



ENHANCING OPPORTUNITIES FOR INNOVATORS

# 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?



# 1

## What is the basis for triggering the mechanism?

### 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                                                                                                                                                                                                                                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• Transparent &amp; simple for agency</li> <li>• Less volatile than price</li> <li>• More closely aligns with CARB goal of reducing CO2</li> </ul> | <ul style="list-style-type: none"> <li>• Less transparent for market participants</li> </ul> | <ul style="list-style-type: none"> <li>• Formula(s) that incorporate Bank, Credits, and Deficits</li> <li>• Cumulative Credit Bank: credits in bank + current credit production can cover the next 2 compliance years (e.g., quarterly/annual/etc.)</li> <li>• Cumulative Credit Bank to Deficits</li> </ul> |

### Price-Based

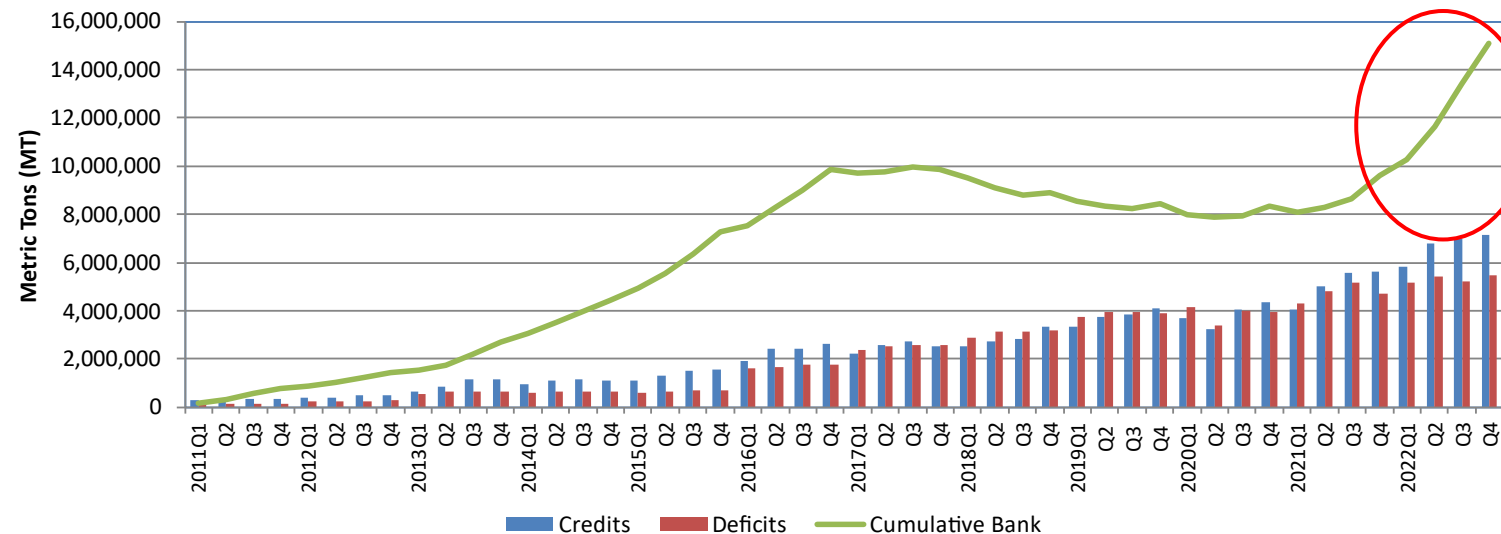
| Pros                                                                                                                                                                                                                                              | Cons                                                                                                                                   | Approach (use settlement data in LRT)                                                                                                                      |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• Market participant preference</li> <li>• Transparent for market participants and investors</li> <li>• Will likely generate more market investment</li> <li>• Simpler for market to understand</li> </ul> | <ul style="list-style-type: none"> <li>• Potential for setting price too low</li> <li>• More opportunities for manipulation</li> </ul> | <ul style="list-style-type: none"> <li>• Price floor</li> <li>• Weighted average price</li> <li>• Indexed to % below Credit Clearance Mechanism</li> </ul> |



Easy-to-access data

|                                |           |              | 2018       | 2019       | 2020       | 2021       | 2022       |
|--------------------------------|-----------|--------------|------------|------------|------------|------------|------------|
|                                | Formula   | Trigger      |            |            |            |            |            |
| 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 |
| <b>TRIGGER APPROACHES</b>      |           |              |            |            |            |            |            |
| 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        |

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



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

# 1

## What is the basis for triggering the mechanism?

### 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                                                                                                                      |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• Simplest option for CARB and stakeholders</li> <li>• Catches seasonality issues</li> <li>• Minimizes manipulation</li> </ul> | <ul style="list-style-type: none"> <li>• Greater lag time before compliance adjustment (Ex: from Q1 2022 overperformance, 12-22 month delay before adjustment in Jan 2024)</li> <li>• Lost opportunity to realize GHG reductions</li> </ul> | <ul style="list-style-type: none"> <li>• <b>Calendar year (simple)</b></li> <li>• Rolling 4-quarter (too variable)</li> </ul> |

### Other Options

| Three Quarters                                                                                                                                                                                           | More than One Year                                                                      |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• Minimum that should be considered</li> <li>• Less time that this would undercut the goal of certainty</li> <li>• Issues with seasonality in fuel use</li> </ul> | <ul style="list-style-type: none"> <li>• Not responsive enough to the market</li> </ul> |



## 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                                                                                                            |
| <ul style="list-style-type: none"> <li>• With the presence of a stepdown, reasonable and small adjustment in the short-term</li> </ul> | <ul style="list-style-type: none"> <li>• After 2030, may be too proportionally small to affect change</li> </ul> | <ul style="list-style-type: none"> <li>• 0.5%</li> <li>• 1.0%</li> <li>• Blended / variable (next slide)</li> </ul> |

| Compliance Year Jump                                                                       |                                                                                                                   |                                                                                                                    |
|--------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|
| Pros                                                                                       | Con                                                                                                               | Approach                                                                                                           |
| <ul style="list-style-type: none"> <li>• Optically preferable</li> <li>• Simple</li> </ul> | <ul style="list-style-type: none"> <li>• Gets to be a large jump, especially in outer years of program</li> </ul> | <ul style="list-style-type: none"> <li>• Continuous increase with limits</li> <li>• Freeze (next slide)</li> </ul> |



# 3

## What is the magnitude of increased stringency?



### 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%.



# 4

## What is the lead time given to market participants?

### Factors Considered

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

#### Annual Assessment

| Pros                                                                                                                                                                      | Cons                                                                                            | Approach                                                                     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• Simple</li> <li>• Builds on CCM framework</li> <li>• Updates would adhere to annual compliance curve schedule changes</li> </ul> | <ul style="list-style-type: none"> <li>• Slow responsiveness to issues from Q1 or Q2</li> </ul> | <p>Follow CCM schedule: EO announces by May 15.<br/>Jan 1 effective date</p> |

#### Rolling Assessment

| Pros                                                                                                                              | Cons                                                                                                                         | Approach                                            |
|-----------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|
| <ul style="list-style-type: none"> <li>• Attempts to minimize manipulation</li> <li>• Allows for faster responsiveness</li> </ul> | <ul style="list-style-type: none"> <li>• Complex</li> <li>• Variable lead time</li> <li>• Variable responsiveness</li> </ul> | <p>On a quarterly basis, assess 4 quarters back</p> |



## 4

# What is the lead time given to market participants?

## 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

