

May 14, 2023

Ms. Stephanie Potts  
WA Dept. of Ecology  
P.O. Box 47600  
Olympia, WA 98504-7600

**RE: Comments on the process of determining whether to pursue linkage of Washington’s carbon market with California and Quebec’s linked market**

Dear Ms. Potts,

Thank you for the opportunity to provide input on Washington’s pending decision on whether to pursue linkage of its cap-and-invest program with the Western Climate Initiative (WCI) carbon market administered jointly by California and Quebec. The Stockholm Environment Institute (SEI) is an international non-profit research and policy organization focusing on environment and development challenges. SEI’s US center has an office in Seattle, with a focus on local, national, and international climate change policy.

We write as experts with over four decades of collective experience in the design and implementation of greenhouse gas emissions trading policies, including research and hands-on experience related to the design of the California-Quebec carbon market and the linking of emissions trading systems (ETS). To inform this letter, we consulted with key observers and stakeholders in Washington, California, and Quebec to gather insights on the prospects, obstacles, benefits, and risks of linking the systems.

**Summary**

This comment letter responds to the linkage criteria and questions posed by Ecology, even if is not structured around them. The ability for linkage to provide benefits to vulnerable populations and overburdened communities (Criteria #1) will depend critically on the scale and stability of revenues available to fund associated programs, which, in turn, will be a function of the impact of linkage on allowance prices, auction revenues, and program sustainability. Given that Washington’s program is currently far more stringent, absent steps to increase the ambition of California’s program, *full* linkage is likely to significantly reduce WA CCA allowance prices – on the order of 40% as we estimate roughly below – and along with this, the associated cost of compliance for covered businesses in the state (Criteria #4). Therefore, Ecology must balance the tradeoffs in meeting both criteria #1 and #4: reducing compliance costs also means reducing auction revenues and the benefits from investing those revenues in overburdened communities and in emission-reducing activities and infrastructure.

Without a tightening of the California cap-and-trade program’s 2030 cap, the authorization of California’s program beyond 2030, and other measures to reduce the impact of the large bank (or “overhang”) of unused allowances in the linked California-Quebec system, linking could negatively impact Washington’s

ability to achieve its greenhouse gas (GHG) emission reduction limits (Criteria #3). Indeed, as we explain below, linkage could even result in a net increase in global GHG emissions.

By examining these questions and tradeoffs, we hope to support Ecology not only in its process of determining *whether* to pursue linkage with California and Quebec's markets, but also in deciding *how* to proceed. In summary, we recommend that Ecology:

1. **Make *full* linkage with California and Quebec contingent on California extending its program beyond 2030;**
2. **Make *full* linkage with California and Quebec contingent on California increasing the stringency of its 2030 cap** and/or taking other measures to reduce the extent or impact of the large bank of unused WCI allowances;
3. **Pursue implementation a *partial or restricted* link with California and Quebec** until the above are achieved, for example, in the form of a limit on the import of WCI allowances as described below; and
4. **Conduct indicative analysis to quantify the scale of potential impacts** of linkage on allowance prices, auction revenues, and net flow of allowances, and in-state emission reductions (as illustrated below) to inform its deliberations.

Fortunately, steps are already underway in California that could extend the program and increase its stringency, such as the CARB rulemaking process planned for 2024, and draft [legislation](#) that would direct CARB to evaluate adjustments to the cap and supply of allowances and offsets so that the stricter 2030 target consistent with the latest [Scoping Plan](#) is met. However, progress could prove slow and uncertain. Until sufficient adjustments are made to California's system, restricted linkage can offer many of the benefits of fuller linkage. Restricted linking can provide Washington's regulated entities with access to a sufficient amount of WCI allowances to lower allowance prices (e.g., through a limit of 2-3% of compliance obligations in the first compliance period). It can do so, while also maintaining guardrails that constrain the potential negative impacts of full linkage on vulnerable populations and overburdened communities in Washington and on overall environmental integrity.

In addition, several program elements, such as the handling of electricity imports or non-compliance penalties, will be important either to align fully or to ensure that differences among programs do not lead to unintended negative consequences. It would also be ideal for California and Quebec to adopt an Emissions Containment Reserve and place offsets under the cap.

### **Background**

Whether to link to other carbon markets is one of the most important policy decisions in designing a cap-and-invest program. Linking has many potential benefits. As Ecology notes, larger markets tend to be more liquid and stable. They also tend to be more efficient, making it easier to access least-cost abatement opportunities and "smoothing out" transitions across multiple sectors and geographies.

Partly because of this, interlinked carbon markets can help to sustain broad-based climate action, which will be essential over the long run if the country, and world, are to successfully limit climate change. It can be difficult for a single jurisdiction to pursue ambitious measures on its own. Wide and deep coalitions, built upon a common carbon pricing regime, can pave the way for sustained effort, with fewer free riders, lower risk of industry migration, and broader economic benefits all around .

Despite being (as Ecology notes) the “second of its kind” in the United States, Washington’s cap-and-invest program is groundbreaking in several ways. Multiple design features – including ambitious long-term cap schedules, price and emission containment reserves, protections for overburdened communities, and an approach to carbon offsets that places them “under the cap” – provide innovative solutions to problems confronted by other emission trading programs.

Linking cap-and-invest programs does not require 100% alignment on all design features. However, as Ecology considers a linkage with California and Quebec, it should ensure that doing so will not compromise any of the unique guardrails of Washington’s program. For example, Ecology must guard against weakening the State’s efforts to reduce greenhouse gas emissions. As Ecology alludes to in its solicitation of comments, linking to the California-Quebec market could lead to “unused” allowances in that program being used for compliance in Washington. If such use becomes too prevalent, it could result in less auction revenue for Washington, lower levels of mitigation investment, and fewer total reductions of both greenhouse gases and local pollutants.

### **Essential conditions for linkage**

The conditions for successful linkage of emissions trading systems have been the subject of ongoing research and policy analysis over the past two decades. A key insight is that not all program features need to be aligned to enable linkage. However, alignment may be important in some areas. Following Mace et al. (2008) and Burtraw et al. (2013), for example, alignment priorities can be roughly classified as follows in Table 1. (The list in Table 1 is not exhaustive, nor do all observers agree on the set of elements for which alignment is “necessary” versus “desirable”.)

Washington’s system is relatively unique in that it was designed from the start to be “WCI-linkage ready”, with most design elements aligned with California’s and Quebec’s from the start. As indicated by italics in Table 1, many of the priority items, such as sectoral coverage and price collars, are either identical or otherwise well-aligned.

Table 1. Priorities for program alignment when linking carbon markets (elements already largely aligned in italics)

Level of priority	Examples of program elements
Alignment is important to ensure a functioning market	<ul style="list-style-type: none"> <li>• <i>Measurement methods</i></li> <li>• Penalties for non-compliance</li> <li>• <i>Price collars (ceiling &amp; floor prices)</i></li> <li>• <i>Borrowing rules</i></li> <li>• <i>Allowance tracking systems</i></li> <li>• <b>Comparable time horizons</b></li> </ul>
Alignment is desirable for smooth market function and/or politically important	<ul style="list-style-type: none"> <li>• <i>Governance provisions</i></li> <li>• Carbon offset rules</li> <li>• <i>Purchase and holding limits</i></li> <li>• <b>Comparability of ambition / stringency</b></li> </ul>
Alignment is “good to have” but not necessary	<ul style="list-style-type: none"> <li>• <i>Allowance allocation policies (including auctions)</i></li> <li>• Treatment of energy-intensive, trade exposed industries (EITEs)</li> <li>• <i>Sectoral coverage</i></li> </ul>

Two elements stand out, however, in Table 1, both for their high importance and their potential misalignment: comparable time horizons and levels of ambition. Researchers have noted that while linking can yield multiple benefits, it faces particular challenges where the time horizons and ambition of linked programs differ markedly (Bodansky et al. 2015; Burtraw et al. 2013; Flachsland et al. 2009; Mace et al. 2008; Ranson and Stavins 2016).

### **Aligning time horizons and ambition**

Aligning time horizons is particularly important. If one program ceases to operate before the other, then continued linkage is obviously impossible. More importantly, as the date of cessation approaches, market distortions can arise that make linkage untenable. Adopting similar time horizons (over which declining emission caps are defined upfront) is essential for providing investment certainty for participants in a linked market, and for ensuring that programs have comparable levels of ambition. As we discuss below, it would be unwise for WA to link its program, authorized through 2050, to fully link with California’s program until there is greater certainty that it will be extended beyond 2030.

The relative “ambition” of a program is defined by multiple factors. In general, ambition is a measure of how quickly emission caps decline relative to emission levels that would have occurred in a program’s absence (often referred to as “business as usual”), along with the relative cost of achieving those reductions. A relatively ambitious program will require more rapid reductions, achieved at a higher marginal cost, compared to other programs. Complementary policies – i.e., those that drive emission reductions independently of a cap-and-invest program –also play an important role. If a jurisdiction can aggressively reduce emissions through complementary policies, it may end up with a relatively *unambitious* cap-and-invest program, e.g., if emission caps are set *near or above* levels achievable by those complementary policies. This may not be a flaw in program design, or a sign of lower *overall* ambition; it can simply mean the jurisdiction is relying on its emission trading system as a backstop in

case complementary policies fail to perform, rather than as tool to drive emissions reductions. Or alternatively, the jurisdiction may not have taken adequate steps to tighten its emission caps in response to complementary policies not anticipated when the caps were set. As we discuss below, this is precisely the situation of the California cap-and-trade program, as its Independent Emissions Market Advisory Committee has made abundantly clear in its annual reports (Burtraw et al. 2023).

For a jurisdiction with a relatively ambitious cap-and-invest program, however, linking to a much less ambitious program can pose a challenge. All else equal, the more ambitious program will almost invariably become an importer of allowances from the less ambitious one, because emission reductions can be achieved under the less ambitious program for a lower marginal cost. This could have several implications:

- **A slower rate of emission reductions in the more ambitious jurisdiction**, as reductions that would have been achieved locally are instead achieved in the linked jurisdiction through the acquisition of allowances. In a scenario where the less ambitious jurisdiction has a large bank of *unused* allowances, this could mean fewer emission reductions overall (compared to a scenario without linking), as the import of allowances only depletes the bank.
- **Lower allowance auction revenues for the more ambitious jurisdiction**, compared to a scenario without linking, as linking would lower demand for the jurisdiction's allowances. Lower allowance prices may be a welcome benefit of linking, but lower auction revenues could also mean fewer resources to investment in additional mitigation efforts, and specifically in programs designed to deliver benefits to tribes and EJ communities.
- **Slower realization of the local co-benefits of declining greenhouse gas emissions**. If emissions in the more ambitious jurisdiction decline at a slower rate, then without further safeguards, local air pollutant reductions (which may accompany reductions in greenhouse gas reductions) may also be realized more slowly.
- **Outgoing financial flows** as regulated entities acquire allowances from the less ambitious jurisdiction, in lieu of investing in local mitigation.

Historically, these kinds of considerations have been an impediment to linking. In the early days of California's cap-and-invest program, for example, California decided against linking to the Regional Greenhouse Gas Initiative (a cap-and-invest program covering much of the New England power sector) possibly because low allowance prices in that system suggested a (relative) lack of ambition (Burtraw et al. 2013). California also explicitly rejected the prospect of linking to the European Union Emissions Trading System (EU ETS) on the grounds that it had (at the time) a large bank of unused allowances (Kahn 2013), which posed precisely the same risks identified above for California's new program.

If Washington is contemplating linkage with other cap-and-invest programs, including the California-Quebec program, consideration of both the time horizon and relative ambition of emission caps should be a key priority.

### ***There is misalignment in time horizon between California's and Washington's programs***

The first phase of California and Quebec's emissions trading programs extended from 2013 through 2020. California and Quebec formally linked their markets in January 2014. In 2017, the California legislature authorized an extension of California's program through 2030. Quebec's program, in contrast, has no end date.

The status of California's program after 2030 is uncertain. As the state's Independent Emissions Market Advisory Committee (IEMAC) explains in its 2022 annual report, the California Air Resources Board (CARB) may have the implicit authority to extend the program beyond what the legislature explicitly authorized in 2017 (Burtraw et al. 2023). However, this is subject to significant legal uncertainty. The California Legislative Analyst's Office (LAO) recommends that the legislature explicitly authorize the extension of California's cap-and-invest program beyond 2030 (Petek 2023). While this would provide greater legal certainty, however, questions around the constitutionality of such authorization could arise if it is passed with less than a two-thirds legislative majority (Burtraw et al. 2023).

If California and Washington markets were to link, the limited official time horizon for California's program could create significant uncertainties for Washington market participants. Washington actors would need to make long-term investment decisions (based on a cap schedule extending out to 2050) without knowing whether California entities will face similar constraints over the same time period, or whether they can rely on access to California allowances (and the market liquidity this could afford) over the long run.

As explained further below, the lack of clarity about the post-2030 status of California's program also has implications for the risks posed by California's current and projected bank of unused allowances. Because of these risks, Washington should avoid a full linkage with California and Quebec before California's program is officially extended.

### ***There is misalignment in purpose and ambition between California's and Washington's programs***

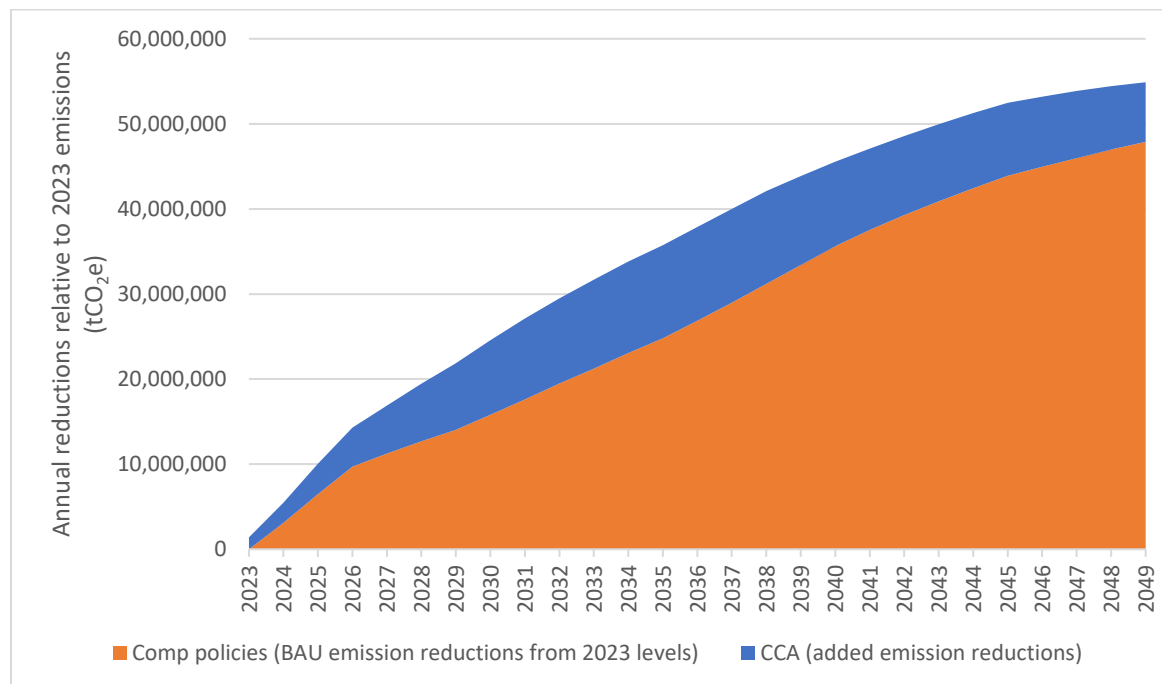
From the beginning, California regulators have been clear that California's cap-and-invest program is one of a wide range of policies designed to achieve California's greenhouse gas emission reduction targets. Early estimates from CARB, for example, suggested that the program was expected to contribute only 20% of the total emission reductions needed to achieve the state's 2020 emissions goal (EPRI 2013). In fact, complementary policies have delivered *more* than was expected. As the IEMAC notes, "To date, regulatory measures have likely delivered most of the emission reductions California has achieved," with the cap-and-invest program serving mainly as a backstop (Burtraw et al. 2023). According to the IEMAC, this is in part because California has adopted more, and more aggressive, complementary policies over time than originally anticipated. These policies include, for example, a significantly more ambitious renewable portfolio standard, required by legislation passed in 2018.

CARB's 2022 Scoping Plan (indicating how the agency plans to meet statewide greenhouse gas reduction goals) suggests the relative contribution of complementary policies may shift in the future, with the cap-and-invest program contributing a larger share of expected emission reductions (CARB 2022). However, the success of complementary policies to date has contributed to the generation of a large bank of unused allowances within the cap-and-invest program. These allowances have not been needed because total emissions at regulated sources fell (well) below California's emissions caps. Both the IEMAC and LAO express concern that the ability of regulated entities to use these allowances, rather than reduce emissions, could mean the cap-and-invest program fails to reduce emissions enough to meet the state's 2030 target (Burtraw et al. 2023; Petek 2023).

Ecology's analysis of Washington's cap-and-invest program suggests it may play a role similar to California's, with Washington's own complementary policies delivering the majority of total emission reductions needed to reach the state's reduction targets through 2050 (Figure 1). However, there are

reasons to believe that Washington will not experience the same unexpected surplus of allowances as California. Regulated entities in Washington will need to reduce emissions at an average rate of 7% per year through 2030. This is a steeper decline than the 4% annual rate of decline in California’s emission caps over the same period. As Figure 1 illustrates, this means the contribution of the cap-and-invest program to emission reductions is expected to grow over time, especially after 2025, with only limited banking of allowances in early years.

Figure 1. Relative contribution of the CCA and complementary policies to Washington State emission reductions



Source: Authors’ calculations derived from Ecology’s primary scenario presented in Washington State Department of Ecology (2022). The orange area represents emission reductions relative to projected 2023 emissions levels, most or all of which are due to complementary policies, as modeled by Vivid Economics.

In summary, California has historically relied on its cap-and-invest program to provide a backstop to its complementary policies – and so far has not adjusted its program in ways that would significantly alter this role. Washington, on the other hand, has adopted a cap-and-invest program that will drive a significant portion of total emission reductions, with very few surplus allowances expected given Washington’s current mix of complementary policies. This means that, under current circumstances, Washington’s cap-and-invest program is demonstrably more ambitious than California’s. Evidence of this is already clear from the respective market prices in these programs, with Washington allowances trading at prices at least 50% higher than those in California.

**What this misalignment means for a potential linkage with the California-Quebec program**

In short, market fundamentals suggest Washington regulated entities are likely to be net buyers of allowances under any linkage arrangement. Without any restrictions on using allowances from California and Quebec, Washington emissions could therefore follow a trajectory closer to those achieved only through complementary policies, with fewer reductions generated by the cap-and-invest program.

For example, drawing on findings in the market modeling conducted by Vivid Economics in 2022 (Vivid Economics 2022), we estimate that linkage could reduce the effect of the CCA in reducing in-state emissions (i.e., the blue wedge in Figure 1) by approximately 40% in 2030 (see Table 2). This estimate assumes that emissions reductions spurred by the CCA would decline in direct proportion to the drop in carbon price due to linkage. Similarly, we find that state revenues from allowance sales would decline by about 40%, from roughly \$15 billion to \$9 billion between now and 2030, as shown in Table 3.

The decline in revenue and emissions reductions, is of course, the result of a lower carbon price, which in 2030 – assuming no further changes to the Washington, California, or Quebec programs – might be closer to \$60/tCO<sub>2</sub>e with linkage than to the approximately \$100/tCO<sub>2</sub>e price that Vivid Economics has projected in its modeling analysis without linkage. Indeed, these are the key tradeoffs that Ecology is grappling with in its decision: between a linked program with a lower and potentially more politically sustainable carbon price and an unlinked one with fuller revenue streams (which could be invested, for example, in programs that provide benefits to vulnerable populations and overburdened communities) and greater in-state emissions reductions spurred by the CCA, but greater concerns around political sustainability. (Note that we provide these rough calculations not as definitive estimates but to suggest that Ecology should conduct similar, and more in-depth, analysis using available information to help inform its decisions and balancing of the tradeoffs.)

A key question that an analysis like this can also make clearer is the net effect of linkage on total GHG emission reductions. Linking could mean substituting a sizeable fraction of in-state emission reductions with imported allowances. But does retiring those allowances represent a similar impact on reducing emissions? This depends on the fate of the large allowance overhang in California, and whether California will take steps to extend and strengthen their program.

***California’s unused allowance bank adds additional risk for achieving Washington’s environmental goals and the overall environmental integrity of its cap-and-invest program***

While linking cap-and-invest systems with divergent levels of ambition can be problematic, multiple studies have highlighted the additional risks associated with linking to programs that have large unused allowance banks. The concern is that by linking, total emissions across both programs could end up *higher* than in a scenario without linking (La Hoz Theuer et al. 2019; Schneider and La Hoz Theuer 2019).<sup>1</sup> As noted above, this was a particular concern of California’s when contemplating a link with the EU ETS.

---

<sup>1</sup> Where no unused allowance banks exist, linking between programs with different levels of ambition can be problematic, but because their respective caps are “binding” (i.e., they limit emissions below what would have occurred otherwise), total emissions the atmosphere will be the same under linkage as would have occurred without linkage.



Table 2. Washington state emission reductions due to CCA under unlinked and linked cases, 2023-2030. Illustrative analysis based on Vivid Economics 2022 analysis and simplified assumptions\*

	Reduction in emissions from 2023 BAU levels due to complementary policies and other developments (MtCO <sub>2</sub> e)	Unlinked case	Linked case			
		Emission reductions due to CCA (MtCO <sub>2</sub> e)	Change in allowance price due to linkage	Emission reductions due to CCA (MtCO <sub>2</sub> e)	Imported CA/QC allowances used for compliance (MtCO <sub>2</sub> e)	Use of imported allowances as fraction of cap
2023	0.0	1.4	-30%	1.0		
2024	3.1	2.3	-31%	1.6		
2025	6.5	3.6	-32%	2.4	1.1	2.1%
2026	9.7	4.6	-32%	3.1	1.5	3.0%
2027	11.2	5.7	-34%	3.7	1.9	4.4%
2028	12.7	6.8	-36%	4.3	2.4	6.2%
2029	14.0	7.8	-38%	4.8	3.0	8.7%
2030	15.8	8.7	-40%	5.3	3.5	11.7%
Total	73.0	40.9		26.3	13.5	

\* Linked case assumes a linear marginal abatement cost (MAC) curve, with CCA-driven in-state emission reductions being directly proportional to the carbon price in that year, and with CA/QC allowances making up difference. A more detailed modeling analysis would better capture the net costs and intertemporal dynamics of abatement investments.

Table 3. Comparison of CCA allowance prices and auction revenues under unlinked and linkage in 2025 cases, based on Vivid Economics 2022 analysis and authors' calculations

	Unlinked case (with APCR revenue frontloaded)					Linkage in 2025				
	Unallocated allowances auctioned (excl reserves) (MtCO <sub>2</sub> e)	APCR amounts auctioned (MtCO <sub>2</sub> e)	Total auctioned (MtCO <sub>2</sub> e)	Price (\$/tCO <sub>2</sub> e)	State revenue (\$B)	Unallocated allowances auctioned (excl reserves) (MtCO <sub>2</sub> e)	APCR amounts auctioned (MtCO <sub>2</sub> e)	Total auctioned (MtCO <sub>2</sub> e)	Price (\$/tCO <sub>2</sub> e)	State revenue (\$B)
2023	30.7	10.3	41.1	\$58.3	<b>\$2.40</b>	30.7	0.0	30.7	\$40.7	<b>\$1.25</b>
2024	29.8	0.7	30.5	\$61.2	<b>\$1.87</b>	29.8	0.0	29.8	\$41.3	<b>\$1.23</b>
2025	28.8	7.6	36.3	\$64.8	<b>\$2.35</b>	28.8	0.0	28.8	\$43.7	<b>\$1.26</b>
2026	27.4	0.0	27.4	\$70.0	<b>\$1.92</b>	27.4	0.0	27.4	\$46.8	<b>\$1.28</b>
2027	24.4	0.0	24.4	\$76.9	<b>\$1.88</b>	24.4	0.0	24.4	\$50.1	<b>\$1.22</b>
2028	20.9	0.0	20.9	\$84.0	<b>\$1.76</b>	20.9	0.0	20.9	\$53.4	<b>\$1.12</b>
2029	17.3	0.0	17.3	\$92.8	<b>\$1.61</b>	17.3	0.0	17.3	\$56.9	<b>\$0.98</b>
2030	14.3	0.0	14.3	\$100.2	<b>\$1.43</b>	14.3	0.0	14.3	\$60.1	<b>\$0.86</b>
Total	193.7	18.6	<b>212.3</b>		<b>\$15.21</b>	193.7	0.0	<b>193.7</b>		<b>\$9.21</b>
Notes:	Allowances auctioned drawn from appendix of WA ECY Revised Preliminary Regulatory Analyses (22-02-019), Appendix H1. Linkage prices estimated as the emissions-weighted average of WA and CA-QC prices for 2025-2030, and from linkage anticipated prices in that same analysis (see Regulatory Analysis appendix H.2). CA-QC prices derived from Exhibit 4 of Vivid Economic analysis in WA Ecology (2022), and linearly extrapolated beyond 2026.									

The substantial size of the current unused allowance bank in California is undisputed. California’s IEMAC has alluded to this surplus in multiple assessments since its inception in 2018 (Burtraw et al. 2023). CARB’s own analysis (CARB 2022, p.113) and analysis from the LAO (Petek 2023, fig.4) suggest the bank consists of more than 300 million allowances, or around one year’s worth of emissions from California covered entities. The bank is likely to be drawn down as California’s emissions caps decline. CARB asserts that the bank will be “exhausted by the end of the decade” (CARB 2022). In contrast, the LAO contends that – without further reforms – around 200 million allowances could remain unused by 2030 and “[a]s a result, covered entities would have more than enough allowances to comply with the regulation without actually needing to reduce their emissions any farther” (Petek 2023). Although multiple scenarios are possible, independent analyses suggest the risk of the bank persisting through 2030 is significant.

The size of this allowance bank greatly exceeds Washington’s potential demand for allowances under a linkage agreement, which as estimated in Table 1, may be on the order of 13-14 million tCO<sub>2</sub>e *cumulatively* between now and 2030. This means there is no guarantee that the use of California allowances by Washington entities through 2030 would correspond, ton-for-ton, to emission reductions.<sup>2</sup> Based on the LAO’s analysis, unless California takes steps to address the overhang, Washington’s demand would not substantially alter the circumstance where California entities could “comply with the regulation without actually needing to reduce their emissions.” Use of California allowances by Washington entities would therefore allow higher emissions in Washington without a corresponding level of reductions in California. The net result could be higher overall emissions (across Washington, California, and Quebec combined) than under a scenario where Washington decided not to link.

Ecology and the authors of the CCA are clearly aware of concerns posed by the large bank of unused California allowances. Section 70A.65.210(3) of the CCA, for example, instructs Ecology to assess “whether the aggregate number of unused allowances in a linked program would reduce the stringency of Washington’s program and the state’s ability to achieve its greenhouse gas emissions reduction limits.” **We suggest that, without further reforms by California, the bank of unused allowances will indeed pose a risk to the stringency of Washington’s program.** Furthermore, because the size of this bank greatly exceeds potential demand from Washington – and, through 2030, could even exceed *total emissions* from CCA-regulated entities in Washington – **there is little Ecology can do to rectify this risk on its own (e.g., by “adjusting the number of allowances offered each year” to Washington entities<sup>3</sup>).**

---

<sup>2</sup> Washington’s demand might somewhat reduce the supply of allowances in California, leading to (somewhat) higher prices, and a corresponding increase in California emissions abatement on the margin. However, this would not equate to a ton of CO<sub>2</sub> reduced for each California allowance used by Washington entities.

<sup>3</sup> As suggested in Ecology’s online linkage survey: <https://ecology.wa.gov/DOE/files/af/afbf6f34-fb93-4a4f-90d4-6f4e6fb8ab3f.pdf>

***Washington should encourage California to take three steps that could significantly reduce the risks posed by the overhang, and to help align California’s ambition with Washington’s.***

The risks posed by California’s unused allowance bank are well understood. Analysts in California have highlighted the challenges it poses for the achievement of the state’s own emission reduction goals, and have proposed remedies accordingly (Burtraw et al. 2018; Burtraw et al. 2019; Burtraw et al. 2020; Burtraw et al. 2022; Burtraw et al. 2023; Busch 2017a; Busch 2017b; Petek 2023). Three key recommendations stand out.

- First, California must explicitly extend the time horizon for its cap-and-trade program beyond 2030 (Burtraw et al. 2023; Petek 2023). This would not only better align California’s program with Washington’s, it would also provide needed clarity for California entities about future emission caps and potential allowance scarcity. This could in turn avoid a devaluing of allowance prices resulting from uncertainty about their value after 2030. As the IEMAC notes, “Ambiguity about the market after 2030 introduces risk to investments in climate-friendly projects relying on a return through the monetization of allowances (or avoiding the need to acquire allowances)” (Burtraw et al. 2023). Removing this ambiguity is the first step in reducing risks to Washington’s climate goals posed by a link with California and Quebec’s cap-and-invest programs.
- Second, California should tighten its cap for 2030. In its 2022 Scoping Plan, CARB set a revised goal for reducing statewide emissions to 48% below 1990 levels by 2030 (compared to California’s statutory goal of a 40% reduction). As discussed in the Scoping Plan, CARB intends to explore during 2023 whether there are any “changes that may be needed to allowance supply to help achieve [this] accelerated target for 2030” (CARB 2022, p.114), and has committed to reporting to the state legislature on its findings. If CARB were to lower its program’s 2030 emissions cap, this could help create demand for additional emissions reductions and reduce the existing unused allowance bank.
- Third, California should take other measures to reduce the overhang of unused allowances. Even if CARB revises downward the 2030 cap, this may not guarantee a sufficient drawdown of the unused allowance bank to allay concerns about the environmental risks of linking. When the EU ETS faced a similar bank of unused allowances during the past decade, it undertook a series of measures to calibrate the supply of new allowances entering the market, culminating in the creation of a “market stability reserve” that establishes predefined rules for adjusting allowance allocations based on changing circumstances.<sup>4</sup> These measures greatly accelerated the drawdown of the bank, ensuring that total allowance supply was better aligned with emissions. California’s IEMAC has for several years identified analogous approaches that could be adopted in California, reflecting California’s unique circumstances. These include creation of an emissions containment reserve (such as already exists under Washington’s cap-and-invest program), price floor adjustments, and/or other measures that would adjust allowance supply and how supply enters the market (Burtraw et al. 2023). To reduce the environmental risks of linking, Washington could encourage California to implement these measures.

---

<sup>4</sup> EU regulators undertook several interventions to reduce the bank of unused allowances, first through “backloading” allowance auctions and ultimately through the creation of the “Market Stability Reserve” – see [https://climate.ec.europa.eu/eu-action/eu-emissions-trading-system-eu-ets/market-stability-reserve\\_en](https://climate.ec.europa.eu/eu-action/eu-emissions-trading-system-eu-ets/market-stability-reserve_en).

Proposals are already in play in California to achieve all three of these objectives. As noted, CARB has committed to exploring possible adjustments to allowance supply in its latest Scoping Plan, and reporting to the state legislature on any necessary legislative authorizations. In parallel, legislation has already been introduced (AB-9) that would direct CARB to “evaluate potential updates to the market-based compliance mechanism” including consideration of the IEMAC’s recommendations.<sup>5</sup> Washington’s engagement with California on a potential linkage agreement could provide additional impetus for undertaking these reforms. Critically important, however, will be a clear sign that California intends to extend its cap-and-invest program beyond 2030 (and ideally out to 2050, in line with Washington’s cap-and-invest time horizon).

Should California not undertake these reforms, Washington may have other options for addressing the potential environmental risks of linkage. One option would be to pursue additional complementary policies to make up for any increase in emissions that might arise under linkage. In simplistic terms, this would mean increasing the size of the orange wedge in Figure 1, proportionate to any reduction in the blue wedge that might occur under linking. Doing so would reduce demand for allowances from the California-Quebec program and would also (all else equal) reduce allowance prices in Washington. In essence, this would shift the role of Washington’s cap-and-invest program to something more like the “backstopping” role that California’s program has historically played. One consequence could be lower auction revenues in Washington, which could make other goals – such as safeguarding overburdened communities – more difficult to achieve (depending on how revenues are used).

Given the potential challenges of accelerating Washington’s already ambitious complementary policies, another option would be to agree to linkage, but under conditions that would regulate potential risks to Washington’s greenhouse gas reduction goals.

### **Restricted linking**

Recognition of the issues that WA faces with respect to alignment and linkage with a much larger and well-established WCI ETS system is hardly new. With over 28 distinct ETS operating across the world, and another 21 in preparation or under consideration (ICAP 2023), a rich literature has examined the benefits and challenges of, as well as alternatives to, the type of full linkage that WA is contemplating with WCI.

As this literature shows, there are alternatives to immediate, full linkage that can help jurisdictions in negotiating these differences, delivering many of the benefits (lowering costs) while limiting risks (diminished in-state revenues and emission reductions), especially as greater alignment is pursued. Referred to as restricted linkage, they involve the partial, conditional or restricted recognition of units from another ETS (Burtraw et al. 2013; Füssler et al. 2016; Marcu 2015; Mehling 2016).

In work for the International Climate Action Partnership (ICAP) in 2015, a time when interest in linking ETSs was at its peak, we examined three restricted linking options: *quotas*, *exchange rates*, and *discount rates* (Lazarus et al. 2015)<sup>6</sup>. Quotas restrict the amount or type of units from other jurisdictions that can be used for compliance. The offset usage limits embedded in the CCA and most other ETSs are a commonly adopted form of quota. Here in the context of WA-WCI linkage, a quota could limit the number of WCI allowances that WA entities could use for compliance. Much like an offset quota, a quota

---

<sup>5</sup> See: [https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill\\_id=202320240AB9](https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=202320240AB9)

<sup>6</sup> This work was later published in the peer-reviewed literature (Schneider et al. 2017).

for imported allowances would help to ensure that a certain fraction of the emission reductions be achieved by regulated WA entities.

***An allowance import limit could be a practical step towards fuller linkage and achieving linkage criteria***

In contrast to immediate, full linkage or other restricted linkage options (exchange rates and discount rates<sup>7</sup>), we believe that **introducing a quota or limit on WCI allowances, could offer a particularly promising step for WA to consider on the path to full linkage**. A limit, properly designed, could help ensure and balance the attainment of the linkage criteria that Ecology needs to satisfy. While sufficient program alignment between WA and WCI could take years to accomplish, a limit could be put into play rather swiftly, with limited additional administrative or procedural effort. By making a quantity of lower cost compliance units available, it would provide immediate cost containment benefits to the extent these are sought. And by limiting the amount of imported allowances available, it would also ensure that the CCA leads to (a certain level of) emission reductions occurring within the state.

The setting of allowance import limits could allow Ecology to place guardrails on the potential loss of anticipated benefits for EJ communities and the loss of future revenue to support emission reduction investment in those and other communities. Conditions could be placed on entities' ability to use of imported allowances, similar to those for offsets, whereby facilities operating in affected communities would lose access to these units if air quality conditions do not improve.

A limit could also serve an incentive for jurisdictions to adopt the regulatory (or legislative) changes required to enable full linkage. The contingency of such a limit would also offer an easier off-ramp to terminate linking arrangements,<sup>8</sup> as well levers to adjust (e.g., limit levels or adding discount rates) should linking concerns prove to be more significant than anticipated.

***The limit could be set in a relatively straightforward manner, while balancing multiple factors***

A straightforward way to administer a limit would be in the form of fraction of imported allowance units that a covered entity could submit for compliance, much the way that offset limits currently work in the CCA and most other emission trading systems. In setting a limit, Ecology would need to balance several factors, in particular the level of cost reduction desired, the extent of in-state emission reductions sought, the amount of CCA auction revenues desired, and the level of confidence that retiring imported allowances will result in corresponding emission reductions in CA and QC, as well as the expected duration of the limit.

Based on the rough analysis described above, we can illustrate how some of these factors could be taken into account in setting a limit. For example, if a) the limit were intended serve for only the 1<sup>st</sup>

---

<sup>7</sup> *Exchange rates* would adjust the value of units transferred between jurisdictions by a conversion factor; while *discount rates*, would also involve a conversion factor, but place a greater value on units of the own jurisdiction. We do not think either approach would be fit for purpose for a WA-WCI linkage. As described in Schneider et al (2017), exchange rates could lead to unintended adverse environmental and economic consequences. Discount rates, on the other hand, might be help to solve for different levels of ambition in the two programs, but would be difficult and politically challenging to administer.

<sup>8</sup> Where linking is formalized in a linking agreement, this may require a termination procedure (Mehling & Haites 2009). The way the termination of a linking agreement is organized may affect abatement costs as well as subsequent price divergence (Pizer & Yates 2015).

compliance period (keeping open the prospect of full linkage starting in 2027 for the 2<sup>nd</sup> compliance period, should all linkage criteria be adequately satisfied in time for this to occur); and b) the State were to aim for the majority of emissions reductions (e.g. 2/3s or more) due to the CCA to occur in-state, then assuming the figures in the last column of Table 2 above are reasonably accurate, an imported allowance limit covering 2025-2026 (or the full first compliance period of 2023-2026) on the order of 2-3% of compliance units might be appropriate. This would limit allowance imports to what might be needed for immediate compliance, for example, but could avoid the creation of a large bank of unused allowances in Washington.<sup>9</sup>

While such a limit would offer some level of cost containment, WA CCA allowance prices would likely remain above WCI allowance prices. The higher price, at least on an interim basis, could serve as hedge against uncertainty in the full emission reduction value of imported WCI allowances (due to the size of the bank, see above) as well as to ensure adequate revenues for CCA-funded programs. It would also serve to limit the extent of financial flows out of state.

***The limit can function in both directions and can be contingent on further progress in program alignment and satisfaction of linkage criteria.***

Even though the net flow of allowance units under full or restricted linkage would likely be in the direction of WA state, both WA and WCI jurisdictions could adopt similar imported allowance limits. Indeed, doing so would be in the spirit of pursuing eventual, full linkage. It would also prepare for the possibility that CA might adopt a much more stringent cap for 2030, or that other unanticipated factors lead WA CCA prices to drop below WCI levels in the near future.

The limit could be applied on an interim basis, and renewable contingent upon the extent of progress towards alignment of ambition and time horizon as noted above. It could also be contingent upon assessment of the impact of introducing imported allowance units on satisfying Ecology's linkage criteria, and for example, not leading to an overall negative effect on highly impacted communities in Washington, California, or Québec.

**Conclusion**

As Ecology has alluded to in its survey questions, there are numerous factors to be considered in any linkage agreement between Washingtons' cap-and-invest program and the WCI program. In this letter, we have focused on the largest structural issues with potential linkage, including the programs' misaligned time horizons and relative ambition, and proposed an approach based on limited or restricted linking until these structural misalignments are addressed. These are not the only issues the Ecology must consider. Although not addressed here, a successful linkage arrangement is likely to depend on other factors as well, including:

---

<sup>9</sup> Quebec, for example, has been a net importer of allowances from California under the WCI program, but the volume of imports has far exceeded the number of allowances immediately surrendered for compliance, with Quebec entities banking the remainder to meet future obligations. If this dynamic were to play out in Washington, banking by Washington entities could expose Washington's program to added environmental risks, if California did not take steps to reduce the total unused allowance surplus.

- Alignment of non-compliance penalties. This is frequently cited as an essential condition for linking carbon markets, yet independent analyses suggest Washington and WCI are not sufficiently aligned (EDF and IETA 2022).
- Handling of electricity imports. Linkage of the programs as currently configured could cause distortions in Northwest electricity markets and pose possible environmental integrity risks.
- Alignment of carbon offset policies, including bringing offsets under the cap in the WCI program. Washington's policy of keeping offsets under the cap is an important innovation in cap-and-invest program design, eliminating most of the environmental integrity risks associated with offsets. Although not an essential requirement for linkage, Washington should encourage California and Quebec to adopt similar policies to better align their stringency.
- Adopting a common policy for an Emissions Containment Reserve (ECR). As mentioned above, this could be an essential element of California's efforts to reduce its unused allowance bank, as recommended by the California IEMAC. If California adopts an ECR, alignment of ECR provisions across the entire Washington-WCI linked system would be ideal for a smoothly functioning market.

Addressing the first two issues identified above will be essential for any linking agreement. The latter two elements will be important to address under full linkage, which as we argue here, should ultimately be contingent upon aligning both time horizons and ambition.

Finally, we wish to thank Ecology for inviting comments and for the thorough stakeholder engagement work that you are leading. The Climate Commitment Act represents an important milestone not just for Washington's leading climate action efforts but for advancing the design and role of emissions trading systems. We stand ready to assist you further in your pursuit of linkage. Please reach out to us if you have any questions.



Derik Broekhoff, Senior Scientist, SEI US  
derik.broekhoff@sei.org



Michael Lazarus, Senior Scientist and Center Director, SEI US  
michael.lazarus@sei.org

## References

- Bodansky, D. M., Hoedl, S. A., Metcalf, G. E. and Stavins, R. N. (2015). Facilitating linkage of climate policies through the Paris outcome. *Climate Policy*, no. ahead-of-print. 1–17.
- Burtraw, D., Carlson, A., Cullenward, D., Foster, Q. and Fowlie, M. (2018). *2018 Annual Report of the Independent Emissions Market Advisory Committee*. California Environmental Protection Agency. <https://calepa.ca.gov/independent-emissions-market-advisory-committee/>
- Burtraw, D., Carlson, A., Cullenward, D. and Fowlie, M. (2019). *2019 Annual Report of the Independent Emissions Market Advisory Committee*. California Environmental Protection Agency. <https://calepa.ca.gov/independent-emissions-market-advisory-committee/>
- Burtraw, D., Carlson, A., Cullenward, D., Fowlie, M. and Kropke, J. (2020). *2020 Annual Report of the Independent Emissions Market Advisory Committee*. California Environmental Protection Agency. <https://calepa.ca.gov/independent-emissions-market-advisory-committee/>
- Burtraw, D., Cullenward, D., Fowlie, M., Holt, B., Sutter, K. R. and Brown, R. (2023). *2022 Annual Report of the Independent Emissions Market Advisory Committee*. California Environmental Protection Agency. <https://calepa.ca.gov/independent-emissions-market-advisory-committee/>
- Burtraw, D., Cullenward, D., Fowlie, M., Sutter, K. R. and Brown, R. (2022). *2021 Annual Report of the Independent Emissions Market Advisory Committee*. California Environmental Protection Agency. <https://calepa.ca.gov/independent-emissions-market-advisory-committee/>
- Burtraw, D., Palmer, K. L., Munnings, C., Weber, P. and Woerman, M. (2013). *Linking by Degrees: Incremental Alignment of Cap-and-Trade Markets*. RFF Discussion Paper 13-04. Resources for the Future, Washington, DC. <http://www.rff.org/Publications/Pages/PublicationDetails.aspx?PublicationID=22167>
- Busch, C. (2017a). *Recalibrating California's Cap-and-Trade Program to Account for Oversupply: An Original Quantitative Analysis and Policy Recommendations*. Energy Innovation. [https://energyinnovation.org/wp-content/uploads/2017/04/RecalibratingCA\\_Cap-Trade\\_2017.pdf](https://energyinnovation.org/wp-content/uploads/2017/04/RecalibratingCA_Cap-Trade_2017.pdf)
- Busch, C. (2017b). *Oversupply Grows in the Western Climate Initiative Carbon Market: An Adjustment for Current Oversupply Is Needed to Ensure the Program Will Achieve Its 2030 Target*. Energy Innovation. <https://energyinnovation.org/wp-content/uploads/2018/02/WCI-oversupply-grows-February-update.pdf>
- CARB (2022). *2022 Scoping Plan for Achieving Carbon Neutrality*. California Air Resources Board. <https://ww2.arb.ca.gov/our-work/programs/ab-32-climate-change-scoping-plan/2022-scoping-plan-documents>
- EDF and IETA (2022). *A Roadmap for Linkage: Aligning California and Washington's Carbon Prices*. Environmental Defense Fund and International Emissions Trading Association. <https://ieta.org/resources/Resources/Reports/ARoadmapforLinkageJuly2022.pdf>
- EPRI (2013). *Exploring the Interaction Between California's Greenhouse Gas Emissions Cap-and-Trade Program and Complementary Emissions Reduction Policies*. 3002000298. Electric Power Research Institute.



[https://ieta.wildapricot.org/resources/EU/Overlapping\\_Policies\\_Drafting\\_Group/epri\\_complementary\\_mech\\_report\\_highlighted.pdf](https://ieta.wildapricot.org/resources/EU/Overlapping_Policies_Drafting_Group/epri_complementary_mech_report_highlighted.pdf)

Flachsland, C., Marschinski, R. and Edenhofer, O. (2009). To link or not to link: benefits and disadvantages of linking cap-and-trade systems. *Climate Policy*, 9. 358–72. DOI: 10.3763/cpol.2009.0626

Füssler, J., Wunderlich, A. and Taschini, L. (2016). International carbon asset reserve: prototyping for instruments reducing risks and linking carbon markets. *Zurich/London: INFRAS*.

Haites, E., Mullins, F. and Consultants, M. (2001). *Linking Domestic and Industry Greenhouse Gas Emission Trading Systems*. Margaree Consultants

ICAP (2023). Emissions Trading Worldwide: 2023 ICAP Status Report. 22 March 2023. <https://icapcarbonaction.com/en/publications/emissions-trading-worldwide-2023-icap-status-report>

Kahn, D. (2013). E.U. market troubles will prevent emissions trade linkage -- Calif. air chief. 19 April 2013. <https://subscriber.politicopro.com/article/eenews/1059979761>

La Hoz Theuer, S., Schneider, L. and Broekhoff, D. (2019). When less is more: limits to international transfers under Article 6 of the Paris Agreement. *Climate Policy*, 19(4). 401–13. DOI: 10.1080/14693062.2018.1540341

Lazarus, M., Schneider, L., Lee, C., and van Asselt, H. (2015). Options and Issues for Restricted Linking of Emissions Trading Systems. , 2015.

Mace, M. J., Millar, I., Schwarte, C., Anderson, J., Broekhoff, D., Bradley, R., Bowyer, C. and Heilmayr, R. (2008). *Analysis of the Legal and Organisational Issues Arising in Linking the EU Emissions Trading Scheme to Other Existing and Emerging Emissions Trading Schemes*. ENV.C.2/SER/2006/0115r. European Commission Director General for Environment. [https://static1.squarespace.com/static/56bccdcdb09f954f203561af/t/5720d52df8baf30a23ca975a/1461769520738/SYDDMS-719716-v1-FIELD\\_EU-ETS\\_linking\\_project\\_2008+%283%29.PDF](https://static1.squarespace.com/static/56bccdcdb09f954f203561af/t/5720d52df8baf30a23ca975a/1461769520738/SYDDMS-719716-v1-FIELD_EU-ETS_linking_project_2008+%283%29.PDF)

Marcu, A. (2015). *Mitigation Value, Networked Carbon Markets and the Paris Climate Change Agreement*. World Bank Group

Mehling, M. (2016). Multilateral linking of emissions trading systems.

Petek, G. (2023). *Assessing California's Climate Policies: The 2022 Scoping Plan Update*. California Legislative Analyst's Office. <https://lao.ca.gov/Publications/Report/4656>

Ranson, M. and Stavins, R. (2016). Linkage of greenhouse gas emissions trading systems: learning from experience. *Climate Policy*, 16(3). 284–300. DOI: 10.1080/14693062.2014.997658

Schneider, L. and La Hoz Theuer, S. (2019). Environmental integrity of international carbon market mechanisms under the Paris Agreement. *Climate Policy*, 19(3). 386–400. DOI: 10.1080/14693062.2018.1521332

Schneider, L., Lazarus, M., Lee, C. and van Asselt, H. (2017). Restricted linking of emissions trading systems: options, benefits, and challenges. *International Environmental Agreements: Politics, Law and Economics*. DOI: 10.1007/s10784-017-9370-0

Vivid Economics (2022). *Washington State Climate Commitment Act: Summary of Market Modeling and Analysis of the Proposed Cap and Invest Program*. Washington Department of Ecology. [https://app.leg.wa.gov/ReportsToTheLegislature/Home/GetPDF?fileName=Vivid-CCA-Report\\_5a57f91c-6b59-468b-9689-2521a1d6daf2.pdf](https://app.leg.wa.gov/ReportsToTheLegislature/Home/GetPDF?fileName=Vivid-CCA-Report_5a57f91c-6b59-468b-9689-2521a1d6daf2.pdf)

Washington State Department of Ecology (2022). *Revised Preliminary Regulatory Analyses*. Publication 22-02-019. <https://apps.ecology.wa.gov/publications/SummaryPages/2202019.html>