ENHANCING OPPORTUNITIES FOR INNOVATORS

AJW
20 YEARS

Acceleration Mechanism

Primary Design Elements

May 23, 2023

Preliminary recommendations are highlighted

Disclaimer The material in the following slides are preliminary recommendations based on independent research, analysis, and stakeholder input and do not reflect any decisions from CARB staff

Why an Acceleration Mechanism is Needed

- Innovation has consistently outpaced the stringency of the program, leading to significant growth in the credit bank, credit devaluations, and heightened uncertainty stifling clean fuel investments

- Lost opportunities for emission reductions

- Will help to ensure that LCFS can continue to send strong market signals that will drive innovation and deliver further GHG reductions

- Program has multiple features to protect against price run-ups and credit shortfalls, but no "built-in" features for over-exceedance of targets

AJW's Process for Developing This Recommendation

- Reviewed existing, historical, and public material on CARB's LCFS website including comment letters from past workshops, LCFS quarterly summary reports, and data from the LCFS data dashboard

- AJW conducted extensive stakeholder outreach including people from academia, non-profits, the private sector, credit and deficit generators, and CARB staff, and held working group meetings with industry associations to help think through the acceleration mechanism design questions

- Performed analysis on available data including initial modeling

Design Questions

1 What is the basis for triggering the mechanism?

2 What is the duration of time that triggers?

3 What is the magnitude of increased stringency?

4 What is the lead time given to market participants?

Factors Considered

- Simplicity
- Ease of public data access
- LCFS goals
- Catching lasting trend v. snapshot
- Future deficit obligations (some credit bank is healthy)

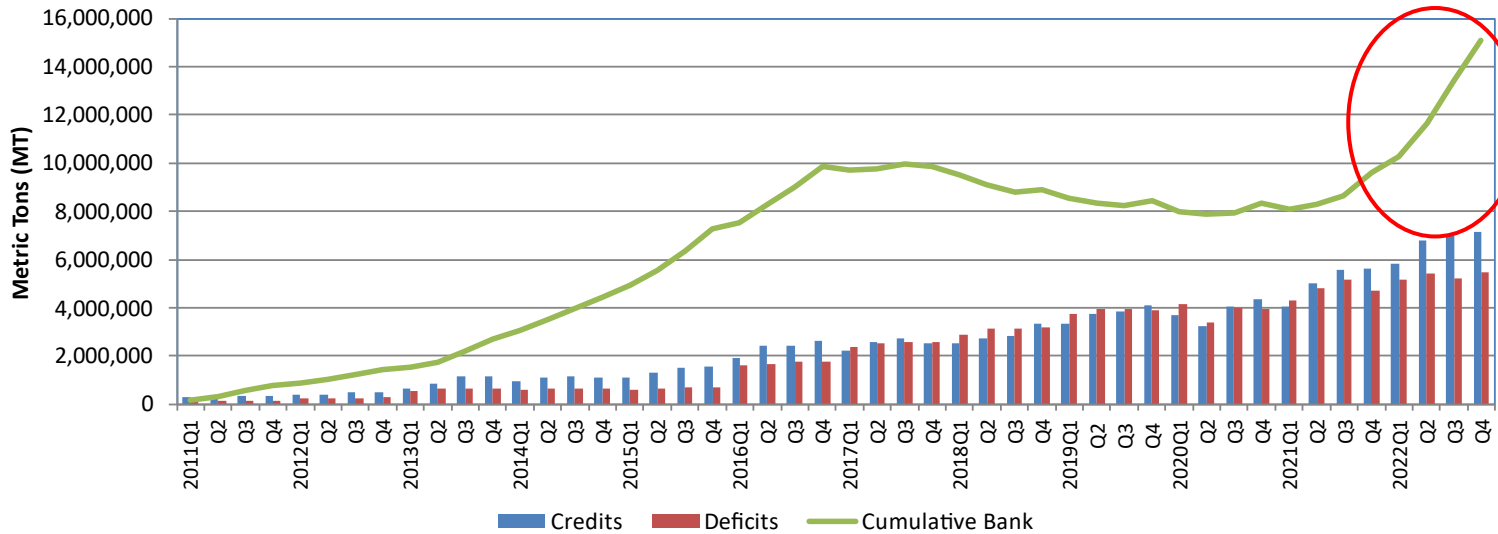| Credit-Based		
Pros	**Cons**	**Approach**
• Transparent & simple for agency • Less volatile than price • More closely aligns with CARB goal of reducing CO_2	• Less transparent for market participants	• Formula(s) that incorporate Bank, Credits, and Deficits • Cumulative Credit Bank: credits in bank + current credit production can cover the next 2 compliance years (e.g., quarterly/annual/etc.) • Cumulative Credit Bank to Deficits

Price-Based		
Pros	**Cons**	**Approach** (use settlement data in LRT)
• Market participant preference • Transparent for market participants and investors • Will likely generate more market investment • Simpler for market to understand	• Potential for setting price too low • More opportunities for manipulation	• Price floor • Weighted average price • Indexed to % below Credit Clearance Mechanism

	Formula	Trigger	2018	2019	2020	2021	2022
Cumulative Credit Bank	(B)		8,918,202	8,438,847	8,342,978	9,582,822	15,069,408
Annual Credits Generated	(C)		11,419,848	15,008,198	15,392,363	20,208,421	26,712,553
Annual Deficits Generated	(D)		12,366,566	15,487,415	15,488,232	18,968,577	21,225,967
TRIGGER APPROACHES							
Bank over 2 Years Deficits	(B/D0+D1)	Unclear	0.466	0.303	0.269	0.279	0.375
Credit Bank to Deficits	(B/D)	>0.70	0.721	0.545	0.539	0.507	0.710
Annualized Credits to Deficits	(C/D)	>1.0	0.91	0.96	0.99	1.07	1.26
Credit Bank Size		>12M credits	NO	NO	NO	NO	YES

Ratchet is needed for the spike in 2021-22; previous bank was healthy

Fig 1. Total Credits and Deficits (MT)
for All Fuels Reported Q1 2011 - Q4 2022

Two-Test Verification – An Example

B/D > 0.70

- Indicates if the cumulative credit bank is sufficiently robust to support program compliance without undermining investments in low-CI fuels
- Does not capture the current rate of credit generation

C/D > 1.0

- Indicates the pace of investments and innovation in low-CI fuels relative to program stringency
- Does not ensure that the credit bank is sufficient to support future demand

Therefore, a combination of both formulas should be applied

If **B/D > 0.70** __AND__ **C/D > 1.0** = Trigger

Factors Considered

- Potential for market manipulation
- Lost opportunities to realize GHG reductions
- Ability of market to plan for/anticipate mechanism being triggered
- Seasonality in fuel use

4 Quarters / One Year		
Pros	**Con**	**Approach**
• Simplest option for CARB and stakeholders • Catches seasonality issues • Minimizes manipulation	• Greater lag time before compliance adjustment (Ex: from Q1 2022 overperformance, 12-22 month delay before adjustment in Jan 2024) • Lost opportunity to realize GHG reductions	• Calendar year (simple) • Rolling 4-quarter (too variable)

Other Options	
Three Quarters	**More than One Year**
• Minimum that should be considered • Less time that this would undercut the goal of certainty • Issues with seasonality in fuel use	• Not responsive enough to the market

3 | What is the magnitude of increased stringency?

Factors to Consider

- Simplicity
- Size of potential stepdown
- Balancing size of change – enough to cause market reaction but still marginal
- Modeling to determine market impacts

Percentage		
Pros	**Con**	**Approach**
• With the presence of a stepdown, reasonable and small adjustment in the short-term	• After 2030, may be too proportionally small to affect change	• 0.5% • 1.0% • Blended / variable (next slide)

Compliance Year Jump		
Pros	**Con**	**Approach**
• Optically preferable • Simple	• Gets to be a large jump, especially in outer years of program	• Continuous increase with limits • Freeze (next slide)

Variable v. fixed
(for percentage increase)

Varying magnitudes of CI reductions based on how substantial the current reductions are, or after certain year

- At 15% reduction, an increase of 0.5% is relatively larger than at 25%

Varying magnitudes of CI reductions based on how substantial the overperformance is

Continuous increase v. freeze
(for compliance year jump)

Continuous increase: All future years automatically jump – sends year over year signal that gets large

Continuous increase with limits: All future years automatically jump, but in the event of repeated triggers, Board approval would be needed before a third consecutive trigger

Freeze: Sends one-time signal – allows time to see how market reacts

- E.g., 2024 target moves to 2025 target (13.75%). 2025 target remains at 13.75%.

Factors Considered

- Simplicity
- Providing sufficient time for stakeholder planning
- When data becomes publicly available
- Avoid manipulation

Annual Assessment		
Pros	**Cons**	**Approach**
• Simple • Builds on CCM framework • Updates would adhere to annual compliance curve schedule changes	• Slow responsiveness to issues from Q1 or Q2	Follow CCM schedule: EO announces by May 15. Jan 1 effective date

Rolling Assessment		
Pros	**Cons**	**Approach**
• Attempts to minimize manipulation • Allows for faster responsiveness	• Complex • Variable lead time • Variable responsiveness	On a quarterly basis, assess 4 quarters back

Jan 1st Compliance Schedule Change

Quarter	Data Available	Trigger Decision	Advance Notice Prior to Change	Compliance Target Change Date	Lag time since original quarter to compliance schedule change
Q1	July 31	Aug 31	4 months	Jan 1	9 months
Q2	Oct 31	Nov 30	1 months	Jan 1	6 months
Q3	Jan 31	Feb 28	10 months	Jan 1	1 year 3 months
Q4	Apr 30	May 31	7 months	Jan 1	12 months

Interim Compliance Schedule Change

Quarter	Data Available	Trigger Decision	Advance Notice Prior to Change	Compliance Target Change Date	Lag time since original quarter to compliance schedule change
Q1	July 31	Aug 31	5 months	Feb 1	10 months
Q2	Oct 31	Nov 30	5 months	May 1	10 months
Q3	Jan 31	Feb 28	5 months	Aug 1	10 months
Q4	Apr 30	May 31	5 months	Nov 1	10 months

Summary

Basis for Triggering → Credit-based; two-test verification

Magnitude of Increased Stringency → Continuous increase with limits

What is the Duration of Time that Triggers? → One calendar year

Lead Time → Decision by May 15 for Jan. 1 effective date