

Low Carbon Fuel Standard

Public Workshop: Auto-Acceleration Mechanism and Step Down Benchmark Considerations

MAY 23, 2023



Agenda

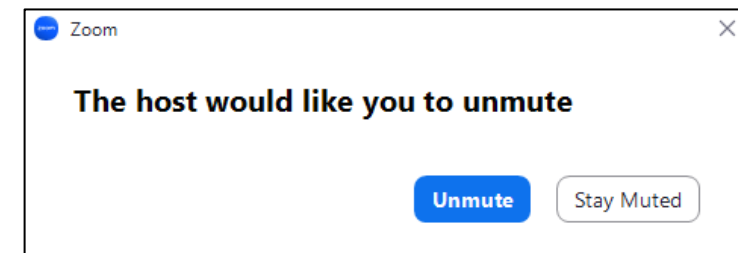
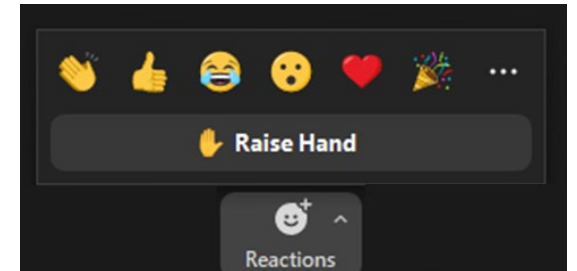
- Overview of auto-acceleration design elements and staff concepts
- Stakeholder presentations
 - UC Davis
 - AJW
 - Low Carbon Fuels Coalition
 - BTR Energy
- Public Comments

Today's Workshop Objectives

- Overview of auto-acceleration concepts
- Present staff's latest thinking on possible concepts
- Provide outside perspectives on auto-acceleration and step down concepts
- Solicit feedback from stakeholders to move forward on designs

Public Comment Logistics

- Workshop materials and public comment page available on the LCFS Meetings and Workshops page:
<https://ww2.arb.ca.gov/our-work/programs/low-carbon-fuel-standard/lcfs-meetings-and-workshops>
- Written feedback accepted through June 6th at 11:59 p.m.
- Q&A during the workshop
 - 1) Use the “**Raise Hand**” function in the “reactions” box at the bottom Zoom toolbar
 - 2) When staff call your name, please “**unmute**” yourself to begin
 - 3) Commenters will be given 3 minutes for comments, no ceding time to others



LCFS Rulemaking Overview

Objectives for LCFS Rulemaking

- Update LCFS to support increased low-carbon fuel supply identified in 2022 Scoping Plan Update
- Provide long-term price signals and increase regulatory clarity for the market to support deeper transportation sector decarbonization needed through mid-century
- Leverage new federal programs/funding via with complimentary LCFS policies
- Modify existing crediting opportunities to align with the Scoping Plan, while also reducing risk of backsliding on GHG benefits
- Streamline program implementation

Scope of Rulemaking

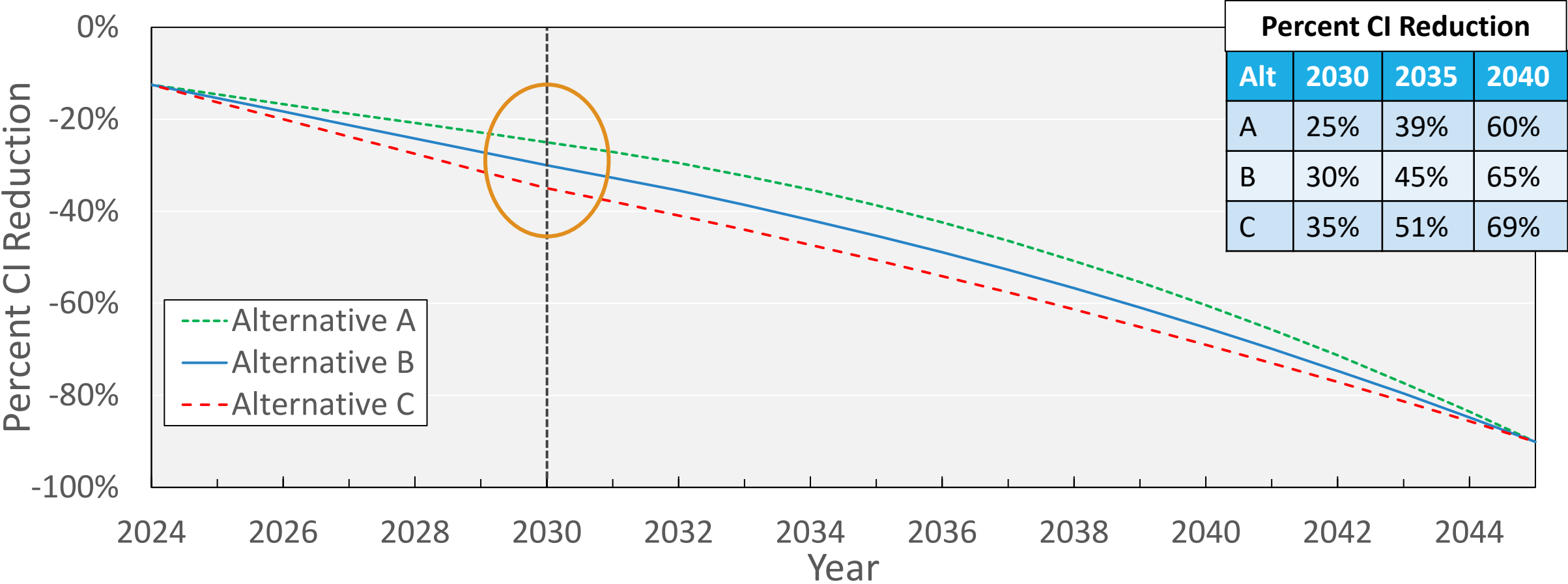
- 2030 CI target. Establishing post-2030 targets.
- **Mechanisms to auto-adjust CI targets to accelerate investment if program is over-performing**
- Incentives for ZEV infrastructure capacity build-out
- Provisions to support scaling of nascent technologies/fuel production needed to meet future demand
- Off-ramping/adjusting incentives where demand growth is limited
- Align investment signals with federal funding opportunities
- Changing implementation provisions to support streamlining

Process for Rulemaking Development

- Identify regulatory concepts
- Conduct public workshops to gather feedback on concepts
- Conduct technical analysis
 - Model fuel demand/supply effects of regulatory concepts
 - Evaluate GHG/air quality, public health, and economic impacts
- Release rulemaking package

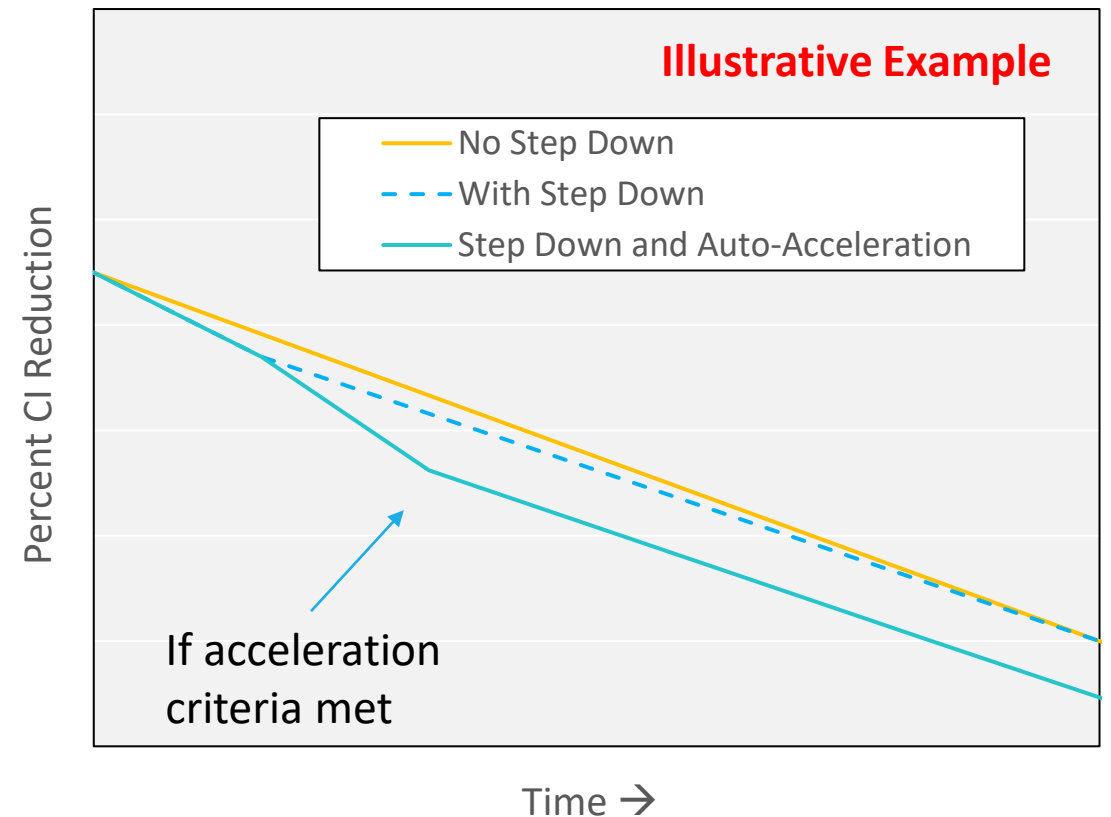
Auto-Acceleration Background

Carbon Intensity Target Alternatives



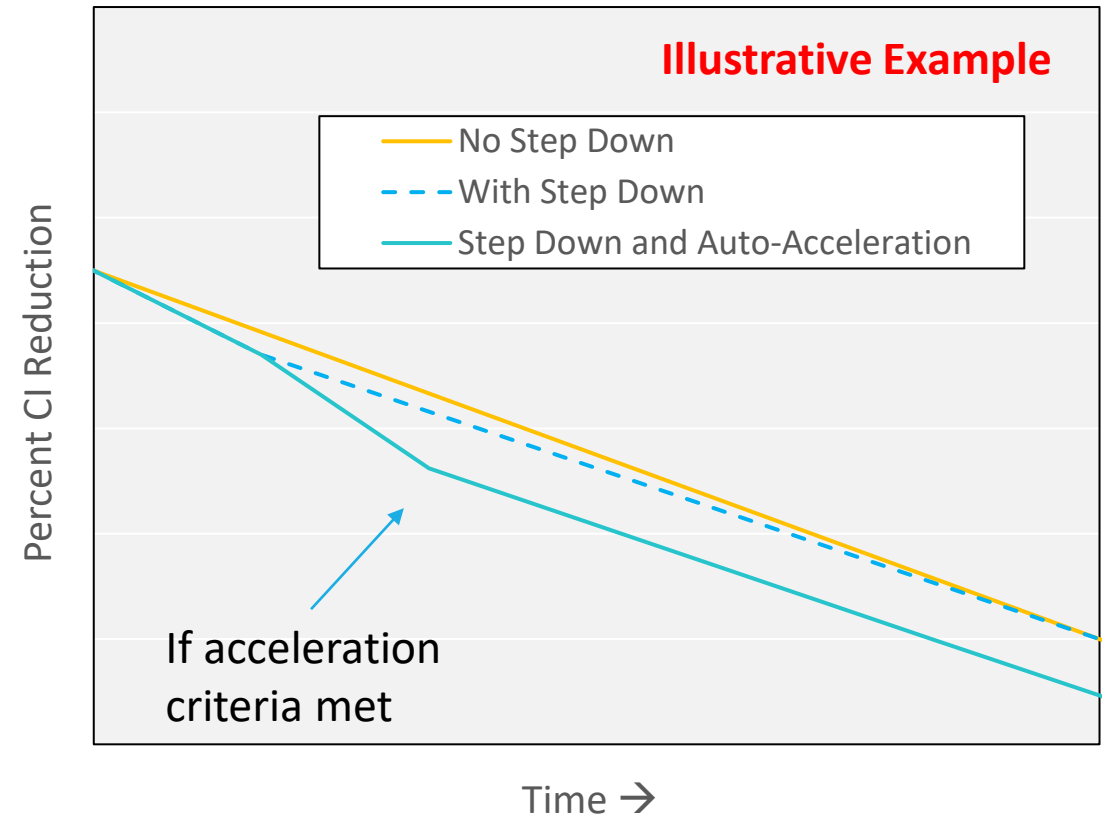
Compliance Target Step Down and Acceleration Mechanism Concepts

- Staff has received substantial feedback on the need to ensure the steady price signal for credits in the market to support ongoing investment
- Near-term **step down** in compliance target stringency could strengthen near-term price signal
- Compliance target **acceleration mechanism** could potentially increase the stringency of compliance targets, improving market certainty



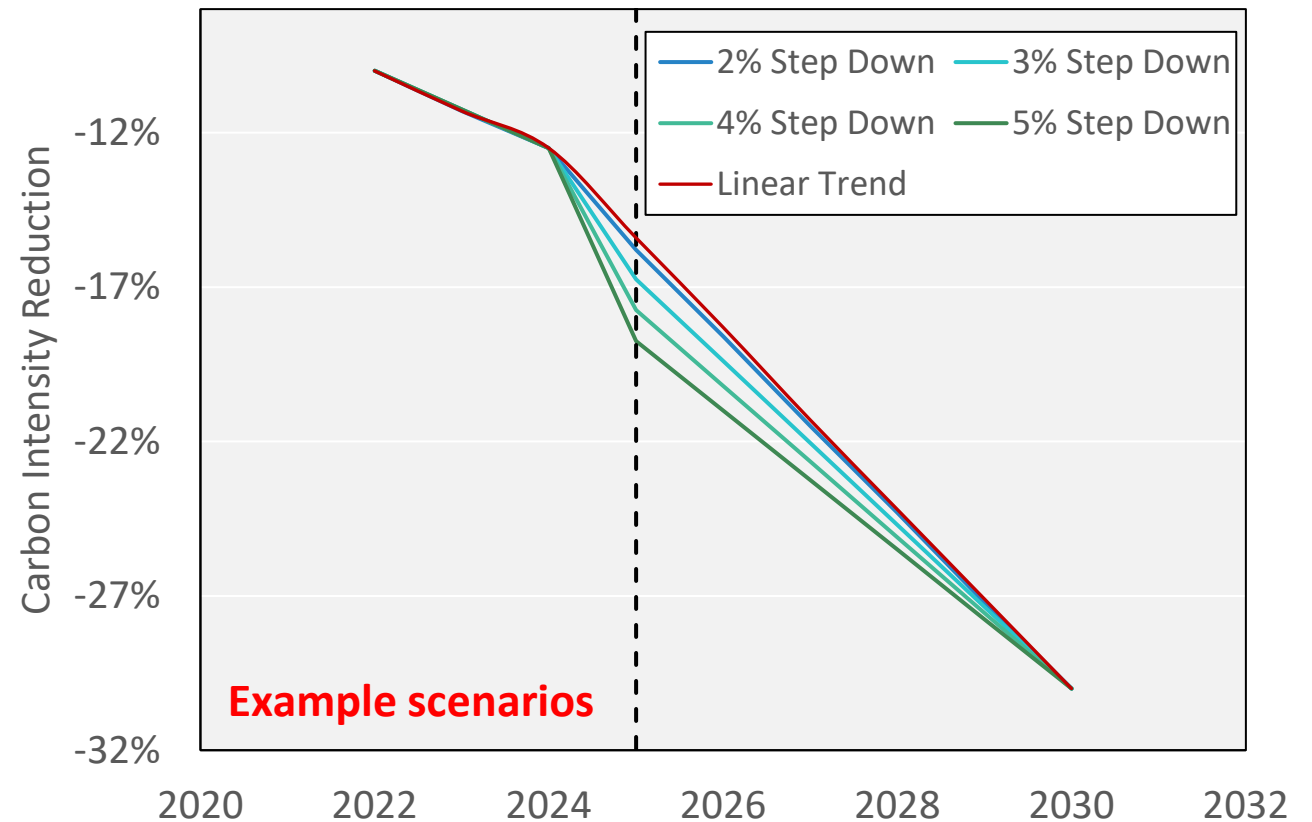
Compliance Target Step Down and Acceleration Mechanism Concepts

- Auto-acceleration mechanism would be based on clear regulatory criteria in response to market conditions
- Staff previously requested public feedback on the following:
 - What market indicator(s) would serve as the best trigger for increases in stringency, and over what time period?
 - How much should the CI target increase in various situations?
 - How should the auto-acceleration mechanism be implemented?

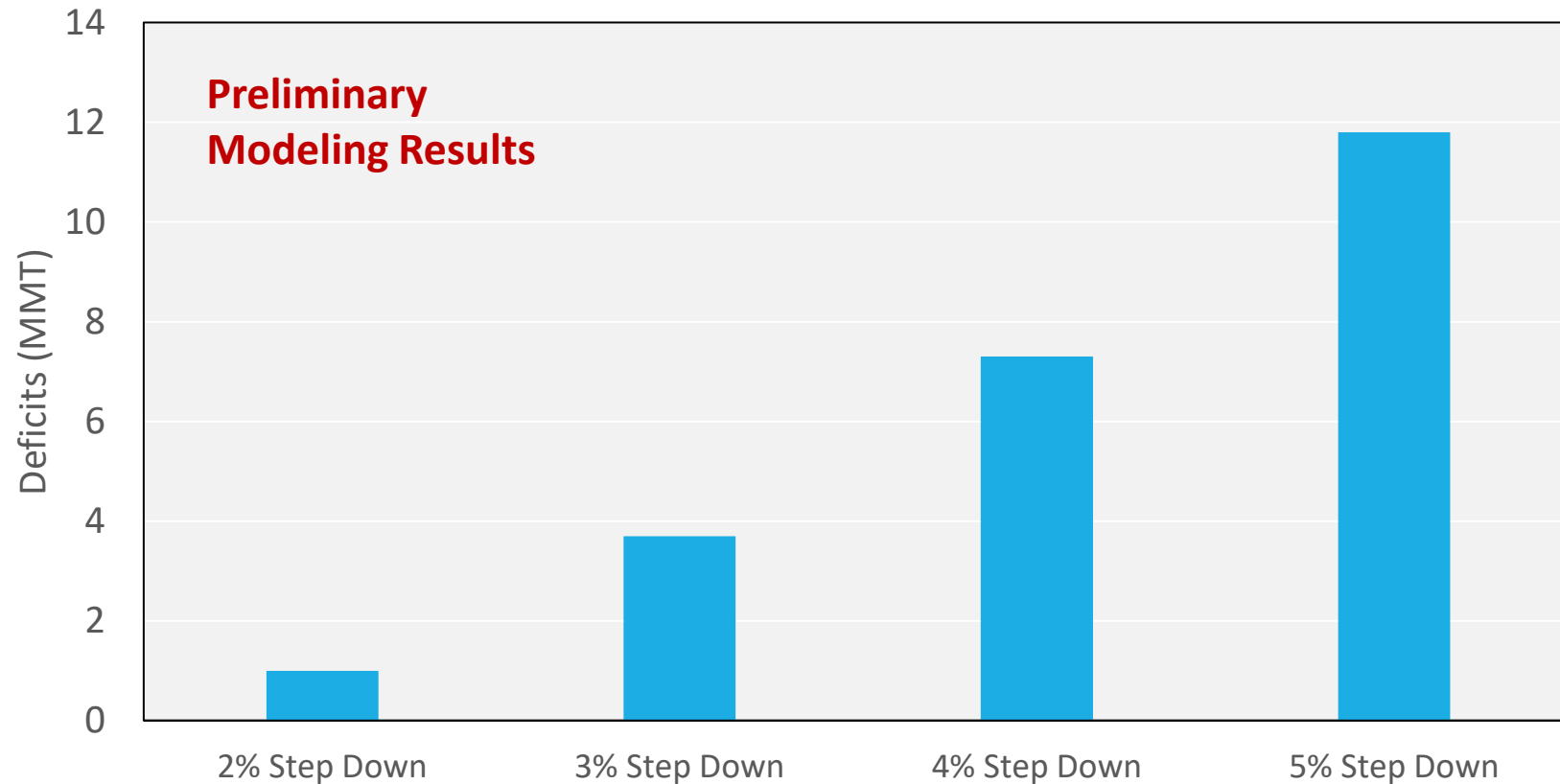


What Is An Appropriate Step Down?

- The graph shows step down percents relative to the existing 13.75% in 2025 benchmark
- Under 30% by 2030 scenario, 2025 CI benchmark examples:
 - Without step-down: 15.4% in 2025
 - 2% step-down: 15.75% in 2025
 - 5% step-down: 18.75% in 2025
- More aggressive step downs will likely:
 - Increase credit prices
 - Result in more low-carbon fuels to CA
 - Reduce the credit bank

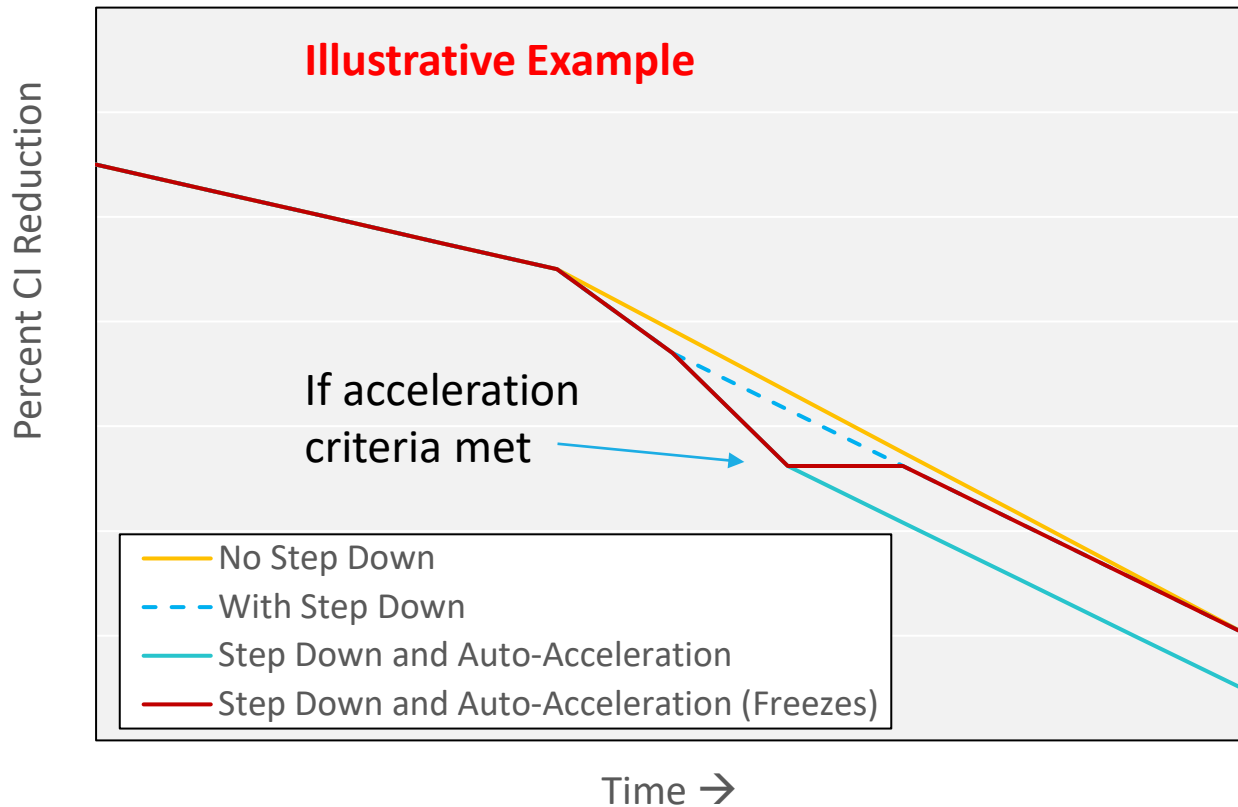


Different Step Downs Will Change the Cumulative Deficits Generated Between 2025 and 2030



- Reflects 30% by 2030 scenario
- Cumulative deficits generated from 2025-2030 relative to the linear benchmark trend (“no step down”)
- Current LCFS credit bank is approx. 15 million credits, accumulated since inception.

There are Different Ways to Implement the Auto-Acceleration Mechanism



- Auto-acceleration mechanism can act only on the benchmark for one year, and is then “frozen” (red line)
 - Responsive to short-term conditions that led to a sudden surge in credits
- Auto acceleration can act on the whole curve, accelerating all future benchmarks (teal line)
 - Responsive to conditions that create long-term shifts in fuel markets (e.g. accelerated electric vehicle uptake)

Auto-Acceleration Design Considerations

An Appropriate Auto-Acceleration Mechanism (AAM)

- May help provide a steadier and predictable price signal (bookend to the credit clearance market/advanced crediting)
- Will automatically adjust the Carbon Intensity Benchmark Schedule if well-defined, publicly available market metrics are observed
- Will not replace the need for regular rulemaking
- Two main components for design:
 - (1) The market condition that triggers the adjustment (trigger)
 - (2) The mechanism or approach for adjusting the carbon intensity schedule (ratchet)

Design Considerations: Potential Unintended Consequences

- AAM design concepts should try to minimize the following potential unintended consequences
 - Non-compliance risks to the program
 - LCFS credit market manipulation
 - Unreasonable program complexity

DESIGN ELEMENT: DEFINING A TRIGGER

Defining the AAM Trigger

- What condition causes an auto-acceleration mechanism (ratchet) to become effective?
- The LCFS market is defined by credits, deficits, and transaction prices
- Potential triggers
 - (1) Credit or deficit-based triggers
 - (2) Price-based triggers

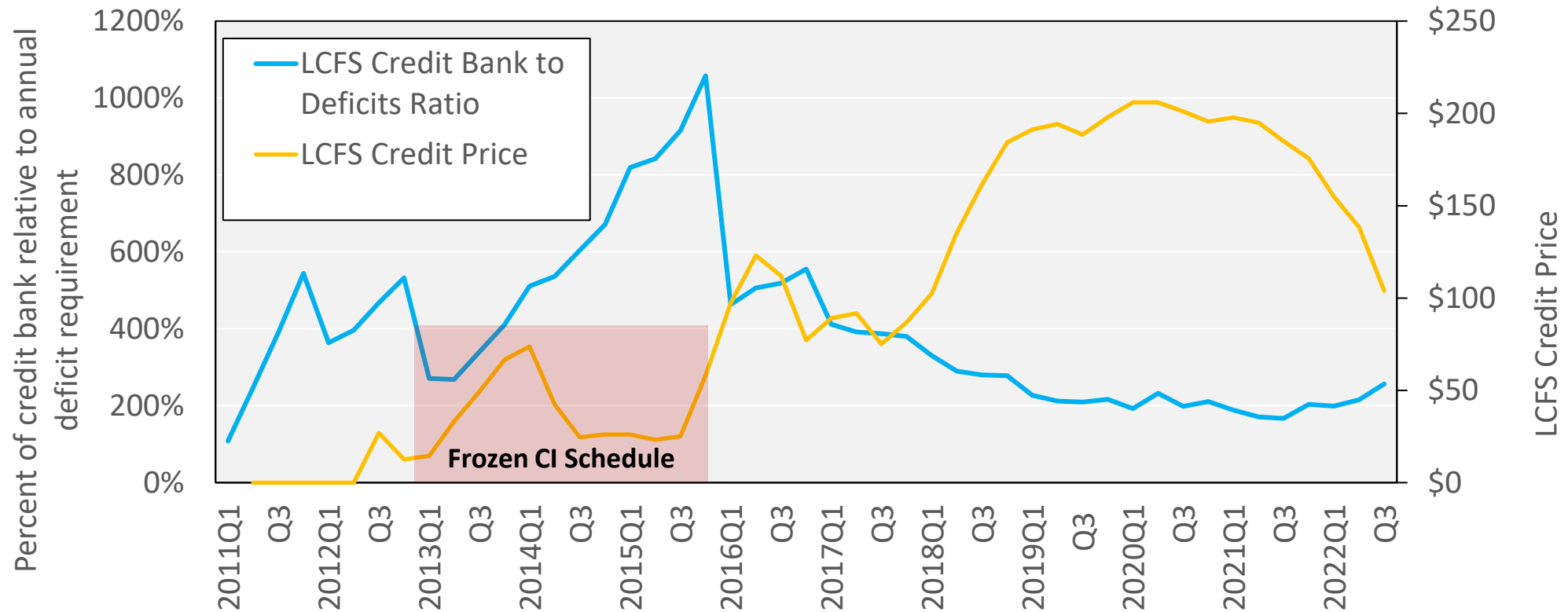
Credit Trigger vs Price Trigger

- Credit or deficit Trigger
 - Credit/deficit metrics require understanding of LCFS market
 - May reduce the ability for entities to bank credits
 - May increase risks of non-compliance (inadequate bank)
- Price Trigger
 - Provides clear metric for investment decisions
 - Requires CARB to specify a price trigger
 - May result in distorted credit prices
- Need to consider market manipulation risks under both options

Key Consideration: the Role of the LCFS Credit Bank

- LCFS allows regulated entities to “bank” excess credits for future compliance periods
- A robust LCFS credit bank can help reduce cost passthroughs to consumers
- The credit bank is a form of insurance for the program (reduces risks)
- Can help ensure liquidity in the market (more entities participate in the credit trading market over time)
- **Should an implemented AAM set a limit to banking? What is a healthy bank size or bank level?**

Is There a Maximum or Desirable Bank to Deficit Ratio?



DESIGN ELEMENT: DEFINING THE RATCHET (HOW TO ADJUST THE BENCHMARK)

Defining the Ratchet

- Adjustment mechanism: once the trigger condition is met, what happens next
- **How should the LCFS schedule be adjusted?**
- Some possibilities include:
 - Alter the entire schedule by a calculated amount for all following years?
 - Adjust only one year of the schedule?
 - Shift the entire schedule up by one calendar year?

Staff Auto-Acceleration Design Concepts

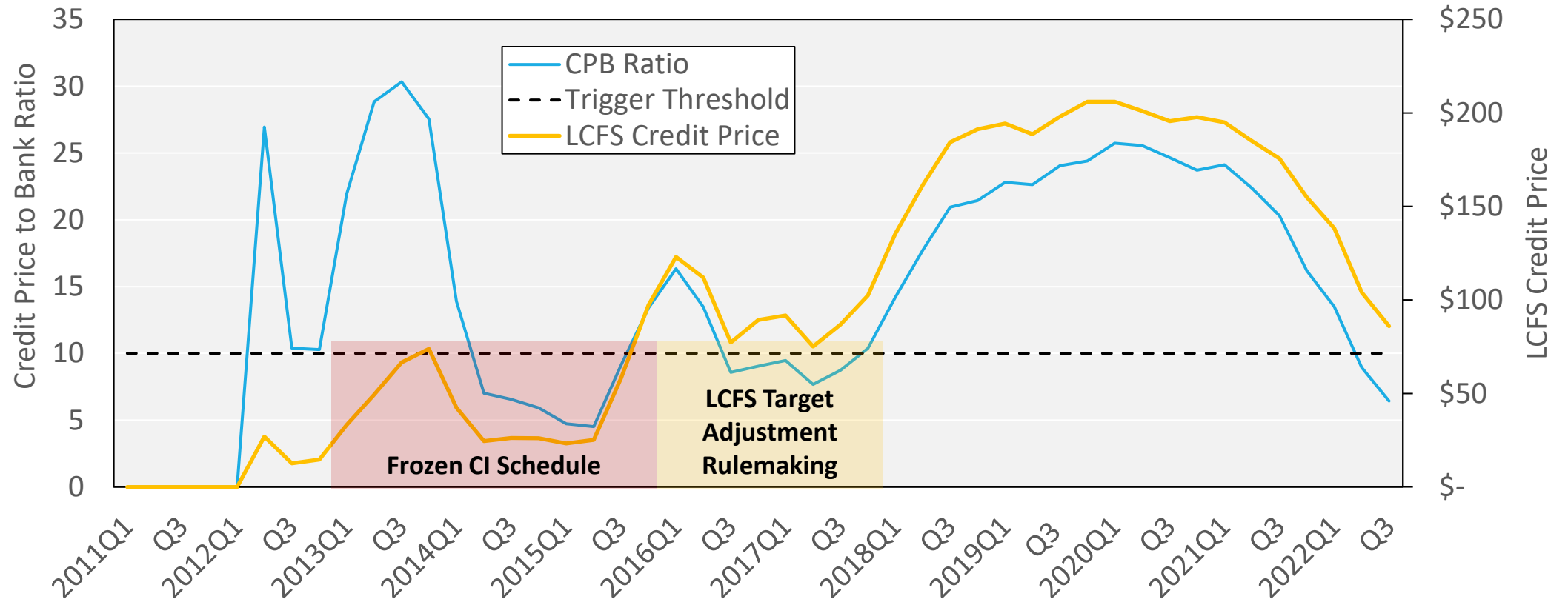
Design Element 1 (Trigger) Design Goals

- Define a clear trigger, responsive to market conditions of credit supply
- Avoid explicitly imposing a trigger price
- Allow for the LCFS credit bank to grow in proportion to the total deficits expected according to more stringent compliance targets

Staff Trigger Design Concept A: Credit Price-to-Bank Trigger

- Based on publicly available data
- Informed by credit prices without setting a specific price
- Calculated based on an average credit price divided by the total banked credits (million MT)
- Both credit bank size and market price information are considered to define the trigger condition
- The adjustment is triggered when the Credit Price-to-Bank (CPB) ratio drops below a threshold value
 - Larger credit banks increase likelihood of a trigger event
 - Higher credit prices decrease the likelihood of a trigger event
- **Is a CPB ratio of 10 a reasonable threshold? If not, what should it be?**

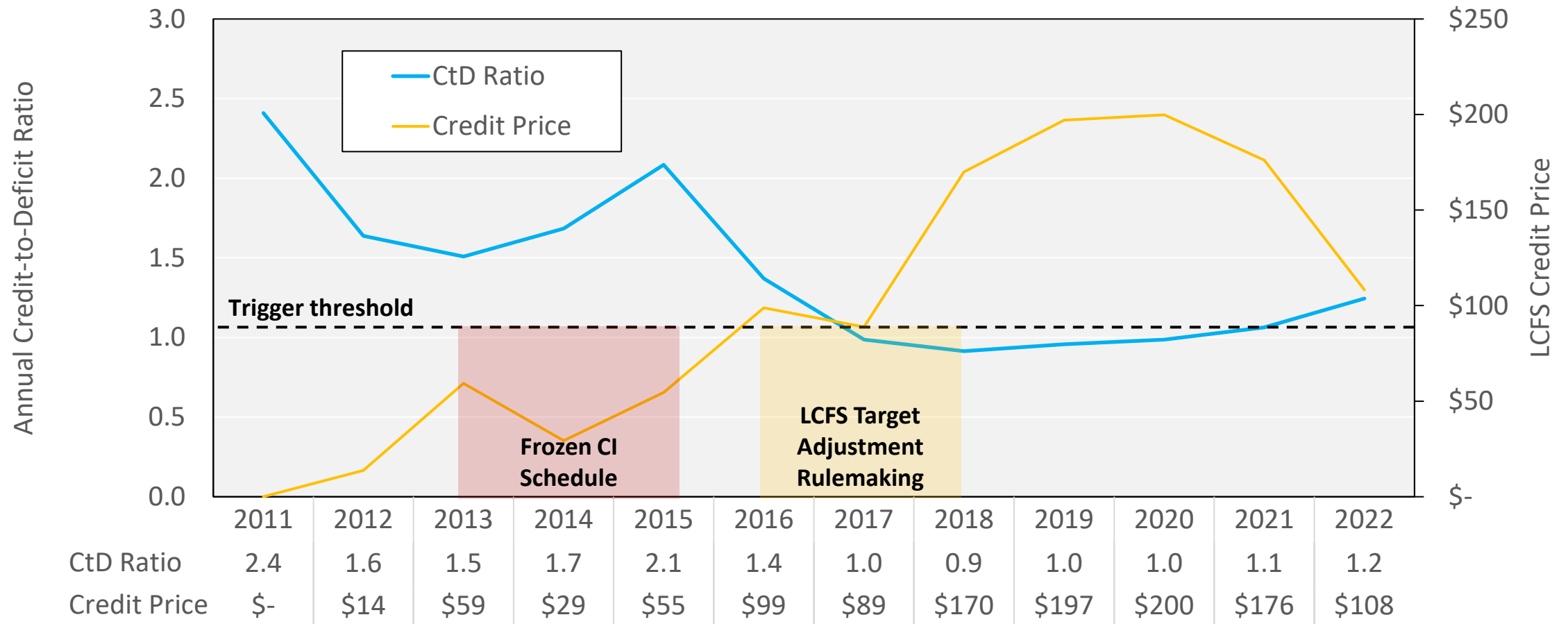
Illustration: Credit Price-to-Bank Trigger



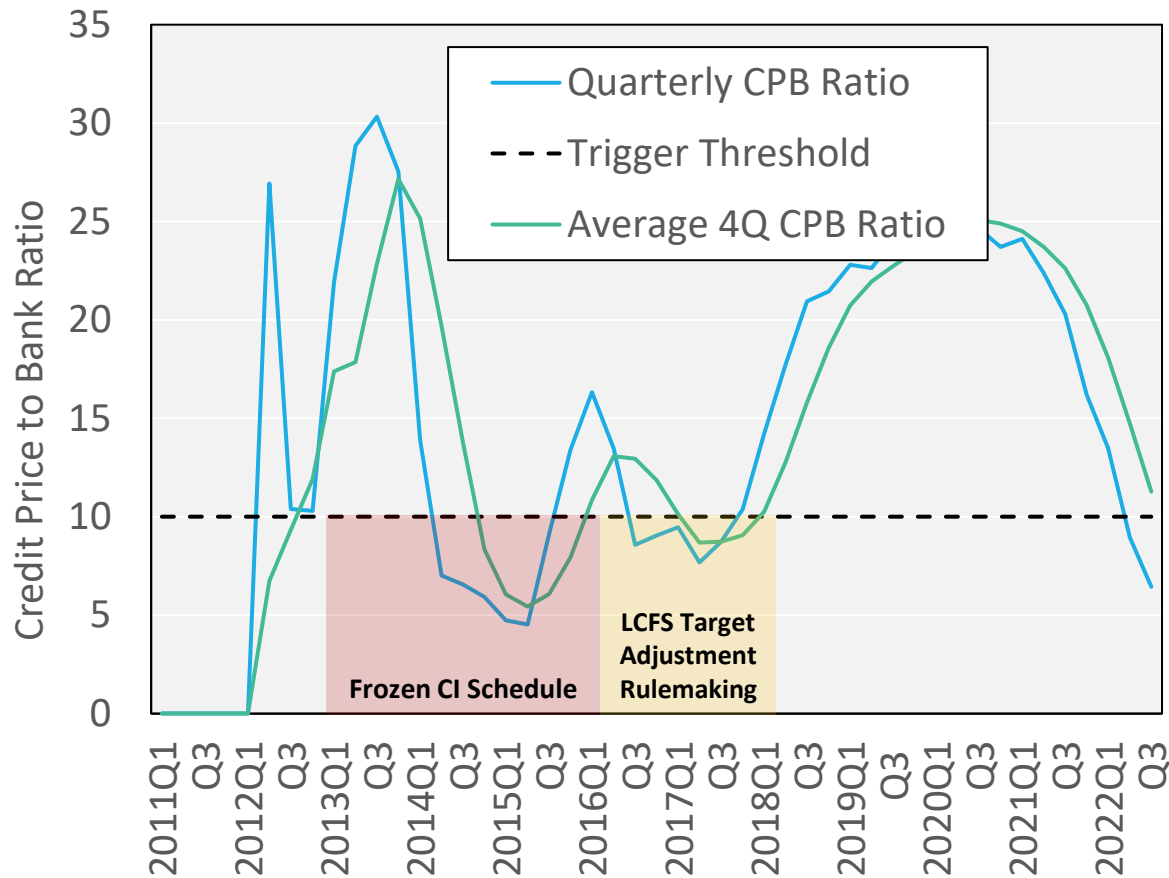
Staff Trigger Design Concept B: Credit-to-Deficit (CtD) Trigger

- Calculated based on the total credits generated divided by the total deficits generated
- If the total generated credits relative to total generated deficits exceeds a threshold level for the calendar year, the acceleration mechanism is triggered
- **Is a CtD ratio of 1.1 an acceptable threshold to set? If not, what should it be?**

Illustration: Credit-to-Deficit Trigger



Stakeholder Discussion: What Metric Averaging Periods Should be Used?



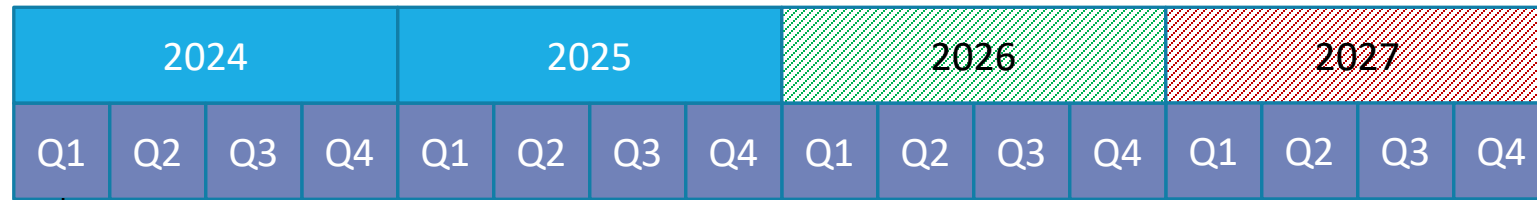
- Can average over quarters (e.g. 4Q average, annual average)
 - May delay when an adjustment occurs
 - Triggered if market conditions are persistent
 - Focuses on longer-term evolution of fuels market
- Can look at quarters independently
 - More responsive to resolving current market conditions
 - How many quarters to look back? How are quarters weighted?

Example of concept A with different averaging periods

Design Element 2 (ratchet) Design Goals

- Simple to implement in the regulation
- Easy for market participants to monitor using publicly available data
- Impacts can be readily understood and calculated by stakeholders
- Helps improve market certainty

Market Considerations: There is a Lag Before Market Data are Released



Quarterly data released

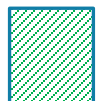
Data is reported/finalized at the end of the following quarter for which fuel was used and published by CARB 1 month afterward.



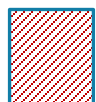
Q2 is the earliest that an announcement can be made using a trigger that reflects complete, prior-year data



If an auto-acceleration trigger occurred in the immediately prior year, then the current year cannot also trigger acceleration, as annual data are not yet released to see the impact of the new standard



Auto-acceleration triggered



If auto-acceleration was triggered in prior year, another cannot be triggered in this calendar year

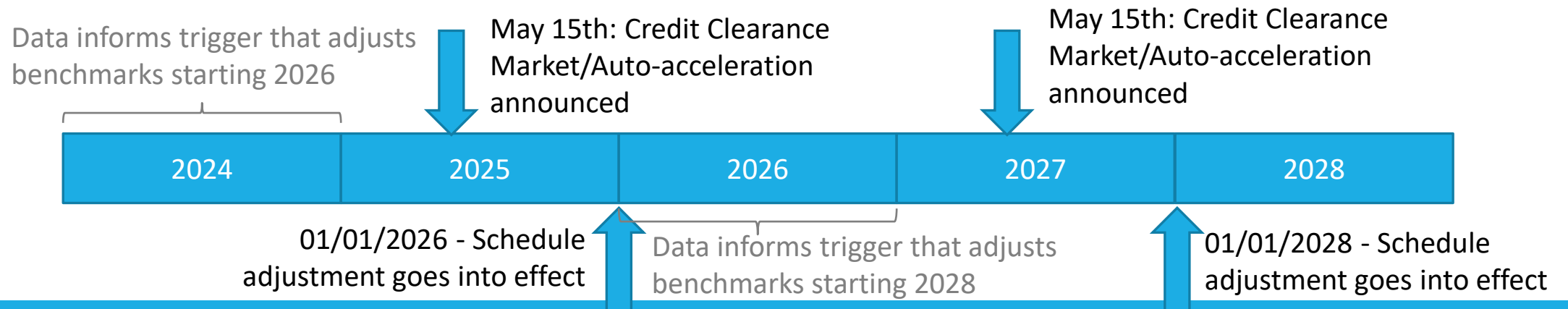
Illustrative Example

Staff Design Concept: Advancing the LCFS Benchmark Schedule by one year

Once a trigger condition is met, the schedule would advance by one year, starting the following year

- $CI_{std}^{XD} = Benchmark_{year+adj}^{XD}$ (Section 95486.1)
- Where adj is the number of times the auto-acceleration mechanism has been triggered

Illustrative Example



Staff Design Concepts Summary

Concept A:

- Trigger: Credit Price-to-Bank (CPB) Ratio
- Ratchet Option: Shift benchmark schedule for the next compliance period up by one year

Concept B:

- Trigger: Credit-to-Deficit (CtD) Ratio
- Ratchet Option: Shift benchmark schedule for the next compliance period up by one year

Key Implementation Questions

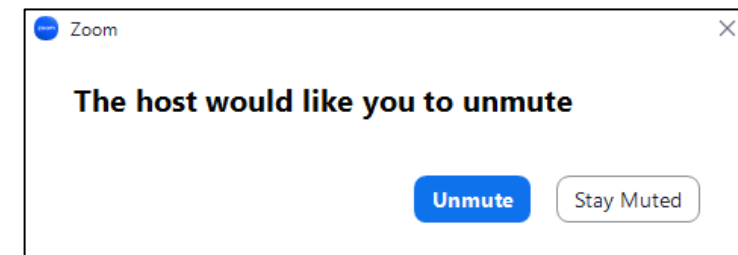
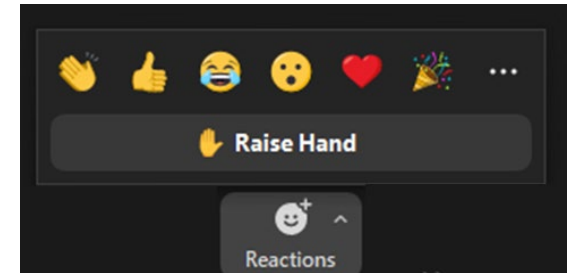
- Which trigger(s) are preferable?
- What averaging periods should different triggers use (e.g. quarterly, annually)?
- Should the auto-acceleration mechanism only impact one year (“freeze”), or all subsequent years?
- Should the cost-containment mechanism be bolstered as well if banking opportunities become limited? (e.g. increase the advanced credit limits beyond 10 million)

Outside Perspectives

Public Comments

Public Comment Logistics

- Workshop materials and public comment page available on the LCFS Meetings and Workshops page:
<https://ww2.arb.ca.gov/our-work/programs/low-carbon-fuel-standard/lcfs-meetings-and-workshops>
- Written feedback accepted through June 6th at 11:59 p.m.
- Q&A during the workshop
 - 1) Use the “**Raise Hand**” function in the “reactions” box at the bottom Zoom toolbar
 - 2) When staff call your name, please “**unmute**” yourself to begin
 - 3) Commenters will be given 3 minutes for comments, no ceding time to others



Next Steps

- Submit written feedback online through June 6th, 2023
- Link to submit written feedback found on the LCFS Meetings and Workshop webpage:
https://www.arb.ca.gov/lispub/comm2/bcsubform.php?listname=lcfs-wkshp-feb23-ws&comm_period=1