



# Urgent Vulnerabilities and Risks in California's Fuel Supply Chain

Transportation Energy Supply Chain  
Infrastructure & Investment (TESCII)  
Study Summary

For: Petroleum and Gasoline Supply Committee –September 19, 2024  
By: Dr. Mark Nechodom, Senior Director for Science & Technology, WSPA

# Transportation Energy System

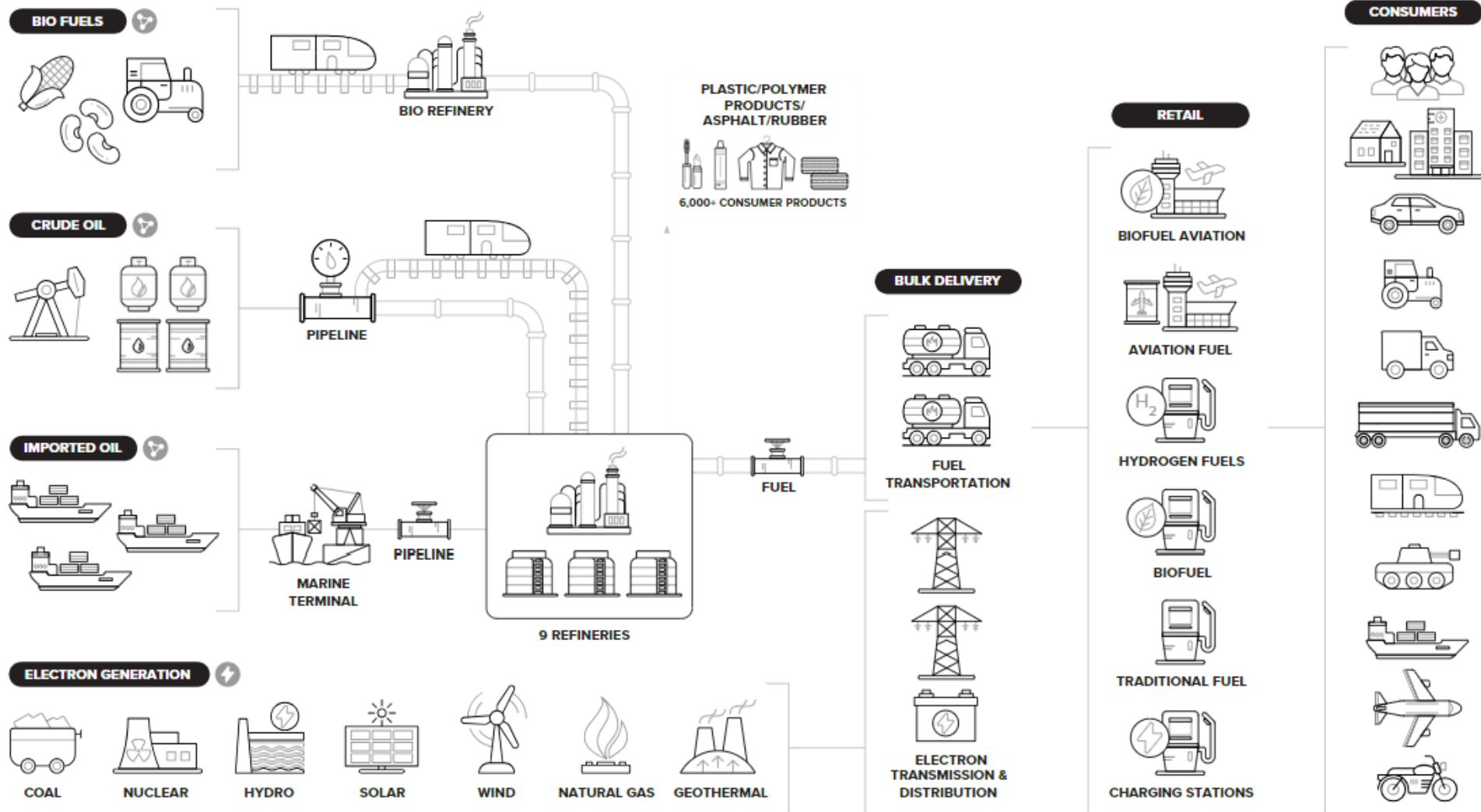
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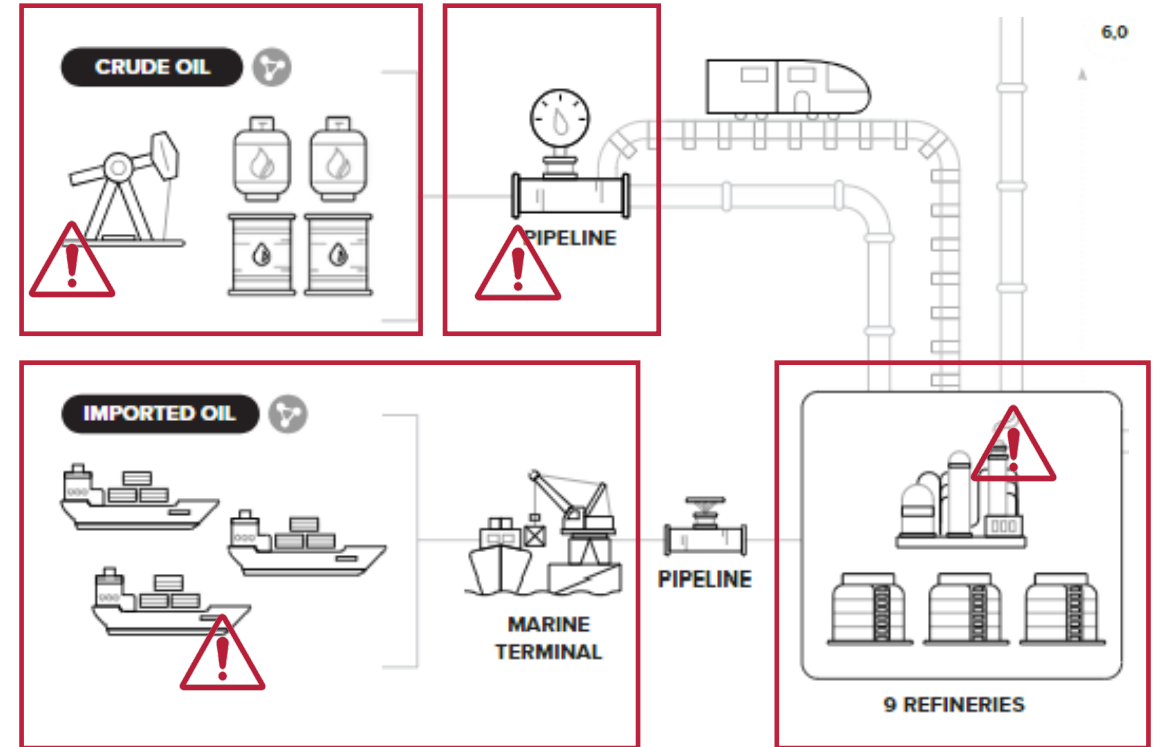


## Background & Approach

- California's transportation fuel supply chain is at risk of unprecedented disruption, primarily due to the culmination of tightening state policies and regulations. To better understand the complete impact, WSPA enlisted Turner, Mason & Company (TM&C) to carry out the Transportation Energy Supply Chain Infrastructure and Investment (TESCII) study.
- TM&C conducted a study of the California transportation fuel system (upstream, downstream, logistics, refining, regulatory) with a focus on identifying potential “pinch-points” that could significantly impact the ability of the system to meet the state’s future transportation fuel demands.

# Concerns & Urgent Takeaways

- California crude oil production is in terminal decline, despite ample reserves.
- Pipelines are increasingly at risk of shutdown.
- Marine facilities face increased congestion and dramatic vessel limits.
- It's not a matter of "if" but "when" refiners and oil producers will face tough decisions.
- Without major investments, refiners' ability to adapt to shifts in supply or demand will be constrained.



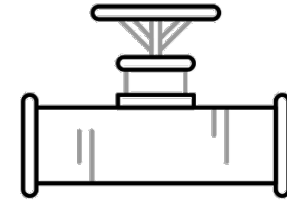
## Production of Crude Oil is in Terminal Decline

- California's crude oil production is experiencing a sharp annual decline rate of ~15%, which is about 50% faster than gasoline demand declines in the state's Transportation Fuels Assessment "Rapid" case.
- This rapid decline is driven by the lack of drilling permits, NOT lack of resources.
- Setback law (SB 1137) could result in a ~20% decrease of production per year.



## 🔗 Pipelines Are Approaching Minimum Volume

- California crude oil pipelines are nearing critical minimum throughput levels, requiring at least 30% capacity to maintain safe flow.
- In all scenarios, it's assumed that once a pipeline shuts down, it will not return to service.
- Pipelines serving Northern California are at the greatest risk.
- If pipelines close, refineries become more dependent on waterborne crude oil imports but in some cases lack sufficient marine capacity to fully compensate.



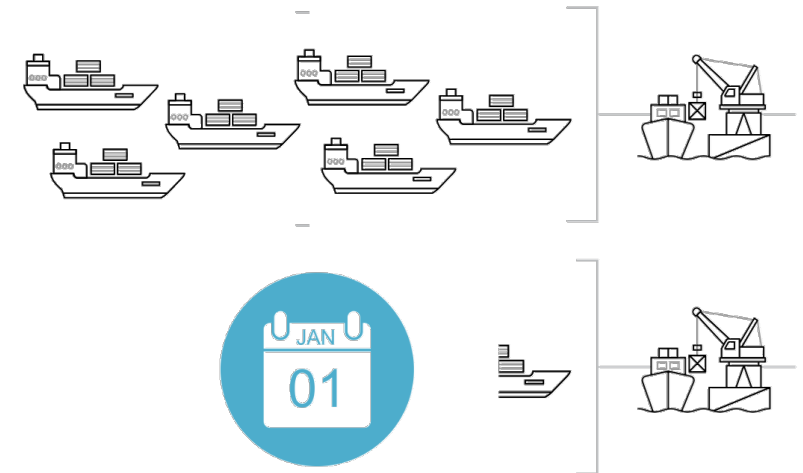
# Pipelines Are Approaching Minimum Volume

Regional Movement	Pipeline Name	Current Capacity (TBD)	Estimated Minimum Throughput (TBD)	Current Throughput (TBD)	
Central Valley to San Francisco	KLM Pipeline	90	30-35	80-100	~ 30%
	San Pablo Bay Pipeline	210	60-65		
Central Valley to Los Angeles	Line 63	60	20-25	120-150	~ 44%
	Line 2000	110	30-35		
	M-70 Pipeline	110	30-35		
	Chevron	30	10-15		
Central Coast to Los Angeles	Texaco	28	10-15	34	~ 40%
	Southern California Pipeline System	55	20-25		



# Ports Face Congestion & Vessel Limits

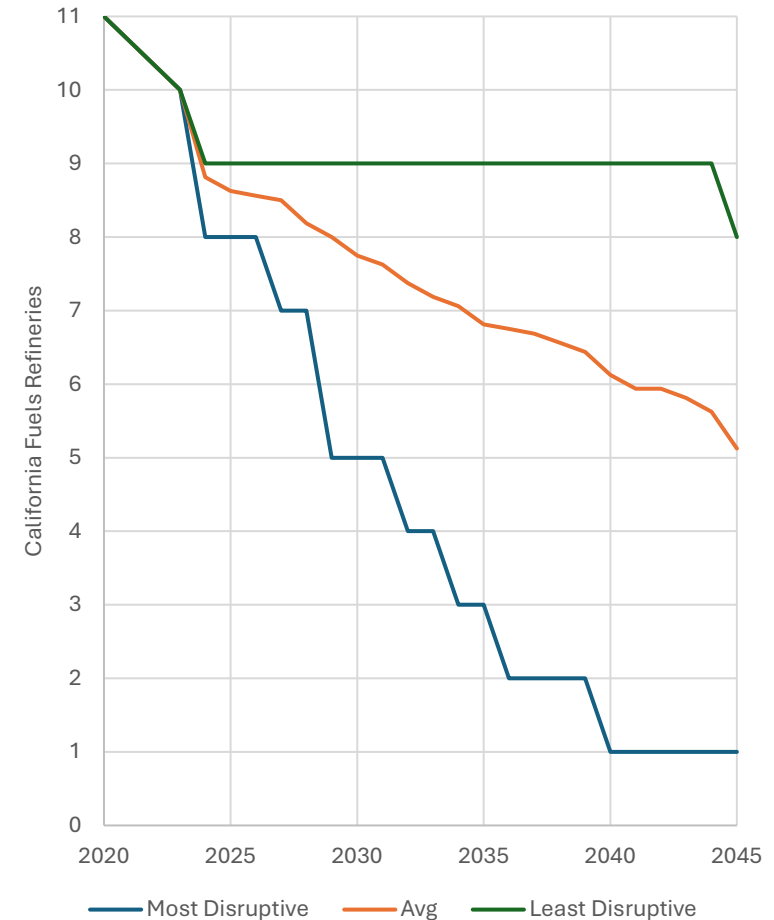
- Starting January 1, 2025, the California Air Resources Board (CARB) will implement “At-Berth” regulations that require ocean-going tanker vessels in Southern California ports to cut emissions using shore power or CARB-approved technologies:
  - The California tanker fleet, as a whole, is NOT currently equipped to use shore power;
  - Sufficient infrastructure is NOT in place to supply the needed electricity;
  - Stack emissions control systems are still in the testing phase, and likely a long way from full deployment at scale.
- Economic decisions may lead to a significant decline in supply of crude and other transportation fuel products needed to meet the state’s energy demand.





# 🔗 Refinery Shutdowns Loom in All Scenarios

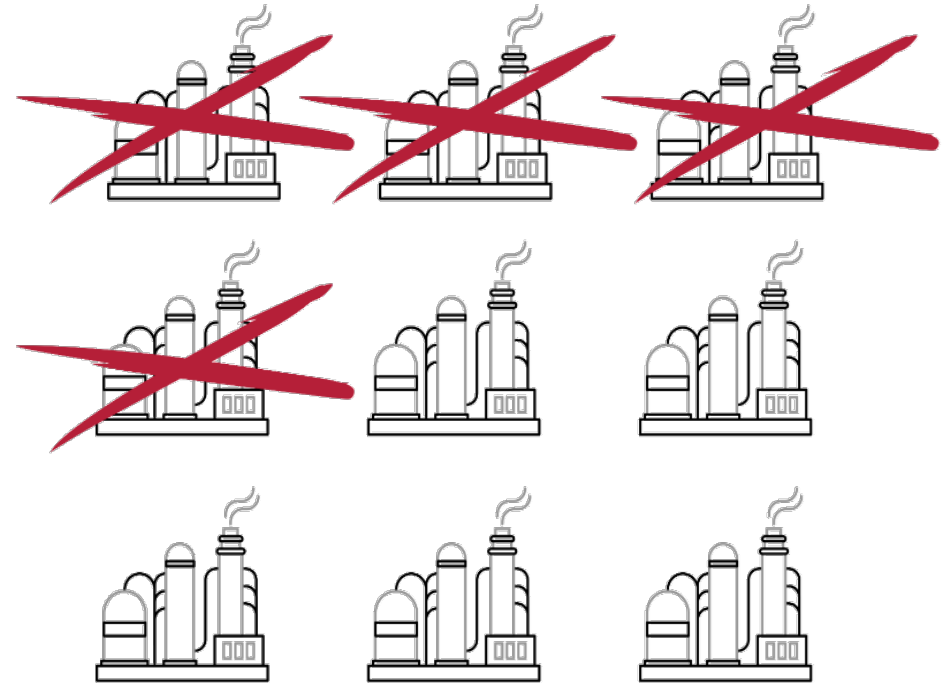
- TM&C evaluated potential refinery closures across 16 scenarios covering combinations of:
  - Transportation fuel demand cases
  - Crude oil production profiles
  - Logistics constraints
  - Refining operating environments
- In all scenarios, up to half of California's fuel refineries could shut down by 2045. In the worst-case scenario, only one refinery may be left by 2040.
- “At-Berth” restrictions could quickly shutdown 3-4 refineries.
- None of these scenarios take into account the proposed gasoline margin cap penalty.



Note: Refinery utilization falls to 65% before shut-down

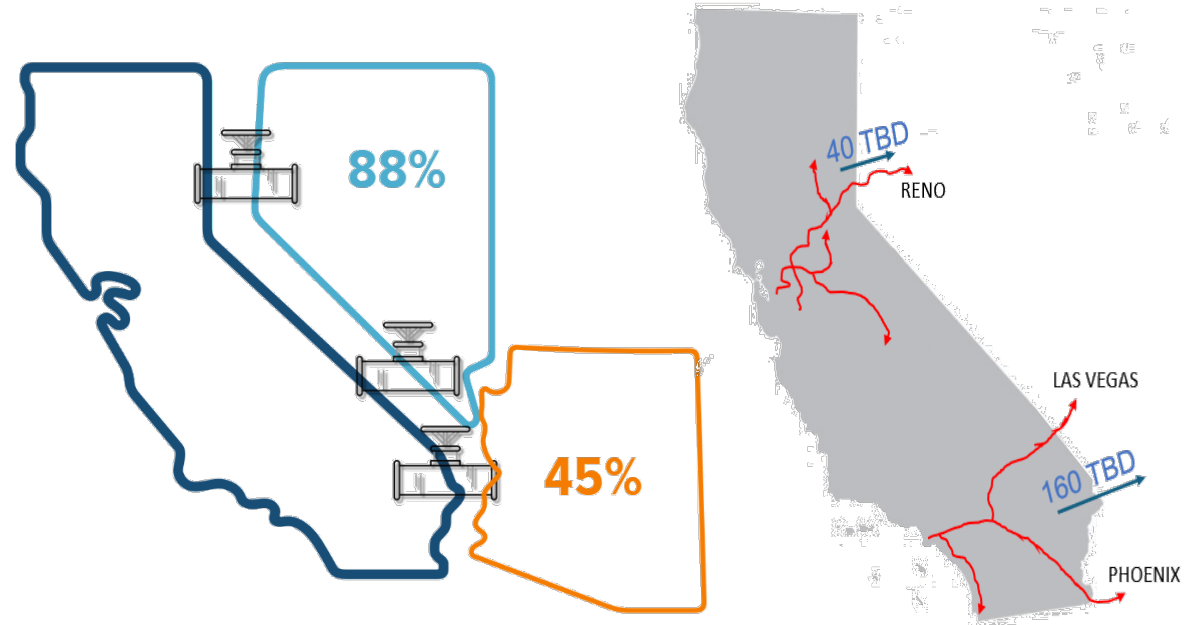
## 📍 Refinery Shutdowns Loom in All Scenarios

- If onshore power is unavailable or on-ship capture is infeasible, full enforcement of “At-Berth” restrictions could close 3-4 refineries almost immediately
- Refineries may close faster than demand declines, which could put pressure on marine logistics and vessel traffic limits.
- Reality usually strikes faster and harder than models.



## Arizona and Nevada Depend on California

- California refineries supply 45% of Arizona's and 88% of Nevada's transportation fuels, so any disruption in California impacts all three states.
- California's northern and southern fuel supply systems are not connected, requiring ocean-going vessels to transport fuel between them.



# I Discussion

Please direct inquiries to:

Dr. Mark Nechodom  
Senior Director for Science and Technology  
Western States Petroleum Association  
[mnechodom@wspa.org](mailto:mnechodom@wspa.org)  
916-591-1444