

Cap-and-Trade Program Workshop

OCTOBER 5, 2023



Workshop Logistics

- Workshop materials and comment docket available at Cap-and-Trade Meetings and Workshops webpage
 - <https://ww2.arb.ca.gov/our-work/programs/cap-and-trade-program/cap-and-trade-meetings-workshops>
- Written feedback may be submitted to comment docket open through October 26 at 11:59 p.m. Pacific Time
- Public comment after presentation
 1. Use the “Raise Hand” function in the toolbar at bottom of your screen
 2. When staff call your name, please “Unmute” and introduce yourself
 3. Commenters will be given 3 minutes. No ceding time to others.



Agenda

Morning- 9:30-11:30

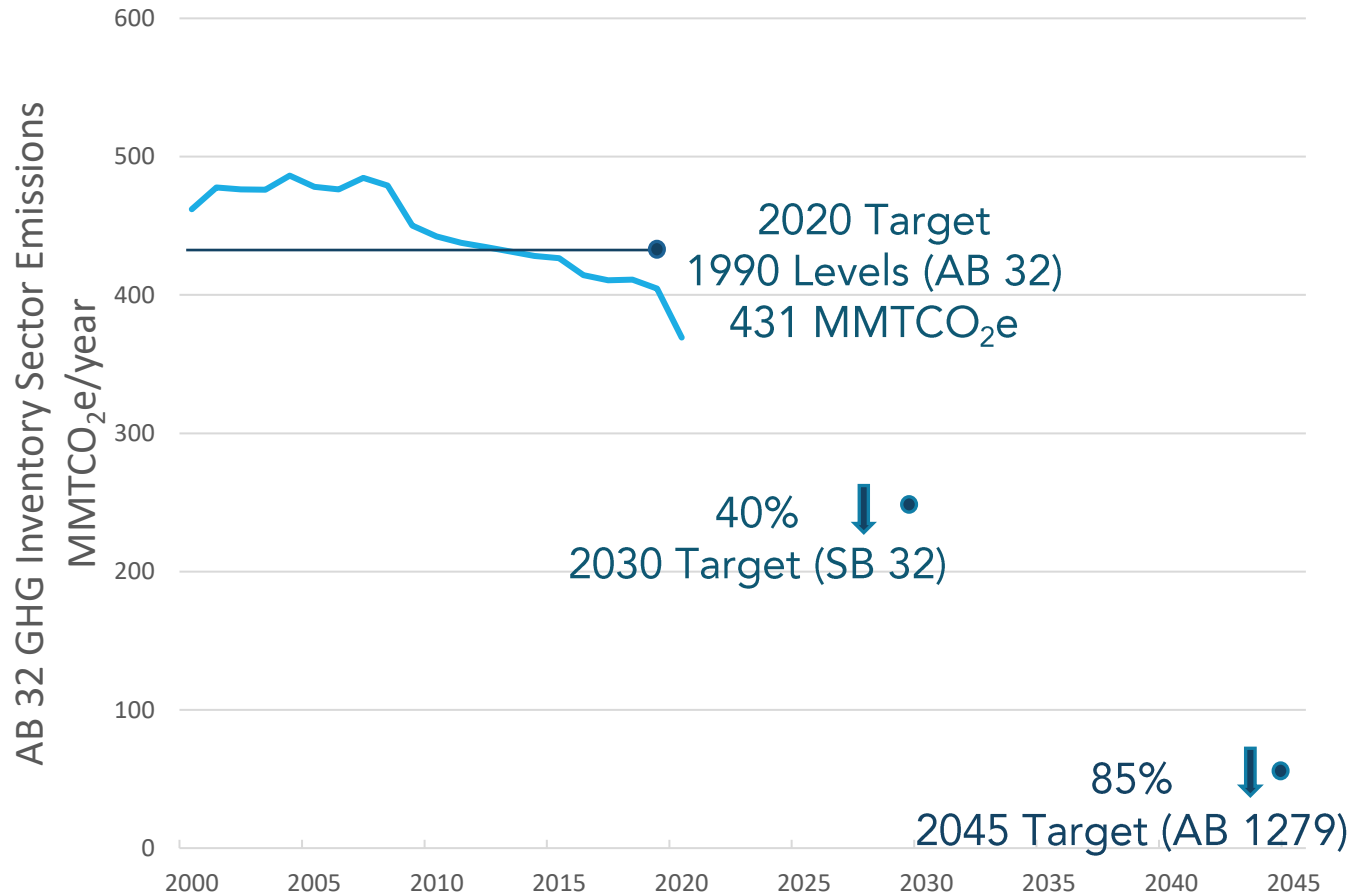
- Cap-and-Trade Program overview
- 2021-2030 allowance budget scenarios and cap adjustment factors
- EDU allocation
- Post-2030 allowance budget scenarios
- Environmental Impact Analysis
- Public Comment

Afternoon- 12:30-4:00

- Imported electricity emissions
- Public Comment
- Biogenic emissions exemptions
- Public Comment

GHG Reduction Targets

Achieved AB 32 target in 2014



ACHIEVING
CARBON
NEUTRALITY
BY **2045**

GHGs included in statute: Carbon dioxide (CO₂), Methane (CH₄), Nitrous oxide (N₂O), Hydrofluorocarbons (HFCs), Perfluorocarbons (PFCs), Sulfur hexafluoride (SF₆), Nitrogen trifluoride (NF₃).

2022 Scoping Plan Update

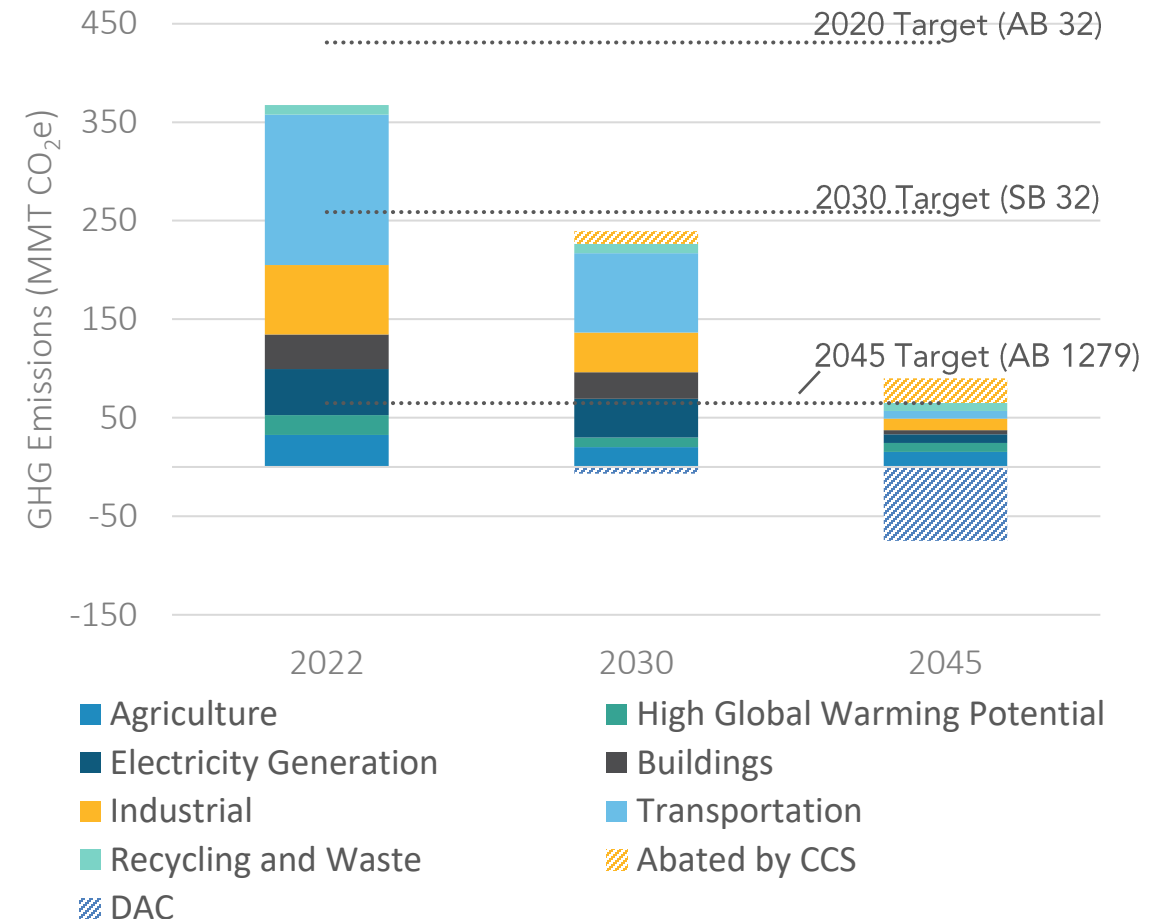
A Plan for Science-Driven Climate Action

2030: 48% reduction below 1990

- Increased ambition from SB 32 40% target
- Scoping Plan (SP) scenario incorporates 20 MMTCO₂e of mechanical carbon dioxide removal (CCUS/DAC) in 2030
- 462x increase in renewable hydrogen

2045: 85% reduction below 1990

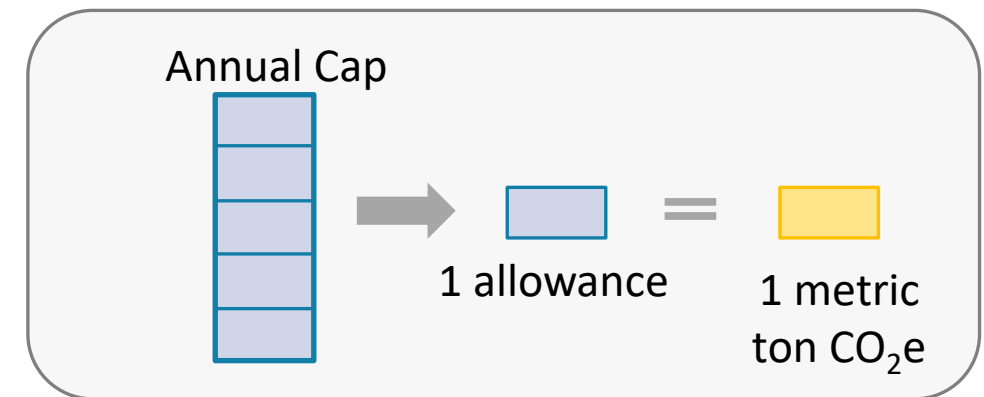
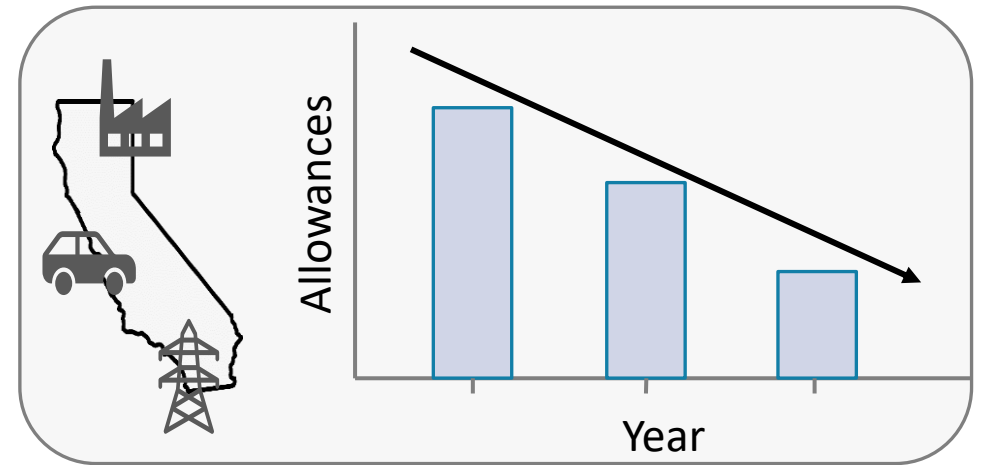
- Need carbon dioxide removal to compensate for residual emissions to achieve carbon neutrality



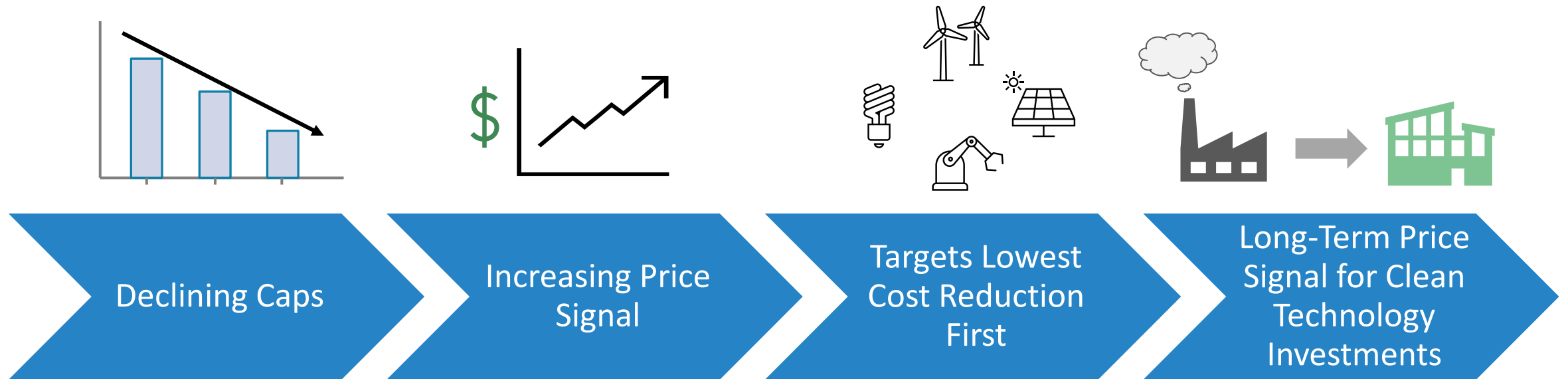
Cap-and-Trade Overview

Key element of California's portfolio approach to achieve the State's GHG emissions reduction targets

- AB 32 authorized market-based approach for GHG reductions
- Program establishes economy-wide, declining cap on statewide GHG emissions
- Cap set by allowances issued each year according to California's GHG goals
- 1 allowance = 1 metric ton CO₂e

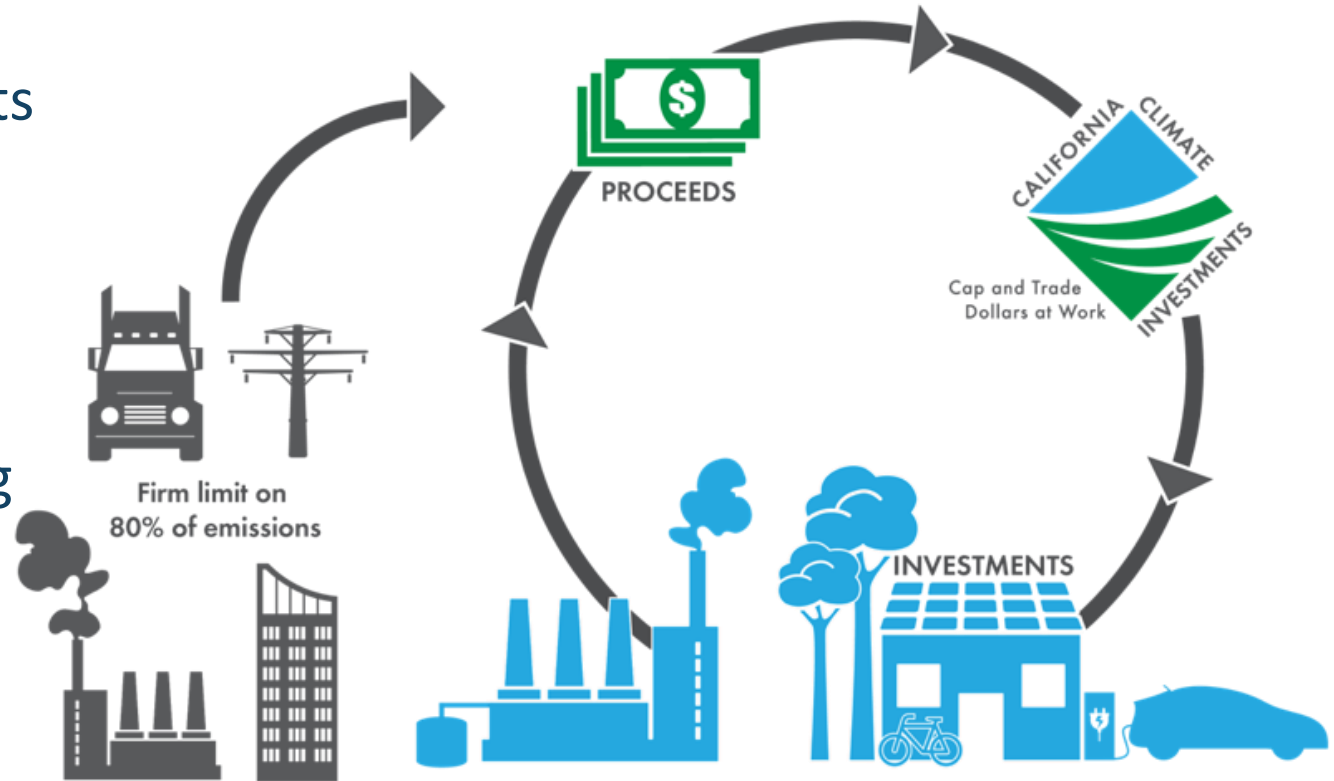


Cap-and-Trade Overview, cont.



Cap-and-Trade Program Critical Funding For Equity

- Auction of State allowances solely fund California Climate Investments and funds AB 617 Community Air Protection Program
- \$23.7B provided; \$9.8B implemented
- Over 74% implemented benefiting priority populations
- Reduced 98 million metric tons CO₂e, 85 thousand tons of criteria air pollutants



California Climate Investments Programs Benefit Californians

CUMULATIVE PROJECT ACHIEVEMENTS

As of May 2023

\$9.8 billion implemented through May 2023



98.0 MMTCO₂e estimated GHG emissions reductions



569,477 individual projects implemented



11,402 affordable housing units under contract



217,763 urban trees



\$7.2 billion+ (74%) benefiting priority populations



1,079 transit agency projects funded, adding or expanding transit service



415,900+ rebates issued for zero-emission and plug-in hybrid vehicles



928,000+ acres of land conservation or restoration

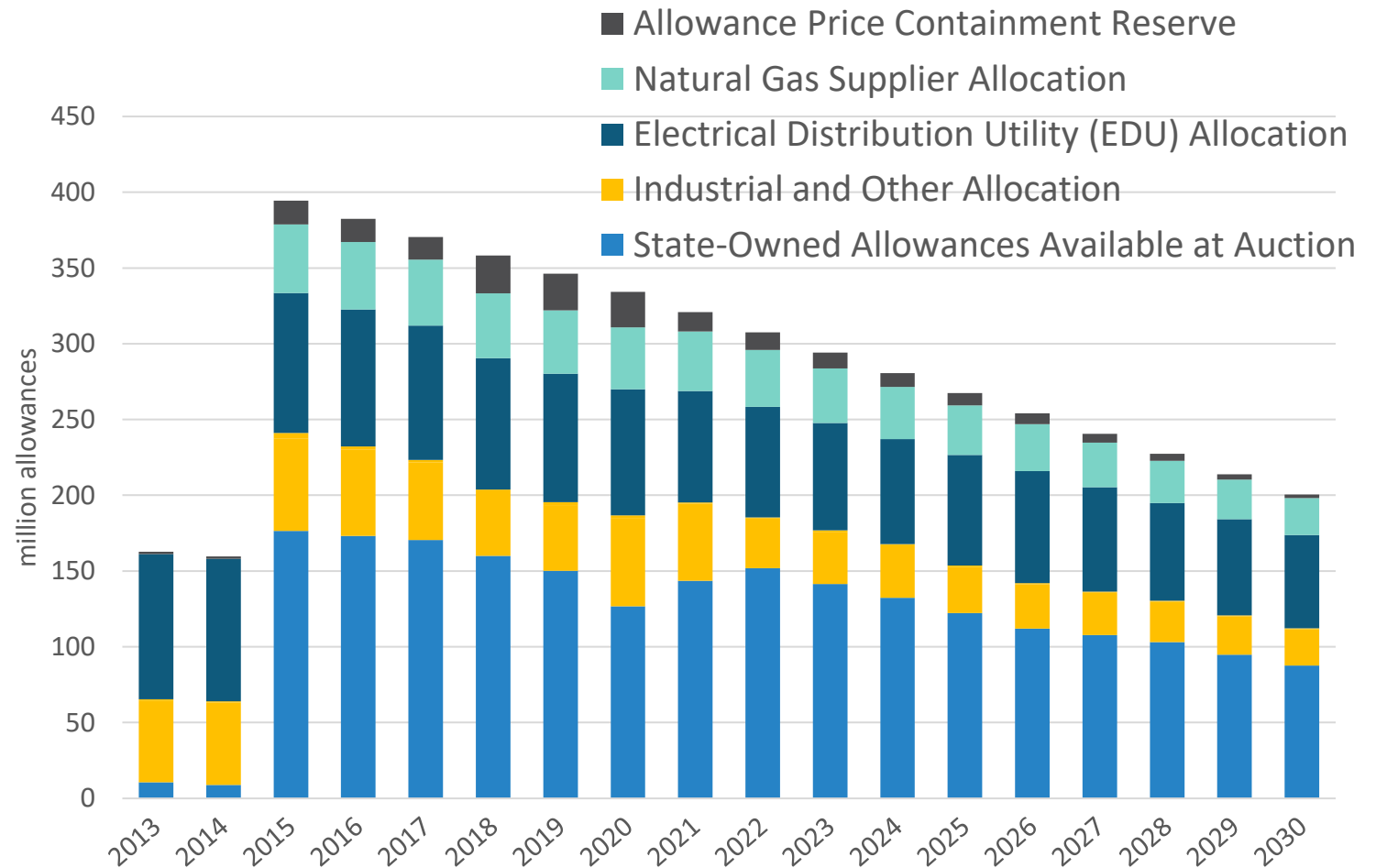
Context for New Cap-and-Trade Program Updates

- 2022 Scoping Plan (SP) Update approved by the Board December 2022
 - Assesses progress toward achieving State climate targets
 - Incorporates targets and actions needed to achieve State's GHG targets
 - Provides economy-wide data to inform review of the Cap-and-Trade Program
- Updated AB 32 GHG Emission Inventory
 - Latest published GHG Emission Inventory included adjustments to align all sector emissions with third-party verified data
- Consider updates to reflect implementation needs, new legislation, Executive Orders, and policies

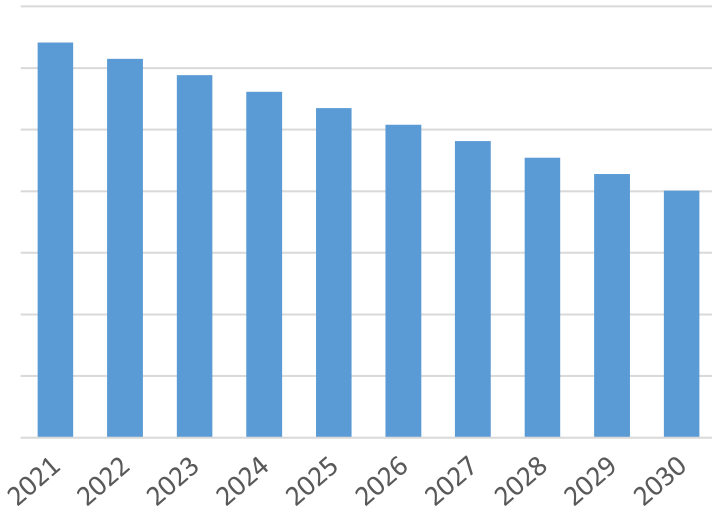
Cap-and-Trade Allowance Budget Scenarios: 2021-2030

Cap-and-Trade Allowance Budget Overview

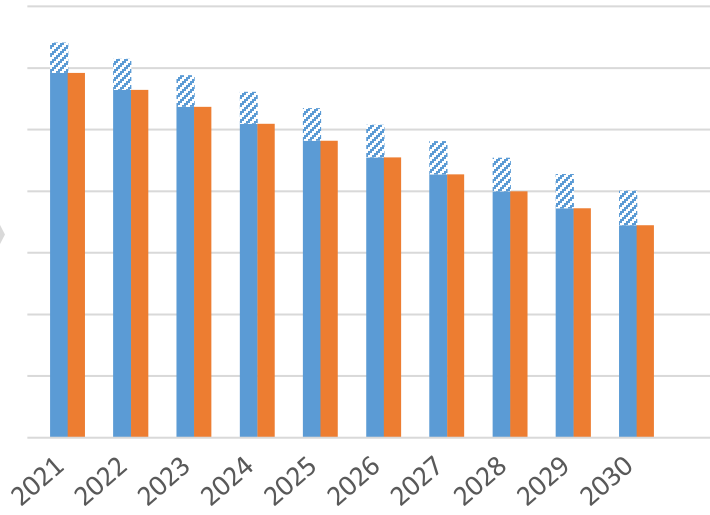
- Allowances distributed to market
 - Direct allocation
 - Sale at auction
- Allowance Price Containment Reserve (APCR) for cost containment



2021-2030 Allowance Budget Scenarios: Framework

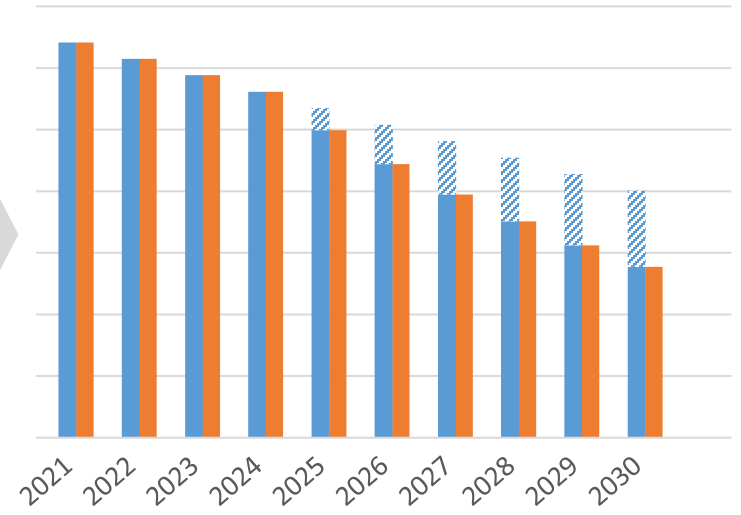


Current 2021-2030 Annual Budget



**Hypothetical scenario
with linear decline 2021-2030**

- Total budget supportive of state climate policy
- Reduction from current annual budgets to hypothetical scenario shown in hashed bars
- Determines cumulative reduction target



**Potential adjusted budget
with all reductions 2025-2030**

- Total budget supportive of state climate policy
- Cumulative reduction from current budget equal to cumulative reduction for hypothetical scenario with linear decline

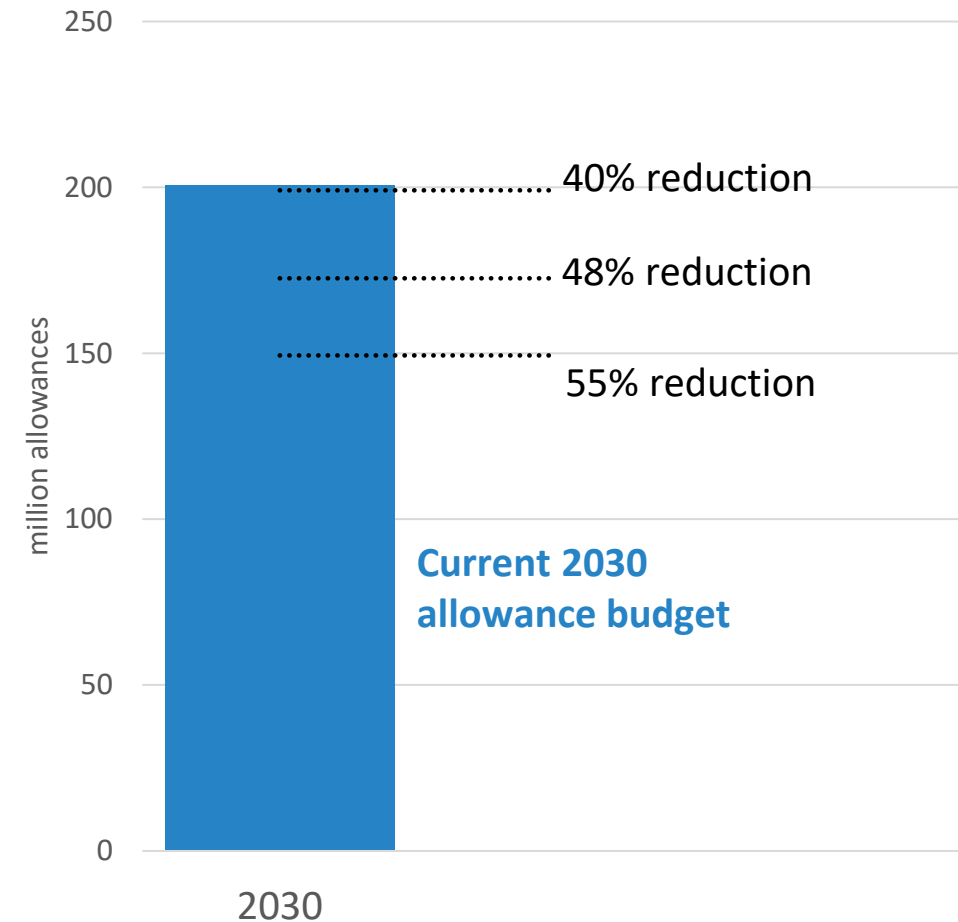
Hypothetical Allowance Budget Scenarios: 2021 start point

- Adjusted Inventory Scenario
 - Reflects impacts of updates to GHG Emission Inventory on 2017 SP Reference Scenario (used in 2016 Rulemaking for APCR designation)
 - Utilizes 2017 SP Reference Scenario, adjusted downwards by ~13.7 MMTCO₂e, to determine 2021 start point
 - For details on method: [Cap-and-Trade Workshop July 27, 2023](#)

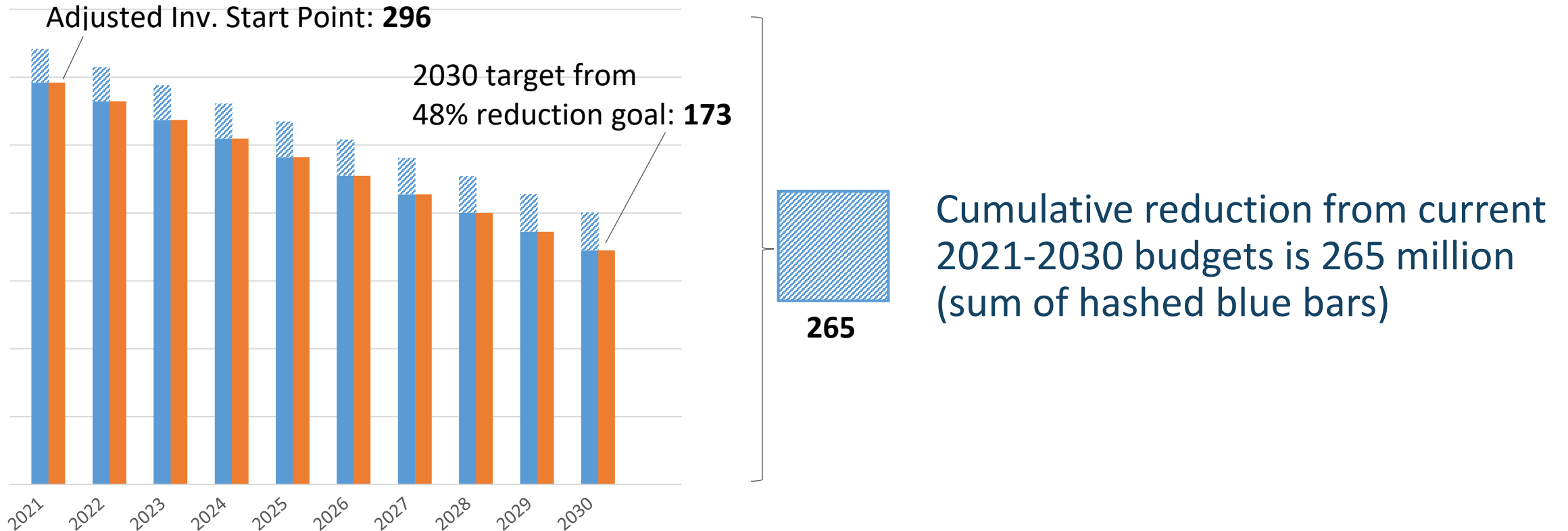
Hypothetical Allowance Budget Scenarios: 2030 cap end point

- 40% by 2030: 199 MMTCO₂e
 - Adjusted AB 32 GHG Emission Inventory warrants a review of existing caps
- 48% by 2030: 173 MMTCO₂e
 - 2022 Scoping Plan Update highlighted accelerated 2030 target
- 55% by 2030: 149 MMTCO₂e
 - With 7 years until 2030, this represents an upper bound

Calculated by multiplying 1990 emissions level (431 MMT) by Program coverage of AB 32 emission sources (77%) and reduction target (e.g., $431 \times 77\% \times (1 - 48\%) = 173 \text{ MMT}$)

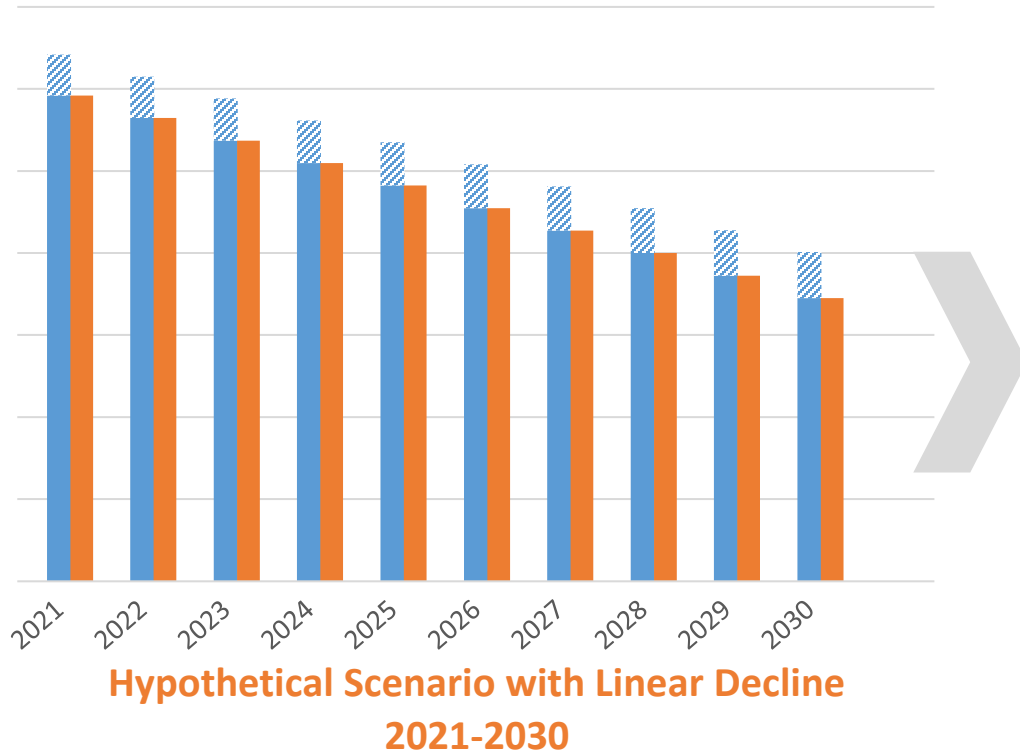


2021-2030 Hypothetical Allowance Budget Scenarios: Cumulative Reduction Determination

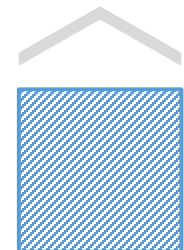


**Hypothetical Scenario with Linear Decline 2021-2030:
48% scenario example**

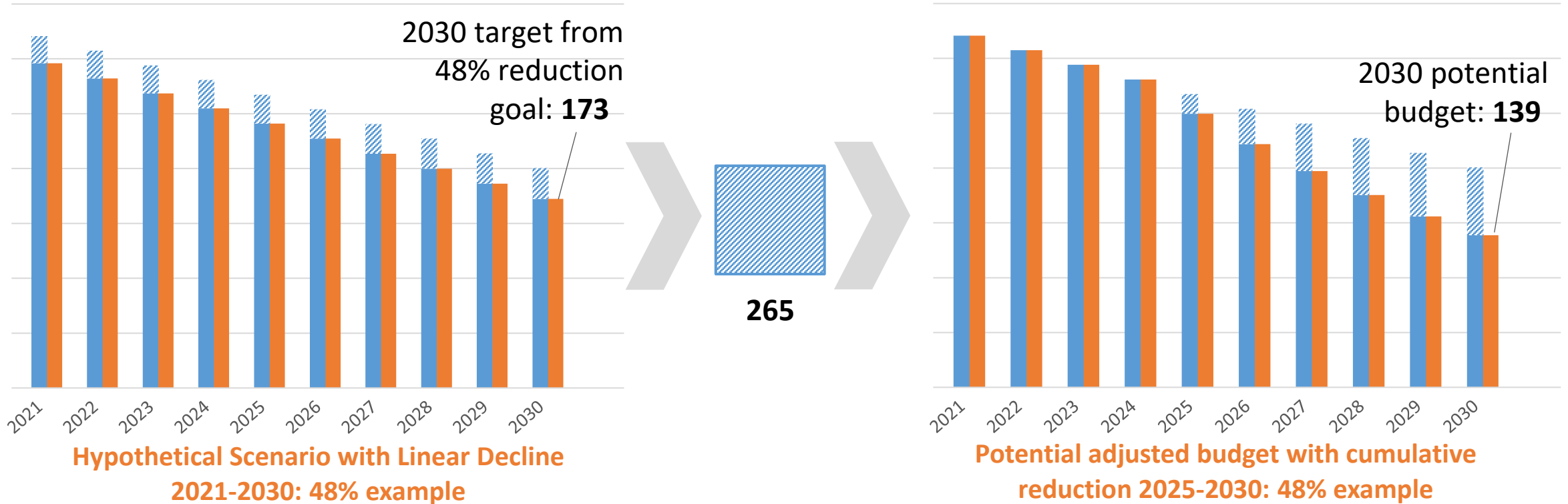
Cumulative Allowance Reductions from Current 2021-2030 Budget for Three Targets



Target	Adjusted Inventory Scenario	
	Estimated Total 2021-2030 Allowances	Estimated Allowances Removed from Budget
40%	2,490	115
48%	2,340	265
55%	2,215	390



Potential Annual Budget Options Achieve 2021-2030 Cumulative Allowance Removals

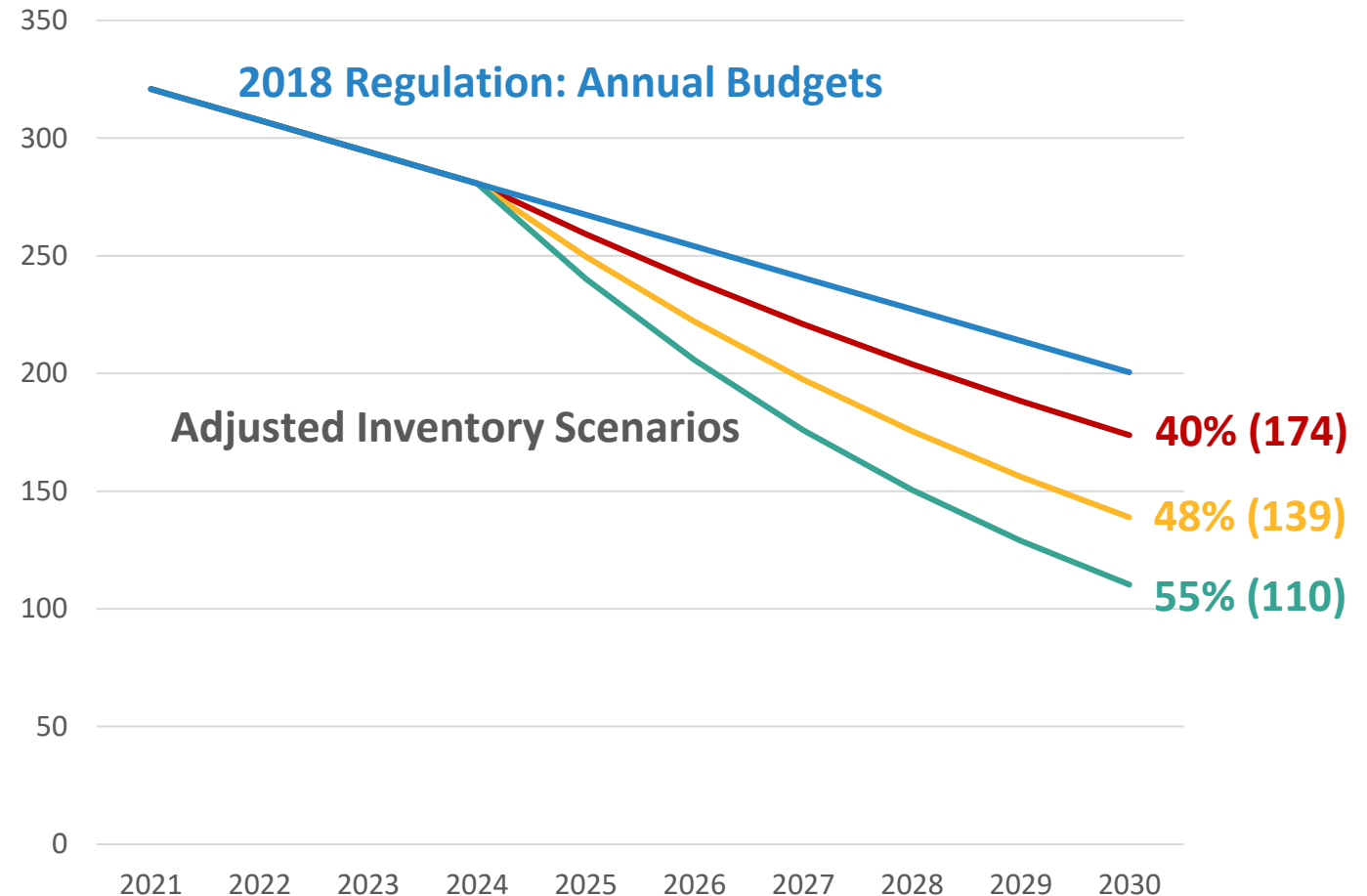


- Remove same cumulative number of allowances
- All allowance removals are from 2025-2030 budget years
 - Thus, the 2030 annual budget is lower than the 2030 target used to determine the cumulative reductions

Potential 2021-2030 Allowance Budgets

For each scenario:

- Same cumulative allowance removals as its corresponding hypothetical scenario
- Decline path set at constant annual percent change 2024-2030
- Achieves cumulative allowance removals by adjusting annual budgets for 2025-2030
- Number of allowances in price containment accounts maintained



Potential 2021-2030 Cap Adjustment Factors (CAFs)

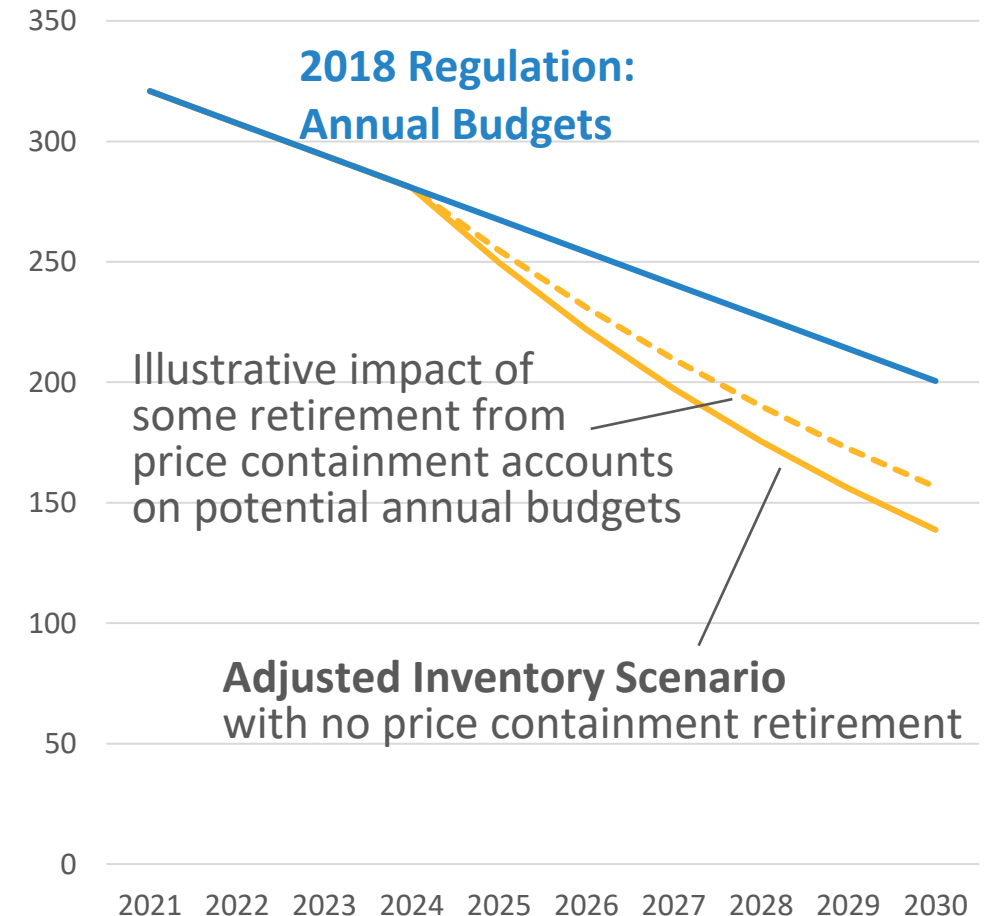
For each scenario:

- Same cumulative allowance removals as its corresponding hypothetical scenario
- Decline path set at constant annual percent change during 2024-2030
- Achieves cumulative allowance removals by adjusting annual budgets for 2025-2030
- Number of allowances in price containment accounts maintained

Year	Adjusted Inventory Scenarios		
	40% Target	48% Target	55% Target
2021	0.817	0.817	0.817
2022	0.783	0.783	0.783
2023	0.749	0.749	0.749
2024	0.715	0.715	0.715
2025	0.660	0.636	0.612
2026	0.609	0.565	0.524
2027	0.563	0.503	0.448
2028	0.519	0.447	0.384
2029	0.480	0.398	0.328
2030	0.443	0.354	0.281
Annual % Reduced 2025-2030	7.7%	11.1%	14.4%

Potential 2021-2030 Allowance Budgets: Retirement from Price Containment

- Three potential 2025-2030 annual budget scenarios presented today and July 27:
 - Achieve entire cumulative reduction by adjusting annual budgets for 2025-2030
 - Number of allowances in price containment accounts maintained
- If some allowances were removed from price containment accounts instead of future budgets:
 - Less reduction in 2025-2030 annual budgets
 - Proportionally reduced impact on CAFs
 - Less price containment allowances to protect covered entities against rapid price increases and enable environmental integrity of Program at price ceiling



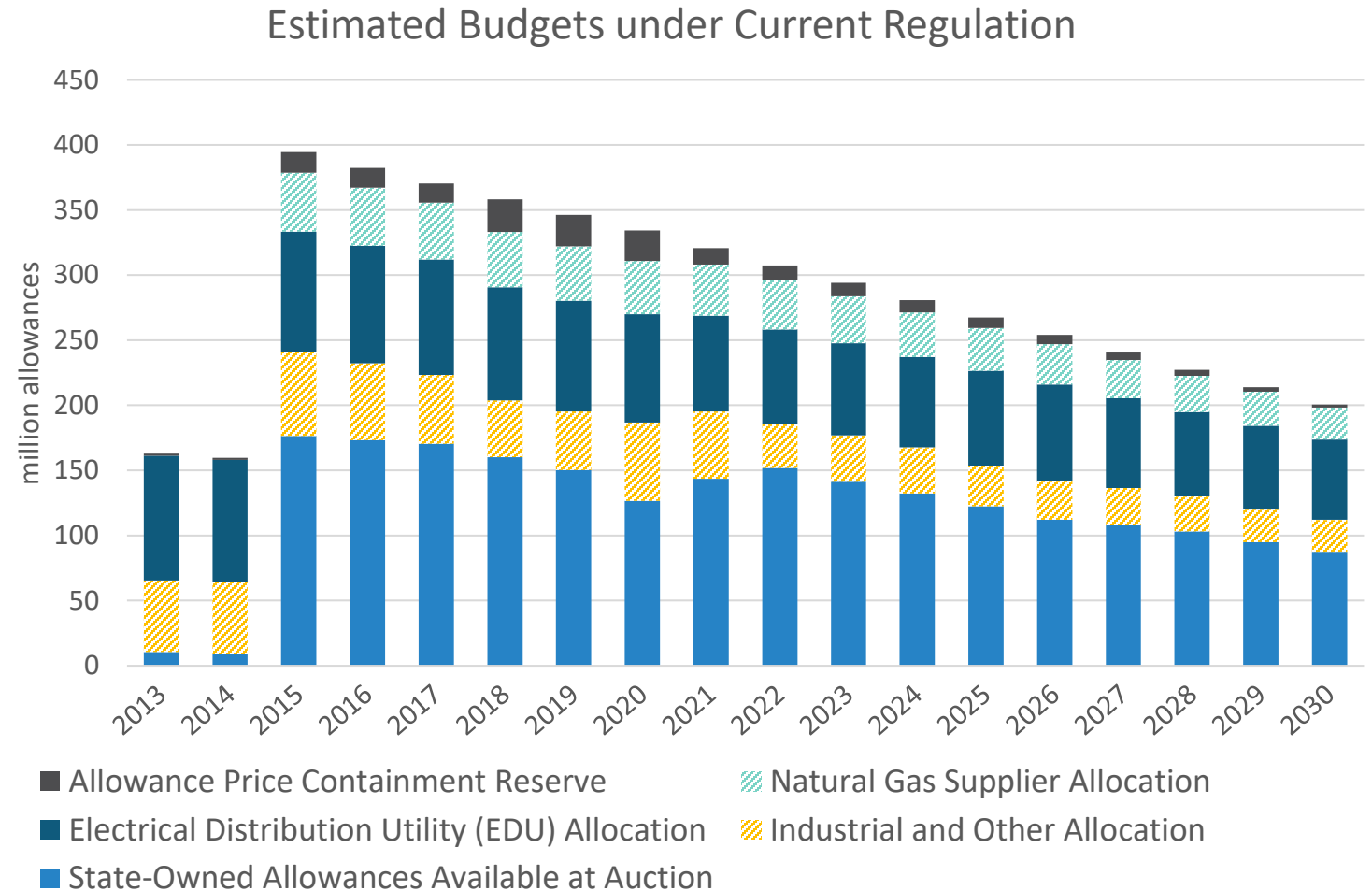
Potential Pools to Retire California Allowances

Vintage	Allowance Pool	Million Allowances
2013-2020	Price Ceiling	77.7
2013-2030	APCR	156.3
2025-2030	Auction and Allocation	1,372.6

All pools still under consideration for removal of allowances

Impact of CAFs on Allowance Allocation

- CAFs scale allowance allocation (striped bars) to most entity types including
 - natural gas suppliers
 - industrial entities
 - universities
 - legacy contract generators
- Electrical Distribution Utility (EDU) allocation
 - not scaled by CAFs
 - determined by expected cost burden



Received Feedback on Potential Allowance Budgets and Allowance Pool Retirement

- At least 30 public comment letters speaking to general allowance budgets
 - Majority of commenters support increased ambition
 - Many specifically supportive of increasing stringency to at least 48% scenario
- Limited and mixed feedback on which pools of allowances to retire from to achieve reductions
- Consistent support for post-2030 Program for market stability and informing decarbonization investments

Electrical Distribution Utility Allocation

EDU Allocation: Background

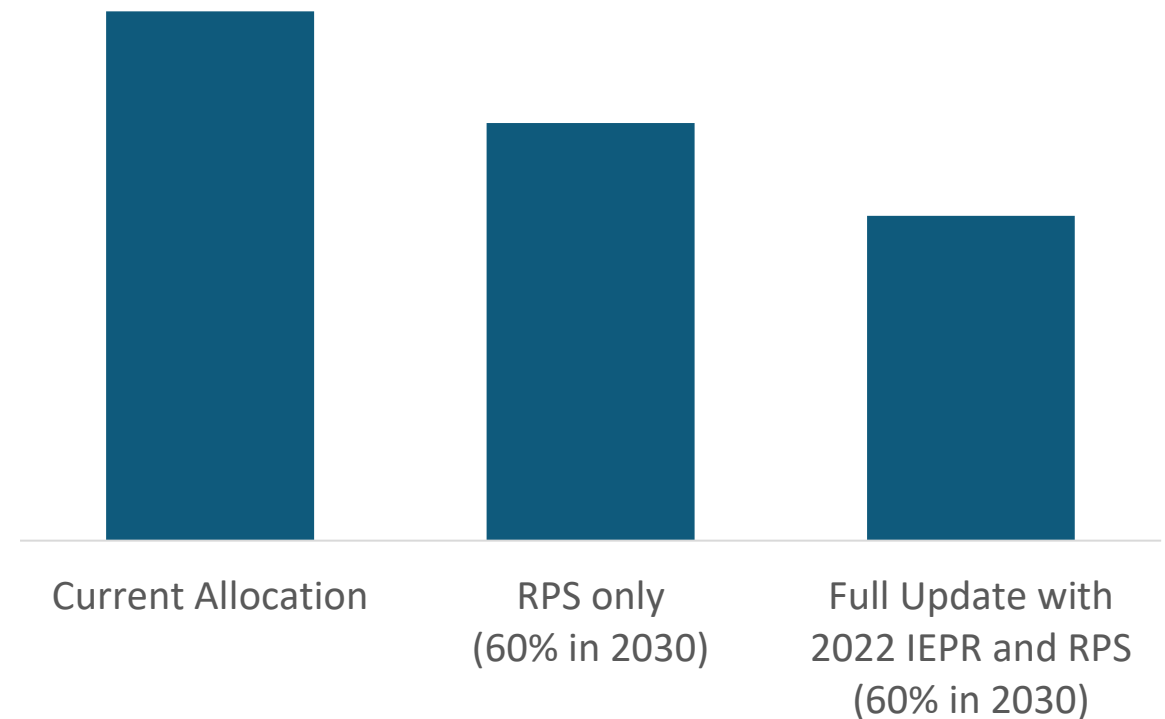
- CARB allocates allowances to electrical distribution utilities (EDU) for the protection and benefit of ratepayers
- Most allowances are consigned to auctions, with a majority of proceeds returned to ratepayers as the California Climate Credit
- EDU allocation (Table 9-4 adopted in 2016 rulemaking) is based on the cost burden of compliance with the Program
 - Data sources: CEC's 2015 demand forecast and EDUs' 2015 S-2 Resource Planning Forms
 - Each EDU assumed to meet mandated Renewable Portfolio Standard (RPS) requirements
 - Cost burden is reduced to account for emissions associated with electricity purchased by covered industrial facilities

EDU Allocation: Considerations

Evaluating updates to align with:

- Planned reevaluation
- SB 100 target of 60% RPS in 2030
- Updated Integrated Resource Planning (IRP) sector targets of 30-38 MMTCO₂e in 2030
- Newly available demand forecast and supply data (IEPR)
- Better projections of transportation electrification in the demand forecast per Board Resolution 17-21

Illustration of Potential Revised EDU Allocation Scenarios



EDU Allocation: Feedback

- How should CARB update EDU allocation to reflect state climate policy?
- S-2 Forms are not available for all EDUs, and some supply forms are confidential. What data source should CARB use for these utilities?
- S-2 Forms are not available for a majority of Community Choice Aggregators (CCA), and some supply forms are confidential. What data source should CARB use for CCAs?
- Several EDUs aggregate data for small and large hydro in their S-2 Forms. Is disaggregated data available for these EDUs?

Cap-and-Trade Allowance Budget Scenarios: post-2030

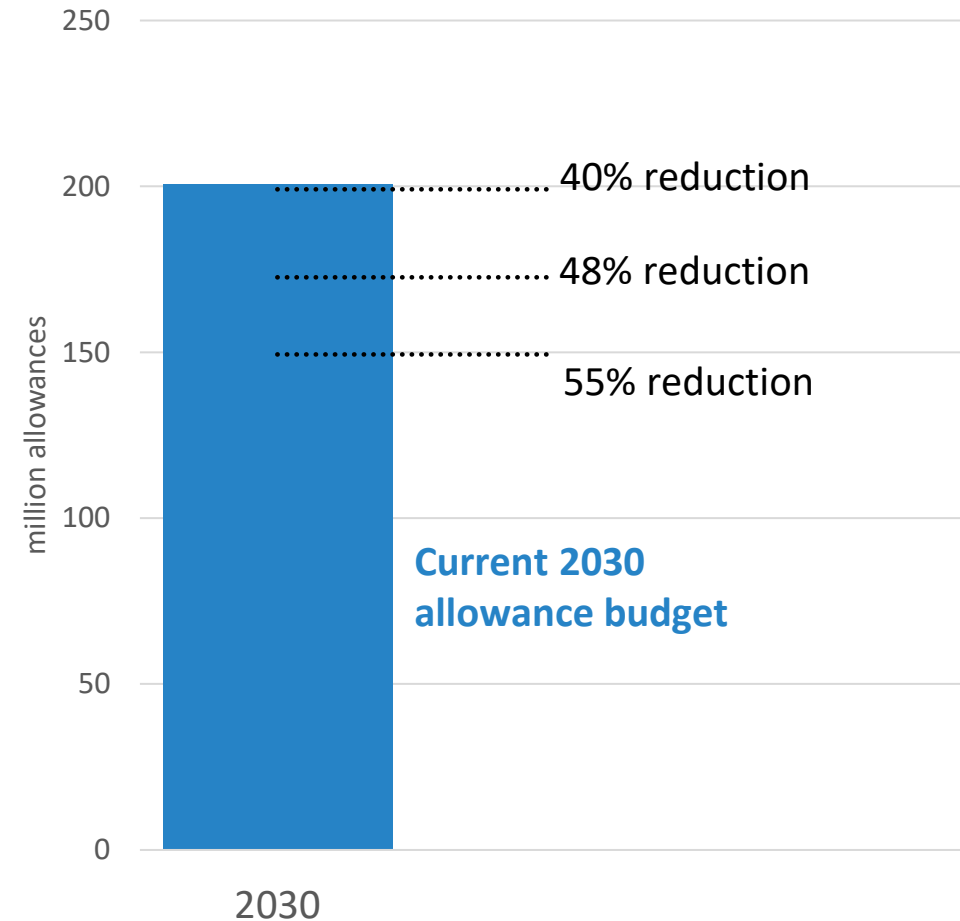
2045 Allowance Budget Consistent with AB 1279 Target

- Calculate the 2045 cap using the Scoping Plan Scenario estimate of 2045 covered sector (broad scope) emissions multiplied by ratio of 2021 covered emissions from MRR to the 2021 covered sector emissions from Scoping Plan Scenario
- Consistent with method for calculating 2020 cap in initial 2010 rulemaking
- The 2045 allowance budget is 30.3 million allowances, which is consistent with an 85% reduction target in 2045
- The 2045 allowance budget is 47% of the 2045 statewide target; the share of AB 32 emission sources that are covered by Cap-and-Trade is expected to decrease during 2030-2045

2031-2045 Allowance Budget Scenarios: Starting Points

Option #1: Emission Target Method

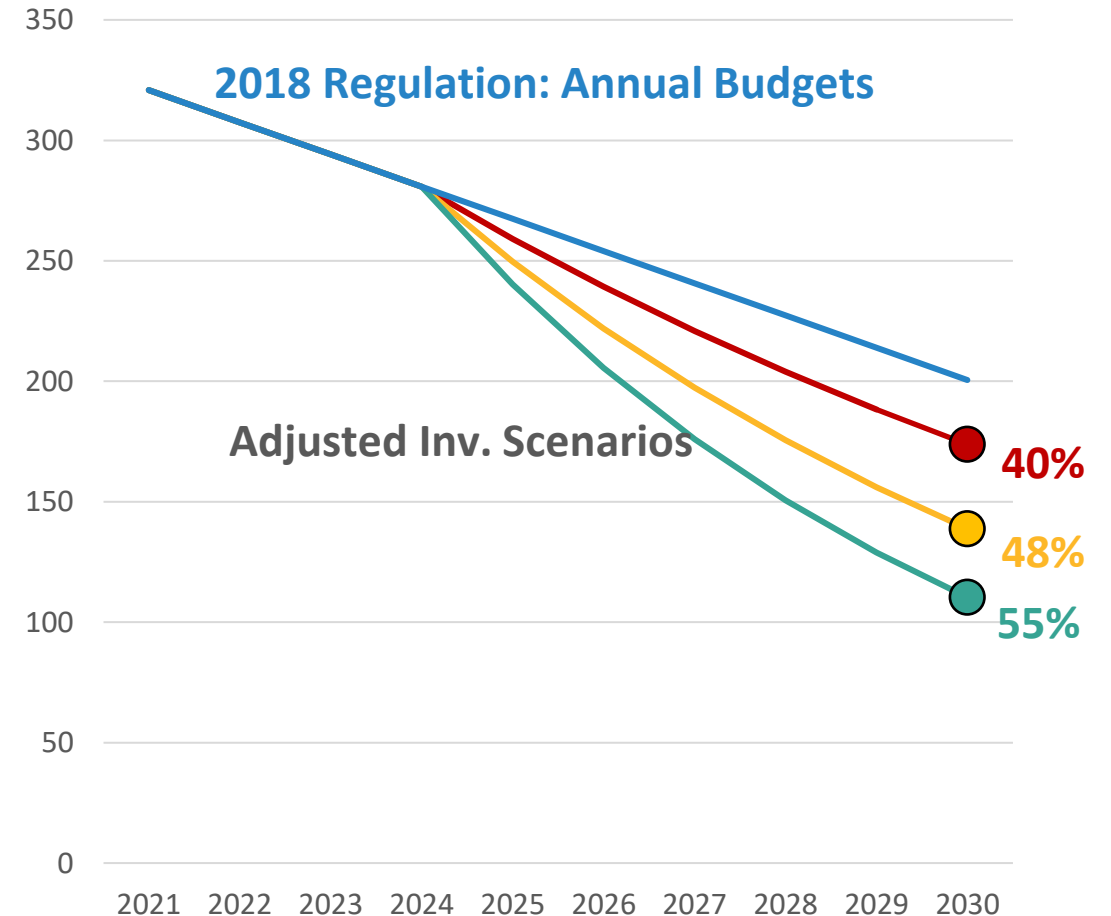
- Decline linearly from a 2030 value that is consistent with emission reduction target for the scenario to the 2045 target (30.3 million allowances)
- Cumulative 2031-2045 budget depends on the 2030 emission reduction target



2031-2045 Allowance Budget Scenarios: Starting Points

Option #2: Allowance Budget Method

- Decline linearly from the 2030 allowance budget for the scenario to the 2045 target (30.3 million allowances)
- Cumulative 2031-2045 budget depends on the adopted 2030 allowance budget



Comparison of 2030 Starting Points

2030 Target	Option #1: 2030 Covered Emissions Target (MT)	Option #2: Potential 2030 Allowance Budget (MT)*
40%	199	174
48%	173	139
55%	149	110

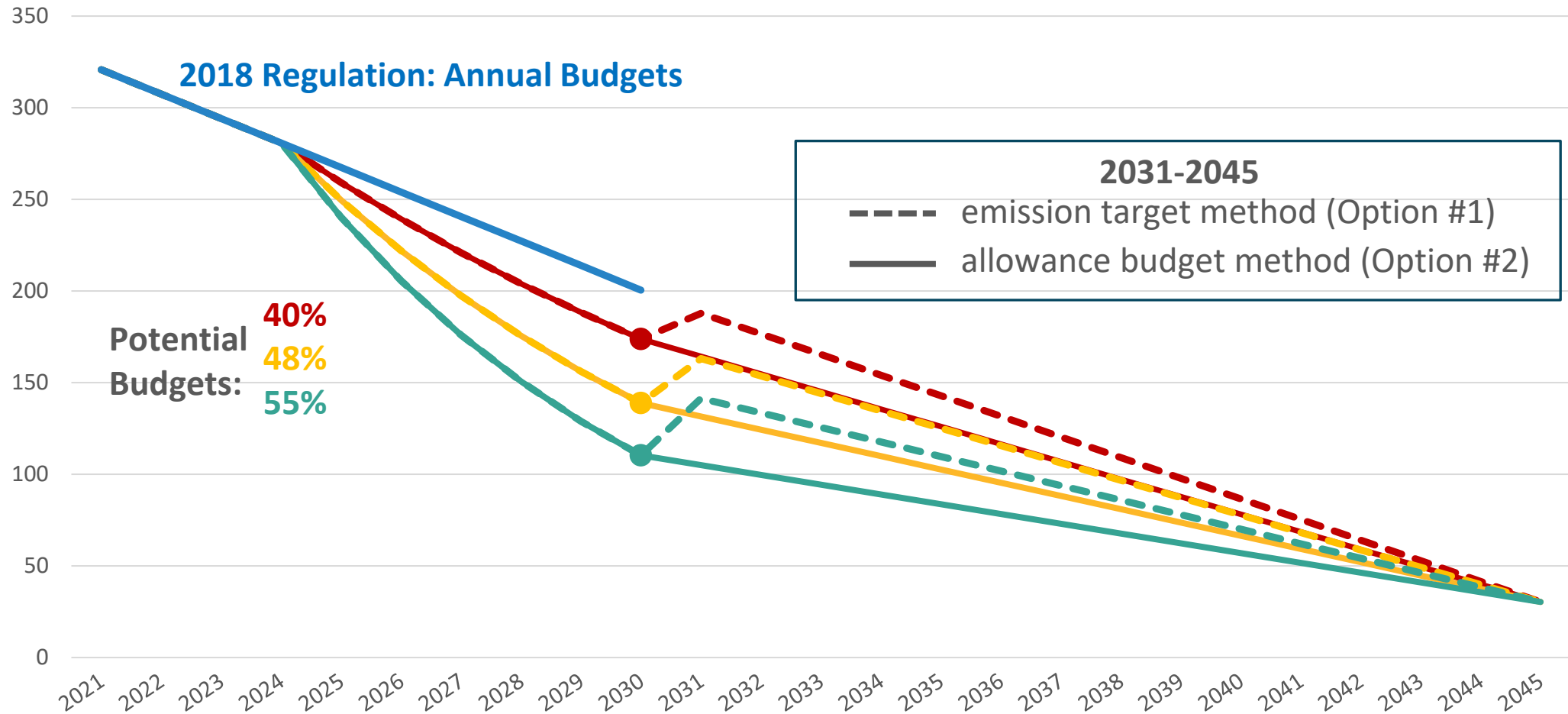
*Potential 2030 budget for scenarios that achieves cumulative allowance removals by adjusting annual budgets for 2025-2030 and number of allowances in price containment accounts maintained

Example Cumulative Allowance Budget for 2031-2045

Estimated Total 2031-2045 Allowances (million)		
2030 Target	Option #1: Emission Target Method	Option #2: Allowance Budget Method
40%	1635	1460
48%	1450	1215
55%	1290	1015

Each scenario declines linearly from a different 2030 starting point to the same 2045 target (30.3 million allowances)

Illustrative Allowance Budgets for 2021-2045



Allowance Budget Scenarios: Next Steps

- Continue to evaluate removal of allowances from different available pools and which pools impact stringency through 2030
- Evaluate impact of potential offset use post-2030 and potential impact of designating some post-2030 allowances to price containment
- Evaluate total compliance instrument supply through 2030 and post-2030, informed by state climate goals and 2022 Scoping Plan modeling
- Allowance price evaluations for various budget scenarios
 - Québec and California will each use independent models to estimate effects on allowance prices

Environmental Impact Analysis (EIA)

Environmental Impact Analysis

- Environmental Impact Analysis (EIA) being prepared analyzing potentially significant adverse impacts caused by reasonably foreseeable actions
- Meets requirements of CARB's certified program under the California Environmental Quality Act (CEQA)
- The CEQA Environmental Checklist (CEQA Guidelines Appendix G) is used to identify and evaluate potential indirect impacts
- The EIA will be an appendix to the Staff Report

Environmental Impact Analysis

- The EIA will include:
 - Description of reasonably foreseeable actions taken in response to the proposal.
 - Programmatic level analysis of potential adverse impacts caused by reasonably foreseeable actions
 - Feasible mitigation measures to reduce/avoid significant impacts
 - Alternatives analysis
- Input invited at this early stage on appropriate scope and content of the EIA
- Draft EIA will be released for 45-day public comment period

Additional Program Evaluations

- Cap-and-Trade FAQ & Local Air Pollution

<https://ww2.arb.ca.gov/resources/documents/faq-cap-and-trade-program>

- Allowance Supply Evaluation

[BR 18-51 Cap-and-Trade Allowance Report](#)

- Recent Forest Offset Program Review

[nc-CARBslides20221130.pdf](#)

- Cap-and-Trade Website

[Cap-and-Trade Program | California Air Resources Board](#)

Questions and Feedback Session: Allowance Budget Scenarios

- Public Comment Instructions



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Return at 12:30 pm

Afternoon- 12:30-4:00

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- Public Comment
- Biogenic emissions exemptions
- Public Comment