DOCKETED	
Docket Number:	25-PIIRA-01
Project Title:	Refinery Resupply Requirements
TN #:	261986
Document Title:	Presentation - Session 1 AB X2-1 Pre-Rulemaking Workshop on Refinery Resupply Planning
Description:	Review of the Proposed Resupply Framework by Jeremy Smith Refinery Resupply Planning Benefit-Cost Analysis by Kevin DeCorla-Souza Economic Considerations for Assembly Bill X2-1 Policy Tools by Dr. Esther Shears
Filer:	Jann Mitchell
Organization:	California Energy Commission
Submitter Role:	Commission Staff
Submission Date:	2/26/2025 11:18:48 AM
Docketed Date:	2/26/2025

AB X2-1 Pre-rulemaking Workshop

Refinery Resupply Plans

February 25, 2025

Housekeeping

- Meeting is being recorded.
- Attendees may participate today by:
  - Making comments during the public comment period.
  - Submitting written comments to docket **25-PIIRA-01**, due by **5 p.m. March 11**.

Purpose of Today's Workshop

- Discuss current market conditions.
- Describe the key components and considerations for a refinery resupply framework.
- Receive feedback on how to develop a resupply policy.

Agenda

1. **Opening Comments from the Dais**
2. **Gasoline Market Update/Review of the Proposed Resupply Framework**

   Presenter: Jeremy Smith, Energy Assessments Division
3. **Resupply Planning Benefit Cost Analysis**

   Presenter: Kevin DeCorla-Souza, ICF
4. **Economic Considerations for AB X2-1 Policy Tools**

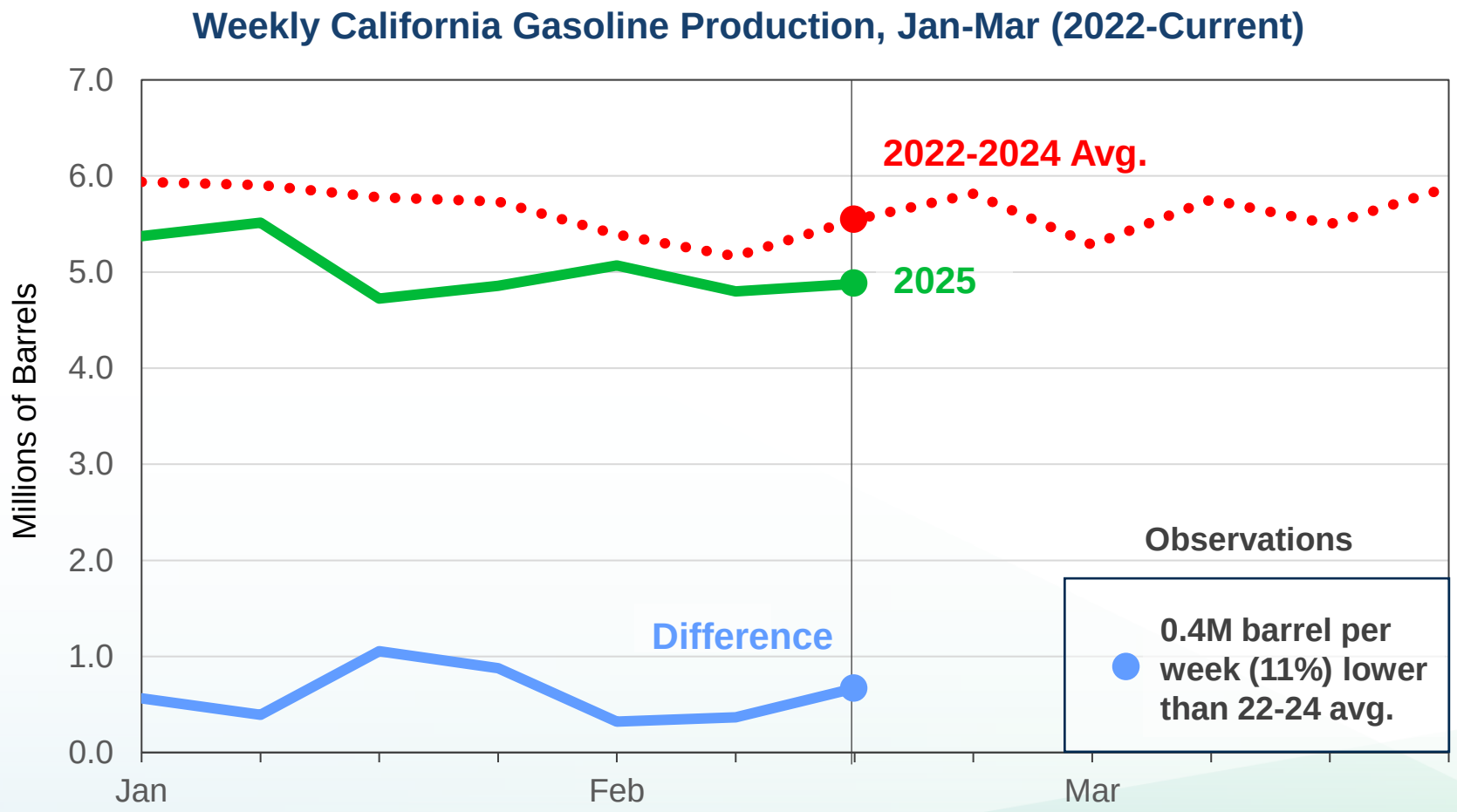
   Presenter: Dr. Esther Shears, Division of Petroleum Market Oversight
5. **Public Comments**

Opening Comments from the Dais

California Gasoline Market Update

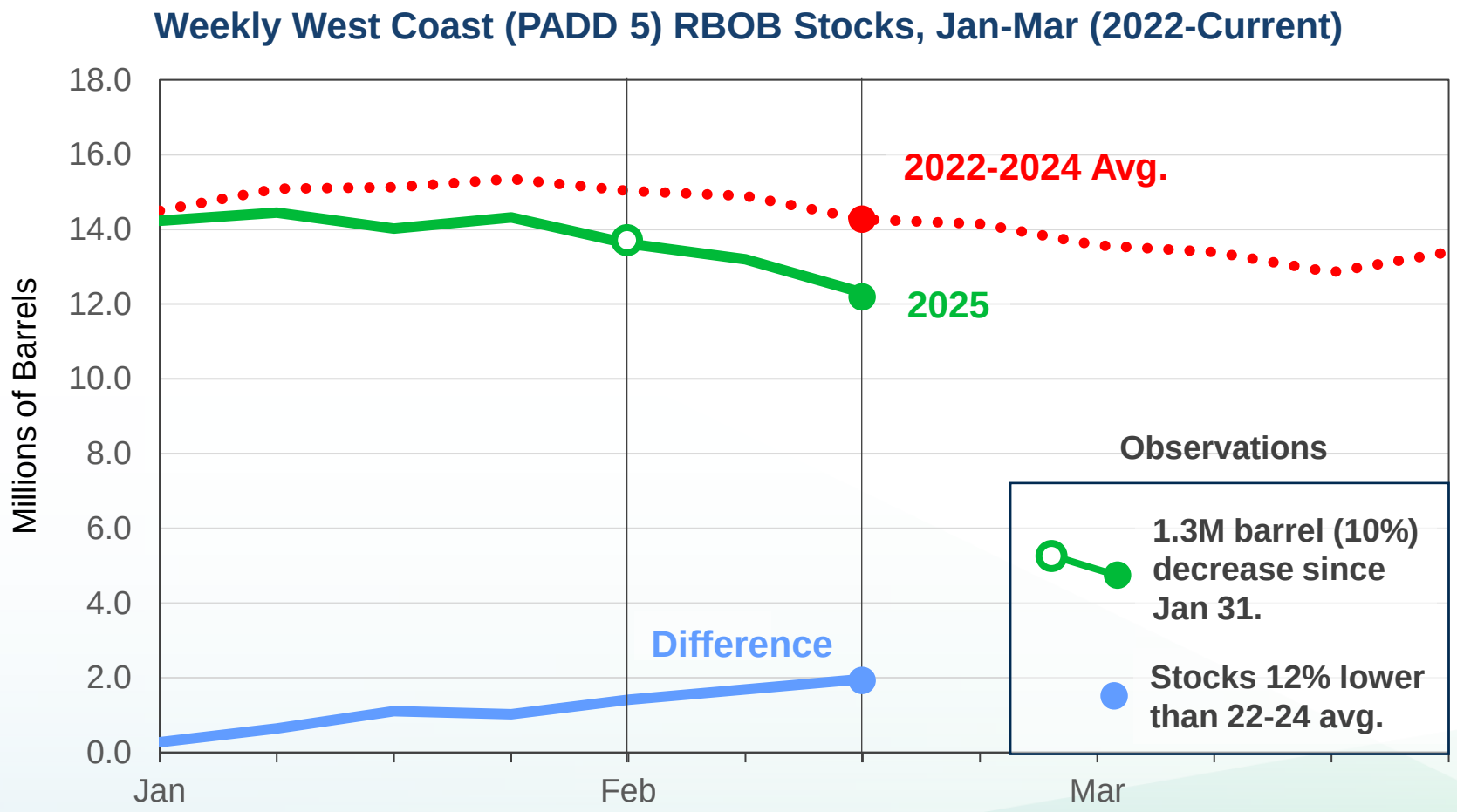
Jeremy Smith
Deputy Director, Energy Assessments Division

California Gasoline Production



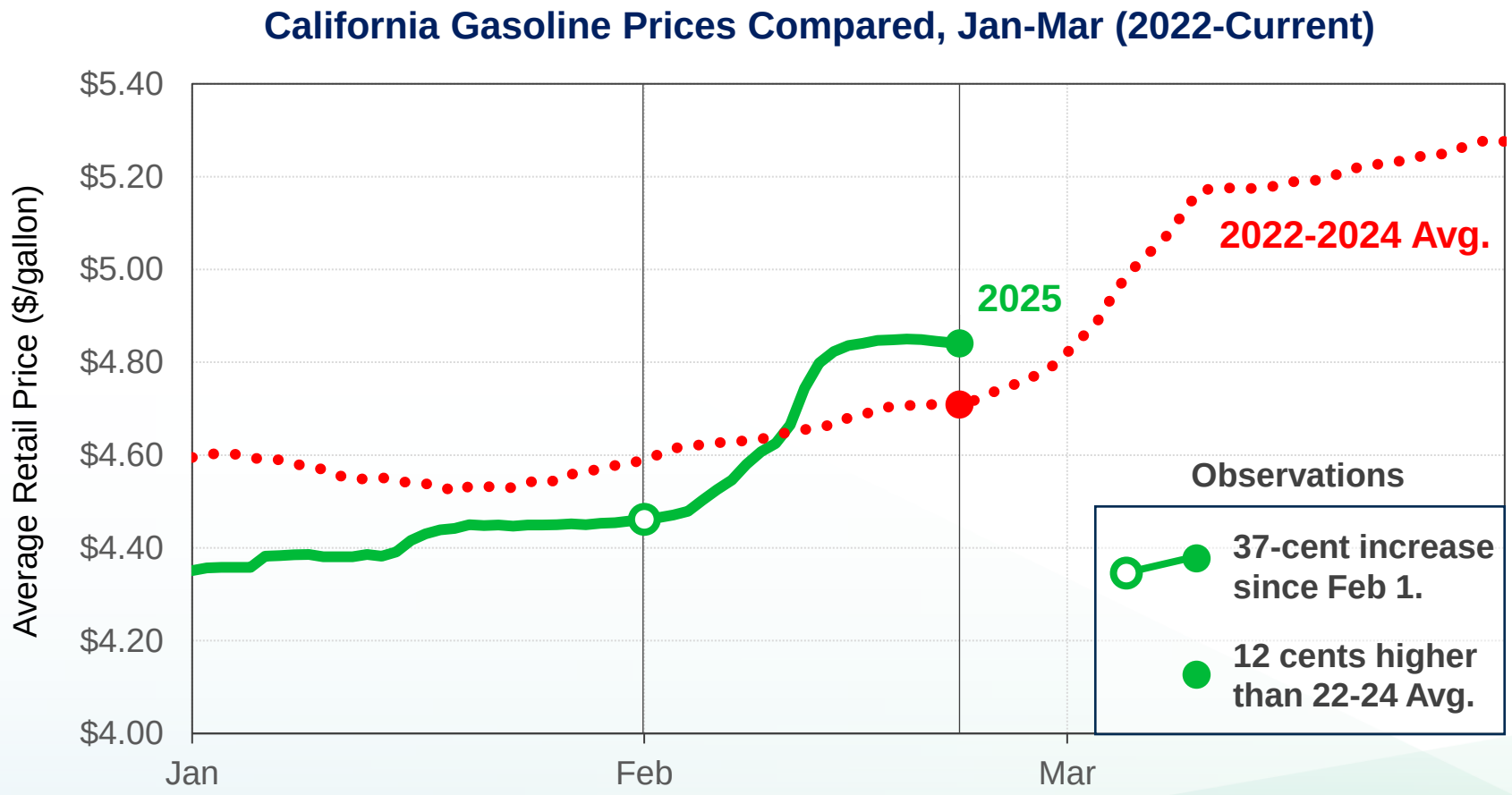
Source: CEC Weekly Fuels Watch (Refinery Inputs and Production)

West Coast Gasoline Stocks



Source: EIA Weekly West Coast (PADD 5) Gasoline Stocks

California Retail Gasoline Prices



Source: CEC Analysis of OPIS data.

Review of the Proposed Resupply Framework

Jeremy Smith
Deputy Director, Energy Assessments Division

AB X2-1 Implementation Activities

Today's Topic

Refinery Maintenance Requirements
(*e.g.*, resupply)

Minimum Inventory Requirements

Noncompliance Penalties

Transportation Fuels Assessment 2.0

Report Each Year After Regulation Adoption

AB X2-1 Resupply Requirements

AB X2-1 authorizes the CEC to establish requirements governing the timing of turnaround and maintenance in consultation with Labor and Workforce Development Agency, labor, and industry stakeholders. Any rules must:

- Protect the health and safety of employees, communities, and public.
- Include resupply planning and reporting requirements for planned maintenance to minimize impact of production loss on fuel prices.
- Not impact refinery workers' authority to perform emergency shutdown.
- Not impact refinery health and safety rules.

Resupply Framework

1. Minimum Production Loss to Trigger Resupply
2. Resupply Amount and Qualifying Sources
3. Applicable Period for Resupply Rule
4. Resupply Plan Reporting Intervals
5. Exemption Pathways

Minimum Production Loss Trigger

Factors to trigger a resupply plan:

Refinery maintenance events and turnarounds vary in impact to California's fuel supply and prices.

- Daily production loss (barrels per day)
- Length of the event (days)
- Total production loss (barrels)

Resupply Amount and Sources

Resupply Amount:

- What fraction of maintenance-related production loss should be resupplied?

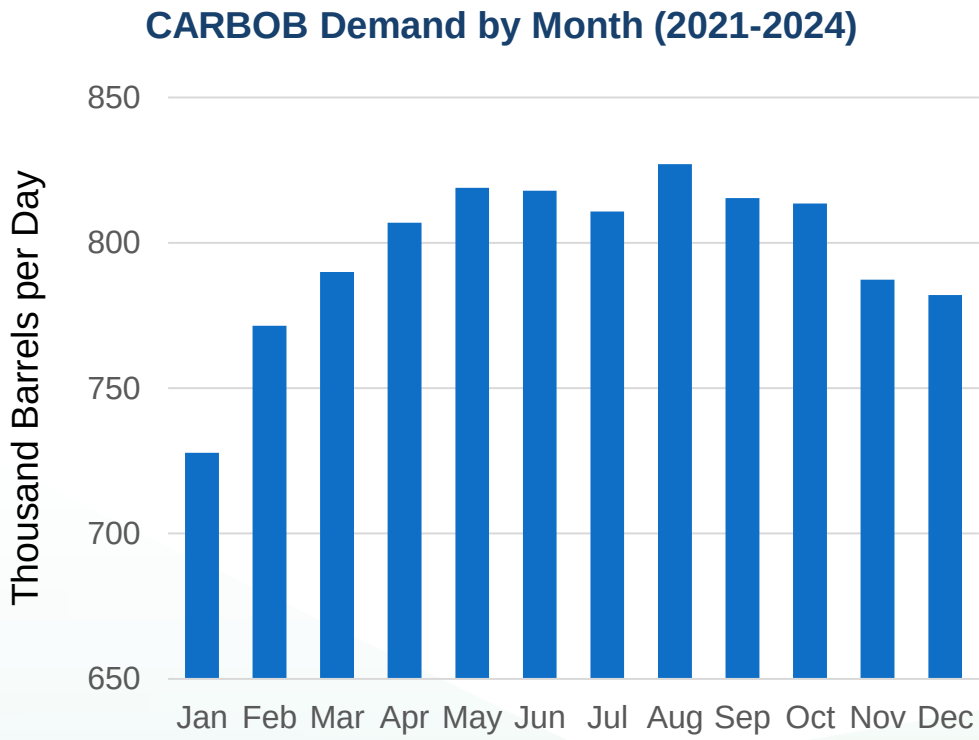
Potential Sources:

- Marine imports from outside California (domestic and foreign)
- Refinery inventory build-up (reducing non-contracted sales)
- In-state purchases (typically does not increase overall state supply)

Applicable Period

Seasonal factors to consider:

- Demand variability (lowest in winter, highest in summer)
- Summer vs. winter gasoline specifications impact on supply



Reporting Intervals

How frequently do evolving resupply plans need to be communicated?

Currently Required:
Notification of
Planned Event
(120 days prior)

Planned
Maintenance Event

Currently Required:
Maintenance
Completed Report
(2 days after)

Exemption Pathways

What factors justify an exemption from resupply?

- Refinery employee, community, and public safety
- Market factors (gasoline stocks, spot or retail prices)
- Refinery operations or costs

Resupply Framework

1. Minimum Production Loss Trigger

15,000-25,000* barrels per day for 21 days
or
450,000 barrels total

2. Resupply Amount

70-90%* of lost gasoline production

3. Applicable Period

For planned maintenance events occurring during peak summer season.

4. Reporting Intervals

120 days before planned event
No less than 60 days before planned event
15-30 days after planned event

*These values represent ranges currently being considered.

Thank you

Jeremy Smith
Deputy Director, Energy Assessments Division

Resupply Planning Benefit Cost Analysis

Kevin DeCorla-Souza
Senior Director, Energy Markets
ICF

Refinery Resupply Planning Benefit-Cost Analysis

California Energy Commission

Kevin DeCorla-Souza
Senior Director, Energy Markets

February 25, 2025

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Key Questions

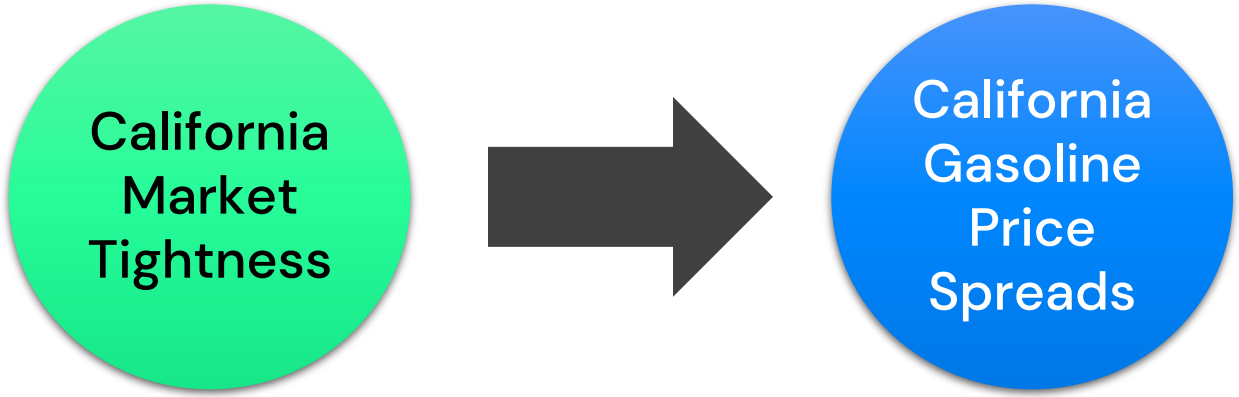
Analyze the benefits and costs of potential Refinery Resupply Planning criteria to inform two key parameters:

1. "**Outage Size Threshold**": At what size planned outage should obligatory Resupply Planning kick in?
2. "**Resupply Planning Criteria**": For qualifying outages, what percentage of the expected gasoline loss should be resupplied from out-of-state sources?

California Gasoline Price Model

California Gasoline Price Model

Results of benefit-cost analysis are driven by California Gasoline Price Model that establishes a relationship between two key variables:



California Gasoline Market Tightness: Forward Days of Supply

Stocks at beginning of week

Expected build (+) or drawdown (-) in stocks over next 3 weeks

$$Fwd\ Days\ of\ Supply_{t=0} = \frac{Stocks_{t=-1} + \sum Exp.Supply\ Balance_{t=0,1,2}}{Avg.Daily\ Demand_{t=0,1,2}}$$

Common metric to measure market tightness

Avg. daily motor gasoline sales (less ethanol content)

Expected Supply Balance

$$\sum Exp.Supply\ Balance_{t=0,1,2} =$$

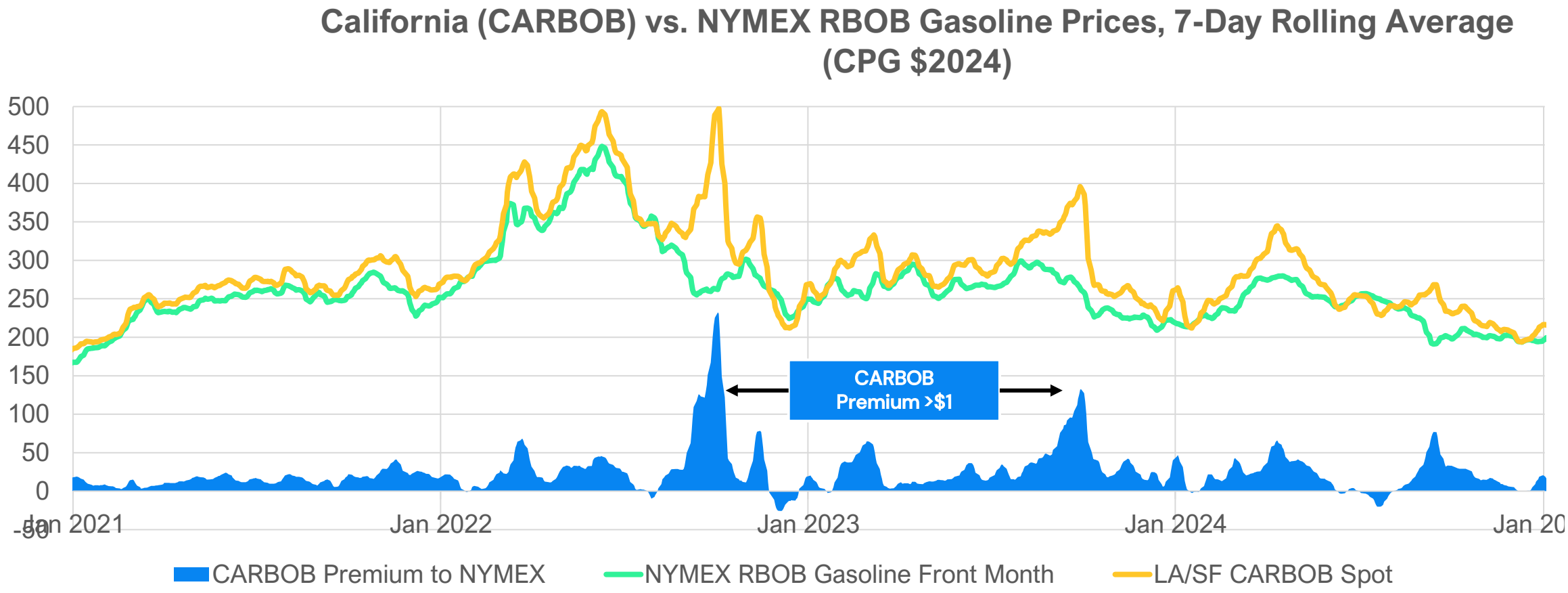
$$Expected\ Supply\ _{t=0,1,2}$$

Baseline refinery production + exp. imports – known planned or unplanned refinery outages

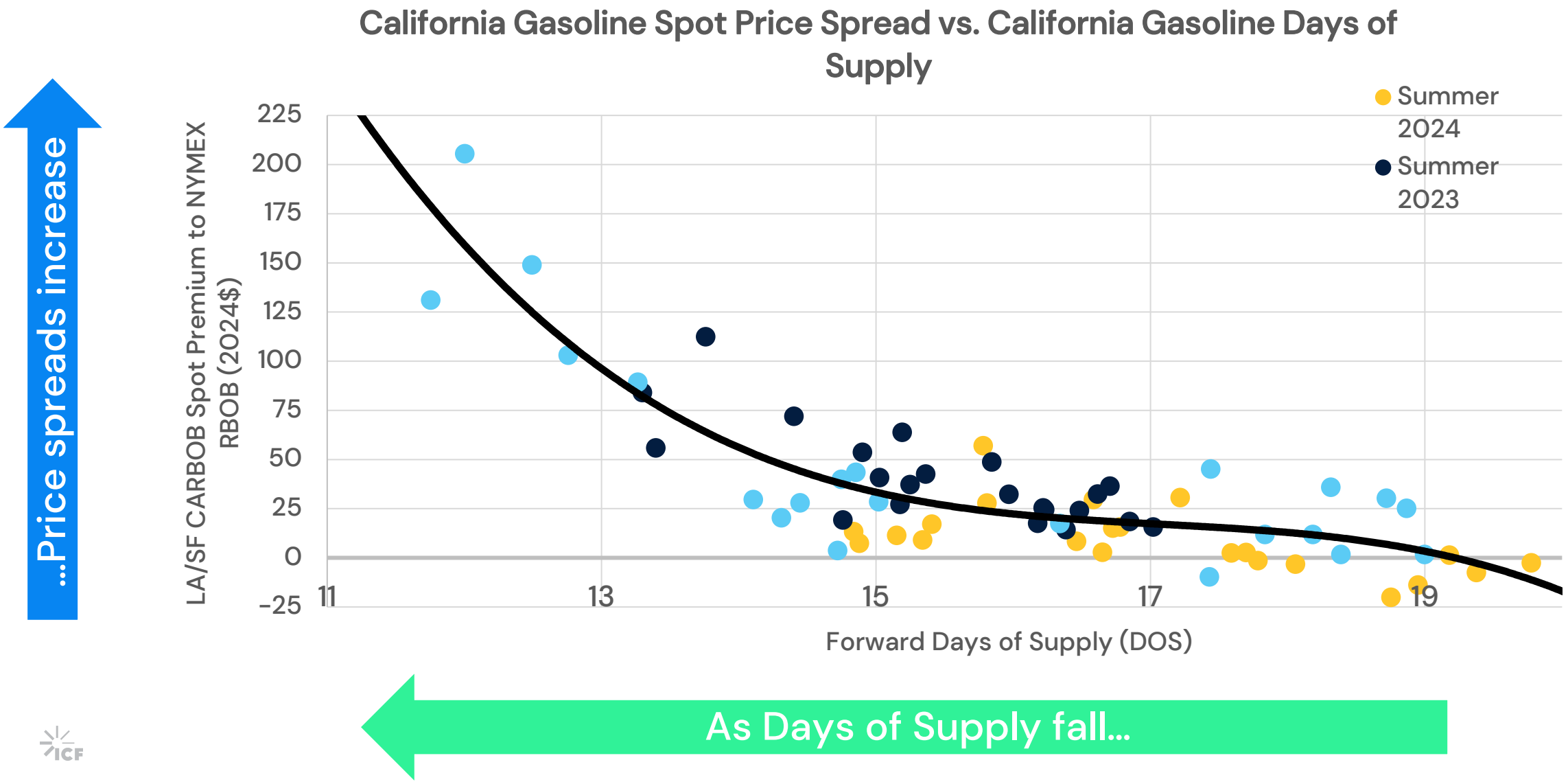
$$-Expected\ Demand_{t=0,1,2}$$

Expected demand based on seasonal averages

California Gasoline Price Spreads: Premium to NYMEX



California Gasoline Spot Price Function



Outage Threshold Analysis

Outage Threshold Analysis: Model Set Up

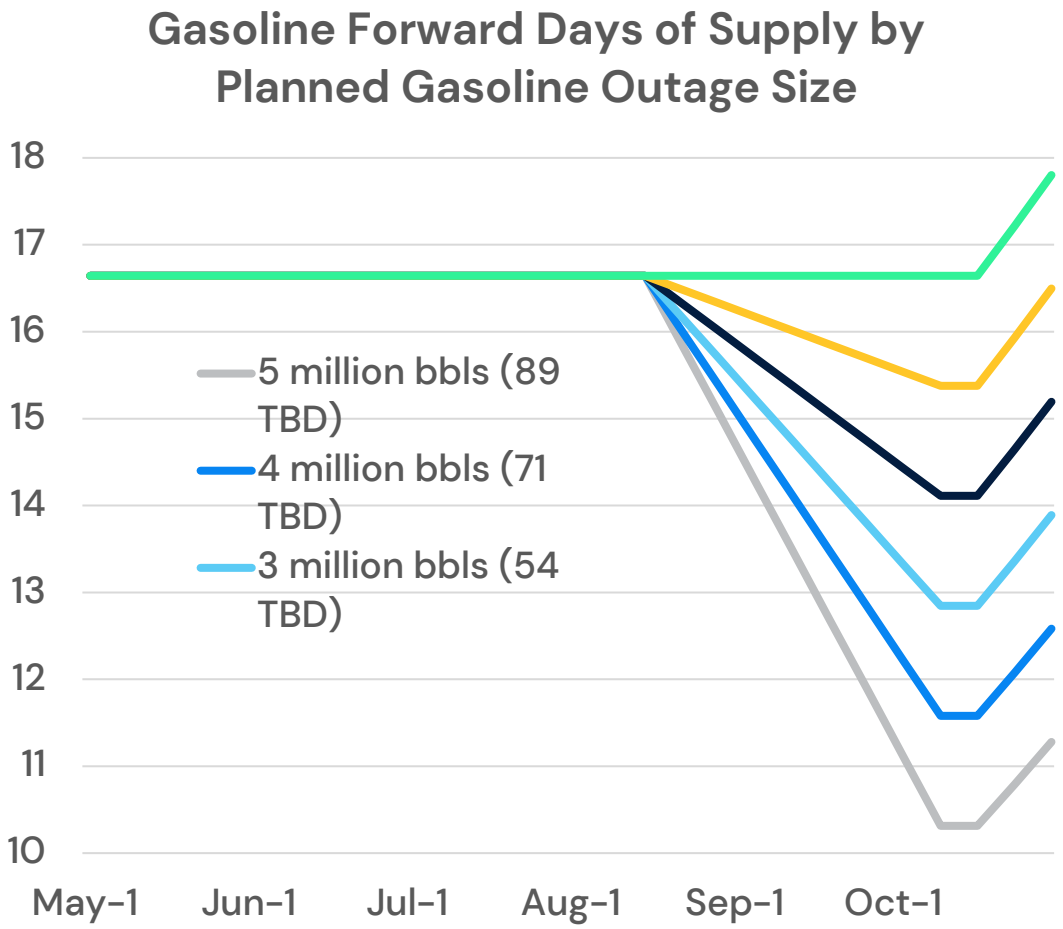
BASE CASE (NO OUTAGE)

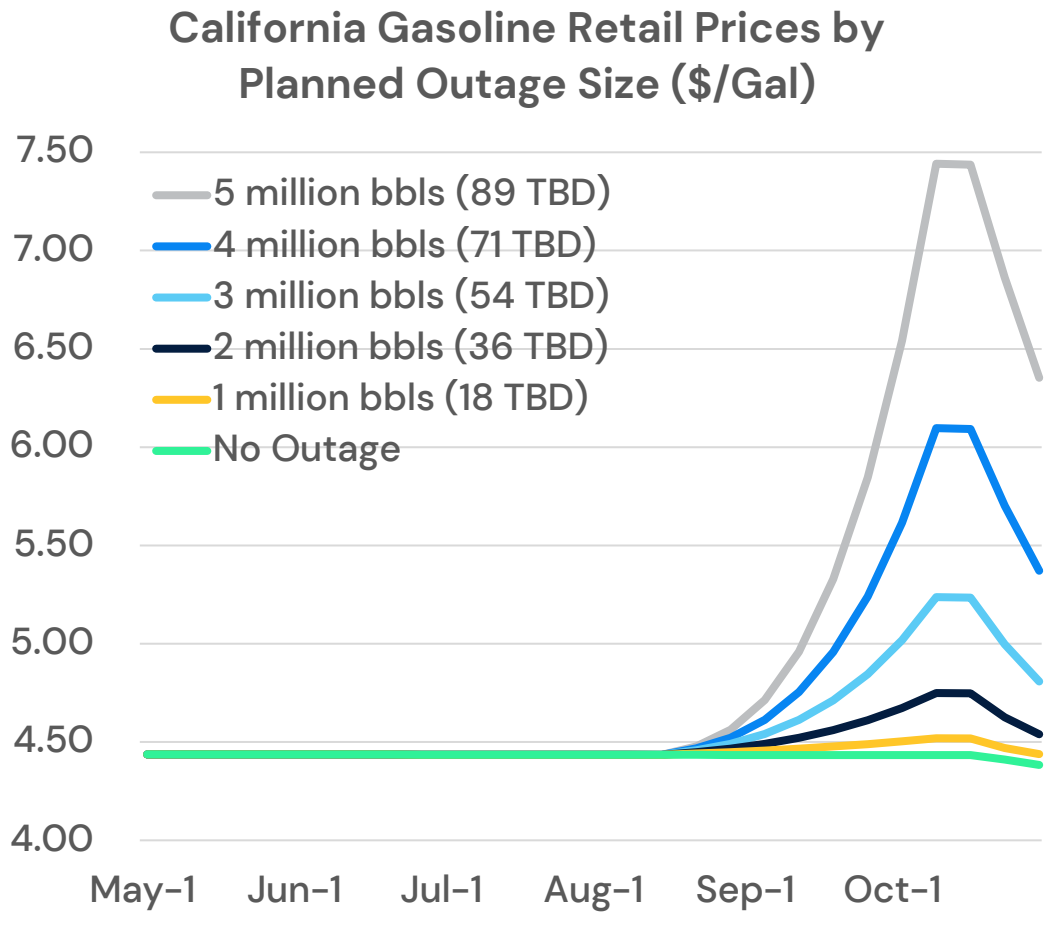
- **Timing:** May 1 through October 31
- **Stocks:** PADD 5 Reformulated Gasoline inventories start May at 13.15 million barrels (~16.7 days of supply)
- **Supply:** CARBOB refinery production + imports average 790 TBD
- **Demand:** CARBOB demand averages 790 TBD throughout the summer
- **NYMEX Gasoline Price:** Held constant at 225 cpg
- **Retail Differential to CARBOB Spot Price:** Held constant at 200 cpg

PLANNED OUTAGE SCENARIOS

- **Duration:** 8-week (56-day) outage from Aug. 30 to Oct. 24
- **Size:** Planned outages modeled with various cumulative gasoline supply losses:
  - 1 million bbls (18 TBD)
  - 2 million bbls (36 TBD)
  - 3 million bbls (54 TBD)
  - 4 million bbls (71 TBD)
  - 5 million bbls (89 TBD)
- Assumes no resupply (out-of-state imports) from any market participants.
- Assumes no unplanned outages occur simultaneously with the planned outage.

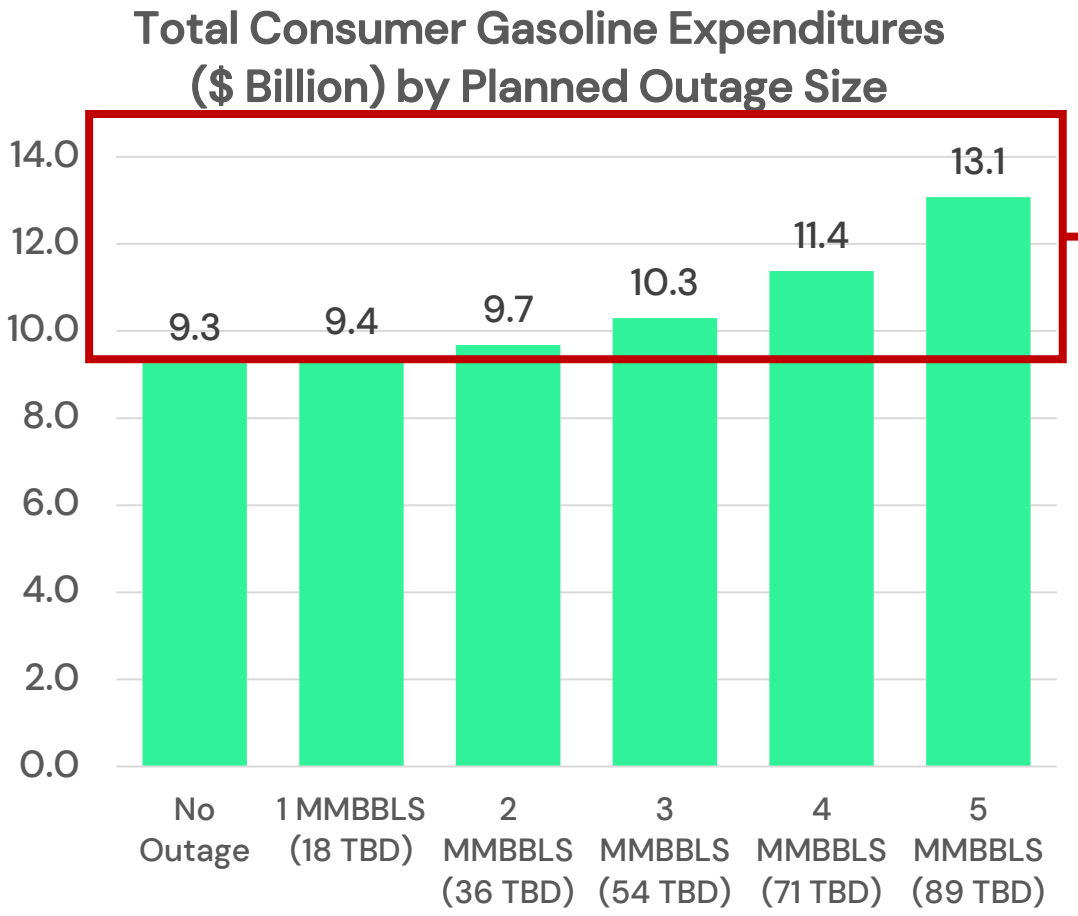
Outage Threshold Analysis: Consumer Price Impacts

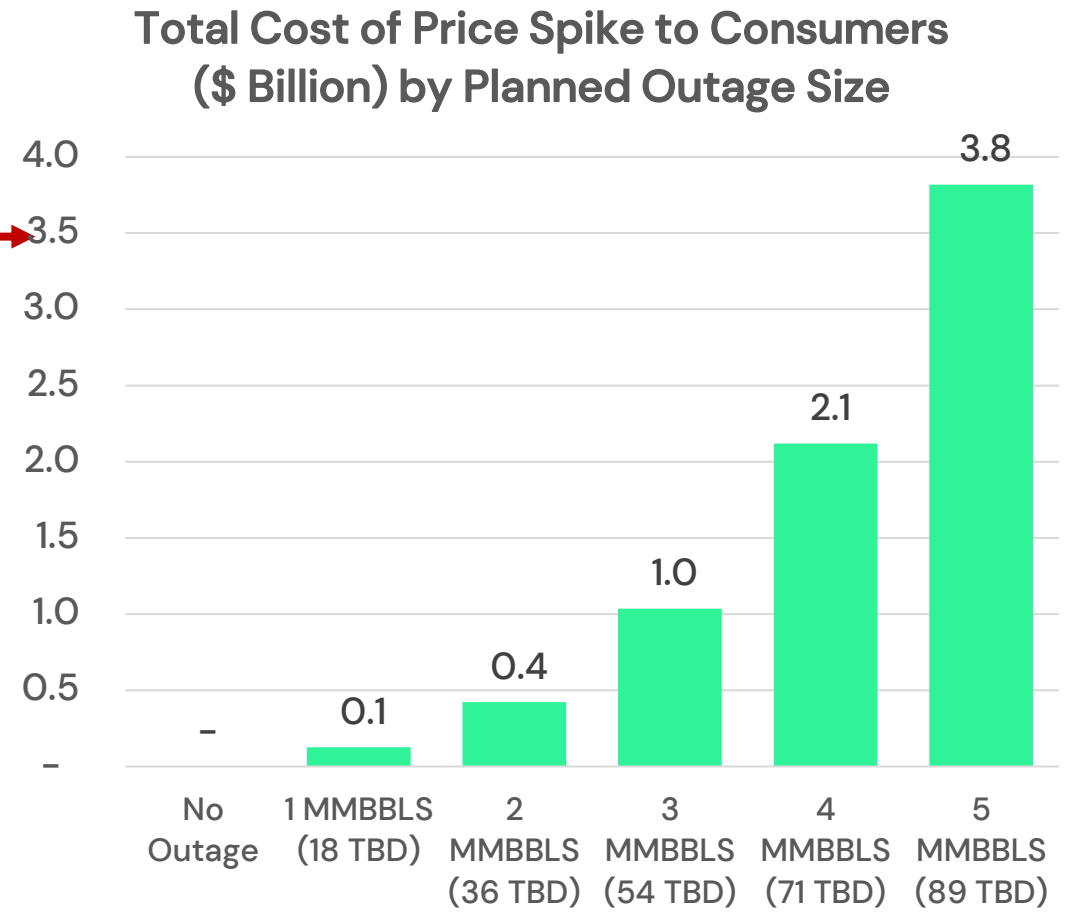




Note: Assumes spot price increases and declines pass through fully to retail prices

Outage Threshold Analysis: Consumer Expenditures and Costs

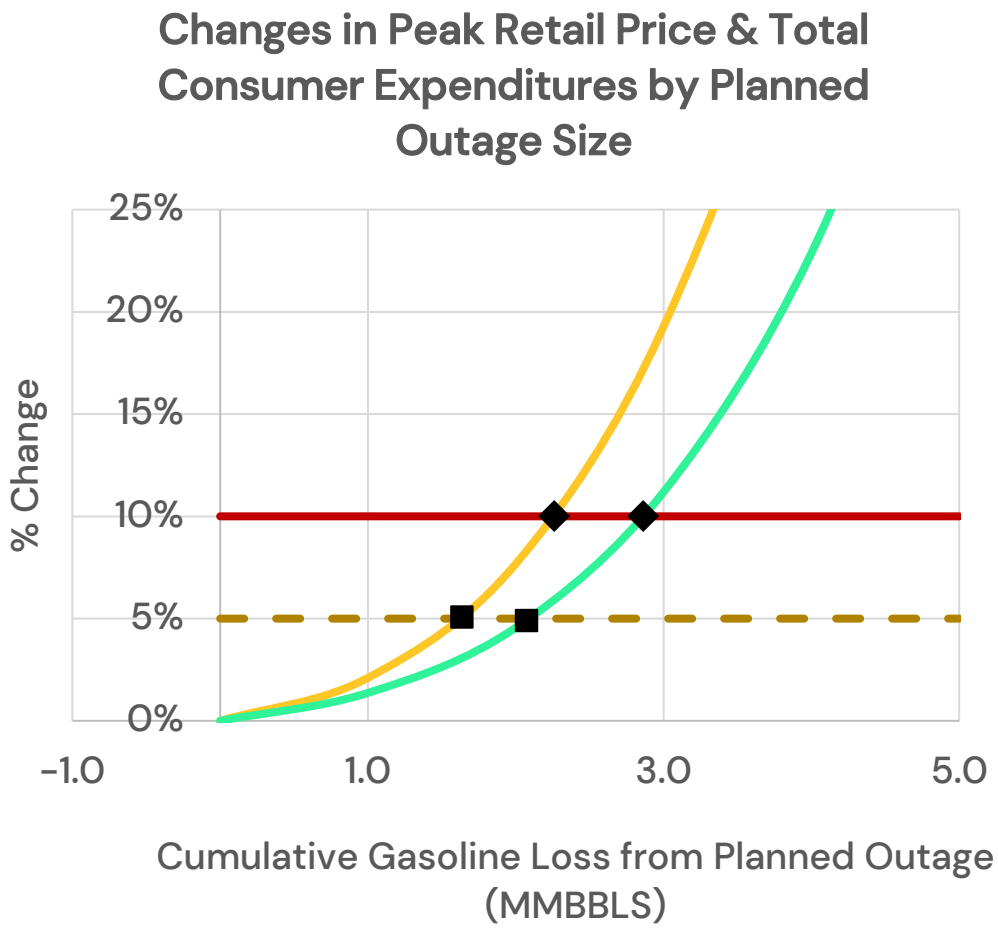




Note: Total consumer gasoline expenditures = price x quantity sold over a 9-week period from Aug. 30-Oct. 31 (8-week outage duration + 1 weeks after). Assumes that consumers do not reduce demand due to higher prices.

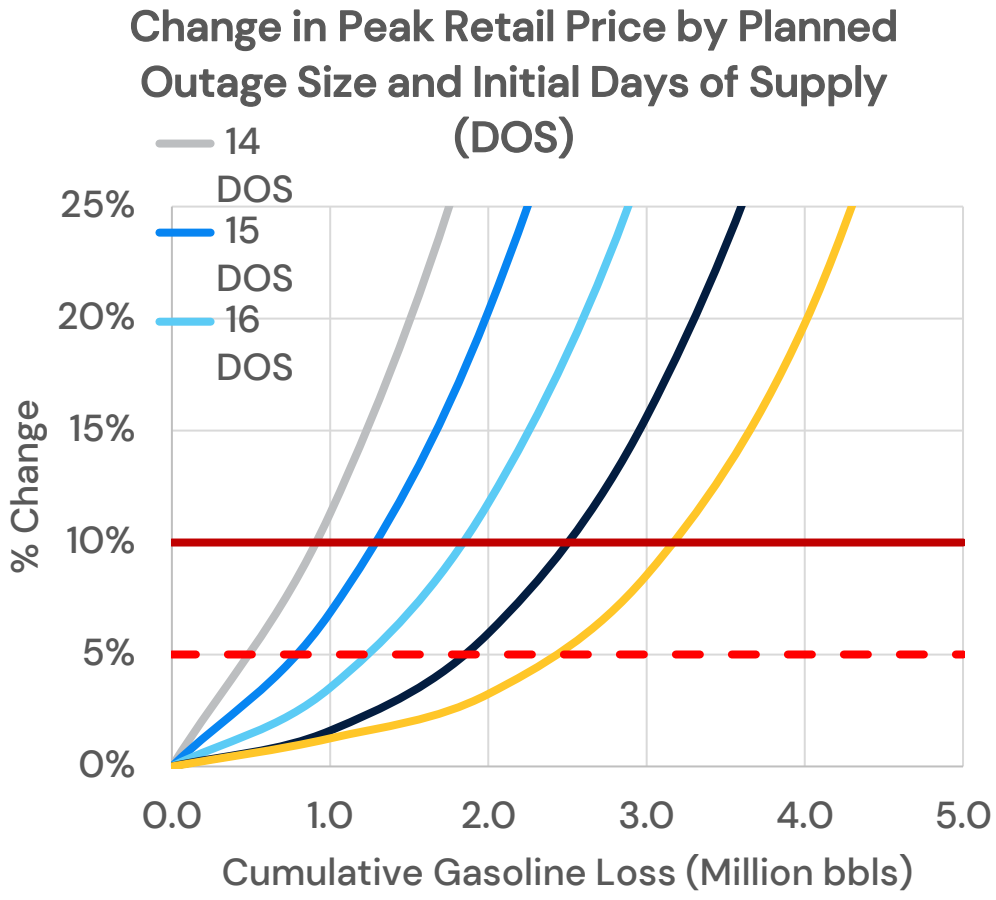
Outage Size Threshold Analysis: Consumer Impacts % Change

- Outage Size Threshold may be targeted to limit increases in retail prices or consumer expenditures. For example:
  - 10% retail price increase triggered by loss of 2.25 million bbls (40 TBD)
  - 10% consumer cost increase triggered by loss of 2.85 million bbls (51 TBD)
  - 5% retail price increase triggered by loss of 1.65 million bbls (40 TBD)
  - 5% consumer cost increase triggered by loss of 2.10 million bbls (51 TBD)
- Specific targets are subject to policy judgement.
- Threshold may be applied to a single outage or to multiple smaller outages subject to policy judgement.



Outage Threshold Analysis: Sensitivity to Initial Days of Supply

- Results are sensitive to initial market tightness (Days of Supply (DOS) at the start of the planned outage).
  - Outage size threshold would lie between 0.9 and 3.2 million barrels if targeting a 10% limit on price increases depending on initial DOS.
  - Outage size threshold would lie between 0.5 and 2.5 million barrels if targeting a 5% limit on price increases depending on initial DOS.



Refinery Resupply Planning Analysis

Resupply Planning Analysis: Model Set Up

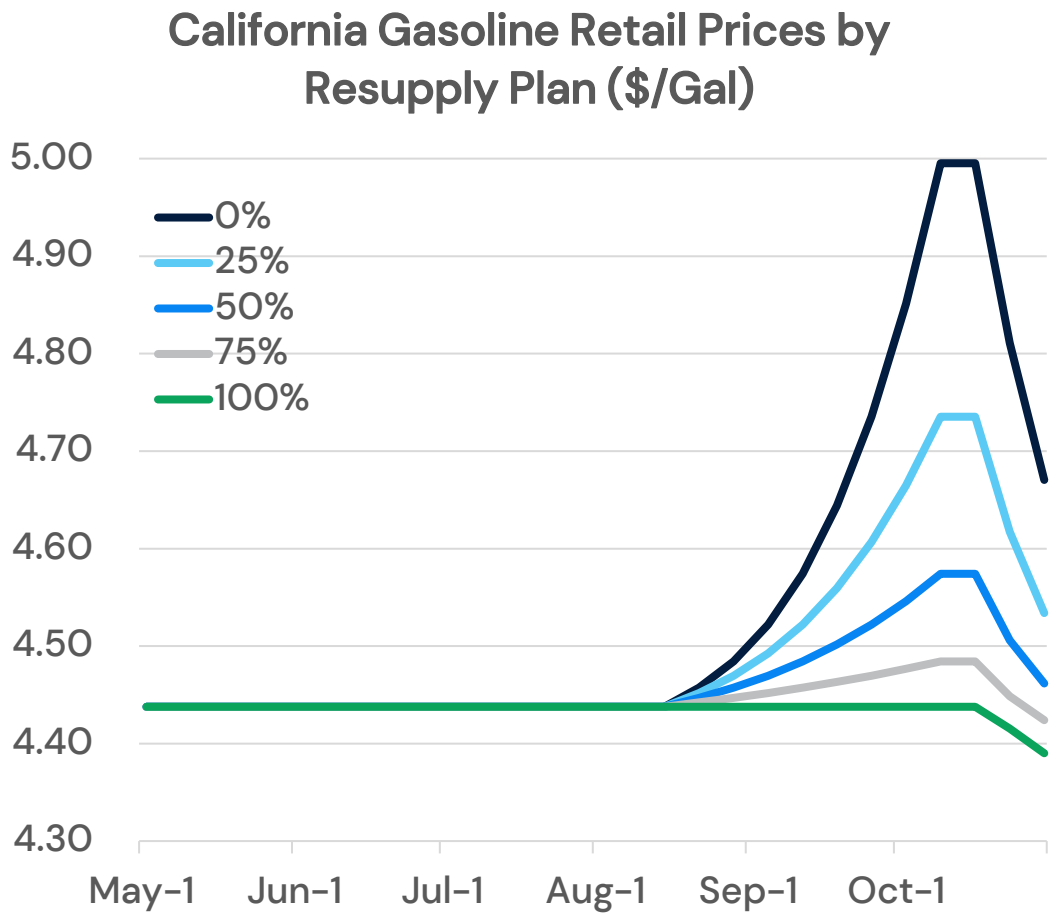
BASE CASE (NO RESUPPLY)

- **Timing:** May 1 through October 31
- **Stocks:** PADD 5 Reformulated Gasoline inventories start May at 13.15 million barrels (~16.7 days of supply)
- **Supply:** CARBOB refinery production + imports average 790 TBD
- **Planned Outage:** 2.5-million-barrel gasoline outage (45 TBD) from Aug. 30 to Oct. 24
- **Demand:** CARBOB demand averages 790 TBD throughout the summer
- **NYMEX Gasoline Price:** Held constant at 225 cpg
- **Retail Differential to CARBOB Spot Price:** Held constant at 200 cpg

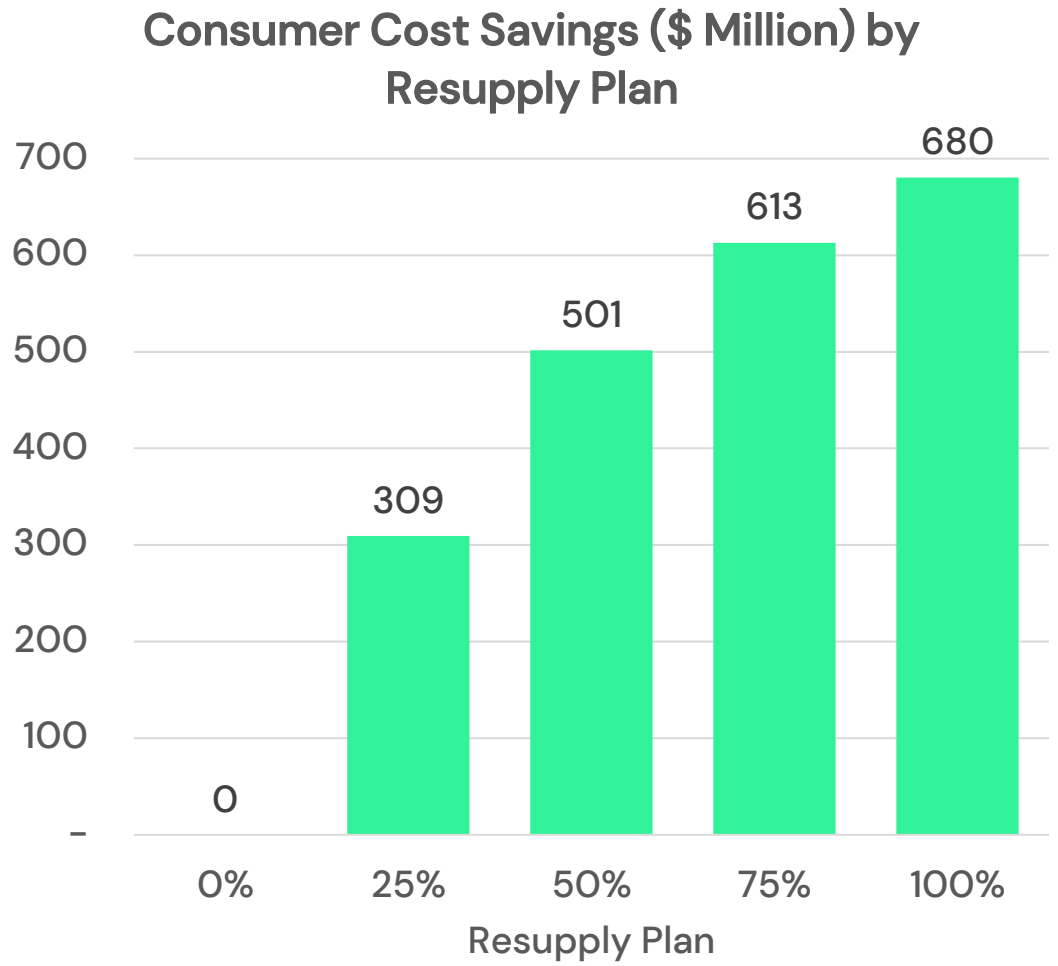
RESUPPLY SCENARIOS

- **Resupply Planning:** modeled at various resupply (out-of-state import) volumes:
  - 25% - 625,000 barrels (11 TBD)
  - 50% - 1,250,000 barrels (22 TBD)
  - 75% - 1,875,000 barrels (33 TBD)
  - 100% - 2,500,000 barrels (45 TBD)
- Assumes no additional resupply (out-of-state imports) from market participants not subject to the resupply policy.

Resupply Planning Analysis: Consumer Benefits



Note: Assumes spot price increases and declines pass through fully to retail prices

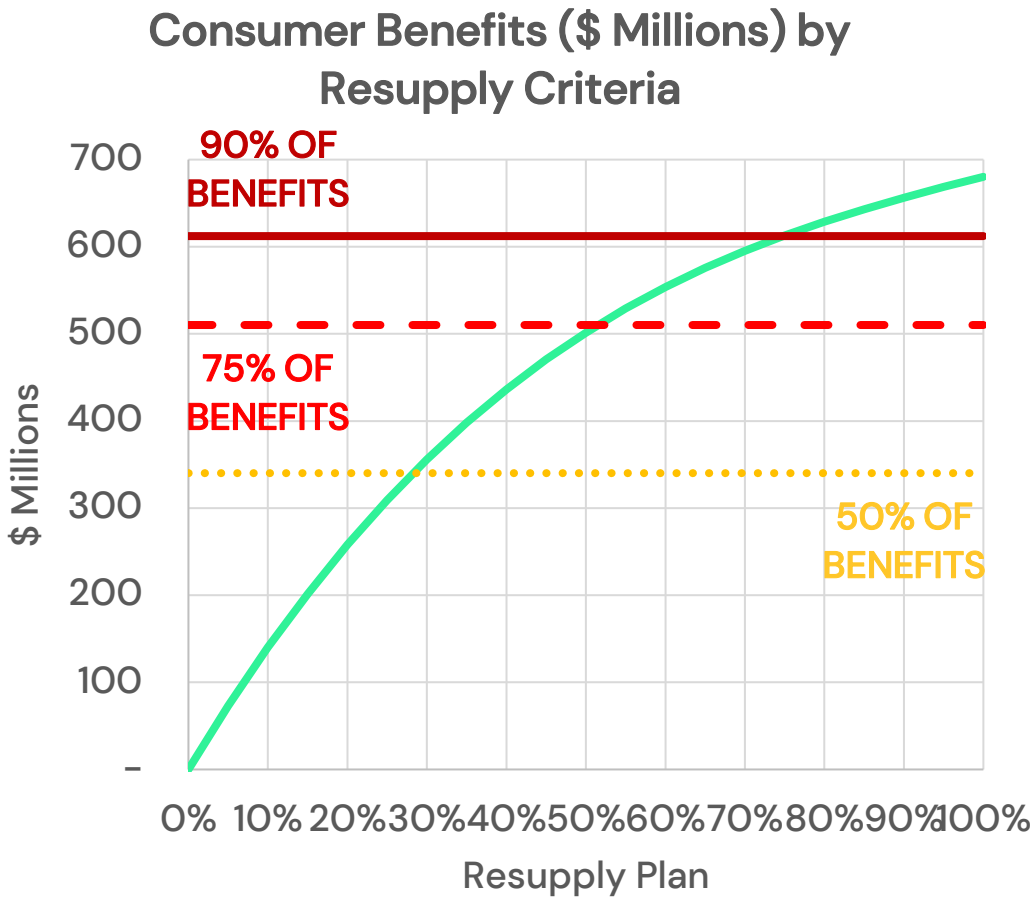


Note: Total cost savings are calculated given average demand over a 9-week period from Aug. 30-Oct. 31 (8-week outage duration + 1 weeks after). Assumes that consumers do not reduce demand due at higher prices.

Resupply Planning Analysis: Total Consumer Benefits

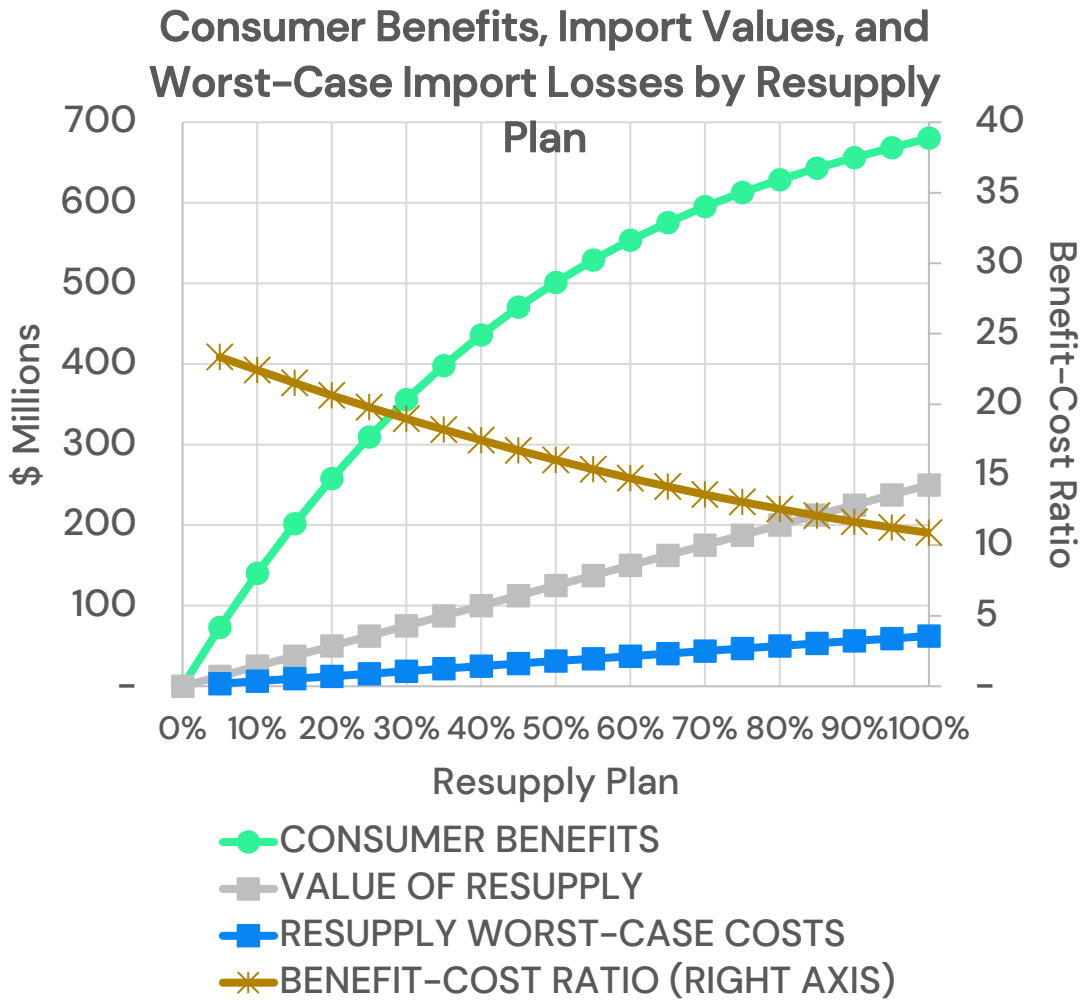
Benefits (Consumer Savings) from Resupply Planning exhibit diminishing returns:

- 50% of Consumer Benefits achieved at ~30% Resupply Plan
- 75% of Consumer Benefits achieved at ~50% Resupply Plan
- 90% of Consumer Benefits achieved at ~75% Resupply Plan



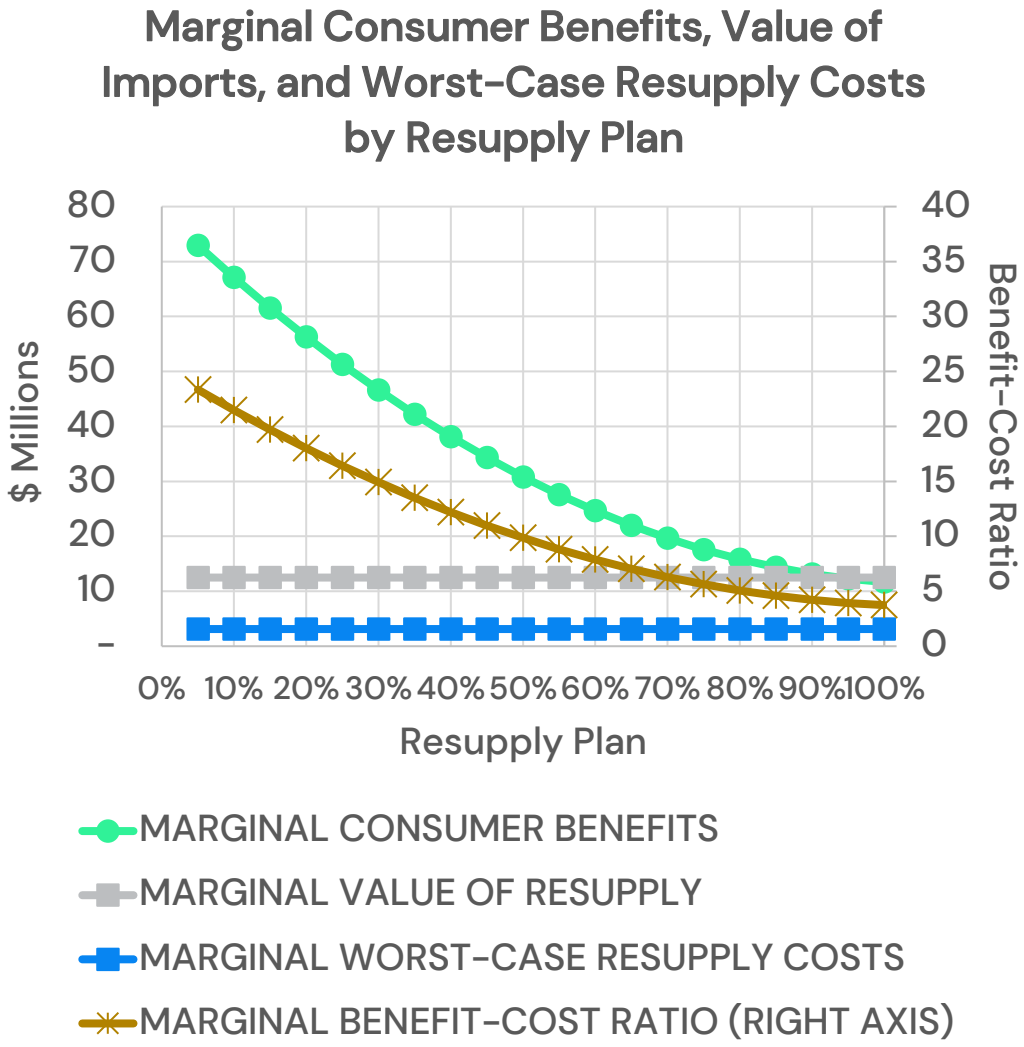
Resupply Planning Analysis: Total Benefit-Cost Analysis

- **Consumer Benefits:** consumer savings from mitigating retail price increases
- **Value of Resupply :** Estimated delivered cost of out-of-state gasoline (resupply) if imported to California at mid-August prices (~$100/bbl)
- **Resupply Worst-Case Costs:** Refiners that import gasoline during a California gasoline shortage/price spike may make money. However, cargoes must be arranged in advance creating price/timing risk if global benchmarks move against them and imports are unhedged. For the purposes of this analysis, we assume a worst-case scenario where the refiners lose 25% on the value of imported cargos.
- **Total Benefit-Cost Ratio (BCR):** Ratio of benefits to worst-case costs ranges from 23 for the first 5% of resupply to 11 for the last 5% of resupply.



Resupply Planning Analysis: Marginal Benefit-Cost Analysis

- **Marginal Benefits** exhibit diminishing returns—declining from $73 million for the first 5% (125,000 bbls) of resupply to $12 million for the last 5% resupply
- **Marginal Value of Resupply** is $12.5 million for each 5% of resupply increment at $100/bbl
- **Marginal Worst-Case Resupply Costs** are $3.125 million, assuming a worst case 25% loss in resupply value for each 5% resupply increment.
- **Marginal BCR:** Ratio of margin benefits to marginal worst-case resupply costs ranges from 23 for the first 5% of resupply to ~3.75 for the last 5% of resupply.



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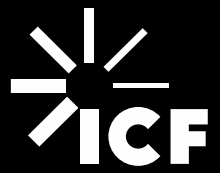

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Economic Considerations for AB X2-1 Policy Tools

Dr. Esther Shears
Deputy Chief Economist, Division of Petroleum Market Oversight

DIVISION OF PETROLEUM MARKET OVERSIGHT

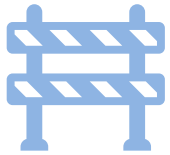
Economic Considerations for Assembly Bill X2-1 Policy Tools

Dr. Esther Shears
Deputy Chief Economist, Division of Petroleum Market Oversight

California Petroleum Refining Industry

A few large firms dominate the market

Firms have some control over prices



High fixed costs create barriers to entry

Long-term demand for gasoline is shrinking

Interdependence among firms

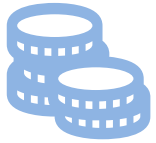
Refining Sector Concentration

Crude Refining Capacity Among California Refiners with Gasoline Production
October 2024

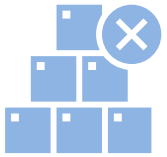
Rank	Refiner with Gasoline Production Capacity	Total CA Crude Refining Capacity (BPD)	Share of Total CA Crude Refining Capacity	Cum. Share of CA Crude Refining Capacity
1	Chevron Corp	514,271	32%	32%
2	Marathon Petroleum Corp	365,000	23%	55%
3	PBF Energy Co LLC	316,400	20%	75%
4	Valero Energy Corp	230,000	14%	90%
5	Phillips 66 Company	139,000	9%	98%
6	Kern Oil & Refining Co	26,000	2%	100%
Four-Firm Concentration Ratio in Rest of U.S.				48%

Notes and Sources: Based on DPMO analysis of data from U.S. Energy Information Administration. Table includes refineries with gasoline capacity, excludes refineries that do not produce gasoline and the Phillips 66 Rodeo facility, which converted to renewable fuel in March 2024. Rank is based on total crude refining capacity, which includes a company's refining capacity across refineries and products. Shares are rounded.

Market Failure: Misaligned Incentives



Firms (including refiners) maximize profits, not reliability and price stability. Refinery maintenance reduces supply, thereby tending to increase prices and profits.



Increased profits from price spikes reduce incentives to build up inventories, bring in imports, and buffer the system. Market power enables this.

Result: Supply shocks lead to price spikes when resupply is limited and inventories are inadequate for reliability and price stability.

Result: Localized Price Spikes

Low Inventories

- Refineries draw down inventories during the high-demand summer CARBOB season.
- Lower inventories signal market tightness.

Refinery Maintenance

- Refineries go offline for planned and unplanned maintenance.
- Supply to the market is further reduced.

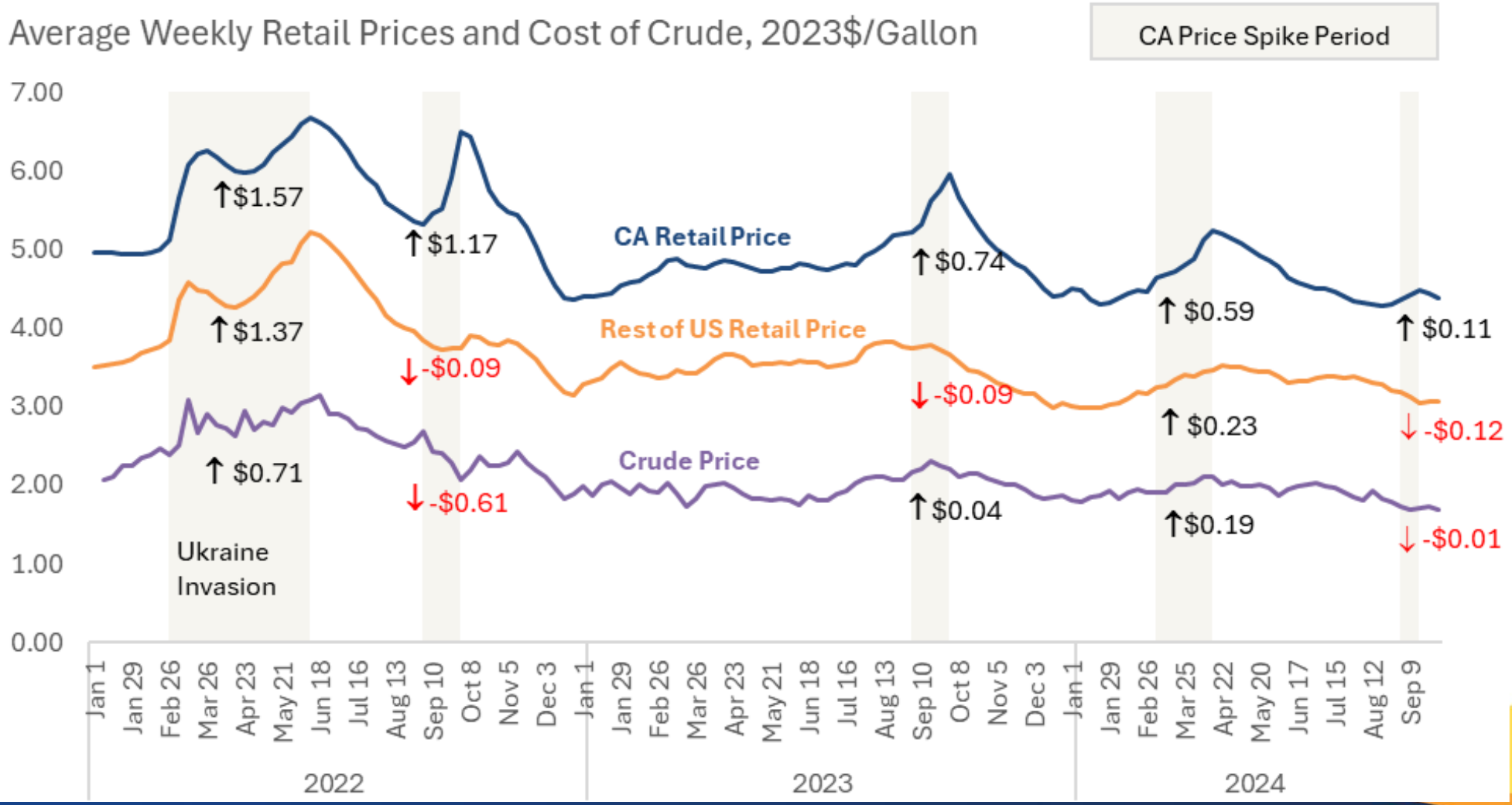
Spot Market Price Spike

- Refineries buy on the spot market to cover contractual obligations and shed noncontracted sales.
- As a result, spot market prices spike.

Retail Price Spike

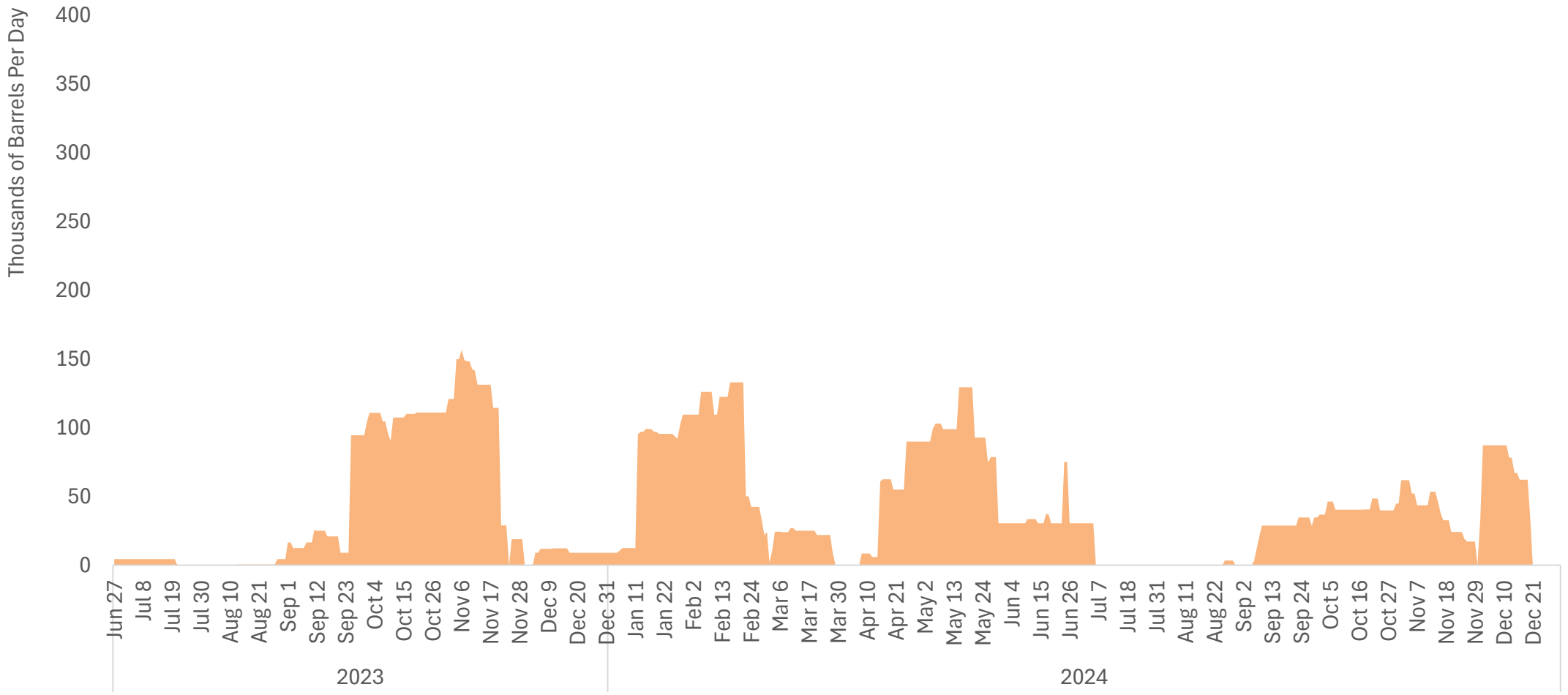
- Spot market price spikes translate into wholesale and retail price spikes.
- Price spikes signal imports, but these take weeks to arrive.

Result: Localized Price Spikes

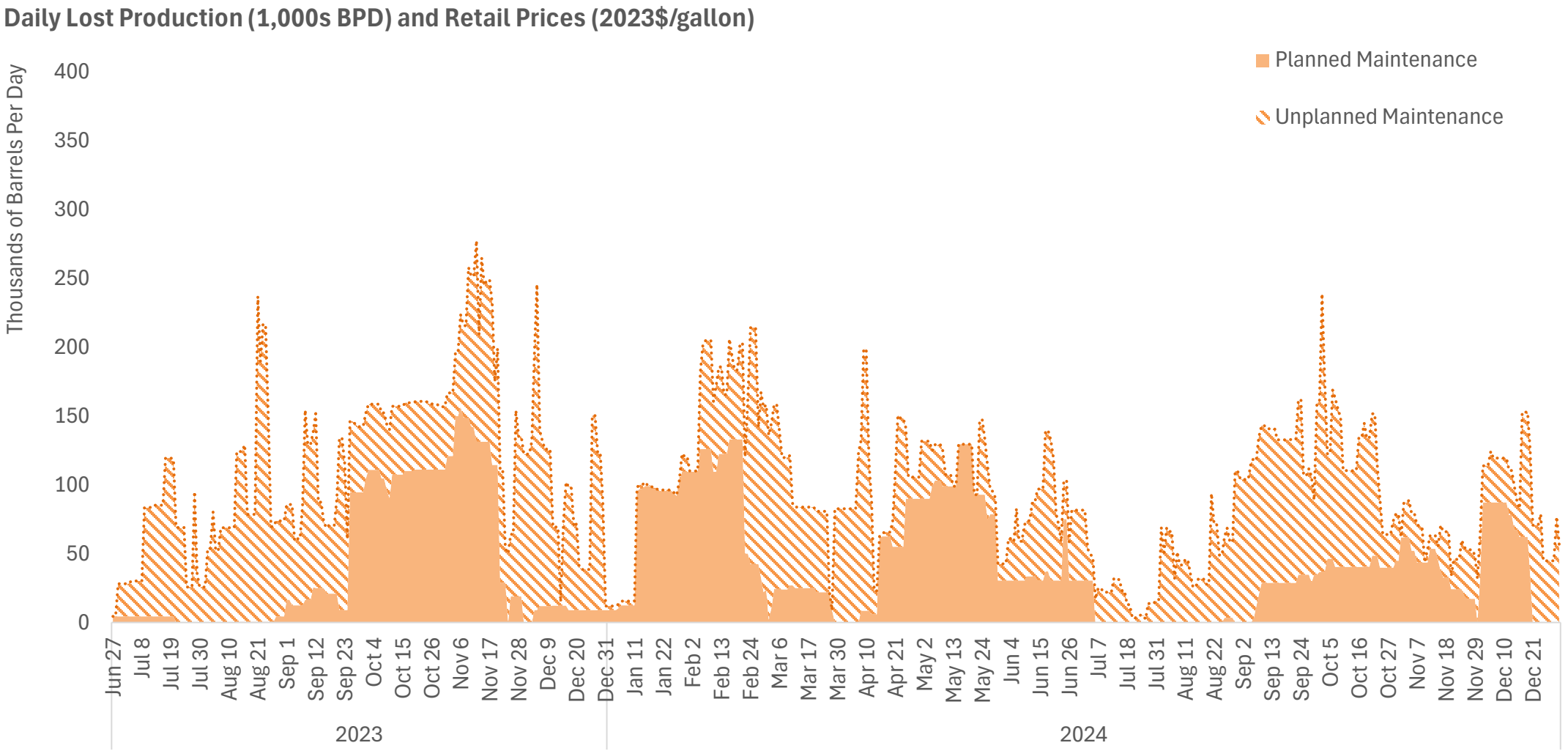


Supply Disruptions & Price Spikes

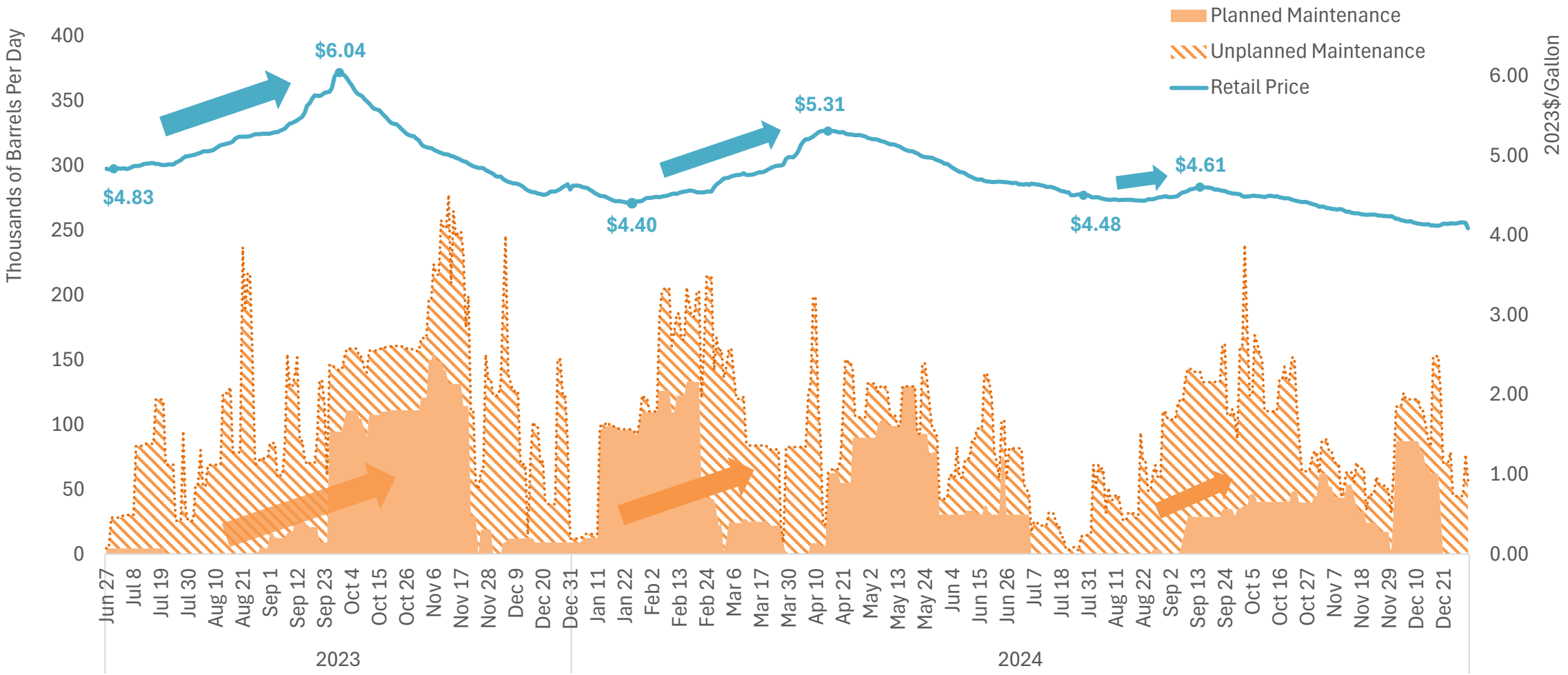
Daily Lost Production (1,000s BPD) and Retail Prices (2023$/gallon)



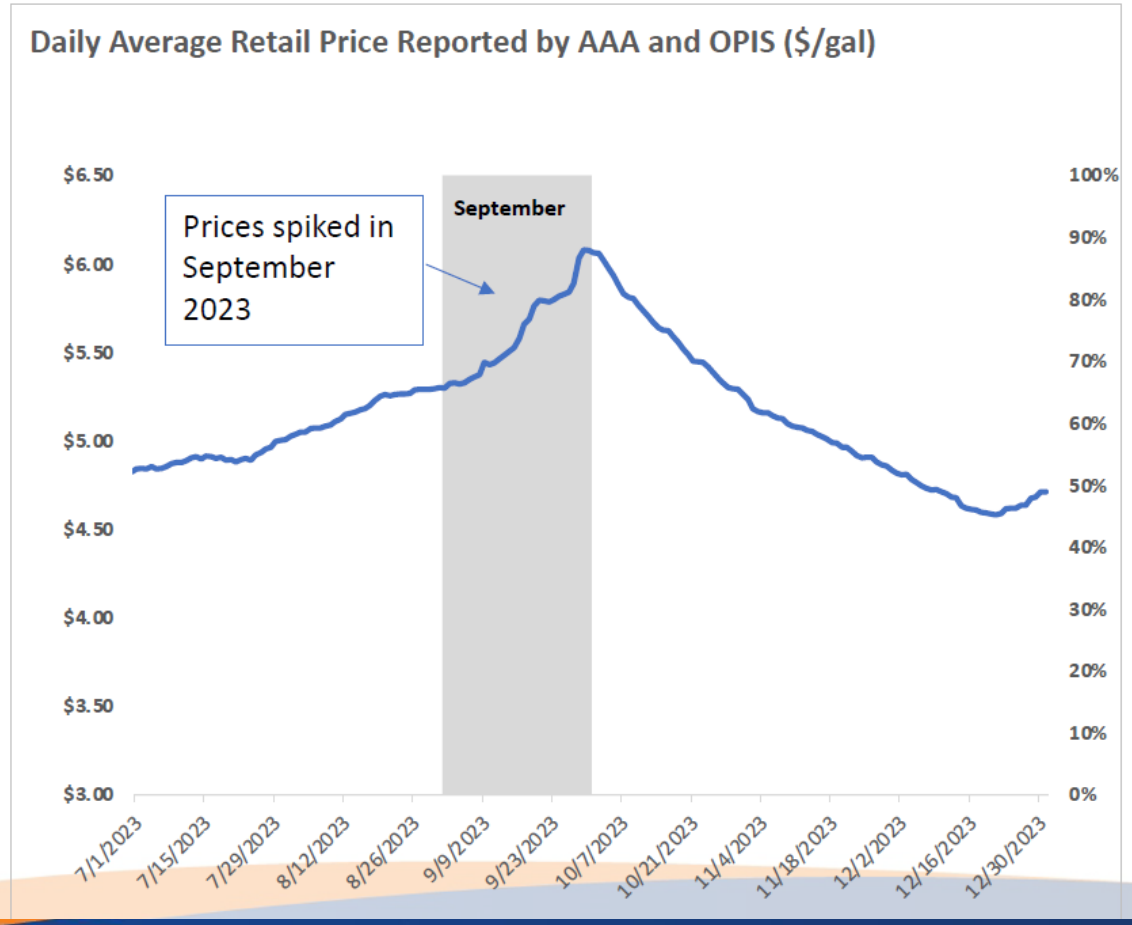
Supply Disruptions & Price Spikes

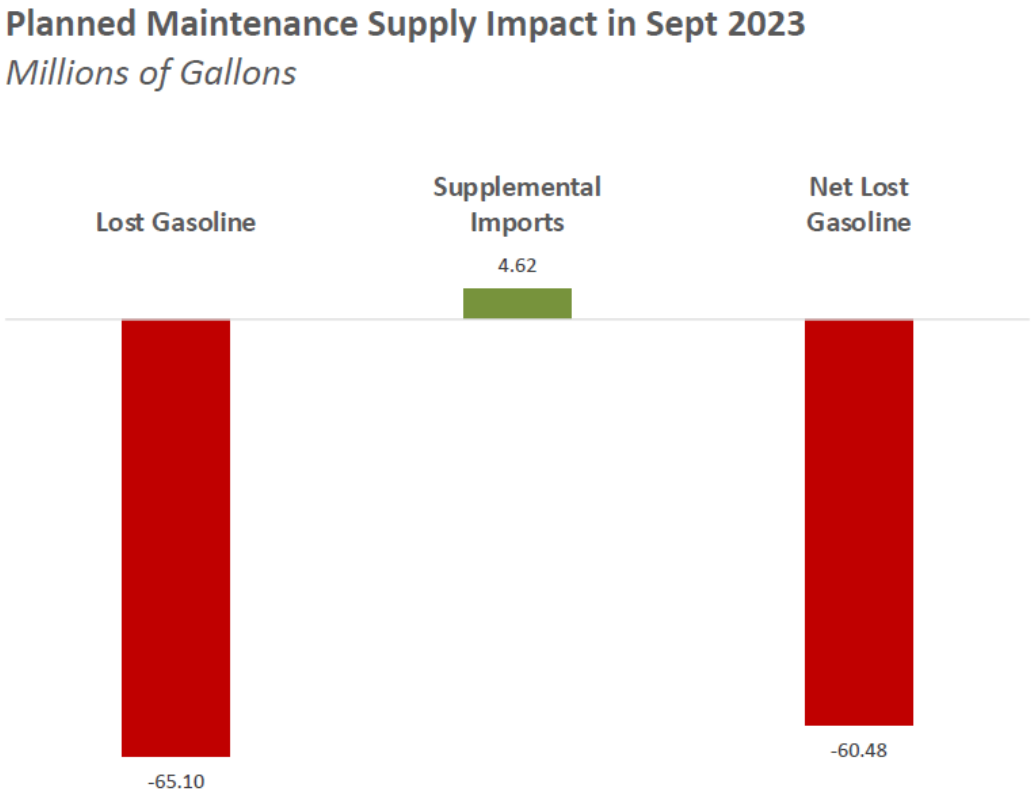


Supply Disruptions & Price Spikes



Case Study: Fall 2023 Price Spike





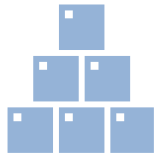
Case Study: Fall 2023 Price Spike

Scenario: Percentage of 2023 Price Spike Averted	*Average Change in Retail Price (July-Nov.'23)*	*Savings to Californians Per Day*	*Savings to Californians Per Week*	*Savings to Californians, Total*
100% (fully averted)	$0.00	$20.8M	$146M	$2.19B
75% (mostly averted)	$0.15 ↑	$15.6M	$109M	$1.63B
50% (half averted)	$0.29 ↑	$10.3M	$72.0M	$1.08B
25% (mostly not averted)	$0.43 ↑	$5.00M	$35.0M	$525M
0% (no avoidance)	$0.56 ↑	$0	$0	$0

ABX2-1 Policy Tools

ABX2-1 (2024) authorizes two key tools:

Resupply Planning: The CEC may require refinery resupply planning ahead of planned maintenance events



Minimum Inventories: The CEC may require refinery minimum inventories in case of unplanned maintenance events

…with the goal of **building resilience** in California's gasoline market.

ABX2-1 Policy Tools

Low Inventories

- Refineries draw down inventories during the high-demand summer CARBOB season.
- Lower inventories signal market tightness.

Refinery Maintenance

- Refineries go offline for planned and unplanned maintenance.
- Supply to the market is further reduced.

Spot Market Price Spike

- Refineries buy on the spot market to cover contractual obligations and shed noncontracted sales.
- As a result, spot market prices spike.

Retail Price Spike

- Spot market price spikes translate into wholesale and retail price spikes.
- Price spikes signal imports, but these take weeks to arrive.

Resupply planning should mitigate these effects

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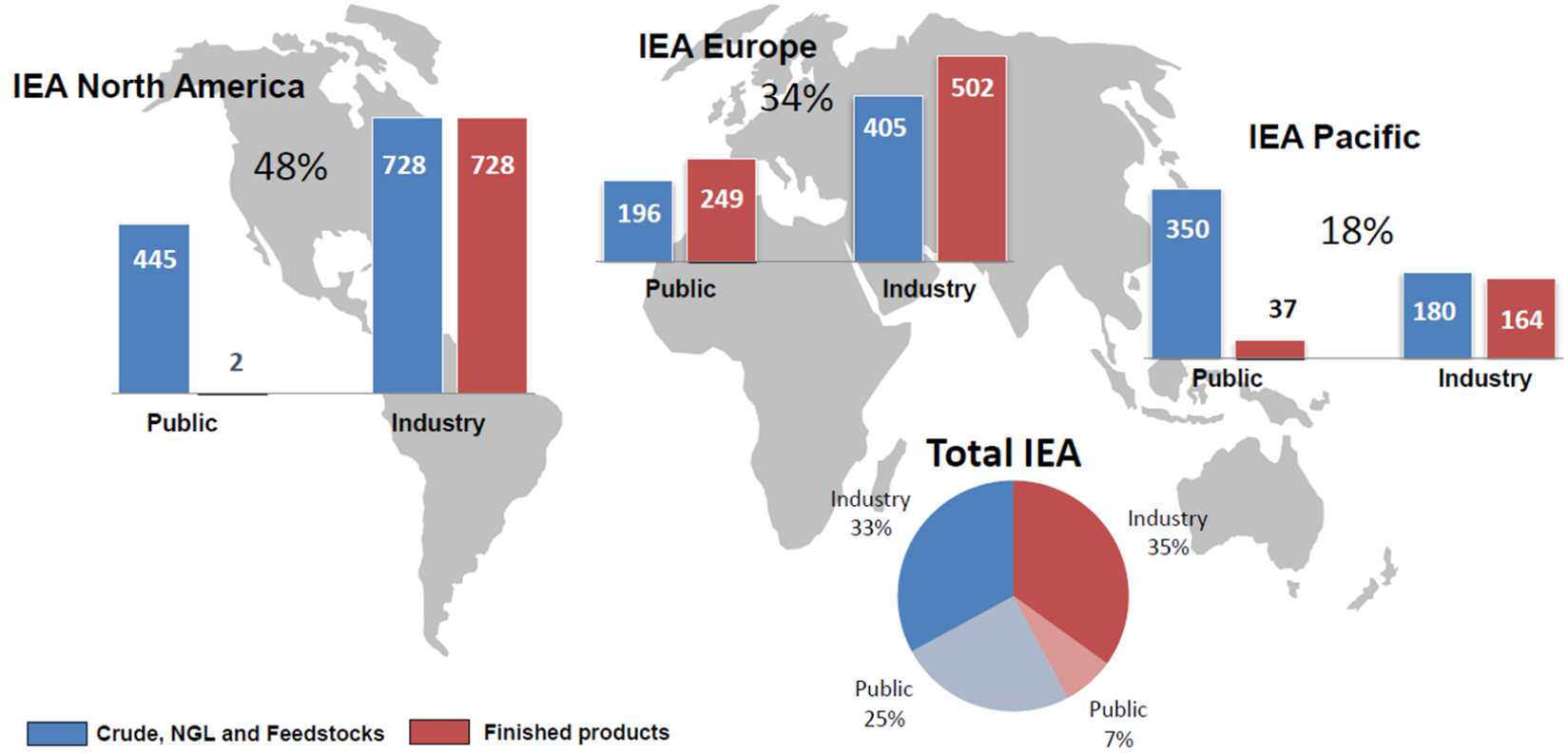
Comparable Policies Around the World

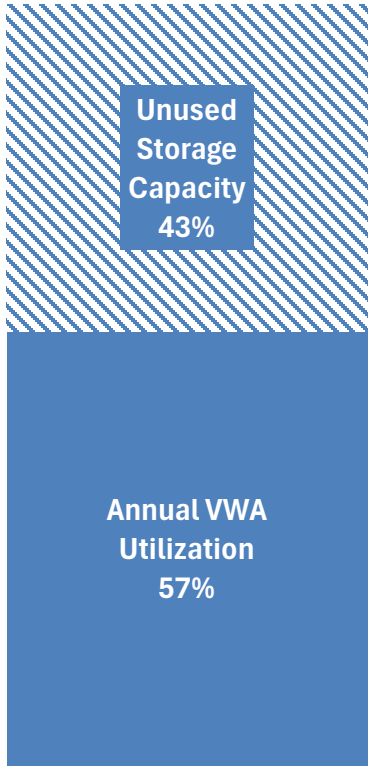
Oil stocks of IEA member countries by region in million barrels, end-August 2022



4 billion barrels of oil stocks in IEA countries, including 1.3 billion barrels of public stocks

California Refinery Storage Utilization

Volume-Weighted Average Storage Capacity Utilization for Gasoline and Blending Components, 2019-2024



Notes: DPMO calculations based on EIA 810 data for gasoline and gasoline blending components. Utilization averaged across refineries in California from 2019-2024. Utilization defined by EIA as closing inventories divided by working capacity excluding tank heels. Because inventories include tank heels, excluding tank heels from working capacity overestimates utilization of capacity.

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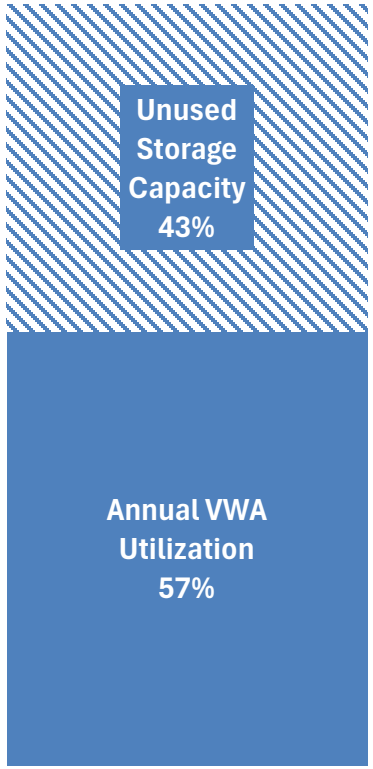
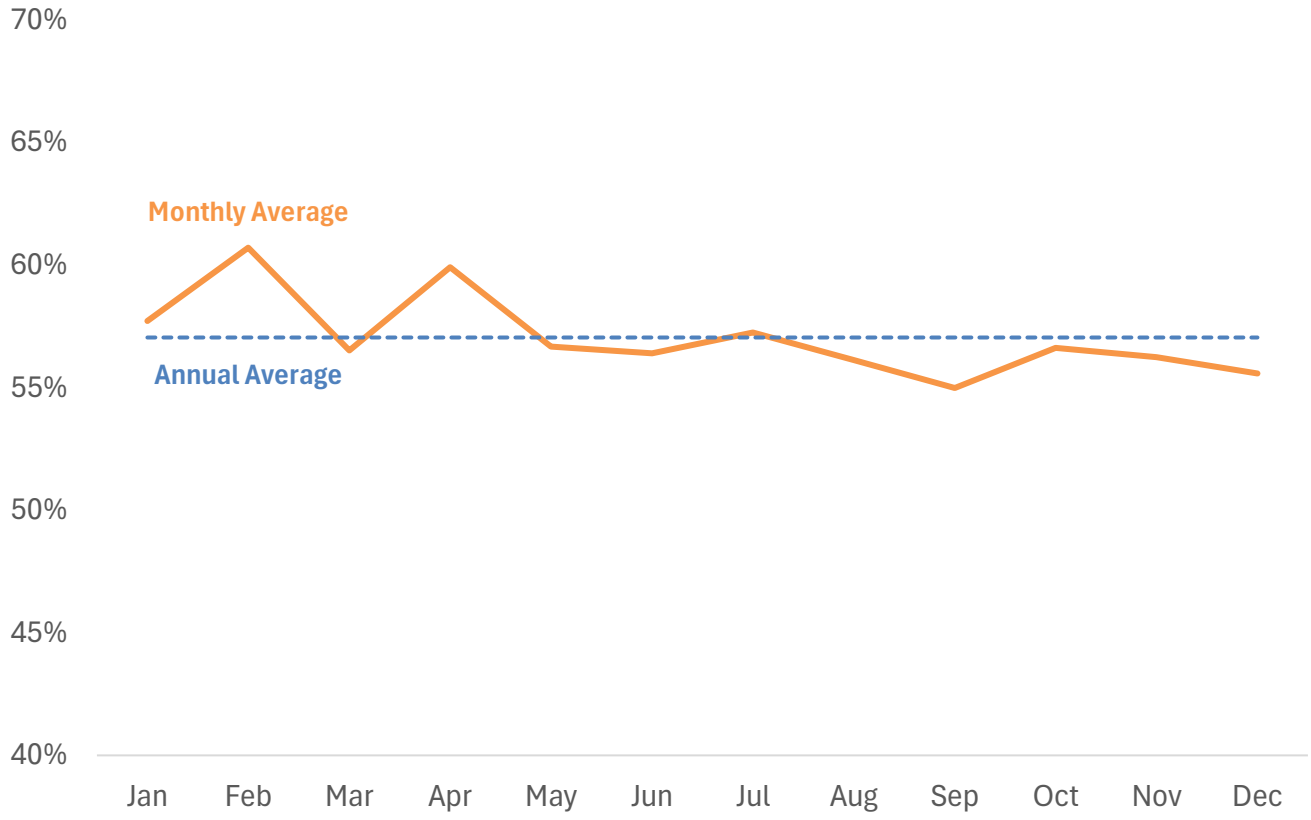


Volume-Weighted Average (VWA) Storage Capacity Utilization 2019-2024



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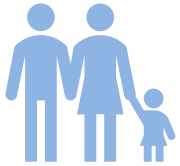
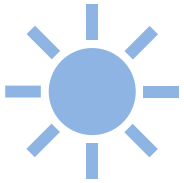
Guidance for ABX2-1 Implementation



Worker and community safety is paramount

Accountability through reporting, oversight, deterrence, and if needed, penalties



Transparency through robust reporting requirements

Flexibility for refiners to reach key resupply or inventory criteria

Simplicity and predictability, and iterate to improve as needed

Written Comments

Submit written comments to:

- Docket No. **25-PIIRA-01**
- Due by **5:00 PM** on **Tuesday, March 11**.

Public Comments

Zoom:

- Use the “raise hand” feature.

Telephone:

- Dial *9 to raise your hand.
- Dial *6 to mute/unmute your phone line. You may also use the mute feature on your phone.

Zoom/phone participants, when called upon:

- Your microphone will be opened.
- Unmute your line.
- State and spell your name for the record, and then begin speaking.

Limited to one representative per organization.

Three-Minute Timer

Thank you