80% of the total reduction in carbon emissions between 2007 and 2009.[51] While the Cap-and-Trade program was not implemented until 2013, the changes in greenhouse gas emissions may be affected by general economic recovery in various industries and increased production. At the least, this factor may show the difficulty in encouraging reduced emissions while also growing a fossil-fuel based economy.
- Transportation
    - According to the California Energy Commission, California's transportation sector accounts for about 50% of the state's greenhouse gas emissions, almost 80% of nitrogen oxide pollution, and 90% of diesel particulate matter pollution.[52]
    - In 2018, California implemented the Alternative and Renewable Fuel and Vehicle Technology Program (ARFVTP) by the Energy Commission, which provided, and still currently provides, approximately $100 million each year to develop and deploy low

[50] https://www.arb.ca.gov/carbapps/pollution-map/#
[51] https://time.com/3966553/recession-emissions-decline/
[52] https://www.energy.ca.gov/about/core-responsibility-fact-sheets/transforming-transportation

carbon fuels, infrastructure for zero and near-zero emission vehicles, and advanced vehicle technologies.[53] This likely contributed to the decrease in State emissions.

- ARFVTP aims to direct a portion of its investments toward California's Disadvantaged Communities. "Approximately 35 percent of ARFVTP investments benefit underserved, low income, or disadvantaged communities that are disproportionately affected by air pollution and other consequences of petroleum-powered transportation," according to the program's website.
- Washington may consider implementing a similar program. Several of ARFVTP's goals are already initiated by the WSDOT, such as a pilot program to strengthen and expand the West Coast Electric Highway network.[54]

- Drought in California
  - Persistent drought conditions may decrease California's ability to rely on hydropower and can increase dependence on fossil fuels. Several studies have shown that California drought increases its CO_2 footprint of energy use. Hydropower production was reduced from 21.2% (42,732 GWh) of the state's total energy in 2011 to 8.3% (16,476 GWh) in 2014, while natural gas production for electric power increased to compensate. Additional CO_2 emissions from electric generation in 2012–2014 were estimated to be nearly 22 million metric tons, or a 33% increase, compared to a similar period (2009–2011) prior to the drought (i.e., equivalent to 0.57 metric tons of CO_2 per capita).
- Forest fires
  - In 2020, California forest fires released roughly 127 million metric tons of greenhouse gasses, which equates to more than double California's total emission cuts from 2003 to 2019 and comprises 49 percent of California's 2030 total greenhouse emissions target of 260 million metric tons.[55]
- Other California policy tools
  - Other Californian policy programs may have also contributed to emissions reductions. Examples of such policies include setting mileage standards for automobiles, a low-carbon fuel standard for transportation fuels, and a renewable portfolio standard for



[53] https://www.energy.ca.gov/programs-and-topics/programs/clean-transportation-program
[54] https://wsdot.wa.gov/construction-planning/protecting-environment/sustainable-transportation
[55] https://www.sciencedirect.com/science/article/pii/S0269749122011022#bb30

electricity generation. California also increased tax credits for electric vehicles and funding for public transportation, which may factor into transportation emissions.[56] These programs have less research on how it has causally affected California air pollution levels.

The Impacts of California's Offset Program

Carbon offset credits are instruments that entities can purchase to comply with California's Cap & Trade program instead of directly reducing their greenhouse gas (GHG) emissions. Offset credits are defined in both California and Washington as being equivalent to a GHG reduction that is "real, quantifiable, permanent, verifiable, enforceable, and additional" to any GHG reductions that would have otherwise occurred.[57] [58]

To obtain offset credits, a regulated entity must invest in one of the following six project types approved by the California Air Resources Board (CARB): U.S. forestry projects, ozone-depleting substances projects, livestock projects, mine-methane capture projects, rice cultivation projects, and urban forest projects. Offset project sites are not exclusive to California and can be located in any continental U.S. state, including Alaska. However, starting with 2021 emissions, entities will be required to source at least half of their offset credits from projects that provide "direct environmental benefits'' to California. This policy change was made in 2017 due to concerns raised by environmental justice advocates that offset projects are not benefiting the state's most vulnerable populations.[59]

We observed the following trends in California's carbon offset program that are relevant to environmental justice stakeholders:

- **Offset use in California is increasing.** Currently, offset credits in California can be used to meet up to 4% of an entity's compliance obligation for emissions from 2021 to 2025. Entities were originally able to meet up to 8% of their obligation with offset credits, but this usage limit was reduced to 4% with the passage of Assembly Bill 398 in 2017 due to concerns raised by environmental justice advocates. However, the usage limit for offsets in California is set to increase again during the next compliance period, as entities will be able to meet 6% of their compliance obligation with offset credits from 2026 to 2030.[60]

- **Offsets provide cost-containment for Cap & Trade and (limited) economic benefits for tribal nations.** According to CARB, offsets serve as an important cost-containment measure in the Cap and Trade Program since they are typically cheaper than buying carbon allowances at quarterly

[56] https://ww2.arb.ca.gov/sites/default/files/classic/cc/scopingplan/document/adopted_scoping_plan.pdf
[57] https://ww2.arb.ca.gov/sites/default/files/cap-and-trade/guidance/chapter1.pdf
[58] https://ecology.wa.gov/DOE/files/4f/4ffb375b-2bec-4b66-afb3-9b613645896e.pdf
[59] https://ww2.arb.ca.gov/our-work/programs/compliance-offset-program/direct-environmental-benefits
[60] https://www.c2es.org/content/california-cap-and-trade/

auctions.[61] It is important to note that, as a result, entities are incentivized to *maximize* their use of carbon offsets since they are cheaper than purchasing allowances. Offset projects have also provided significant economic benefits to California's tribal nations.[62] The Yurok Tribe, for example, was able to leverage funds from forestry offset projects with the state of California to buy back over 57,000 acres of its ancestral land. Well-managed offset projects therefore have crucial environmental justice implications in supporting tribal economic development, land stewardship, and reclamation of traditional lands. However, the ability for smaller tribal nations that lack jurisdiction over large amounts of land to benefit from offset projects is limited, since offset projects must take place over a large area to be economically viable.[63]

- **There is limited evidence as to whether offset projects are reliably reducing GHG emissions in California.** California's U.S. forestry offset projects, which generated 85% of all offset credits issued in California as of 2021[64], have been criticized for issuing "ghost" offset credits that do not represent real GHG emission reductions.[65] In order for an offset project to be "additional," it must provide a quantifiable benefit (i.e. acres of forest land protected) that goes beyond what would have happened in a business-as-usual, or "baseline," scenario. A study conducted by the nonprofit CarbonPlan found that U.S. forestry offset programs were subject to "systematic over-crediting" because of flawed calculations of baseline scenarios and average regional carbon stocks. This led to roughly 30 million credits that the program has awarded – or 29.4% of all credits assessed – to be non-additional, meaning that they did not represent genuine GHG emissions reductions.[66] Other studies on California's U.S. forestry offset projects have support the claim that these projects are prone to over-crediting, with one study using remote sensing to indicate that several CARB-accredited offset projects were located on lands that already had low timber harvest rates, and were therefore not at risk of significant deforestation.[67] [68] [69]

- **Offsets may have inhibited GHG emissions and co-pollutant reductions in disadvantaged communities.** California's offset program may threaten environmental justice goals since it allows facilities located to avoid reducing local emissions and invest in offset projects outside of California. As of May 2023, less than 25% of all offset projects accredited by CARB during the program's lifespan have provided direct environmental benefits to California, based on our

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[61] https://ww2.arb.ca.gov/resources/documents/faq-cap-and-trade-program

[62] https://law.stanford.edu/publications/returning-the-yurok-forest-to-the-yurok-tribe-californias-first-tribal-carbon-credit-project/

[63] See Note 62

[64] https://doi.org/10.1111/gcb.16380

[65] https://calepa.ca.gov/wp-content/uploads/sites/6/2018/09/6d.-IEMAC_Meeting_Materials_9-21-18__Subcommittee_Report_on_Offsets.pdf

[66] https://doi.org/10.1111/gcb.15943

[67] See Note 64

[68] https://doi.org/10.1002/eap.2817

[69] https://doi.org/10.1080/14693062.2020.1781035

review of CARB's offset credit issuance table.[70] Although GHG emission reductions are globally beneficial no matter where they occur, environmental justice advocates have raised concerns that offset credits can allow polluting facilities to emit greenhouse gasses, and therefore co-pollutants, in overburdened communities. This is because, as Cushing et al. (2018) found, co-pollutant emissions are at least temporarily correlated with greenhouse gas emissions from Cap and Trade regulated facilities.[71] While the literature on the environmental justice impacts of offset use in California is limited, a 2018 study conducted by Stanford researchers found that offset use by regulated facilities is marginally higher in disadvantaged (i.e., overburdened) communities than outside of disadvantaged communities, although not to a statistically significant degree.[72] The study also indicated that, had offset credits not been used and facilities instead directly reduced their emissions by an equivalent amount, annual decreases in total PM2.5 co-pollutant emissions would have been greater for all regulated facilities and refineries from 2015-2018. Cushing et al. (2018) similarly found that facilities owned by companies that used offsets emitted significantly higher levels of GHGs than other facilities, and that these high-emission facilities are more likely to be located in disadvantaged communities.

- **Offset use has been criticized by environmental justice stakeholders in California.** In California's 2014 and 2017 Scoping Plan, the Environmental Justice Advisory Committee recommended that the state eliminate the use of offsets and free allowances as part of the Cap and Trade program due to concerns that they would inhibit co-pollutant reductions in overburdened communities.[73] [74] These recommendations were not adopted. In 2022, the Environmental Justice Advisory Committee's Cap and Trade working group once again recommended that California eliminate offsets due to scientific uncertainty about their validity and their lack of efficacy in improving air quality in overburdened communities.[75] However, the use of offsets in California is instead set to increase from 4% to 6% of a facility's compliance obligation by 2026.

- **Engagement with environmental justice stakeholders in developing offset policies has been weak.** In 2021, under the direction of Assembly Bill 398, CARB established a task force to provide recommendations on creating new offset protocols for the Cap-and-Trade Program with direct environmental benefits to California "while prioritizing disadvantaged communities, Native American or tribal lands, and rural and agricultural regions."[76] The eleven-person task force

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[70] https://ww2.arb.ca.gov/resources/documents/arb-offset-credit-issuance-table
[71] https://doi.org/10.1371/journal.pmed.1002604
[72] https://doi.org/10.1021/acs.est.8b00908
[73] https://ww2.arb.ca.gov/sites/default/files/classic/cc/scopingplan/2013_update/final_ejac_recommendations.pdf
[74] https://ww2.arb.ca.gov/sites/default/files/classic/cc/scopingplan/2030sp_appa_ejac_final.pdf
[75] https://www.arb.ca.gov/lists/com-attach/2350-scopingplan2022-B2RTNF0sVFhRNlc5.pdf?_ga=2.233896022.999829440.1682555934-1074024083.1673835475
[76] https://ww2.arb.ca.gov/our-work/programs/compliance-offset-program/compliance-offset-protocol-task-force

included one environmental justice advocate and one environmental advocate, both of whom resigned before the final recommendations report was published. In their resignation letters, both representatives expressed disappointment with the task force's "lack of attention to… indigenous and environmental justice communities," the task force's focus on expanding the offset program, and the fact that CARB's "perfunctory public comment process" did not represent "meaningful inclusion of environmental justice interests."[77] [78] While CARB has disputed the claims made in both letters, the resignation of the task force's only environmental justice stakeholders illuminates California's challenges in integrating environmental justice into its offset policies.

Offsets in California vs. Washington: Opportunities for Improvement

The following table highlights the policy differences between California's and Washington's offset programs. Facilities in Washington will be able to cover a larger percentage of their compliance obligation with offsets (8% total) than in California (4% total) from 2021-2026, although Washington's offset usage limit will decrease during the state's second compliance period.

Policy Category	**California**	**Washington**
Offset Usage Limit *(Short and Long Term)*	• **8%** of an entity's compliance obligation through 2020 • **4%** between 2021-2025 • **6%** between 2026-2030 **(increasing)**	• **5%** (+**3%** on Tribal lands) of an entity's compliance obligation between 2023-2026 • **4%** (+**2%** from Tribal lands) between 2027-2030 and for all remaining compliance periods through 2050 **(decreasing)**
Out-of-state offsets	• Projects can be **out of state** • At least 50% of an entity's offset credits must provide direct environmental benefits to the state (DEBS), 2021 onward	• Projects must be **in state** or within any jurisdictions that Ecology links with • If Ecology links with California's trading system: ○ At least 50% of an entity's offset credits must provide DEBS

[77] https://ww2.arb.ca.gov/sites/default/files/2021-02/tangri_neil_offsets_task_force_letter_020821.pdf
[78] https://ww2.arb.ca.gov/sites/default/files/2021-02/nowicki_brian_offsets_task_force_letter_020821.pdf

		(excluding Tribal lands), 2023-2026 ○ At least 75% of an entity's offset projects must provide DEBS (excluding Tribal lands), 2027-2030
Eligible Offset Protocols: Project Types	• U.S. Forestry • Urban Forestry • Livestock • Ozone Depleting Substances • Mine Methane Capture (MMC) • Rice Cultivation	• U.S. Forestry • Urban Forestry • Livestock • Ozone Depleting Substances
Verification	• Offset credits and projects must be verified by **third-party verification bodies** and verifiers • Verifiers must be accredited by CARB by completing training and examinations on CARB's offset protocols	• Allows **CARB-accredited verification bodies** to register to provide offset verification services in Ecology's Cap-and-Invest program
Environmental Justice (EJ) Measures	• Periodic reviews from Environmental Justice Advisory Committee • Offset protocol task force: provide guidance to CARB in establishing offset protocols with **direct environmental benefits in the state**, prioritizing disadvantaged communities, Native American or tribal lands, and rural and agricultural regions • **Only one EJ advocate** on task force; **resigned in 2021**	• Offsets are **"under the cap"** • Climate Commitment Act establishes an **Assistance Program for Offsets on Tribal Lands** and a **Small Forestland Owner Work Group** to identify and scale those opportunities • Offset usage ***may*** **be limited in high priority emissions sources** in overburdened communities that are not reducing local criteria pollutants

One of the most significant policy differences is the requirement for all Washington offsets to provide a direct environmental benefit to the state or other jurisdictions that are linked to the Cap and Invest program, such as California. Additionally, offsets in the Washington program are "under the cap," meaning that the number of allowances Washington offers will be reduced by the number of offset

credits it issues. These policies are important to ensure that offsets still provide Washington's overburdened communities with meaningful environmental benefits, given the prevalence of out-of-state offset projects in the California program with uncertain environmental benefits.

Washington also makes specific provisions for offsets in tribal nations, which has significant potential environmental justice benefits given the success of offsets for the Yurok Tribe in California. However, in order for offset programs to be economically viable, tribes must already have ownership over large areas of land (an estimated 5000 to 6000 acres) to manage, which is why only a relatively small number of tribes in California have participated in the offset program.[79] Tribes also need substantial initial capital to invest in establishing a baseline amount of carbon and monitoring their offset project, although this can have the benefit of creating job opportunities for tribal members to monitor projects.[80] Washington's Assistance Program for Offsets on Tribal Lands, which is a competitive grant program for tribal nations, is an improvement upon California's program and an important first step in supporting tribal land stewardship.

Despite the potential benefits of tribal offset programs, offsets still present an overall threat to co-pollutant mitigation goals in overburdened communities. In order to ensure that overburdened communities are not disadvantaged by offsets, we recommend limiting and/or eliminating the use of offsets in high-priority emissions sources in overburdened communities that are not reducing local criteria pollutants. Evidence from California indicates that offset usage is marginally higher for facilities that operate in disadvantaged communities and produce the largest amounts of GHG emissions. Market-based solutions alone, which are intended for allocative efficiency rather than distributional objectives such as improving air quality in overburdened communities, are insufficient to remedy these environmental justice disparities. [81] Indeed, research has indicated that location-specific command-and-control policies in specific overburdened communities could help address air quality disparities, which limiting offset usage in overburdened communities can better ensure.[82]

[79] See Note 62
[80] https://doi.org/10.1016/j.cosust.2021.01.007
[81] https://www.nber.org/papers/w27205
[82] https://www.pnas.org/doi/10.1073/pnas.2205548119#body-ref-r69

Designation of priority populations

Major Takeaways / Recommendations:

- CA has greater latitude in identifying priority populations, while WA is confined to a narrower scope
- But even within these statutory limits, WA has the opportunity to set a precedent for future cap-and-invest programs by being the first to pay greater attention to communities typically overlooked by climate programs (e.g. institutionalized persons, the incarcerated, and the homeless)
- WA should increase public outreach efforts and collaborate with local agencies to acquire more precise, granular data for officially identifying priority populations

Side-by-side Comparison: Designation of Priority Populations

California's CalEPA and Washington's Ecology have a shared mission of improving public health and quality of life in populations that are disproportionately affected by health, social, and environmental inequities. Termed by these agencies as 'disadvantaged (DACs)' and 'overburdened' communities respectively, these impact constituencies are identified through the use of geospatial mapping tools and environmental justice indicators, both of which incorporate public input in their formulation. These methodologies help to ensure that climate investments and proceeds from Cap and Trade are directed to communities that need it the most.

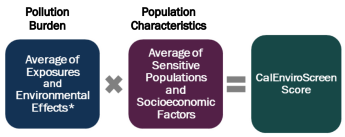
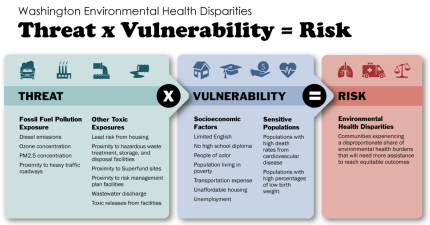
The following table provides a side-by-side comparison of how CalEPA and Ecology identify and designate priority populations.

Category	California	Washington
Entity in Charge	California Environmental Protection Agency (CalEPA)	Department of Ecology: State of Washington (Ecology)
Bill/Statute	California Senate Bill 535[83]	Section 3 of the Climate Commitment Act (CCA)[84]

[83] http://www.leginfo.ca.gov/pub/11-12/bill/sen/sb_0501-0550/sb_535_bill_20120930_chaptered.html
[84] https://apps.leg.wa.gov/rcw/default.aspx?cite=70A.65

Scope	According to SB 535, communities shall be identified based on "geographic, socioeconomic, public health, and environmental hazard criteria, and may include, but are not limited to, either of the following: ● *Areas disproportionately affected by environmental pollution and other hazards that can lead to negative public health effects, exposure, or environmental degradation.* ● *Areas with concentrations of people that are of low income, high unemployment, low levels of homeownership, high rent burden, sensitive populations, or low levels of educational attainment."*	The Climate Commitment Act defines an overburdened community as: ● *"a geographic area where vulnerable populations face combined, multiple environmental harms and health impacts or risks due to exposure to environmental pollutants or contaminants through multiple pathways, which may result in significant disparate adverse health outcomes or effects."*
Geospatial Mapping Tool(s) and Model Characteristics	**CalEnviroScreen 4.0**[85] ● Uses 21 statewide indicators to characterize both Pollution Burden and Population Characteristics. ● Uses percentiles to assign scores for each of the indicators in a given geographic area. The percentile represents a relative score for the indicators. ● Uses a scoring system in which the percentiles are averaged for the set of indicators in each of the four components (Exposures, Environmental Effects, Sensitive Populations, and Socioeconomic Factors).	**WA Environmental Health Disparities (EHD) Map**[86] ● Estimates a cumulative environmental health impact score for each census tract reflecting pollutant exposures and factors that affect people's vulnerability to environmental pollution. ● The model is based on a conceptual formula of Risk = Threat x Vulnerability.

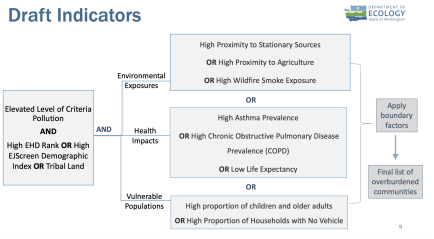
[85] https://oehha.ca.gov/media/downloads/calenviroscreen/report/calenviroscreen40reportf2021.pdf
[86] https://deohs.washington.edu/sites/default/files/2022-08/311-011-EHD-Map-Tech-Report.pdf

	• Combines the component scores to produce a CalEnviroScreen score for a given place relative to other places in the state, using the formula below. Formula for Calculating CalEnviroScreen Score After the components are scored within Pollution Burden or Population Characteristics, the scores are combined as follows to calculate the overall CalEnviroScreen Score:  * The Environmental Effects score was weighted half as much as the Exposures score.	 EJScreen Demographic Index[87] • An average of the percent of low-income populations and people of color, used in EPA's EJScreen mapping tool, calculated at the census block group level. • The demographic index is combined with environmental indicators of exposure to form an EJ Index for each environmental exposure[88].
Minimum Funding Levels	• At least 25% of funds must be allocated toward DACs. • At least 5% must be allocated toward projects within low-income communities or benefiting low-income households. • At least 5% must be allocated toward projects within and benefiting low-income communities, or low-income households, that are outside of a CalEPA-defined DAC but within ½	• The CCA requires that a minimum of 35%, with a goal of 40%, of auction-generated revenue be used for projects that provide a direct benefit to vulnerable populations within overburdened communities. • 10% of auction funds must be used for projects with Tribal support.[90]

87 https://www.epa.gov/system/files/documents/2023-01/EJScreen%20Technical%20Documentation%20October%202022.pdf

88 https://apps.ecology.wa.gov/publications/documents/2302019.pdf

90 https://app.leg.wa.gov/RCW/default.aspx?cite=70A.65.230

	mile of a disadvantaged community.[89]	
Current Designation	CalEPA formally designated four categories of geographic areas as disadvantaged[7]: 1. Census tracts receiving the highest 25 percent of overall scores in CalEnviroScreen 4.0 (1,984 tracts). 2. Census tracts lacking overall scores in CalEnviroScreen 4.0 due to data gaps, but receiving the highest 5 percent of CalEnviroScreen 4.0 cumulative pollution burden scores (19 tracts). 3. Census tracts identified in the 2017 DAC designation as disadvantaged, regardless of their scores in CalEnviroScreen 4.0 (307 tracts). 4. Lands under the control of federally recognized Tribes. For purposes of this designation, a Tribe may establish that a particular area of land is under its control even if not represented as such on CalEPA's DAC map and therefore should be considered a DAC by requesting a consultation with the CalEPA Deputy Secretary for Environmental Justice, Tribal Affairs and Border Relations at TribalAffairs@calepa.ca.gov.	To be considered overburdened, an area must meet the following[6]: 1. **Community Indicators:** ● Either have a 9 or 10 ranking on the Washington **Environmental Health Disparities (EHD) map**, or ● Be in the 90th percentile or higher of census block groups for the **EJScreen Demographic Index**, or ● be a Tribal land **2. Air Pollution Indicators:** ● Have an elevated level of one or multiple criteria air pollutants; and ● Meet the threshold for one or more of the eight indicators related to air pollution exposure, health  impacts, or vulnerability.

89 https://calepa.ca.gov/wp-content/uploads/sites/6/2022/05/Updated-Disadvantaged-Communities-Designation-DAC-May-2022-Eng.a.hp_-1.pdf

Comment summary & response	2021 Comment Summary & Response (see Appendix 1)	2021: Ecology's Comment Summary & Response

As seen in the table, both CalEPA and Ecology take into account environmental effects (community exposure to environmental hazards and pollutants), intrinsic factors (health status) as well as extrinsic factors (socioeconomic status) in their designation of vulnerable communities. Though their geospatial data tools and scoring systems differ, both agencies employ robust strategies to help facilitate more equitable decision-making when allocating funding for priority populations.

Environmental justice and equity are key underpinnings of these initiatives, and both agencies have expressed commitment to continuously improve these processes in ways that incorporate new insights and reflect evolving needs[7] [91].

One point of divergence between the two agencies, however, is their scope. Ecology designs its draft indicators for the designation of 'overburdened communities' to be consistent with Section 3 of the CCA, which defines them as follows[2]:

> "a geographic area where vulnerable populations face combined, multiple environmental harms and health impacts or risks **due to exposure to environmental pollutants or contaminants through multiple pathways**, which may result in significant disparate adverse health outcomes or effects."

As for CalEPA, its designation of disadvantaged communities (DACs) is directed by the California Senate Bill (SB) 535, which states:[1]

> Communities shall be identified based on "geographic, socioeconomic, public health, and environmental hazard criteria, and may include, **but are not limited to,** either of the following:
>
> - Areas disproportionately affected by environmental pollution and other hazards that can lead to negative public health effects, exposure, or environmental degradation.
> - Areas with concentrations of people that are of low income, high unemployment, low levels of homeownership, high rent burden, sensitive populations, or low levels of educational attainment.

As seen above, SB 535 does not offer a precise definition for 'disadvantaged communities' (DACs) but rather delegates it to CalEPA to enumerate the particulars. In other words, CalEPA is given broader discretion for developing specific criteria and methods in their designation of DACs.This opens up

[91] https://apps.ecology.wa.gov/publications/documents/2302016.pdf

possibilities for California to account for larger intersectional considerations, rather than being confined to evaluating communities solely based on differentials in environmental risk exposure.

In contrast, Ecology is bounded by Section 3 of the CCA, which is exposure-focused and therefore relatively narrower in scope, with less latitude for adjustment. This has several implications for the designation process, one of which is limiting Washington's capacity to cater to a wider range of social justice concerns and lived experiences.

When we went through Ecology's responses to public comments, we found that the limited scope of the CCA was cited as the reason for their inability to address several raised issues[6]. While we recognize that a narrower scope may allow for a more focused approach to identifying overburdened communities, we echo commenters who pointed out that such a strategy might have exclusionary outcomes, potentially overlooking certain vulnerable groups.[92]

But even within this narrow scope, there is room for WA to make its program more inclusive. We would like to highlight three groups in particular that WA should pay attention to as it works towards finalizing its list of overburdened communities. The table below the rationale for including them, as well as potential data sources Ecology can use to pinpoint geographical areas with a higher proportion of these communities.

Stakeholder	**Rationale**	**Potential Data Sources**
Persons living in group quarter conditions	Incarcerated or detained individuals are **disproportionately exposed to environmental contaminants due to poor institutional conditions, hazardous work programs, and limited social capital to improve their living conditions.**[93]	2020 Census Demographic Data Map Viewer - Group Quarters
The homeless	Lacking access to stable shelter, infrastructure, and services, **houseless people are directly and differentially exposed to a range of environmental hazards.**[94]	National Alliance to End Homelessness State and COC Dashboards - WA (Last 10 Years) Point in Time Count Washington PIT (Will be available in May)

[92] https://apps.ecology.wa.gov/publications/documents/2302018.pdf
[93] https://doi.org/10.1111/anti.12569
[94] https://doi.org/10.1177/2514848619892433.

Persons with disabilities	Certain types of disability are associated with **increased physiological susceptibility to environmental pollution, particularly PM2.5 and other forms of air pollution.**[95] [96]	US Census Bureau ACS - Disability Characteristics (2021) 5-year estimates

We understand that it is not an easy task for Ecology to balance often-competing considerations while also remaining within the dictates of the statute. Additionally, we recognize that the data sources we listed above have their limitations in terms of granularity and being up-to-date. However, we hope that Ecology can consider them as temporary proxies, and that these communities can at least be kept in view as more data becomes available and monitoring tools improve.

In making sure that their needs are captured by the program, we urge Ecology to conduct outreach with these overlooked communities as promptly as possible, as they have been neglected by climate policies for far too long. Additionally, we advise Ecology to coordinate with both governmental and non-governmental agencies to fill any data gaps, allowing for more precise identification of these communities in the long term.

Economic Outcomes

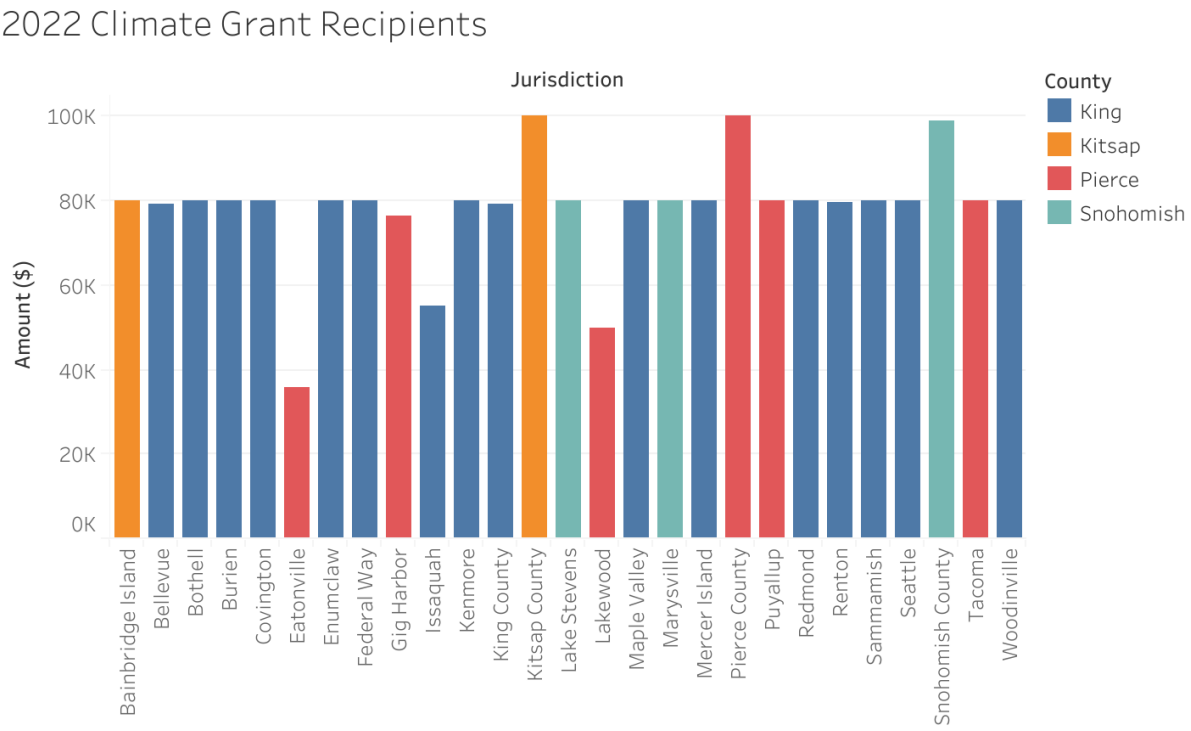
Major Takeaways / Recommendations:

- WA and CA have similar economic policy, overall
- Wealthy, western WA jurisdictions dominate state grants for local governments; WA should replicate California's Climate Investments Funded Programs system to directly give to local communities and nonprofits instead of a grant application that leaves Eastern WA localities behind
- California is in a linkage program with Quebec that improves economic outcomes, and likely would for WA if it joins
- WA should not join any linkage program with California, Quebec because it could decrease emissions reduction in WA, especially overburdened communities

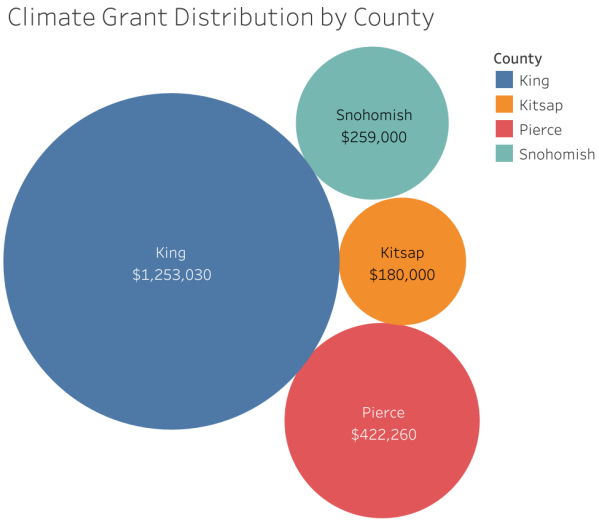
Climate Grants

[95] https://doi.org/10.1371/journal.pone.0168931.
[96] https://doi.org/10.1016/j.envint.2017.04.004.

In June 2022, Washington State awarded $2.1 million in Climate Grants to 27 counties and cities across Washington[97]. The grants were provided through the Commerce's Growth Management Services program and distributed **up to $100,000 for counties** and **up to $80,000 for cities**. Jurisdictions were required to submit a plan that outlined measures they would implement to reduce climate risks. It is anticipated that there will be a 2023 Climate Action Grant with $2 million in funding.



From our analysis, we determined that the Climate Grants were distributed to only four Washington counties (parenthesis indicate the number of grants each county received): King (16), Pierce (4), Snohomish (2) and Kitsap (6). These counties are the 1st, 2nd, 3rd, and 7th largest counties by population in Washington.[98] This may explain why some of the largest counties received the Climate Grants. However, it may be a concern that no other counties in Washington applied for or received these grants, especially Eastern Washington cities and counties with significant agricultural worker populations.



97 https://www.commerce.wa.gov/uncategorized/commerce-awards-2-1-million-in-grants-to-help-27-communities-plan-for-climate-change/

98 https://www.washington-demographics.com/counties_by_population

We suppose that there could be several reasons for this unequal distribution of grants. One reason may be in the marketing of the grants, meaning some counties or cities may have been more aware of the program. A second reason may have been a selective bias towards western counties within the committee that chooses grant recipients. A third reason would be that the four Western jurisdictions that received funding are in general wealthier counties and may have the funds and staff capacity to apply for grants. The counties and cities that did not apply may not have as many resources to apply for the grants. The fourth reason may be a lack of positive reception to the grants from the local governments in all or some of the 35 counties that did not receive grants, which skew more conservative. Further study may need to be done to gather sentiment among politicians in those counties around climate change and their receptiveness to receive state funding for reducing the impacts of climate change.

As noted above, California's Cap and Trade program distributes funds to the Greenhouse Gas Reduction Fund. California follows a different process than Washingston of distributing funds to mitigate climate change.[99] Instead of distributing funds to counties or cities, California designates "Eligible Applicants" for each type of grant. The criteria for these applicants are based on their relevance to the particular issue that the grant attempts to address. California also hosts frequent virtual workshops which explain the funding processes, given that local community groups may need additional support in applying for funding.

Some examples of programs and their eligible applicants are listed in the table below.

Funding Program	**Description**	**Eligible Applicants**
Community Air Grants[100]	Reduce air pollution and exposure to harmful emissions in communities.	• Community-based organizations and nonprofits • Tribal governments.
Clean Cars for All[101]	Financial incentives to replace older vehicles with cleaner vehicles or other mobility options, such as e-bikes , vouchers for public transit or a combination of clean transportation options.	• Low-income residents within and near disadvantaged communities of various counties and districts.

[99] https://ww2.arb.ca.gov/our-work/programs/california-climate-investments/california-climate-investments-funded-programs

[100] https://www.caclimateinvestments.ca.gov/community-air-grants

[101] https://www.caclimateinvestments.ca.gov/clean-cars-4-all

Community Solar[102]	Community-level solar arrays that generate energy and savings for low-income households.	• Nonprofits • Local or tribal government entities • Publicly owned utilities • Community development corporations and finance institutions • Joint powers authorities • Community choice aggregators
Wetlands and Watershed Restoration[103]	Restoration or enhancement of coastal wetlands. Projects that preserve and increase soil organic carbon and provide important co-benefits such as enhanced fish and wildlife habitat, water quality protection and improvement, flood protection, groundwater recharge, and resiliency to sea level rise.	• Public agencies • Nonprofits • Tribal governments.

According to the Washington Department of Commerce, there seemed to be high interest in the grants, but not enough funding available to support all the applicants. This seems to suggest that there is either a lack of applications from Eastern Washington, or that there may be bias against those counties, in the case that they did apply. To satisfy the demand of funding from Climate Grants, this is where the funds from the Cap & Invest program can come into play for future cycles of the Climate Grants.

The state has the responsibility to look out for and support overburdened communities and communities of color in the areas of Eastern Washington. However, given the conservative political leanings on climate change in counties that haven't received grants, whether they were not chosen or they simply did not apply, we would advise to give grants directly to communities, whether they be indigenous groups, non-profits, or other organizations that support overburdened communities and that the state identifies as serving priority populations. This would require a change in the application process and the eligibility requirements of the Climate Grants.

Assessing the Benefits and Challenges of Linking Washington's Cap-and-Trade Program with California

[102] https://www.caclimateinvestments.ca.gov/community-solar
[103] https://www.caclimateinvestments.ca.gov/wetlands-watershed

As Washington deliberates a Cap-and-Trade Program (CTP) with California, it is necessary to highlight that aligning Washington's program rules with California's and Québec's will pose a challenge. A linkage entails Washington participating in joint allowance auctions alongside California and Québec, resulting in a shared allowance price between all three regions and enabling the trading of allowances across jurisdictions[104].

California SB 1018 mandates that the California Air Resources Board (CARB) must seek approval from the governor before linking with another emissions trading system, and that the governor is required to make specific findings prior to approving the linkage. In May 2012 for instance, CARB proposed amendments for a linkage between the California and Québec Cap-and-Trade-Programs (CTP), after which SB 1018 was enacted. Finally, in April 2013, the governor issued the necessary findings and then instructed CARB to prepare a readiness report for linkage, including initiating a comprehensive rulemaking process to modify the existing CTP regulations. Here are some standard legislative and regulatory procedures that will need to be addressed if Washington state seeks to enter into a linkage agreement with California and Québec[105].

- Criteria for eligibility to participate in the program, aligning the cap and floor pricing mechanisms, a unified auction provider to facilitate joint auctions between jurisdictions, purchase and holding limits based on entity type, bidding procedures, etc.
- Joint greenhouse gas reporting and verification mechanisms, the development of offset protocols, as well as enforcement of compliance requirements (ie: allowance penalties)

Even more, an interesting hurdle for Washington state is that of environmental justice. As RCW 70A.65.210 (linkage with other jurisdictions) states, a linkage program "must not yield net adverse impacts to either jurisdictions' highly impacted communities"[106]. Washington state must:

- Ensure linkage with California and Québec will protect overburdened communities in all jurisdictions
- Ensure that the agreement does not hinder Washington's ability to meet its mandated emission reduction targets

Given this complexity, the report will also offer analysis on whether Washington should undertake and implement linkage. As we will discuss below, linkage will align with Washington's economic interests and may or may not meet their goals for overburdened communities. We will first overview differences between California and Washington State's CTPs.

Analyzing Washington State's Cap-and-Invest Program: Does it Address Flaws in California's Approach?
While Washington state's Cap-and-Invest program shares similarities with California in terms of its scope and structure (though California has approximately 500 entities in the program compared to Washington

[104] https://ecology.wa.gov/Air-Climate/Climate-Commitment-Act/Cap-and-invest/linkage
[105] https://ww2.arb.ca.gov/sites/default/files/classic/cc/scopingplan/scoping_plan_2017.pdf
[106] https://app.leg.wa.gov/RCW/default.aspx?cite=70A.65.210

State's 100), the program has addressed certain pitfalls found in California's strategy through its treatment of offsets, revenue allocation, and the considerations for "overburdened" communities.

Previously in California, oil and gas production facilities saw a decrease in the percentage of free allowances they received based on a formula that considered their level of exposure to leakage or risk of competition. However, in 2021, California enacted AB 398, which backtracked on CARB's projected decrease in free allowances by setting the energy industry's 2021 allowances at the same levels as in 2015. The oil and gas sector received 72% of the free allowances, making them the primary beneficiaries of this legislation[107]. Given, in both Washington State and California, allowances can be "banked" and do not expire, California has seen an increasing number of banked allowances with covered entities currently holding a total of 226 Megatons of carbon dioxide as of 2018.[108] The California Environmental Justice Alliance has thus presented concerns regarding California meeting its 2030 GHG reduction targets, as the carryover of unsold and pre-2021 allowances has brought an additional 80 million tons of allowances into the post-2020 market. The oversupply of allowances will make the 2020 "market less stringent, which potentially will increase emissions and put downward pressure on prices". [109] In contrast, Washington State's Energy-Intensive-Trade-Exposed facilities, including electrical and natural gas facilities, as well as a limited number of oil refineries, will receive 90% of their allowances without charge initially. Over time, this allocation will gradually decrease by 5% each year until 2026.[110]

Unlike Washington State's gradual reduction approach, California's current policy interventions are not adequately addressing the oversupply of allowances. When industries have excess allowances, they may rely on these surplus allowances rather than investing in emission reduction measures. As a result, the effectiveness of emission reduction efforts is compromised. In contrast, Washington State's approach recognizes the importance of maintaining a balance between supporting energy-intensive industries and ensuring emission reductions. By gradually decreasing the allocation of free allowances, Washington State is encouraging these industries to actively work towards reducing their carbon emissions.

If linkage were to occur between the cap-and-trade systems of Washington State and California, the difference in policy approaches regarding the allocation of free allowances could potentially create challenges. One possible issue is the potential for carbon leakage, where businesses in one jurisdiction may relocate to the other jurisdiction with more favorable allocation policies.[111]
Furthermore, if allowances from California are allowed to freely flow into Washington State's market, it could exacerbate the oversupply issue in Washington State as well. This could weaken the effectiveness of the cap-and-trade system and undermine emission reduction efforts in both jurisdictions.

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[107] https://caleja.org/wp-content/uploads/2017/07/AB-398-Analysis-V3-1.pdf
[108] sais-isep.org
[109] https://caleja.org/wp-content/uploads/2017/07/AB-398-Analysis-V3-1.pdf
[110] 2023 Washington State Biennial Energy Report
[111] https://clear.ucdavis.edu/news/what-carbon-leakage

To address these challenges, it would be crucial for the linked cap-and-trade system to establish harmonized policies and mechanisms for allocating allowances. This could involve aligning the gradual reduction of free allowances over time, as practiced by Washington State.

Offsets Impacts on Linkage

As mentioned in the environmental outcomes section of the paper, California and Washington state have distinct approaches to offsets. In California, offsets are not within California's emission budget, thus exacerbating the over-abundance of allowances. Dissimilar from California, Washington state's allowable offsets must fall within the State's emissions budget. Washington allows 5% (with an additional 3% for projects on tribal lands) of businesses' obligations to be covered through offsets, similar to California's 6% by 2026.

This difference in approaches to offsets between California and Washington state could pose challenges in the context of linkage between their cap-and-trade systems. If California allows a higher percentage of offsets compared to Washington state, there is a risk of an influx of California offsets into Washington state's market. This influx could compromise the integrity of emission reduction efforts in Washington, as the offset credits from California may not represent genuine emissions reductions in Washington. It would be important to ensure that offset projects generate verifiable and additional emissions reductions within the jurisdiction where the offset is being used. Aligning the criteria for offset projects and ensuring they contribute to local emissions reductions would help mitigate this challenge.

Linking cap-and-trade systems could result in market imbalances if there is a significant disparity in the supply and demand of offsets between jurisdictions. If one jurisdiction has a surplus of offsets while the other has a higher demand, it could lead to price fluctuations and volatility in the offset market. To address this, it would be necessary to align offset supply and demand to maintain market stability. This could involve coordinating the issuance and retirement of offsets to ensure a balanced market and prevent price distortions.

If linkage were to occur, it would be essential for both jurisdictions to harmonize their offset policies. This could involve aligning the percentage of offsets allowed, the criteria for offset projects, and ensuring that offsets contribute to genuine emissions reductions that benefit local communities.

Revenue Allocation

For 2022 - 2023, Governor Newson's office has suggested a discretionary CTP expenditure plan of around $1 billion, including a new proposal for $30 million to be put towards a project for mobile air quality monitoring and $200 million to be invested in forest health and wildfire prevention.[112] A significant portion of revenue from quarterly cap-and-trade auctions in California deposited in the Greenhouse Gas Reduction Fund (GGRF) and the funds are generally allocated to provides competitive grants intended to fund clean energy and climate initiatives, with a focus on projects that bring advantages to low-income and marginalized communities. Specifically, in 2016, AB 1150 amended the criteria for revenue use to

[112] https://lao.ca.gov/Publications/Report/4496

require at least 25 percent of revenue to go to investments "within and benefitting disadvantaged communities and at least an additional 10 percent for low-income households or communities," totaling 35 percent of revenue required to go towards disadvantaged and low-income communities.[113]

Comparatively, in Washington, from 2023 to 2037, a substantial portion of $5.2 billion will be dedicated to low-carbon transportation initiatives, primarily focusing on transit projects. The remaining funds will be divided as follows:

- 75% will be directed towards the Climate Investment Account
- 25% will be allocated to the National Climate Solutions Account
- $20 million will be allocated to assist tribal communities threatened by rising sea levels with relocation costs.
- 35-40% of the funding must be specifically targeted towards overburdened communities that are disproportionately affected by pollution.
- To ensure proper oversight and approval of funding decisions, the Environmental Justice Council will review and approve all investments, whereas California does not have a similar body.[114]

Despite these significant differences, a linkage program with California is still feasible for Washingston state. However, it is crucial to address and resolve the logistical disparities presented above to ensure that the interests of Washington State are effectively served at the local level, especially as it relates to Washington State's environmental justice goals. A CTP with high level of offsets, carryover of unsold and pre-2021 allowances could affect the success of Washington State's program. Auction price floors and cap prices would need to align, where in Washington the current price floor is $22.20 and settlement price is $48.50,[115] compared to California-Québec's settlement price of $27.85.[116] Therefore, Washington state will need to have confidence in its and partner jurisdictions' ability to uphold a trading system that effectively prices the external costs of carbon and promotes decarbonization, while also avoiding over-allocation, especially given the criteria for linkage explicitly state that it must not suppress prices, addressing concerns about the impact on Washington's market.

To further help with the linkage decision, it is necessary to analyze the execution of the California-Québec linkage as a case study.

Analyzing the Linkage: Cap-and-Trade Program between California and Québec

The California-Québec linkage aimed to establish a linked carbon market, allowing companies from both jurisdictions to trade emission allowances and create a broader, more liquid market for carbon credits. The partnership is governed by the Agreement on the Harmonization and Integration of CTP Programs for Reducing Greenhouse Gas Emissions, which outlines the principles and procedures for the operation of the joint carbon market, including mechanisms for verifying emissions, coordinating allowance

[113] Auction Revenue Use in California.
[114] https://icapcarbonaction.com/en/news/update-washington-state-passes-cap-and-trade-program
[115] https://ecology.wa.gov/Blog/Posts/March-2023/Meaningful-Momentum-CCA-Updates-for-March-2023
[116] Results from Joint Auction between California and Quebec

auctions, and resolving potential disputes. Québec reaffirmed its commitment to the carbon market and its linkage with California during negotiations in 2017, including discussions with Ontario regarding its participation[117]. However, it is widely known that Ontario withdrew from the carbon market following the June 2018 election, which resulted in a populist government that strongly opposed emissions trading.

A crucial advancement introduced in the California-Québec linkage was the establishment of a price floor and ceiling, which addressed the issue of price instability observed in the European Union Emission Trading System. Washington state, as mentioned earlier, has adopted a similar approach. In 2013, California and Québec agreed upon an initial auction floor price of $10 per ton of carbon dioxide, to increase by 5% annually along with the inflation rate. During the period from 2013 to 2020, they utilized an Allowance Price Containment Reserve (APCR), which was independently administered by each jurisdiction[118]. The APCR creates a reserve of allowances that can be released into or withdrawn from the market in response to certain price thresholds being reached. When the allowance price reaches a predetermined upper threshold, indicating high-prices, allowances from the APCR are released into the market. This additional supply of allowances helps to dampen the price increase and alleviate potential cost burdens on participating entities. On the other hand, if the allowance price falls below a lower threshold, indicating low-prices, allowances can be withdrawn from the market and placed into the reserve. It must be noted that there was a risk of depleting the APCR if prices were to increase greatly. Hence, in 2021, California established a fixed price ceiling of $65 per ton of carbon dioxide, to increase by 5% annually along with the inflation rate. It is expected that auction prices in the California-Québec carbon market will gradually rise and hover between approximately $27 and $100[119].

CALIFORNIA CAP-AND-TRADE PROGRAM

SUMMARY OF CALIFORNIA-QUEBEC JOINT AUCTION SETTLEMENT PRICES AND RESULTS

Last updated February 2023

Auction Name	Total Current Auction Allowances Offered	Total Current Auction Allowances Sold	Current Auction Settlement Price	Total Advance Auction Allowances Offered	Total Advance Auction Allowances Sold	Advance Auction Settlement Price
February 2023 Joint Auction #34	56,395,720	56,395,720	$27.85	7,577,000	7,577,000	$27.01
November 2022 Joint Auction #33	58,020,854	58,020,854	$26.80	7,942,750	7,942,750	$26.00
August 2022 Joint Auction #32	56,956,085	56,956,085	$27.00	7,942,750	7,942,750	$30.00
May 2022 Joint Auction #31	58,331,300	58,331,300	$30.85	7,942,750	7,942,750	$28.13
February 2022 Joint Auction #30	58,527,697	58,527,697	$29.15	7,942,750	7,079,000	$19.70
November 2021 Joint Auction #29	68,598,217	68,598,217	$28.26	8,306,250	8,306,250	$34.01
August 2021 Joint Auction #28	71,261,536	71,261,536	$23.30	8,306,250	8,306,250	$23.69
May 2021 Joint Auction #27	71,647,138	71,647,138	$18.80	8,306,250	8,306,250	$19.04
February 2021 Joint Auction #26	54,773,607	54,773,607	$17.80	8,306,250	8,306,250	$18.01

Furthermore, the CTPs in each of these jurisdictions have provided significant revenue for their respective governments through quarterly auctions of emission allowances. In California, the

[117] https://www.ca.gov/archive/gov39/2017/09/22/news19963/index.html
[118] https://onlinelibrary.wiley.com/doi/10.1111/ropr.12440
[119] Price Ceiling in California

cap-and-trade auctions have accumulated over $12.5 billion for the Greenhouse Gas Reduction Fund[120]. In Québec, approximately $5 billion has been directed towards the Electrification and Climate Change Fund[121].

Similar to Québec, Washington state is abundant with hydroelectric resources, resulting in a lower emissions intensity compared to California. As a result, economic models suggest that reducing emissions in Québec is more expensive than in California. Studies predicted that in the absence of a linked cap-and-trade system, allowance prices for Québec would have ranged from $37-43 per ton of carbon dioxide in 2013 and would have increased to $59-69 per ton in today's carbon market. However, with a linked cap-and-trade system, allowance prices for Québec would be significantly lower, ranging from $15.80 to $34.50, which remains true today. In other words, a linked price represents a substantial reduction for Québec at about 40% compared to unlinked allowance prices.[122] This is not entirely a pro, however, as we will discuss further below.

Estimates also indicate that from 2013 to 2020, Québec firms would have purchased approximately 14.8 to 18.3 megatons of carbon dioxide emission allowances from their counterparts in California, amounting to a cost range of $428 to $644 million USD. However, studies argue that despite these transfers to California, linking the markets would lead to a reduction in Québec's compliance costs by up to 52%, resulting in substantial savings of approximately $450 million compared to an unlinked market.[123].

In the end, a linked cap-and-trade system results in significantly lower allowance prices for Québec compared to operating independently. This linkage was expected to provide Québec with cost savings between $387-532 million since 2013, reducing their compliance costs by 52-59%. These models continue to hold true today[124].

Given similarities between the Québec and Washington markets, it is reasonable to expect similar trends and outcomes if a linkage were to occur between the two jurisdictions. Models estimate that the initial allowance prices in a linkage with California will experience approximately 30% decrease, dropping from $58.31 to $40.74[125]. Summarized below is additional information regarding the pros of linkage.

- Will increase the liquidity of the overall carbon market, making it stronger, more secure, and less vulnerable to market manipulation[126]

[120] https://www.c2es.org/content/california-cap-and-trade/
[121] https://www.environnement.gouv.qc.ca/changements/carbone/revenus-en.htm
[122] https://institute.smartprosperity.ca/sites/default/files/publications/files/QuebecCalifornia%20FINAL.pdf
[123] https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2249955
[124] https://institute.smartprosperity.ca/sites/default/files/publications/files/QuebecCalifornia%20FINAL.pdf
[125] https://apps.ecology.wa.gov/publications/documents/2202019.pdf
[126] Linking Carbon Markets

- Linking Washington's carbon market with California and Quebec's would create cheaper allowance prices, allowing businesses to participate effectively in the program[127].
    - Businesses would have a reduced cost of compliance and more emissions-reduction opportunities.
        - This could also be a con. To align with the objectives of the Paris climate goals, a report from the World Bank suggests that carbon permit prices should range from $40 to $80[128].
    - When multiple carbon markets are connected, there is a larger pool of allowances available for trading, creating a more liquid market. Increased liquidity not only improves market resilience but also enables the market to absorb shocks, such as sudden fluctuations in commodity prices or currency exchange rates. This heightened liquidity and market security make it easier for companies to strategize their emissions reductions and invest in low-carbon technologies.

- Linkage will likely have minimal administrative costs, as many aspects of Washington's cap-and-invest program are already aligned with California and Quebec's[129].
    - Washington's program already uses the same auction platform.
    - Policy alignment is however necessary, as stated above.

- Linkage between all 3 jurisdictions would represent a significant milestone in addressing climate change, symbolizing a shared, comprehensive endeavor to decrease greenhouse gas emissions on a large scale.

The Impact of Linkage on Disadvantaged Communities: Assessing Environmental Justice Considerations

The effect of CTPs on disadvantaged communities has been a topic of considerable concern for Washington state. Disadvantaged communities often bear a disproportionate burden of environmental pollution and its associated health risks. Critics argue that CTPs may perpetuate environmental injustice by allowing industries to purchase emission allowances rather than reducing their own emissions directly.

Thus, if linkage were to occur, it would become essential for Washington state to prioritize additional incentives and policy for internal emissions reductions within businesses. While linkage can provide an avenue for businesses to comply with emission reduction requirements, it should not be seen as a substitute for internal efforts to reduce emissions. By implementing complementary policies, Washington state can encourage businesses to go beyond the minimum requirements of Cap and Trade

[127] https://ecology.wa.gov/Air-Climate/Climate-Commitment-Act/Cap-and-invest/Linkage#sessions

[128] https://openknowledge.worldbank.org/entities/publication/0a107aa7-dcc8-5619-bdcf-71f97a8909d6

[129] https://ecology.wa.gov/Air-Climate/Climate-Commitment-Act/Cap-and-invest/Linkage#sessions

and pursue ambitious emission reduction targets. Regardless, it is necessary to examine the literature to gain a comprehensive understanding of the effects of linkage on disadvantaged communities.

According to section 24 of the Climate Commitment Act, linkage is only possible if:

- The jurisdiction being linked to has environmental-justice provisions in place to get revenue to overburdened communities.
- Linking would reduce the cost of compliance for covered businesses.
    - The first condition and second condition would be met. We explain this in the sections above.
- The linkage will not harm overburdened communities in either jurisdiction.
- The linkage will not harm Washington's ability to hit its targets.
    - We will discuss both these criteria in the piece below.

The 2022 Annual Report conducted by the Independent Emissions Market Advisory Committee revealed that in order for California to successfully achieve its legally binding target of 40% by 2030, it is imperative to urgently implement adjustments to its CTP. The report emphasized the significance of a program overhaul that modifies the allocation of allowances and the method of introducing them into the market [130].

A study conducted by Professor Danny Cullenward et. al confirmed this notion earlier, in 2019. Their analysis found that by the end of 2018 companies already possessed a greater number of surplus allowances than the California Air Resources Board (CARB) had anticipated for the end of 2020. Even more, the accumulated permits held by companies exceeded 200 million, equivalent to nearly the entire projected carbon dioxide (CO_2) reduction expected from cap and trade between 2021 and 2030[131]. These findings, alongside research conducted by Chris Busch, found that therefore an adjustment in the oversupply in allowances is needed to ensure the program will achieve its 2030 target. Busch explains that if the excess allowances are fully utilized during the post-2020 period, companies could potentially fulfill their CTP requirements of the CTP without substantially reducing their emissions[132]. Barbara Haya, a research fellow at the University of California-Berkeley, has also indicated that offsets could still contribute to around half of the anticipated emissions reductions resulting from cap and trade between 2021 and 2030. Her research also reveals that California regulators have overestimated the climate advantages of offsets by neglecting to consider how safeguarding one forest area leads to increased logging in other forests[133].

The concern is that if the current Cap-and-Trade program in California falls short of addressing its own emission reduction requirements, the potential negative impact of this program on overall emission reduction efforts could extend beyond California and affect other jurisdictions like Washington, hindering their ability to achieve their respective targets. As identified in the section regarding California and

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[130] 2022 Annual Report conducted by the Independent Emissions Market Advisory Committee
[131] https://iopscience.iop.org/article/10.1088/1748-9326/ab50df/pdf
[132] https://energyinnovation.org/wp-content/uploads/2018/02/WCI-oversupply-grows-February-update.pdf
[133] Haya's Research

Québec's linkage program, linkage benefits Québec through the linked allowance market. But, disadvantaged communities in Washington state could potentially face challenges as a result of such. Linkage would reduce the internal emissions reductions of entities within Washington state, as they would have an incentive to buy allowances in markets like California, which are in immense surplus, instead of reducing their own emissions internally. This could potentially disadvantage overburdened communities who would not be receiving the local and direct benefits of emissions reductions [134]. Again, as stated above, though a reduction in allowance prices is an economic benefit, it may cause problems for overburdened communities. A lower price for allowances diminishes the financial burden on regulated entities to comply with emission reduction requirements. Consequently, it reduces the economic incentive for entities to invest in emission reduction measures and technologies. This can undermine efforts to transition to cleaner and more sustainable practices.

These failures in California's CTP are likely to have immense impacts on overburdened communities. A study released in February 2022 by Manuel Pastor et. al at the University of Southern California discovered that communities with a larger proportion of people of color and a higher number of households below the federal poverty level had a diminished likelihood of experiencing pollution reductions, while also residing in closer proximity to polluting facilities that were engaged in Cap and Trade[135]. Pastor's research is further supported by a study published by research conducted by ProPublica. ProPublica finds that carbon emissions from California's oil and gas industry have risen 3.5 percent since the cap-and-trade program began[136]. Other recent studies have found that while California's CTP has reduced California's overall greenhouse gas emissions, in-state emissions and co-pollutants have not consistently declined post the linkage with Québec.

However, it is necessary to mention that research over the impact of California's CTP on overburdened communities is conflicting. Danae Hernandez-Cortes et al.'s study reveals that the difference in pollution concentration between disadvantaged communities and other communities has decreased post the implementation of CTP, but the gap is still immense between overburdened communities and other communities[137]. Sheriff's research in 2022 demonstrates that the gap in toxic emissions between white and minority communities did not increase and also supports Cortes et. al's research[138]. It is imperative to also note that these studies, though conflicting in results, exemplify a single notion. Market-based policies cannot not adequately address environmental justice objectives. To prevent the potential exacerbation of environmental justice gaps, it is crucial to supplement market-based policies with specific measures that directly target environmental justice concerns. Meaning, in conjunction with market-based approaches, environmental justice issues require the implementation of dedicated environmental justice policies. Still, what is necessary to do is to compare different methods of conducting research. Here, we find issues with Danae Hernandez-Cortes et al.'s experimental design.

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[134] https://grist.org/economics/washington-state-cap-and-invest-california-lessonsit-works/
[135] USC Study
[136] ProPublica
[137] https://www.sciencedirect.com/science/article/pii/S0047272722001888#s0115
[138] https://www.journals.uchicago.edu/doi/abs/10.1086/725699

Danae Hernandez-Cortes et al. utilize facility-by-year-level data to estimate the impact of the CTP on emissions PM2.5, PM10, NOx, and SOx. They use this data to estimate the average difference in performance levels between facilities regulated under the CTP and those not subject to its regulations. The researchers then utilize an atmospheric dispersal model, feeding in the predicted emissions of PM2.5, PM10, NOx, and SOx and performance levels to estimate the concentrations of these pollutants on a zip code-by-year-level basis. It is important to note that estimation, rather than actual observed changes, forms the basis of their main analysis sample. Even more, their sample includes facilities that are exclusively regulated under the CTP program, not any other climate measures in the state. Therefore, the sample only accounts for only 5% of reported California greenhouse gas emissions. Their use of zip codes is also in question, as census tracts better define disadvantaged communities. In their baseline model, the researchers estimate a common percentage effect resulting from the CTP and then apply across all communities. They observed that communities facing higher initial pollution burdens theoretically experienced greater relief. However, it is worth noting that the assumption made by Hernandez-Cortes et. al that trading affects co-pollutant emissions from all facilities in the same direction is restrictive, particularly in the context of environmental justice. This modeling strategy of applying a common negative percentage effect tends to result in the closure of environmental justice gaps, even when the reported data on individual emitters does not align with this pattern. This is likely why they arrive at different results than the USC study. This also emphasizes the need to look beyond the results at the methods researchers use to reach their conclusions.

We find the USC research method to be better (95% of covered GHGs in California) and suggest a deep analysis of the paper by Washington state. We do however believe its data collection has pitfalls. By not excluding facilities that are subject to overlapping climate programs in California, such as renewable portfolio and low carbon fuel standards, the USC study results in a lack of differentiation between emissions reductions driven by these specific programs and those influenced by the carbon market. Still, the study finds a detrimental impact to disadvantaged communities.

Next Steps Regarding Linkage:

Given conflicting literature and flawed research methods, we strongly encourage Washington state to undertake additional comprehensive studies before making any decisions regarding policy linkage. Even Hernandez-Cortes et. al mention that an environmental market policy could widen the environmental justice gap. These studies should thoroughly assess the specific dynamics of Washington's emissions profile, taking into careful consideration the unique characteristics of overburdened communities and industries within the state. An analysis that compares the "pure" cap-and-trade approach with market modifications and other hypothetical strategies for emissions reductions would provide valuable insights into identifying regulatory tools that promote environmental equity too. For instance, implementing no trade zones in highly polluted areas could lead to tangible improvements in local emissions within those neighborhoods.

To ensure a comprehensive and well-informed analysis, it is imperative for Washington to collaborate with professionals specializing in both economics and environmental science. Through our citations, we have created a list of experts in the field, all of whom would be a great resource for Washington state. This collaborative approach can ensure a more inclusive decision-making process and help identify potential concerns or opportunities. Furthermore, it is notable that research is in need of better data. As an example, due to parent companies being the sole reporter of offset usage, it was not possible for researchers to evaluate the advantages and consequences of offset usage at individual facilities. Given that there could be multiple facilities linked to a particular entity but situated in different areas, disclosing offset usage data at the facility level would enhance comprehension of the effects of offsets within communities.

Conclusion

After a thorough examination of California's Cap & Trade policy outcomes of the past decade, we have identified areas of success that Washington should mirror and shortcomings that Washington can learn from and correct in their implementation of "Cap & Invest," or the Washington Climate Commitment Act. In this report, we sought to determine the extent of a causal link between air pollution reductions and the implementation of Cap & Trade in California and collated a set of recommendations not only on Cap & Trade but also with specific focus on considering the impact of climate change on disadvantaged communities.

The largest success of California's legislation was its designation of disadvantaged communities (DACs) and allocation of C&T revenue towards those communities. Specifically 25% of revenue generated from the auctions must go to these priority populations, who are identified through a combination of community and environmental indicators (ex: socioeconomic and health status, relative exposure to environmental hazards). These processes incorporate extensive community input and feedback in their formulation. California also does not offer a precise definition for disadvantaged communities but instead delegates the responsibility to its state EPA agency which widens the scope of the definition.

In contrast, Washington is directly limited by the CCA to a particular definition thus leading to a decreased ability to direct policy for a wide range of communities.We strongly recommend, based on the California community input process, Washington State to devote more attention to highly impacted constituencies like the unhoused and incarcerated individuals that are typically overlooked in climate plans. Because continued and genuine trust building is needed to sustain an equal and equitable input process, we also recommend adaptable in-person tools for collecting input such as focus groups.

Additionally, Washington State should replicate California's Climate Investments Funded Programs system for local governments. Because Washington distributes money to local governments who submit applications, this process may overlook overburdened communities in eastern Washington, due to local politics and other forms of self-selection bias. In contrast, California assigns funding packages for communities directly instead of an application process (similar to Washington's Climate Grant program);

this ensures communities that need the funds get it regardless of local government officials' inability or unwillingness to apply for such grants.

The greatest shortcoming of California's program is their carbon offset program policy, which allows companies to purchase offset credits to meet part of their Cap and Trade compliance obligation. There is limited evidence of carbon offsets effectively reducing greenhouse gas emissions. Furthermore, California allows for out-of-state offset programs that do not provide direct environmental benefits to its residents, which can inhibit local air pollutant reductions. To address this difficulty, we recommend Washington limiting and/or eliminating the use of offsets in high-priority emissions sources in overburdened communities that are not reducing local criteria pollutants.

We also delved into the economic and environmental impacts of Quebec and Ontario's linkage program with California. We found that while Washington (and California) would certainly benefit economically from establishing a linkage program with California, we caution joining a linkage program because Washington—particularly overburdened communities—may endure greater emissions because Washington companies would be incentivized to buy (cheaper) allowances in California.

It is important to address these gaps early on so underrepresented groups who face the brunt of the climate crisis can have a clear process to elevate their concerns and directly receive benefits from Washington's Climate Commitment Act.