CALIFORNIA REFINERY & GASOLINE

A Blueprint for Supply Security & Price Stabilization

CIPA's 15th Annual Oil Symposium

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Pelican Hill Resort

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Data Sources and Methods

The research used in this work is widely available and includes but is not limited to verifiable sources such the California Energy Commission, U.S. Energy Information Agency, Bloomberg, U.S. Department of Energy, SEC filings, International Energy Agency, Oil & Gas Journal, American Petroleum Institute, the California Department of Tax and Fee Administration, the U.S. EPA, California Air Resources Board, Statista, California Attorney General's Office, California Legislative Analyst's Office, U.S. Department of Interior, Bureau of Labor Statistics, California DMV, California Geologic Energy Management Division, and the U.S. Oil and Gas Association.

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Section 1.0
Introduction

Introduction: California's Conundrum

- **The AAA price of gasoline in California on 12/17/25. was $4.34 a gallon.**
  - 50% higher than the national average of $2.90
  - In some counties, the price is approaching $6.00 a gallon.
- **For the Golden State, there is extreme urgency - since 2020:**
  - Two major refineries were converted to renewable diesel plants
  - Phillips 66 shut down its Santa Maria and Los Angeles Refineries
  - Valero is scheduled to permanently close its Benicia Refinery in 1Q26

With these changes, California is short ~250,000 barrels per day of gasoline, despite being a crude oil rich state with the most advanced and sophisticated crude oil production and refinery operations in the world

Introduction: California's Conundrum

- **California is at a profound inflection point, and we must act … now!**
- **Failure to act and reform policies with a sense of urgency will lead to:**
  - Higher fuel prices
  - Additional emissions
  - More pollution
  - Further support for injustices abroad,
  - Contribute to additional instability in California's energy markets as additional producers and refiners voluntarily exit the state for more attractive and economically superior, supportive business environments.

Section 2.0
California Crude Oil Production & Imports

California Production & Supply

Supply: Crude oil is supplied by in-state production & imports

- **California has 3% of U.S. oil reserves and ranks 5th in U.S. reserves.**
- **At one time, California was the world leader in oil production and exports.**
- **California is the most heavily dependent of all 50-states on non-U.S. foreign oil and gasoline suppliers.**
  - In the 1980's, California was self-sufficient and imported only around 6% of its oil needs from non-U.S. foreign sources.
  - For 2025, California will need to import more than 67% of its oil needs from Iraq and other petrostates.
  - According to various estimates, California ranks #1 in payments to foreign sources of oil and pays more than $61.8 million per day, or $22.5 billion annually, to foreign petrostates such as Iraq.
- **Since 1981, California in-state oil production has fallen by 75%, while its population and motor vehicle registrations grew.**
- **California began importing more oil than it produced in 2005.**

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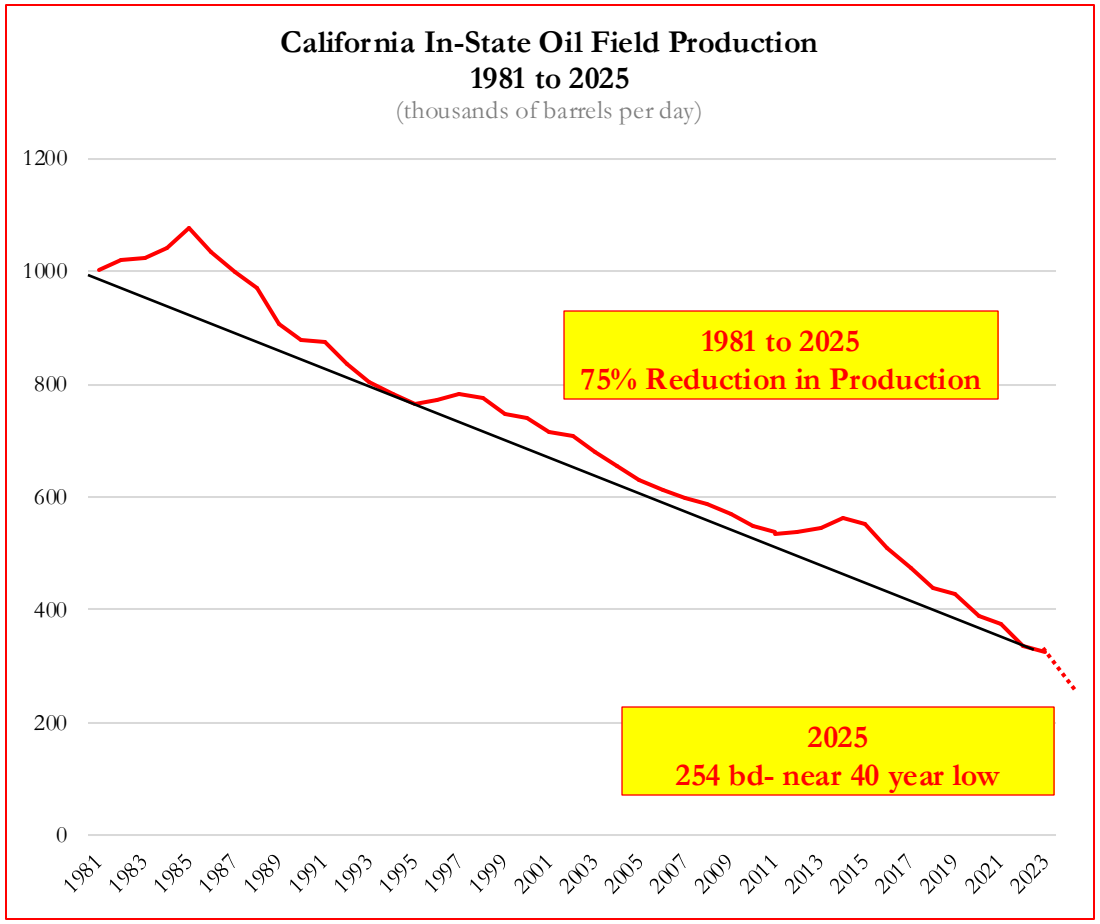
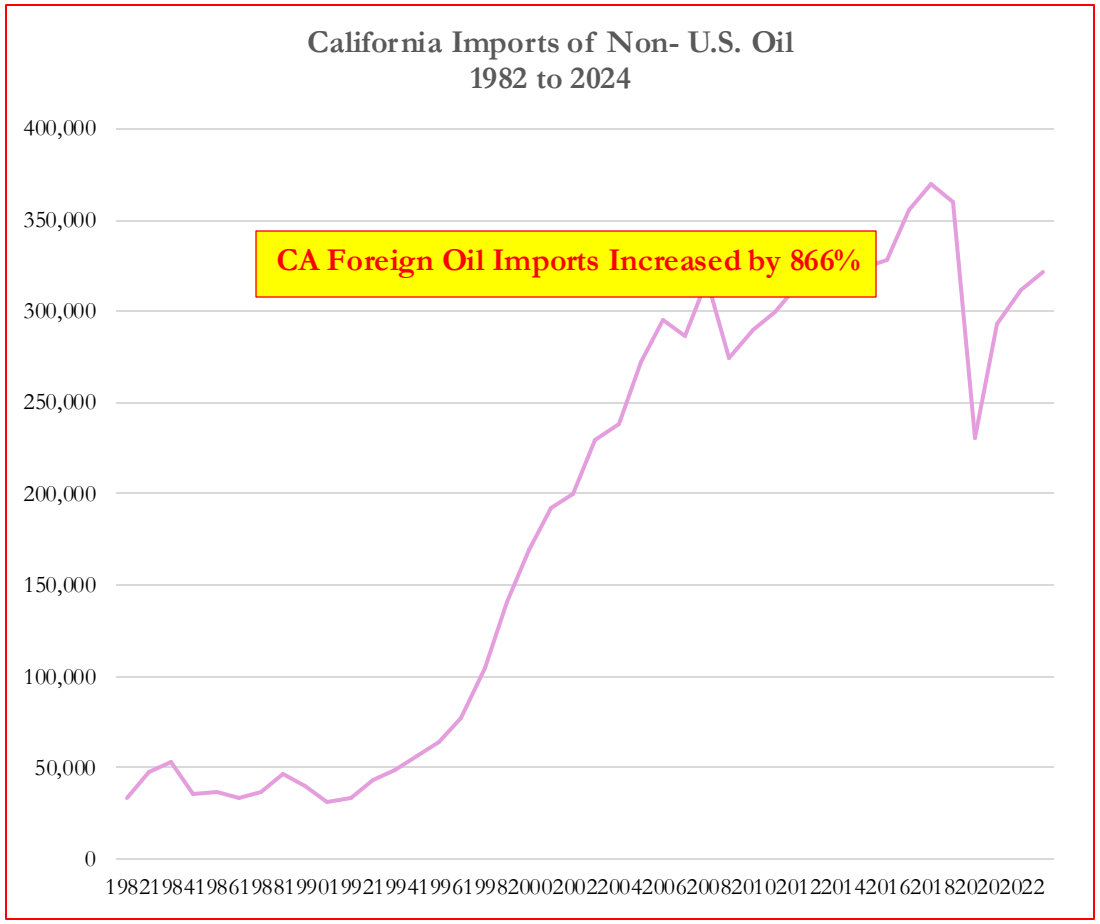
California Production Fell & Imports Increased





Section 3.0
California Crude Oil Production & Imports

The California Conundrum…Consumption is relatively static

Demand: Amount of crude oil and fuels consumed

- **California consumes around 1.89 million barrels of oil per day, over 13.5 billion gallons of gasoline annually, and between 32 to 37 million gallons of gasoline a day.**

- **California's demand for gasoline is relatively static.**
  - For 2025-2045, CEC projects a 58-85% drop in gasoline consumption…implying a 3.6% annual decrease or over 3x historical rates.
  - For 2025-2045, CEC projects a 540-1,260% increase in ZEVs…implying a 63% increase in adoption rates annually.

- **California consumption is declining at rates far less than those optimistically forecasted and widely publicized by the CEC and CARB**

The California Conundrum: Consumption is relatively static

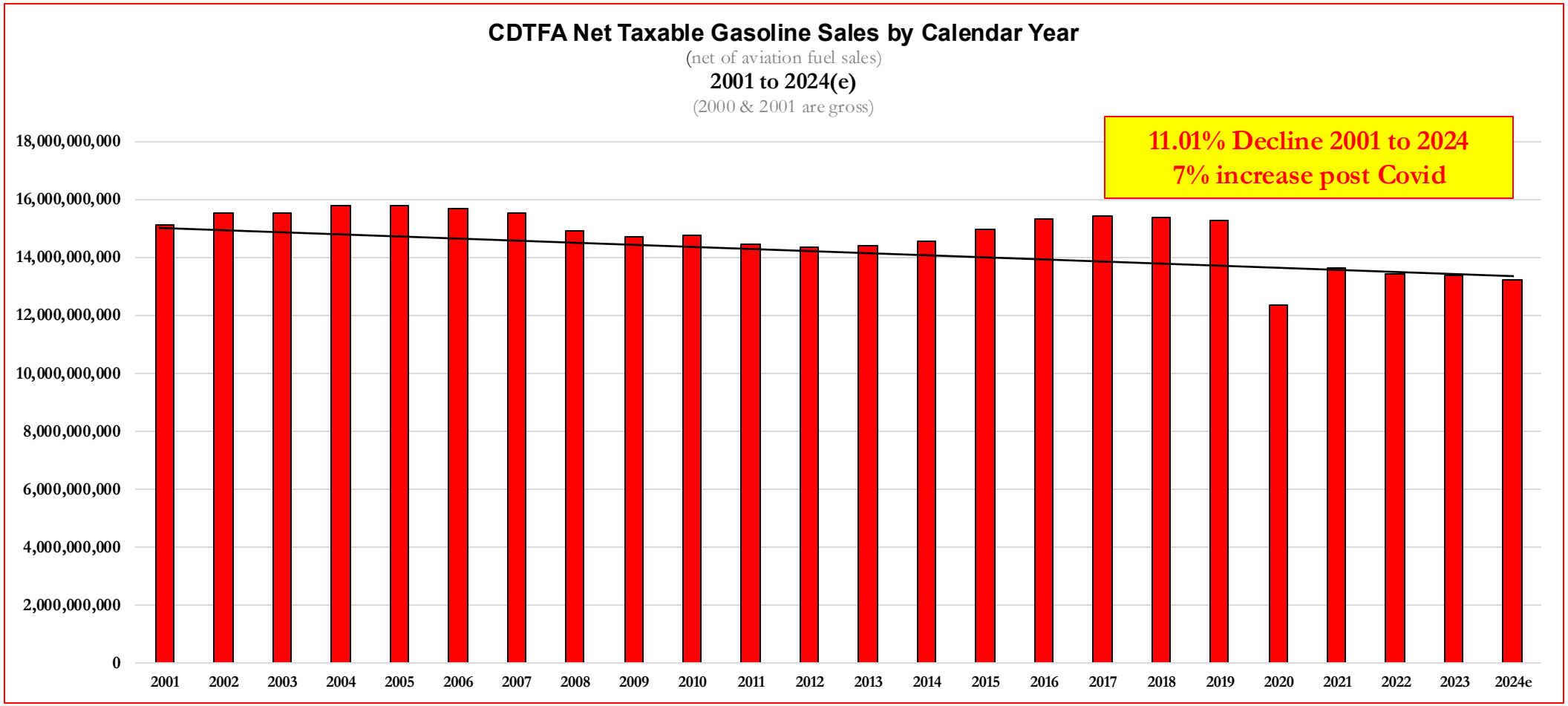
Demand: Amount of crude oil and fuels consumed

- **Based on CDFTA revenue data, California's gasoline consumption, as measured in millions of gallons sold for the 2001 to 2024 period, has declined 13%, or less than 1% per calendar year.**
  - After the end of Covid in 2022, the demand for gasoline in California has increased by nearly 7%, for the 2022 to 2025 period.
  - Jet fuel is the fastest growing segment of fuels in California.

- **California also supplies gasoline and jet fuel to Arizona (35-40%) and Neveda (88%).**

- **California refineries provide fuels to U.S. military installations in California, Nevada, Arizona, and to the U.S. forces deployed in the Asia-Pacific region and are essential to force readiness and national security.**

California Consumption



California Consumption: Sociological Factors

Sociological Factors: Work from Home & Population

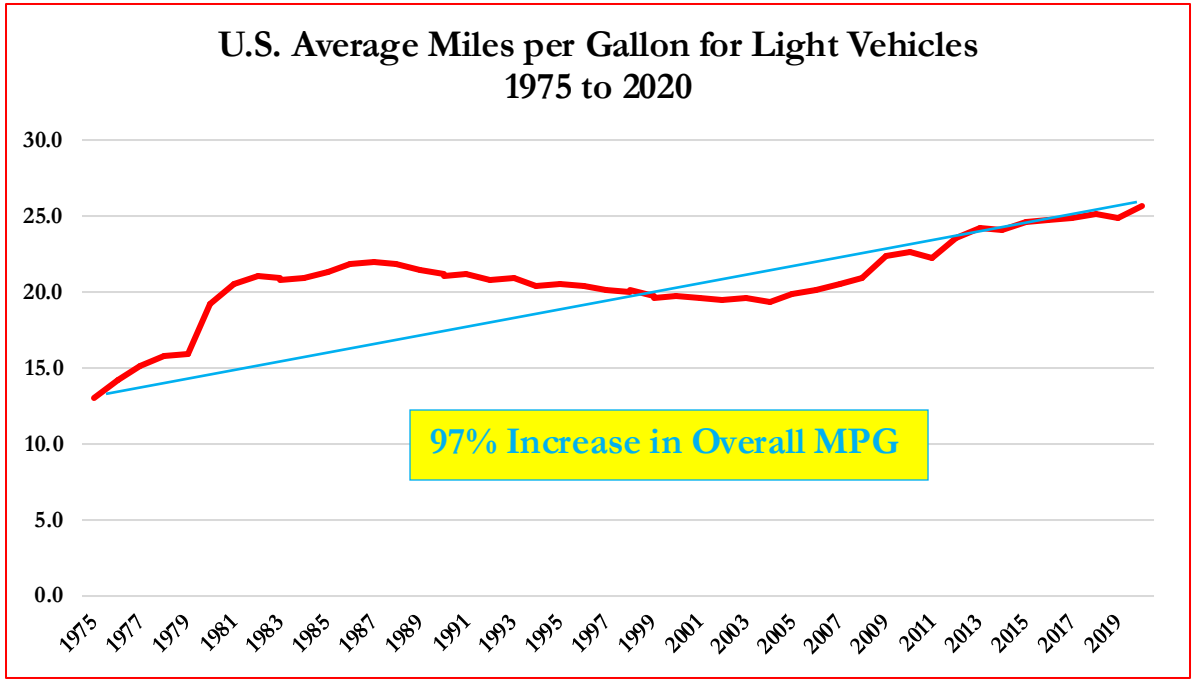
- **Work at home, telecommuting, and hybrid work modes (in-office and home) reduce the number of miles associated with commuting to work.**
- **In 2005, California, along with the rest of the U.S., averaged about 5% of its labor workforce working from home.**
  - California's work at home percentage of its labor force increased to 7% in 2019.
  - Commencing with the outbreak of COVID and the California "stay-at-home" mandates, the percentage of at-home work increased and peaked at 22% in 2021, as compared to the overall U.S. at 18%.
  - By 2022, the percentage of the California workforce that stayed at home had fallen to 17%, which was still higher than the overall U.S. rate 15%.
  - A 2024 MIT study indicates that, in general, a "1 percent decrease in onsite workers leads to a roughly 1 percent reduction in [automobile] vehicle miles driven, but a 2.3 percent reduction in mass transit ridership."
- **Since 2020, California's population has declined by 1.36%, resulting in a loss of one seat in the U.S. House of Representatives.**

California Consumption: Technological Factors

Technological Factors

Engine and Drivetrain Efficiency Has Improved

- Over the last 50 years, automotive engines and drivetrains have become more efficient, resulting in improved miles per gallon.
- In 2025, California ranked 1st in the U.S. for average mpg @ 33.5 compared to the national average of 27.5 mpg.

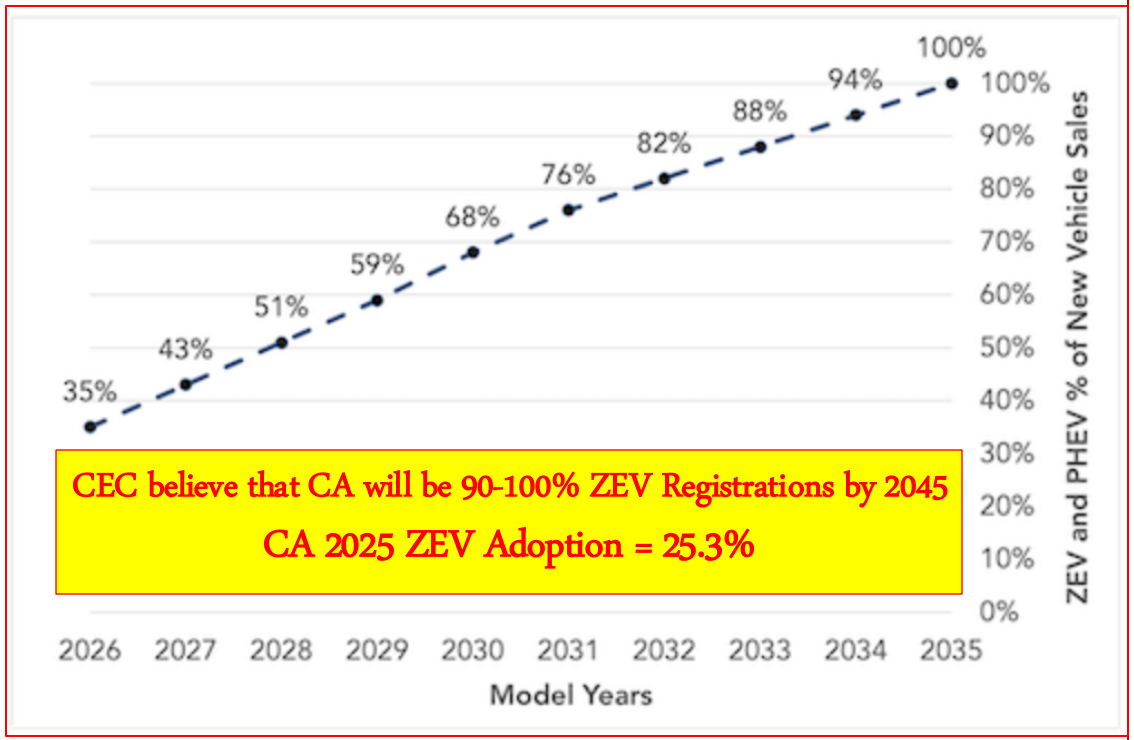


California Consumption: ZEVs...*"It is very unlikely that we will hit our goals, and to be completely frank, the EV goals are a noble aspiration but unrealistic."* *(Bruce Cain, Stanford)*

EV Adoption is Slowing…Ford is Exiting Light Trucks & Dealer Inventories are Growing

- **Thirty-five percent (35%) of California's electrical energy is derived from fossil fuels and over 96% of its estimated 40 million vehicles (of various types) use gasoline or diesel fuels.**
- **California residential and renter electricity rates are around 80% higher than the national average for 2024**
- **CEC is projecting a 58 to 85% drop in gasoline demand for the 2025 to 2045 period. Correspondingly, CEC is projecting a 540 to 1260% increase in EVs. *(How?)***
- **EV prices range from the upper $20,000s to over $150,000 per vehicle.**
- **EV in 2015 the average transaction price was $36,063, without incentives and subsidies.**
- **For 2024, the U.S. average transaction price for an EV increased by 55% to around $57,000, without incentives over 2015 average prices.**
- **EV sales spiked in September 2025, in advance of subsidies and incentives being terminated, and as anticipated, national EV sales for October 2025 dropped by 58% and are expected to remain relatively lethargic.**

CEC is Forecasting 1100-1200% as many registered as exist today for 2045



CEC believe that CA will be 90-100% ZEV Registrations by 2045

CA 2025 ZEV Adoption = 25.3%

Section 4.0

California In-State Gasoline Production Supply Shortfalls

California Refineries: Dwindling Assets

The Long, Continuous Decline

- **California has (had) the third largest refinery capacity in the U.S.**
- **California has been experiencing long-term declining in-state refinery capacity and production.**
- **California produces between 25.0 and 34.5 million gallons of gasoline per day.**
- **In 2024, California had an aggregate refinery processing capacity of 1,622,171 barrels of crude oil per day, which is a 5% reduction from 2023 levels of 1,710,371.**
- **In 2026. California will have an aggregate refinery capacity of around 1,322,671 b/d/.**
- **From 1983 to April 2026 (est.), the processing capacity of CA in-state refineries producing CA compliant gasoline will have declined by 43.48%.**

Shutdowns & Losses

- **From 2023 to April 2026, California will lose 20.95% of its in-state refinery capacity.**
- **Two refineries, are shutting down…284,000 of lost production:**
  - Phillips 66 in SoCal (LA) is closed:
    - Loss of 139,000 b/d of in-state production
  - Valero in NorCal (Benecia) is closing (1/31- 4/26/26):
    - Loss of 145,000 b/d of in-state production
  - Collectively California is losing18% of 2024 total refining capacity.
- **City of Benecia is losing 20% of its tax base & revenues plus over 400 in jobs losses.**
- **Chevron and ExxonMobil have written down between $4.5 to $5.0 billion in refinery and other California-based asset impairments.**
- **Chevron will complete its planned departure from California by 2030/31.**
- **There is a strong possibility that more refineries may exit the Golden State in 2027 and 2030-2032 period.**

California Refineries: Less Refineries = Less Production

CALIFORNIA REFINEIRES		Existing	Projected 2026
CA Refinery Capacity- CARBOB Fuels Only	Location	2025	2026
Southern California Refineries			
Marathon Petroleum Corp., Los Angeles Refinery*	Los Angeles	365,000	365,000
Chevron U.S.A. Inc., El Segundo Refinery	Los Angeles	285,000	285,000
PBF Energy, Torrance Refinery	Los Angeles	160,000	160,000
Phillips 66, Los Angeles Refinery**	Los Angeles	100,000	0
Valero Energy, Wilmington Refinery	Los Angeles	85,000	85,000
Sub-total:		**995,000**	**895,000**
Northern California Refineries			
Chevron U.S.A. Inc., Richmond Refinery	NorCal	245,271	245,271
PBF Energy, Martinez Refinery	NorCal	156,400	156,400
Valero Energy, Benicia Refinery	NorCal	145,000	0
Kern Energy, Bakersfield Refinery	Kern Co.	26,000	26,000
Sub-total:		**572,671**	**427,671**
Grand Total-Refinery Capacity- B/D		**1,567,671.00**	**1,322,671.00**
Gallons Per Barrel = 42		65,842,182.00	55,552,182.00
Total Production- Gasoline Conversion Ratio = 49.64%		**32,684,059.14**	**27,576,103.14**
Percentage Loss in Gasoline Production			-15.62%

- **Cumulative 2020-2026 Production Decline = 21%.**
- **Further Declines are Anticipated Unless <u>Significant</u> Course Corrections are Taken.**
- **NorCal Is More Vulnerable to Severe Supply & Price "Shocks" Then SoCal.**
- **The loss of the Valero complex contributes to the collapse of the San Pablo Bay (Crimson) Pipeline…the vital north/south link.**

Less California Refineries = Gasoline Shortages

Decline in Refinery Production

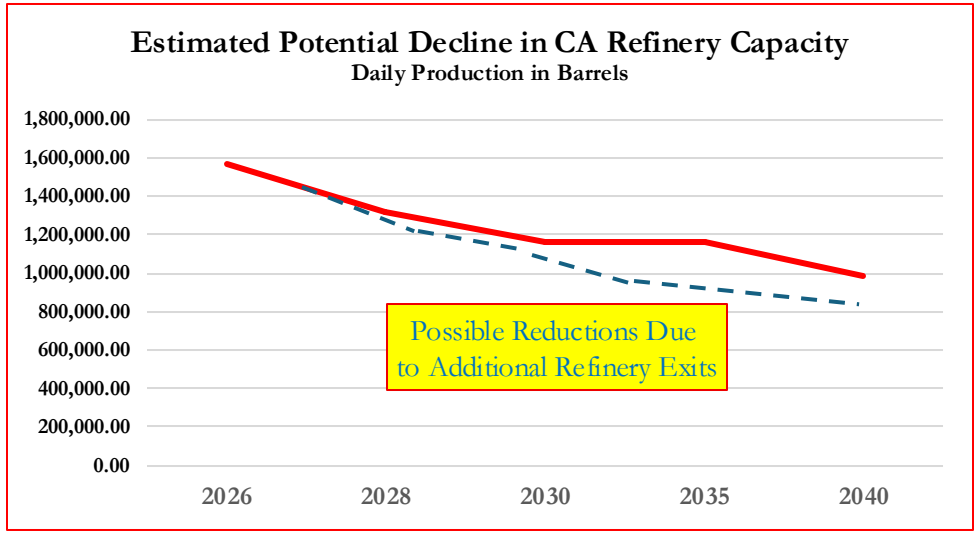
- The decline in refiners and refinery production will create a shortfall between in-state production and demand.
- California will become more vulnerable to external events, geopolitical situations, and force majeure.
- If California does not take action now, it will be left with options other than increasing imports.

Shortfall: In-state Production to Demand

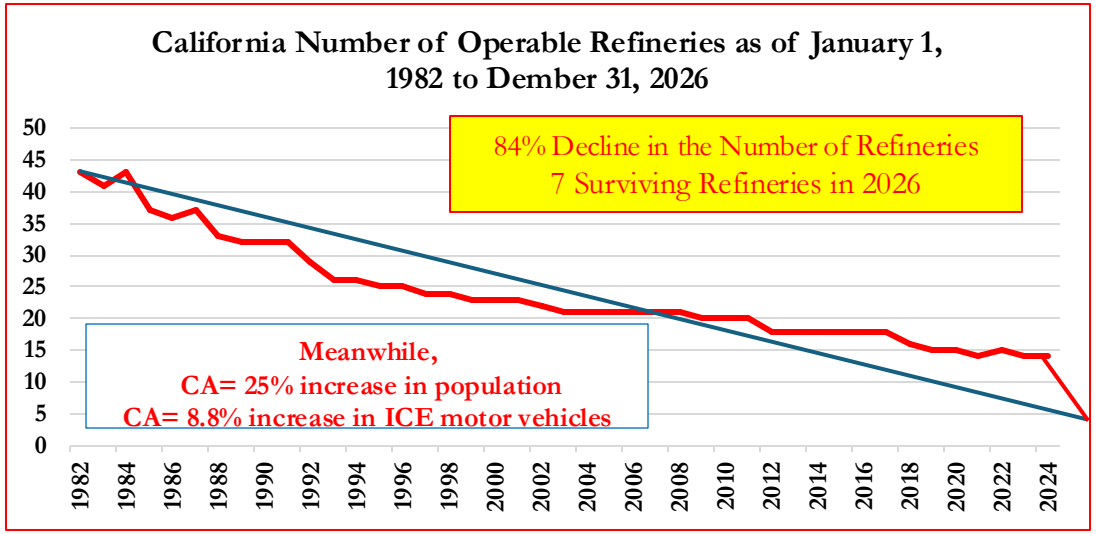
- Gasoline consumption will fall but most likely not at the aggressive rates established by CEC (85.2%) for 2025 to 2045.
- California will become more reliant on non-U.S. foreign sourced gasoline and increasingly complex supply chains.
- California may be forced to rely more offshore barge and tanker storage of gasoline.
- In all cases, California will experience increases in maritime traffic, port congestion and GHG emissions due to its reliance on foreign sources.

California Refineries: Factors Contributing to Potential Shortfalls

Continuous Decline in Refinery Production



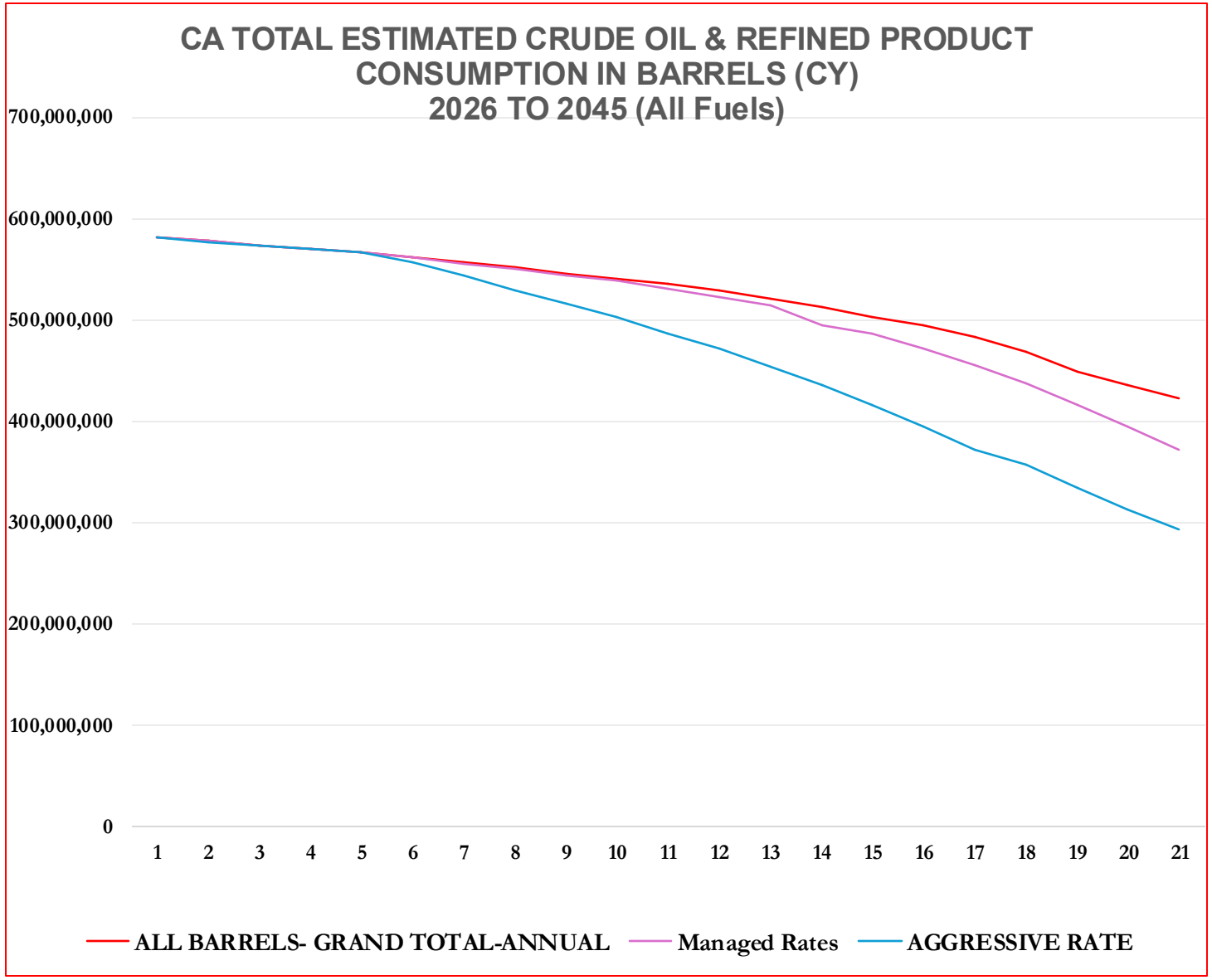
Continuous Refinery Exits While Population & ICE Vehicles Grew



- **In-state gasoline production will be reduced by at least 6.2 million gallons a day, with progressively worse-case estimates indicating 9.33 million gallons a day.**
- **In addition, jet fuel production from Valero will drop by 600,000 gallons a day.**
- **By 2035, California refinery production could further decline by 27-35% or more, placing greater pressure on shrinking supplies and indicating possible increases in consumer prices past $8.00 a gallon.**

California Refineries: Less Production = Gasoline Shortages

- Gasoline Consumption Will Not Decline Commensurate with the Loss in Production.
- SB 237 will be insufficient to compensate for losses and to avert the collapse of the Crimson pipeline.
- AB 30 will not have any material influence over refinery operations or the Crimson pipeline.
- The shortfall between in-state production & in-state demand will become more severe.
- Washington State Refiners Are Incapable of Compensating for the Loss of CA Refiners.
- Price Increases are Inevitable…the only issue is…by how much?



California Refineries: Foreign Product Sources

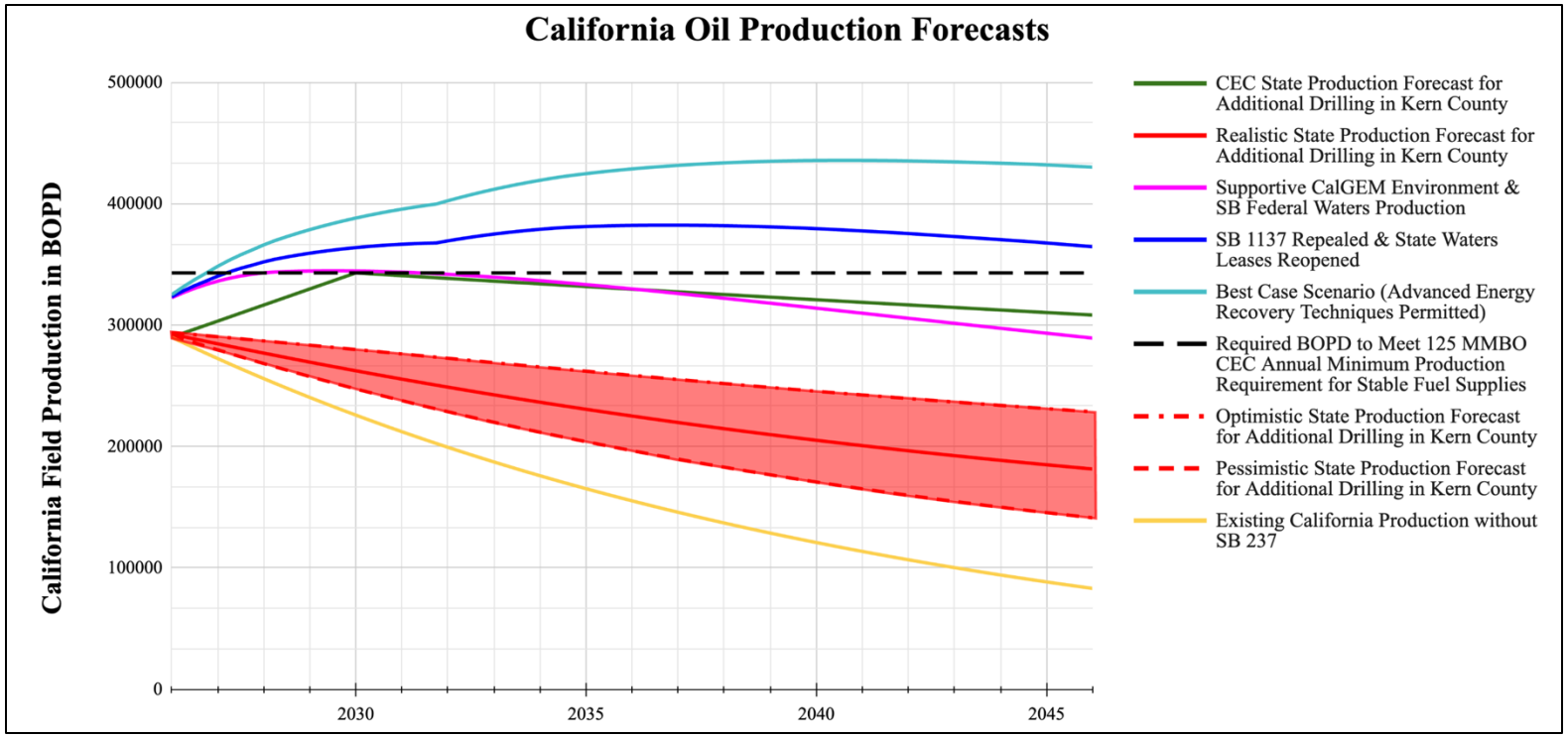
- **To make-up for the loss of two in-state refineries, California will be forced to import a significant amount of gasoline blend stock from foreign sources.**
- **We can expect 3-5 times more maritime tankers, more port congestion, and increased port proximity GHG emissions.**

Possible CA Sources for Gasoline Production by Nation by Typical Source of Crude Oil												
Possible Refinery/Supplier Source	Russia	Iran	Venezuela	Saudi Arabia	India	Iraq	Kuwait	USA	UAE	Qatar	Guyana	Norway Europe
India	Yes			Yes		Yes	Yes	Yes	Yes	Yes		Yes
South Korea				Yes		Yes	Yes	Yes	Yes			
Japan				Yes			Yes	Yes	Yes	Yes		
Singapore				Yes			Yes	Yes	Yes	Yes	Yes	Yes
China	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	Yes	
United Kingdom								Yes			Yes	Yes
The Netherlands	Yes				Yes		Yes			Yes	Yes	Yes

- **Some possible sources of gasoline for California may have interest in conflict with the U.S. as well as marginal/questionable human rights & transparency policies….examples, Russia and the PRC.**
- **California gasoline purchased from India or China could have made from Russia crude.**
- **California's policies which force greater dependencies on foreign sources for gasoline and jet fuels compromise U.S. national security and force readiness.**
- **California's policies, decreasing crude production, and dwindling refinery capacity adversely impact Nevada & Arizona.**

The Loss of Refiners & Lower In-state Oil Production Adversely Impacts CA's Intrastate Pipeline Infrastructure

- **SB 237 was <u>insufficient</u> in compensating for losses and averting the collapse of the Crimson pipeline.**
- **Demand for the northbound pipeline complex capacity (300,000 bopd) will be reduced by the closure of the Valero refinery and loss of 149,000 barrels of daily refining capacity.**



Estimated In-State Oil Production Shortages

Year	2026	2030	2035	2040	2045
Production Shortage in bopd	52,100	70,800	92,700	111,700	127,500
Annual Production Shortage (bbls)	19,017,000	25,842,000	33,836,000	40,771,000	46,538,000

Section 5.0
Why Are Refiners Electing to Exit California?

California Refineries: *"If California refiners are making so much money, why are they leaving?"* *Assemblymember Petrie-Norris*

The decision to exit a complex & critical business such as a refinery, involves many complex operational, economic, strategic, capital & socio-political factors.

Economic & Operating Considerations

- **Declining demand associated with ZEV and EV mandates.**
- **Uncertainties as to long-term viability, political actions, and operating environment.**
- **Declining profit margins & increasing operating costs.**
- **High cost of regulatory compliance.**
- **Extreme capital intensity & commitment.**
- **On average, California refinery operating costs are 26% to 37% higher than the U.S. average for refineries.**
- **California is one of the costliest states in the U.S. in which to operate a business.**
  - Ranked 45th for cost of doing business,
  - Ranked 47th for business friendliness.
  - Ranked 50th for cost of living.
  - Ranked 48th for favorable tax climate.
  - Ranked 50th for state liabilities & unfunded liabilities.
  - Ranked 32nd for the economy.
- ***"I've sat here for hours, and you haven't proved price gouging," Senator Dahle***

California Refineries: *"If California refiners are making so much money, why are they leaving?"* *Assemblymember Petrie-Norris*

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Political Considerations: *Rhetoric- Allegations, Vitriol*

- "***They are lining their pockets by ripping off Californians…"*** ***Gov. Newsom***
- **"*Our cars shouldn't make wildfires worse.*" *Gov. Newsom***
- **"*Cars shouldn't melt glaciers or raise sea levels.*" *Gov. Newsom***
- **"*The upfront cost of electric vehicles are projected to reach parity with conventional vehicles <u>in just a matter</u> of years.*" *Gov. Newsom***
- **"*(CA) committed to phase out gasoline-powered cars and using our market power to push zero-emission vehicle innovation.*" *Gov. Newsom***
- **"*The data is clear: Oil refiners have been racking up profits by planning maintenance that reduces supply during our busy driving seasons.*" *DPMO Director Tai Milder***
- ***"Big Oil has been lying and gouging Californians." Gov. Newsom***

California Refineries: Why are they leaving?

- **Refinery operators have a fiduciary responsibility to their shareholders.**
- **Operators have a fiduciary responsibility to allocate & deploy capital & resources in the most efficient manner & in the best interests of their shareholders.**
- **Given the costs of doing business, high cost of regulatory compliance, & political uncertainties of operating in California, refiners will seek alternative locations in which to deploy their capital.**
  - Over 250 companies have exited California since 2019.
  - Oracle, Toyota, Honda, Tesla, and Charles Schwab have exited California.
  - Shell, Phillips & Valero have exited California.
  - Chevron is completing their exit by 2030.
  - Others will most likely follow.

Section 6.0

Call to Action: A Blueprint For Gasoline Supply & Price Stabilization

California Refineries: Call to Action

California has a unique, exclusive opportunity to demonstrate that environmental responsibility and energy security are mutually inclusive.

- Policies that reduce and restrict in-state production are counterproductive. Rather than reduce California's demand for crude oil, instead, they lead to the outsourcing of California's oil supply to oil producing regions with minimal labor and environmental regulations.
- This, in turn, ultimately increases emissions and pollution levels worldwide while also reinforcing California's support for human rights injustices and environmental destruction abroad by purchasing and using foreign sources of crude oil.
- California can lessen its overall climate and environmental impact by producing oil in California responsibly, using additional in-state production to replace pollutive, foreign-sourced oil imports.
- Ultimately, a lack of action will also cause additional socioeconomic and environmental inequities in California wherein the least fortunate and most vulnerable individuals, families, and communities will disproportionately fall victim to higher prices, pollution, and a lack of affordable and reliable energy, further driving socioeconomic disparities and reinforcing cycles of poverty as they are the least able to absorb higher costs.

Without meaningful and practical policy changes that prioritize both energy security and real environmental progress, California risks sacrificing its own prosperity, climate goals, and environmental leadership, while failing to achieve the social equity and sustainability milestones its people deserve, undermining California's broader goals of environmental justice and economic opportunity for all its residents.

California Refineries: *A Blueprint to Stability & Security*

At issue and at stake is California's vibrant economy and its ability to provide a viable and inviting business environment. At this point, and for the next 30-years, petroleum will play an essential role in California's economy. To ensure gasoline security, California should consider the immediate adoption of the below Action Steps.

Immediate: 3 Key Action Steps

1. Increase In-State Oil Production.

a. Allow for increased offshore oil production oof the Santa Ynez Unit and use of gathering and transmission associated pipelines.
b. Provides 350,000 barrels of crude with 96 hours.
c. Promotes approximately 45,000 b/d in new & badly needed production.
d. Would be directed to LA refineries.

2. Provide Financial Aid.

a. Structure a state-financed, targeted financial aid package for Crimson Midstream to sustain the operations of the San Pablo Pipeline.

3. Presidential Intervention.

a. Given the essential nature of California's crude oil and gasoline production, request assistance under the Defense Production Act, designating the surviving refineries, pipelines, and both on and offshore crude oil producers, critical assets to national security and force readiness.

California Refineries: *A Blueprint to Avert a Crisis*

At issue and at stake is California's vibrant economy and its ability to provide a viable and inviting business environment. At this point, and for the next 30-years, petroleum will play an essential role in California's economy. To ensure gasoline security, California should consider the immediate adoption of the below Action Steps.

Longer Term Action Steps

- **Other than "importing more gasoline" (CEC) and relying on foreign suppliers and foreign shippers, California has no real plan to address its pending gasoline crisis and associated price hikes.**
- **California would benefit from a comprehensive plan to manage both petroleum and refining assets, as well as its ambitions for more ZEVs.**
  - Is it realistic to assume that ZEVs will comprise over 90% of all vehicles?
    - Is it realistic to assume that foreign powers will price California bound products fairly and competitively?
    - Is it safe to assume that foreign suppliers will act in the best interests of Californians and those of the U.S.?
    - Is it correct to neglect to include source to pump GHG emissions associated with foreign refiners and 40-day oceanic transit times, and port waiting times.
- **Revisit and amend or repeal SB 1137, AB 1167, AB 3233, SBX 1-2 and ABX2-1 to be more pragmatic with respect to crude oil and refining operations in California. These actions are contrary to capital investment in infrastructure and serve as disincentives for refiners and producers to remain in the state.**

Section 7.0
Additional Resources

Some Additional Resources & Studies

2026

- "***Ethanol: An Examination of AB 30 and its Impact on California Gasoline Prices…. Fact, Fiction, Fantasy or Reality?"*** (Mische, Rector, Silvi) (January 12, 2026).

2025

- ***"California's Oil and Gasoline Conundrum: A Blueprint to Address California's Gasoline Insecurity, High Prices and Avert More Pipeline & Refinery Closures."*** (Mische, Rector, Silvi) (December 1, 2025).
  - USC website: https://drive.google.com/file/d/1m3mMURBLANnvzdHUmAjZFU3qTQp6-Y9I/view
- ***"A Study of SB 237 to Stabilize Oil Production in California."*** (Silvi, Rector, Mische)
  - https://www.youtube.com/watch?v=mlLa7INf0II
  - USC website: https://drive.google.com/file/d/1yfj8Ub2mhE9lbwZ-DLUa4A6SHN8saNhl/view
- "***California Energy & Fuel Policies: A Clear & Present Threat to National Security and Force Readiness."*** (Ellis,. Mische, Ariza) (October 21, 2025).
  - https://www.youtube.com/watch?v=EU8x9ERxzHY
  - USC website: https://drive.google.com/file/d/1kDC3Kwqoj3p3NL7fE1rLad-cG-8Y4fgK/view

Some Additional Resources & Studies

2025

- **"*We still rely on gasoline. Why is California adding to the cost and pollution?"*** (Mische) **(** LA Times Editorial, July 2025).
  - LA Times website: https://www.latimes.com/opinion/story/2025-07-06/california-gasoline-costs-refineries-pollution-imports
- ***"Ensuring California's Gasoline Security for the 21st Century."*** (Mische) (May 5, 2025).
  - https://www.youtube.com/watch?v=7N95tlY0zrI
  - USC website https://drive.google.com/file/d/1CVsBHQ0s4FX57xQD2iy0ZD1V_MlKJMZX/view?pli=1
- ***"A Study of California Gasoline Prices."*** (Mische) (March 16, 2025).
  - https://www.youtube.com/watch?v=J48kNcDkT7g
  - USC website: https://drive.google.com/file/d/1YK_IxHVQokM6-fMXhTs9fmW2ZW0zdhuj/view

Some Additional Resources & Studies

2025

- "***Fugitive Emissions from Natural Seeps and Orphaned Wells are Orders of Magnitude Greater than Fugitive Emissions*** **from Production Equipment in Southern California."**
  (James Rector & Joseph Silvi, UC-Berkeley).

2024

- ***"Brace for Impact. California Gasoline Prices to Increase in 2025."*** (Mische) (November 11, 2024).
  - https://www.youtube.com/watch?v=Yc-VXwM7s9U
  - USC website: https://drive.google.com/file/d/1J9aNp1NPSzsNAEE9b4b6aUtYFoHiZtIm/view
- ***"Not All Oil is Created Equal: Understanding the Venezuelan Petrostate."*** (Mische) (September 9, 2024).
  - USC website: https://drive.google.com/file/d/1wq-EX-19ztzgkRaqRfTNuCbSKmZpHnni/view


QUESTIONS?
CONCERNS?
THOUGHTS?

THANK YOU!

Please feel free to reach out to me at any time with questions or needs.

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