

ICTSD/ERCST MEETING

Allowance Allocation in California's Emissions Trading System
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CLAYTON MUNNINGS
West Coast Representative
International Emissions Trading Association



IETA
CLIMATE CHALLENGES
MARKET SOLUTIONS

WHAT IS IETA?

- **Global non-profit association composed of over 100 member companies: the trusted business voice on market-based climate solutions.**
- **Two-part mission is to (1) enable business to engage in climate action consistent with the objectives of the UNFCCC and (2) establish effective emissions trading systems that are fair, open, efficient, accountable, and consistent across national boundaries.**
- **Role in California is to ensure that best practices are incorporated into California's emissions trading system and to provide thought leadership to identify opportunities to improve best practices.**

WHAT IS COMPETITIVENESS?

- **Competitiveness means that certain regulated entities are not at an economic disadvantage compared to their unregulated competition.**
- **Achieving this level playing field involves reducing the carbon price differential between regulated and unregulated entities.**
- **Failure to do so can lead to negative economic impacts for regulated entities (e.g., reductions in jobs, profits, market share, domestic investments) and negative environmental impacts, such as emissions leakage.**

ADDRESSING COMPETITIVENESS

The types of assistance to support sectors at risk can be integrated within the carbon pricing mechanism or complementary to it

Integrated		Complementary	
Measures integrated into the design of the carbon pricing scheme		External measures that operate in parallel to a carbon pricing policy	
Measure	Examples	Measure	Examples
Free allocation	EU ETS, California, New Zealand, S. Korea	Cash transfers	EU ETS (for indirect emissions costs)
Exemptions	South Africa	Direct support	New Zealand, Australia

Free allocation of allowances has tended to be the most prevalent measure to mitigate leakage risk in an ETS

GENERAL PRINCIPLES ON COMPETITIVENESS

- **Targeted:** applicable to emissions-intensive and trade-exposed (EITE) sectors.
- **Sufficient:** at a level that reconciles carbon pricing differentials.
- **Predictable:** rules should be durable over time to facilitate investments from business.
- **Adaptive:** rules should evolve when other jurisdictions change their carbon price.
- **Aligned:** rules should be harmonized with other jurisdictions that price carbon.

BACKGROUND IN CALIFORNIA

- Emissions trading system started in 2013 and covers 80% of GHG emissions.
- Absolute cap decreases at ~3.3% annually pre-2020 and ~5.0% post-2020.
- Compliance requirements for entities emitting >25Kt of GHG in the following sectors:
 - Utility – production and importation of electricity and natural gas for heating;
 - Transportation – distribution and importation of transport fuels;
 - Industrial – production of oil, gas, cement, glass and processing of food.
- Program is currently being significantly amended.

BACKGROUND IN CALIFORNIA

- **California takes a multi-faceted approach to addressing competitiveness issues:**
 - Regulation of imports – equalizes carbon price differential for the utility sector;
 - Price ceiling – offers a hard ceiling on excessively high allowance prices;
 - Carbon offsets – offer a slight discount (~10%) compared to allowances; and,
 - Complementary policies – achieve the majority of abatement (~90%) resulting in relatively low demand (and therefore prices) for the emissions trading system.
- **Given this context, the remainder of the presentation focuses on free allocation to EITE industries as a means to address competitiveness issues.**

OVERVIEW OF ALLOCATION IN CALIFORNIA

- The transportation sector does not receive free allowances and therefore must either buy allowances at auction or on the secondary market.
- Electricity and natural gas distributors receive free allocations (even though they are not regulated entities) which they must consign to auction and then use the resulting revenue to keep consumer electricity prices from rising too high.
- The industrial sector receives about ~90% of the allowances they need for free based on formulas that utilize output-based allocation. This level of free allocation corresponds to approximately ~10% of total allowances in any given year.

OUTPUT BASED UPDATING

- The majority of allocations in the industrial sector are awarded via this formula.
- $$\text{Allocation}_{\text{facility}} = \text{Adjustment Factor}_{\text{sector}} * \text{Benchmark}_{\text{product}} * \text{Cap Decline Factor} * \text{Output}_{\text{facility}}$$
 - The cap decline factor ensures the industrial sector tracks with reductions from other sectors.
 - The adjustment factor is determined by an assessment of each sector's leakage risk.
 - A benchmark is chosen for each product produced by the facility.
 - The output is calculated based on an individual facility's production and is updated annually.

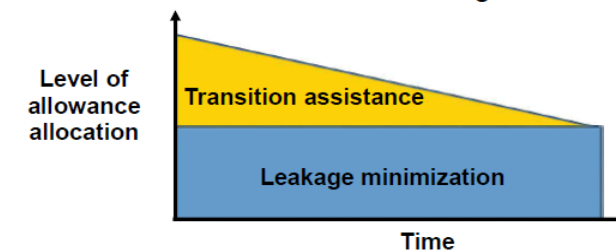
SECTORAL ADJUSTMENT FACTOR

- The California Air Resources Board (CARB) conducted a leakage assessment in 2010 to determine whether, and the degree to which, different industrial sectors deserved free allocation based on two metrics: emissions intensity and trade exposure.
- The initial intent was to use adjustment factors to slowly reduce free allocation as neighboring jurisdictions began to price carbon.

CARB Objectives for Industrial Allocation

- CARB provides industrial allowance allocation for:
 - **Transition assistance** to smooth the change to an economy with GHG costs
 - **Leakage minimization** protect certain industrial sectors vulnerable to leakage risk

Conceptual Representation of Allowance Allocation for Transition Assistance and Leakage Minimization



SECTORAL ADJUSTMENT FACTOR

Emissions Intensity

- Used because high emission facilities face high compliance cost.
- Emissions Intensity = (Sectoral GHG Emissions / Million USD Value Added by Sector).
- Emissions from 2008 collected via CARB's reporting rule.
- Value added for 2008 from U.S. Census and Annual Survey of Manufacturers.

Trade Exposure

- Used because trade exposed facilities find it difficult to pass costs through to consumers.
- Trade Exposure = (Value of Imports + Value of Exports / Value of Imports + Value of Production).
- 0% TE implies no imports or exports and 100% TE implies all production goes to exports.
- Approximated using a combination of national and regional data from 2005 – 2008.

Leakage Risk Determination

Emissions Intensity Classification:

Classification	Emissions Intensity (MTCO ₂ /\$M value added)
High	> 5,000
Medium	1,000 to 4,999
Low	100 to 1000
Very low	< 100

Trade Exposure Classification:

Classification	Trade Exposure (%)
High	> 19 %
Medium	10 to 19%
Low	< 10%

Leakage Risk Classification:

Leakage Risk	Emissions Intensity	Trade Exposure
High	High	High Medium Low
	Medium	High
Medium	Medium	Medium Low
	Low	High Medium
Low	Low	Low
	Very Low	High Medium Low



SECTORAL ADJUSTMENT FACTOR

- Neighboring jurisdictions did not follow California’s lead by pricing their own carbon emissions.
- This motivated regulatory changes in 2013 to increase assistance factors and motivated legislative changes to further increase assistance factors in 2018.
- Ultimately, the assistance factor now equals one (or 100 percent) for all industrial sectors receiving free allocations.
- In summary, CARB adapted to unexpected political realities while explicitly remaining open-minded toward decreasing assistance factors if and when its neighbors begin pricing carbon.

Leakage Risk Category	Regulation 2010			Amendments 2013			Proposed Amendments 2018		
	First	Second	Third	First	Second	Third	First	Second	Third
High	100	100	100	100	100	100	100	100	100
Medium	100	75	50	100	100	75	100	100	100
Low	100	50	30	100	100	50	100	100	100

PRODUCT BENCHMARK

- **Benchmarks based on products are determined via the following equation:**
 - $\text{Benchmark}_{\text{product}} = 0.9 * (\text{Sectoral GHG Emissions from Product} / \text{Sectoral Production of Product})$.
 - Data taken between 2008 and 2010 based on CARB's reporting requirements, CARB industry surveys and data from the US EPA.
- **Benchmark value at less than 100% of the average was used in an effort to recognize and encourage early abatement.**
- **CARB intends to update benchmark values before 2021.**

FACILITY OUTPUT

- Output is a three-year moving average that is updated annually.
- Chosen because the “subsidy” to production discourages negative economic and environmental outcomes, while the “tax” encourages abatement and technological innovation.
- Timing works as follows:
 - Free allocation occurs in January of each year and emissions reporting occurs in April of each year.
 - For example, output data for the year 2010 comes in April 2011 in time for January 2012 allowance allocations.
 - Therefore there is a two-year lag between the most recent data year on output and when corresponding allowances are allocated.

SIMPLIFIED ALLOWANCE ALLOCATION FORMULA

- **Simplified product-based allowance allocation formula:**
 - $\text{Allocation} = \text{Benchmark}_{\text{product}} * \text{Output}_{\text{facility}}$
 - Where benchmark is a sector-level emission intensity (CO₂ per product) and output represents facility-level production updated annually.
- **Simplified energy-based allowance allocation formula**
 - This approach is only used when calculating a product-based benchmark is infeasible.
 - This approach is not preferred because it does not reward early abatement for those who made certain improvements such as more efficient heat use.
 - $\text{Allocation} = \text{Benchmark}_{\text{fuel}} * \text{Fuel Consumed}_{\text{facility}}$
 - Where benchmark is a sector-level fuel intensity (set at default CO₂ per unit of combusted natural gas) and output represents facility-level fuel consumption without updating.

Clayton Munnings
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munnings@ieta.org



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