



# Outlook for Crude Oil Imports into California

Prevention First 2008

Long Beach, CA

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## Presentation Topics

- Petroleum infrastructure and regional product flows
- Crude oil production – CA and United States
- Declining production – historical and forecast
- Crude oil imports continuing to grow – forecast
- Additional crude oil tanker visits
- Incremental crude oil storage capacity
- Southern California imports & outlook
- Factors increasing forecast uncertainty
- IEPR proceedings
- Recent industry developments



# California's Petroleum Infrastructure



CALIFORNIA ENERGY COMMISSION



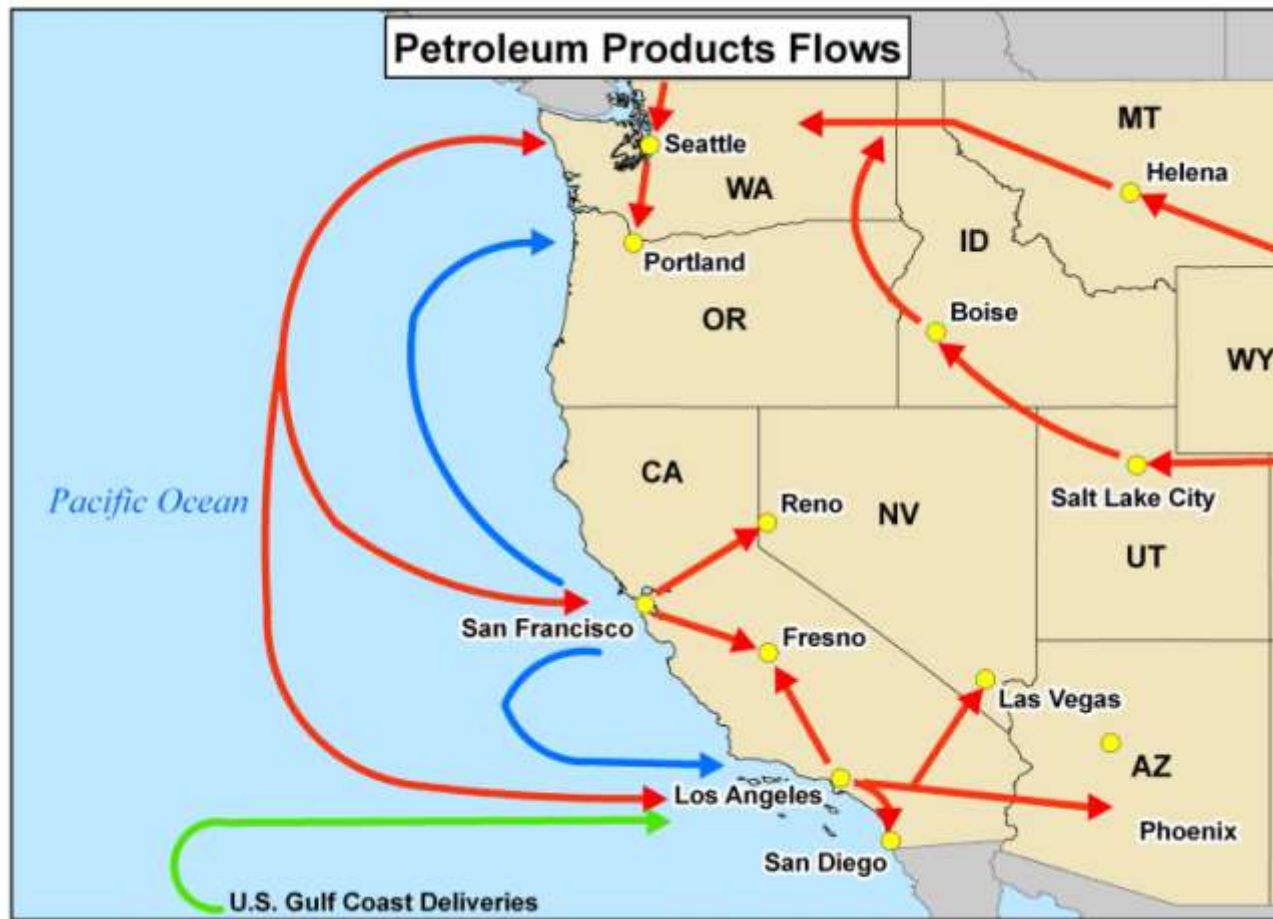
# California Refineries



- 3 primary refinery locations
- 14 refineries produce transportation fuels that meet California standards
- 8 smaller refineries produce asphalt and other petroleum products
- California refineries provide majority of transportation fuel to neighboring states
- Limited petrochemical facilities outside the refineries

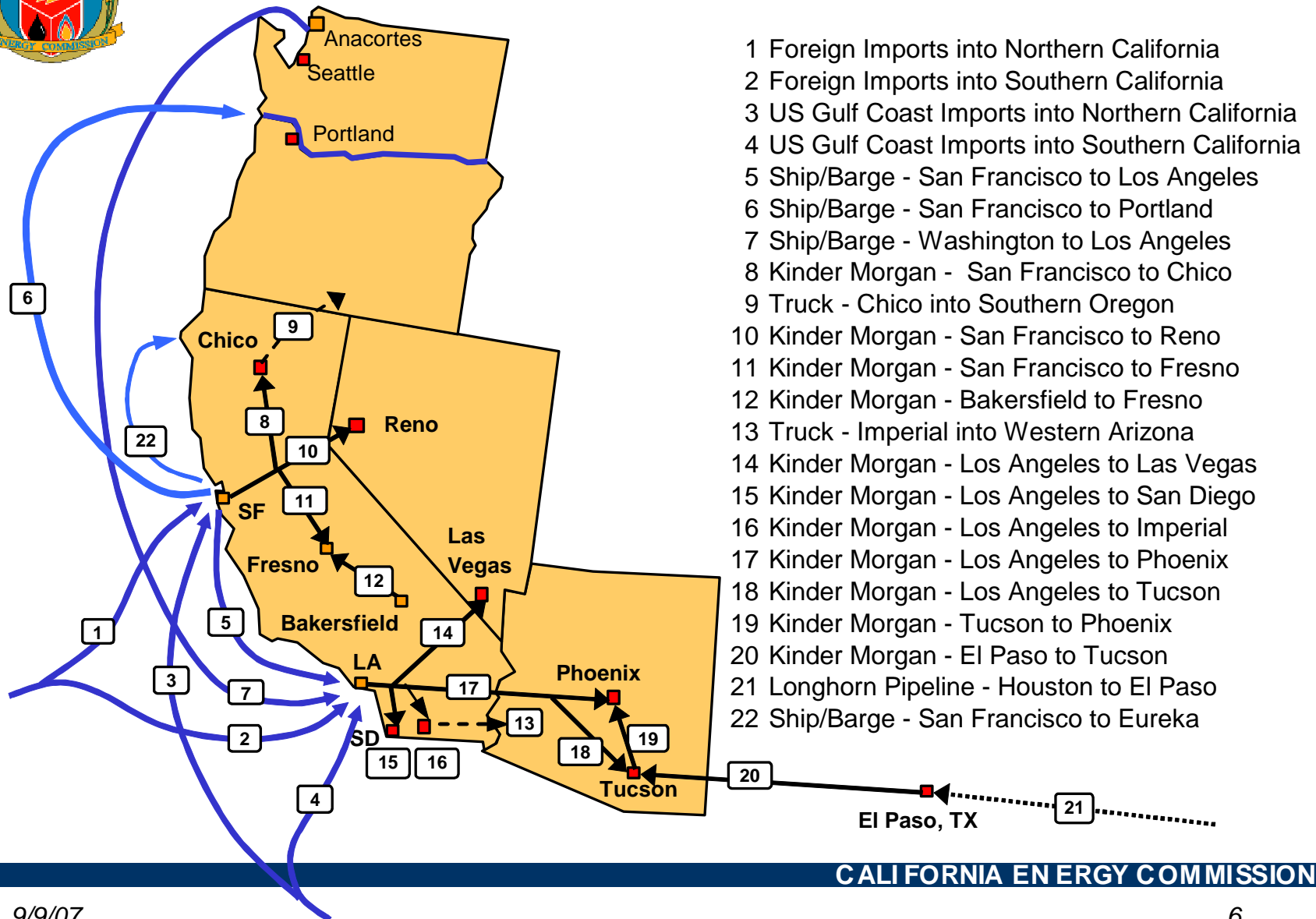


# Interstate Dependence for Transportation Fuel Supply





# West Coast Petroleum Flows



- 1 Foreign Imports into Northern California
- 2 Foreign Imports into Southern California
- 3 US Gulf Coast Imports into Northern California
- 4 US Gulf Coast Imports into Southern California
- 5 Ship/Barge - San Francisco to Los Angeles
- 6 Ship/Barge - San Francisco to Portland
- 7 Ship/Barge - Washington to Los Angeles
- 8 Kinder Morgan - San Francisco to Chico
- 9 Truck - Chico into Southern Oregon
- 10 Kinder Morgan - San Francisco to Reno
- 11 Kinder Morgan - San Francisco to Fresno
- 12 Kinder Morgan - Bakersfield to Fresno
- 13 Truck - Imperial into Western Arizona
- 14 Kinder Morgan - Los Angeles to Las Vegas
- 15 Kinder Morgan - Los Angeles to San Diego
- 16 Kinder Morgan - Los Angeles to Imperial
- 17 Kinder Morgan - Los Angeles to Phoenix
- 18 Kinder Morgan - Los Angeles to Tucson
- 19 Kinder Morgan - Tucson to Phoenix
- 20 Kinder Morgan - El Paso to Tucson
- 21 Longhorn Pipeline - Houston to El Paso
- 22 Ship/Barge - San Francisco to Eureka



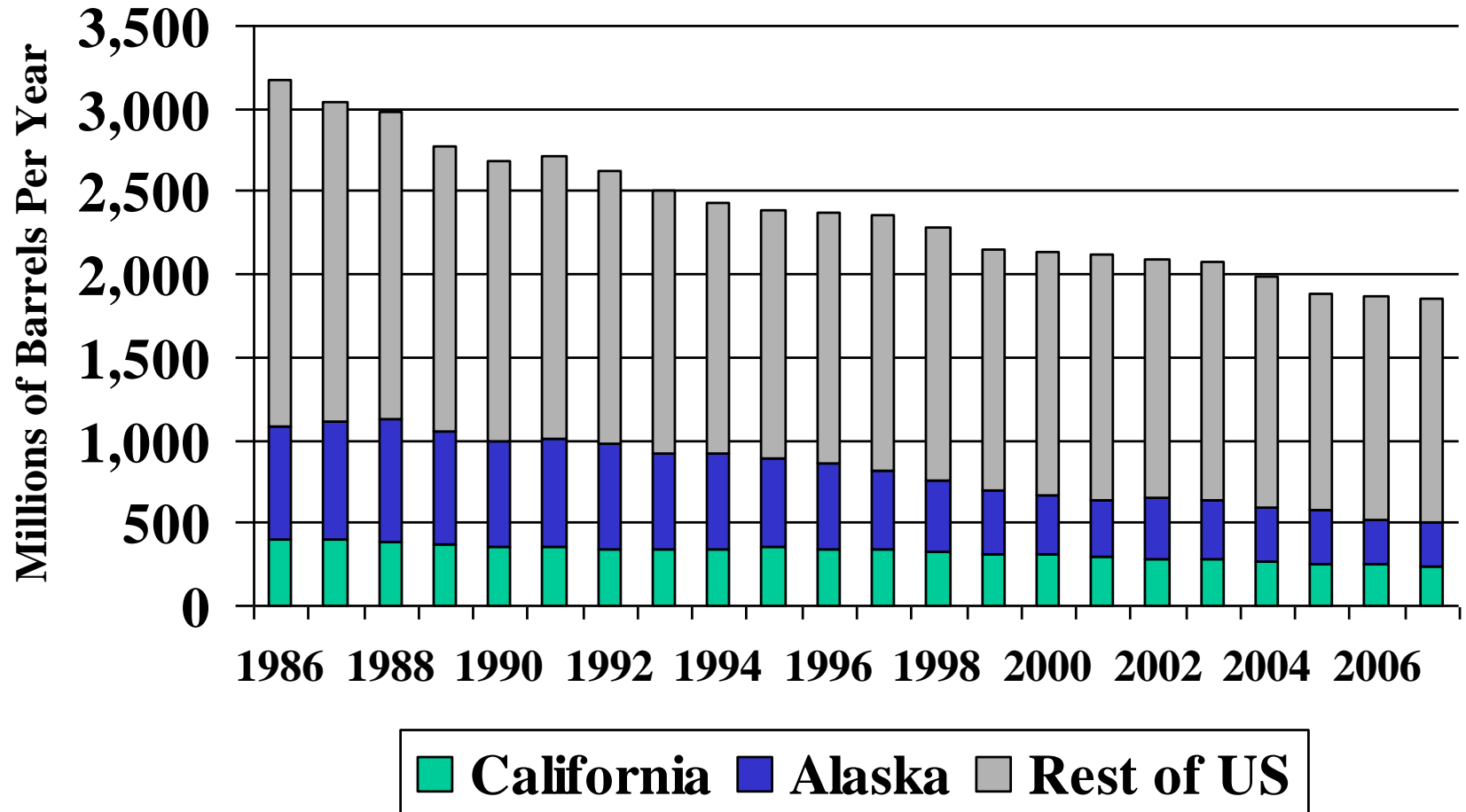


# Crude Oil





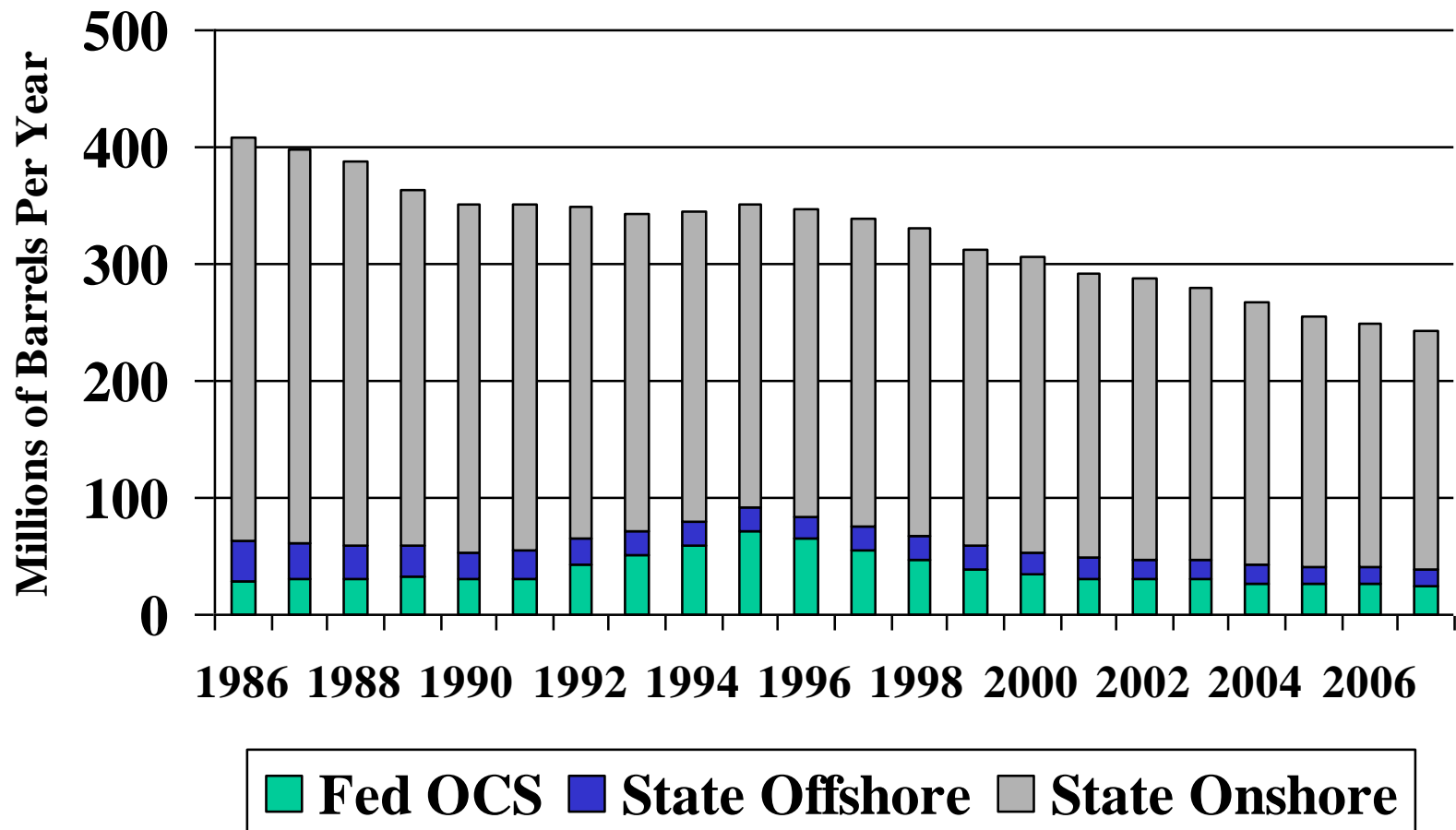
# United States Oil Production 1986 to 2007





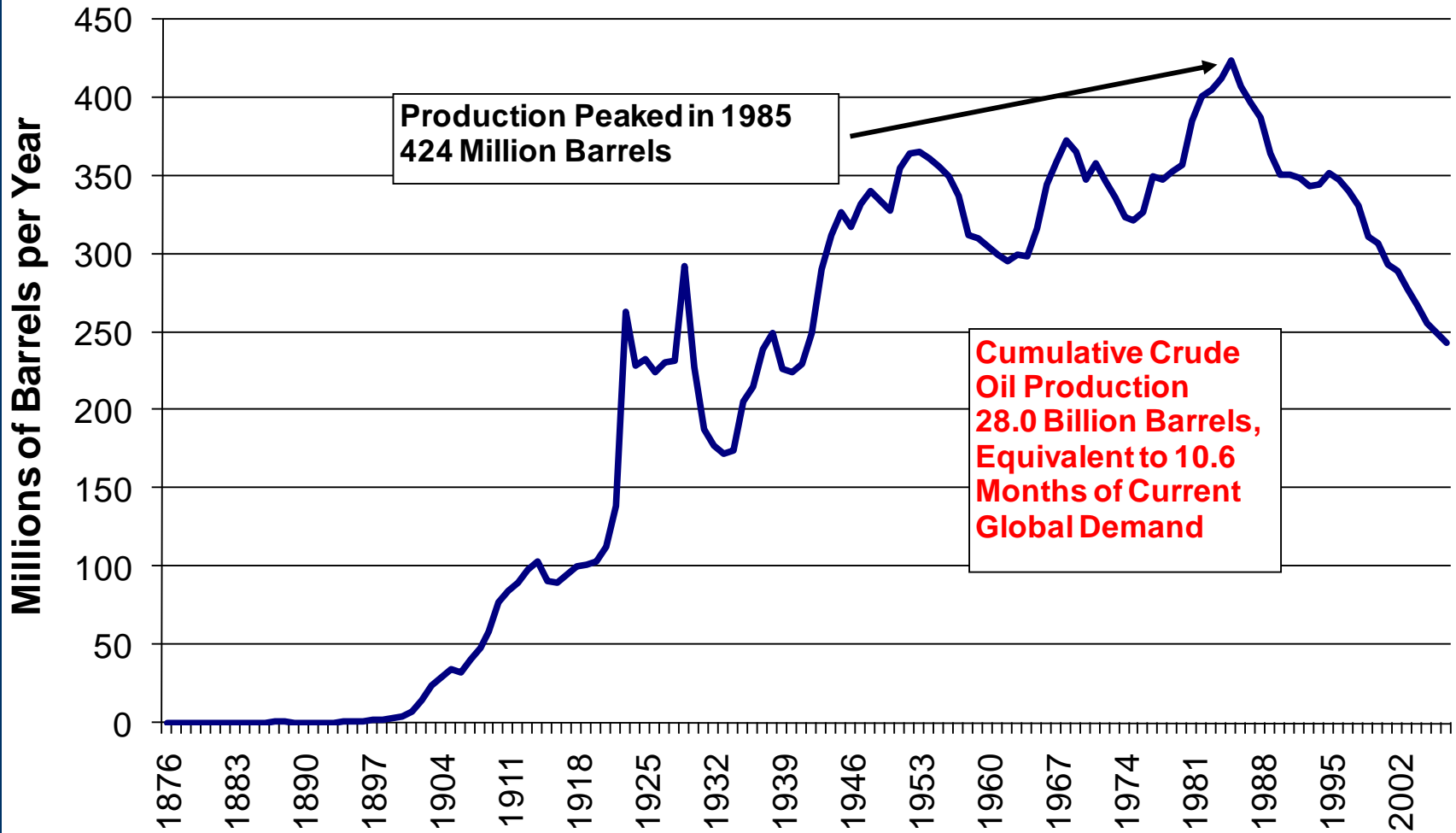


# California Oil Production 1986 to 2007





# California Oil Production 1876 to 2007





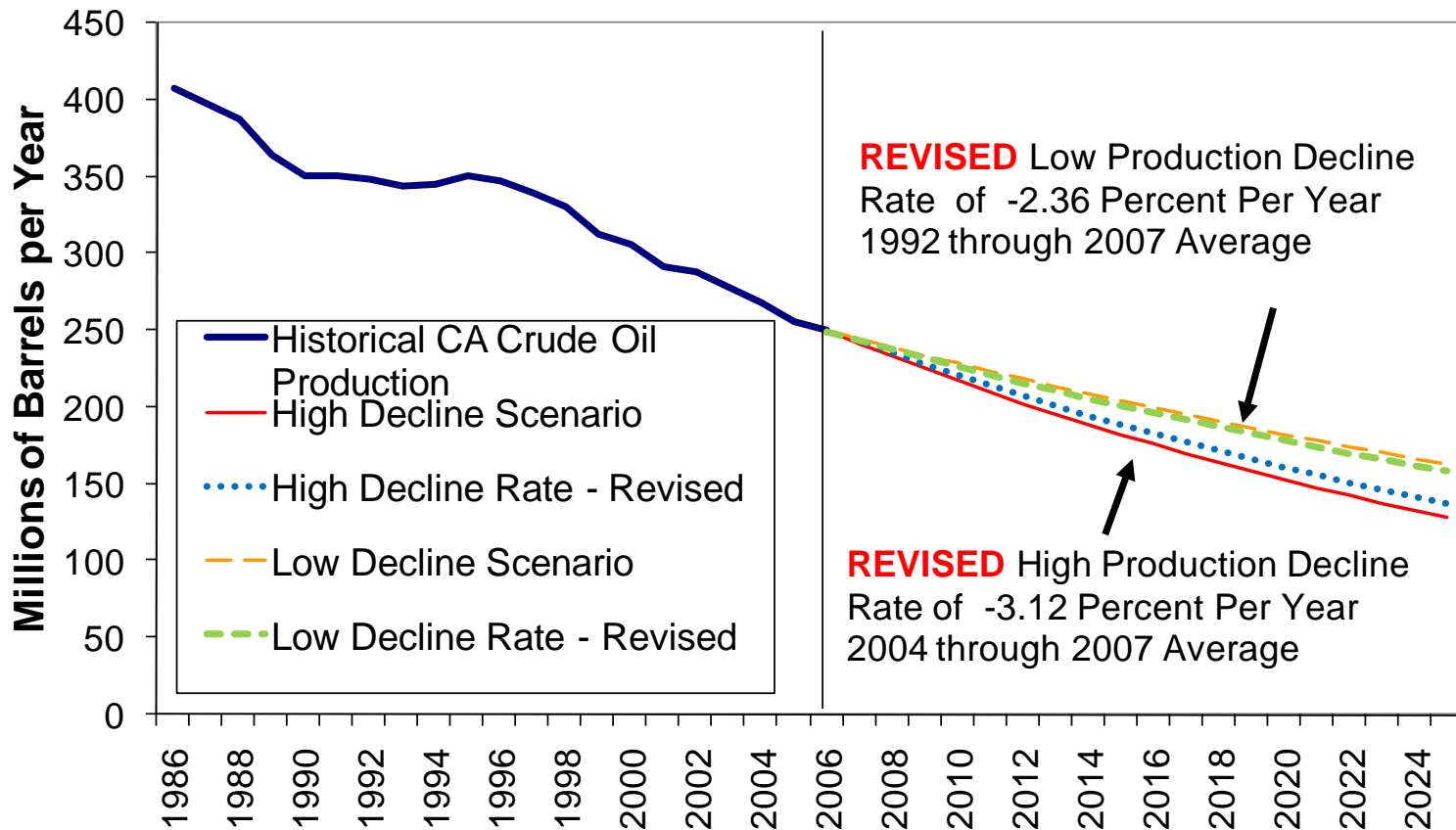
## Recent Crude Oil Production Trends

- Global crude oil production 31.2 billion barrels in 2007, roughly 85.6 million barrels per day
- 2007 U.S. crude oil production 1.87 billion barrels or 5.1 million barrels per day
- CA crude oil production in 2007 was 243 million barrels or 667 thousand barrels per day
- California crude oil production has declined 40% since 1986, Alaska 61% and the rest of U.S. by 35%
- Crude oil production decline expected to continue, despite sustained higher prices and significant drilling activity
- Rate of decline has been greater over the last couple of years compared to longer trends – Kansas & N. Dakota exceptions
- Declining domestic oil production will need to be replaced with increased imports of crude oil from foreign sources



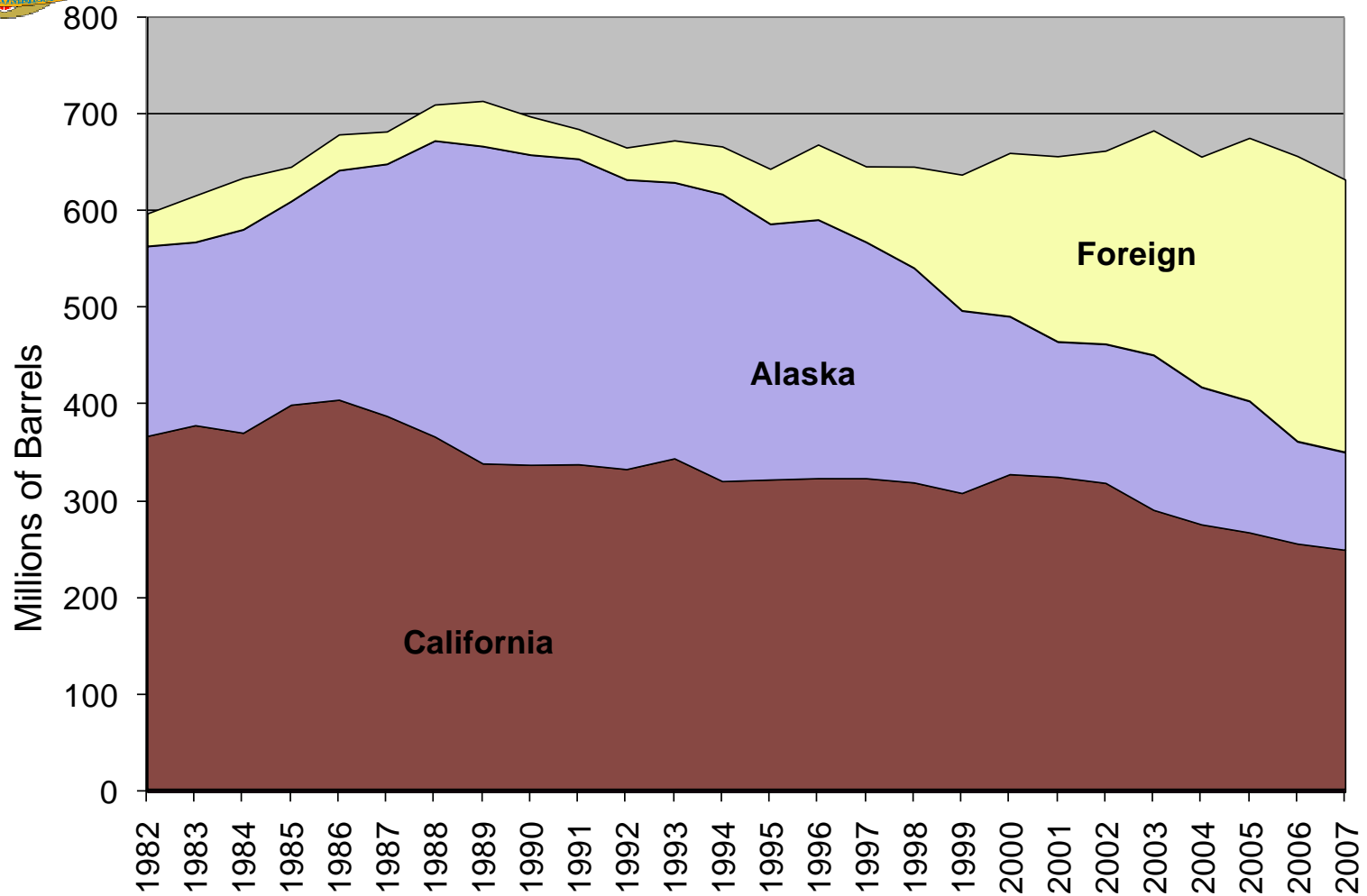
# Decline Forecast to Continue

## California Crude Oil Production Decline Forecast 2008-2025



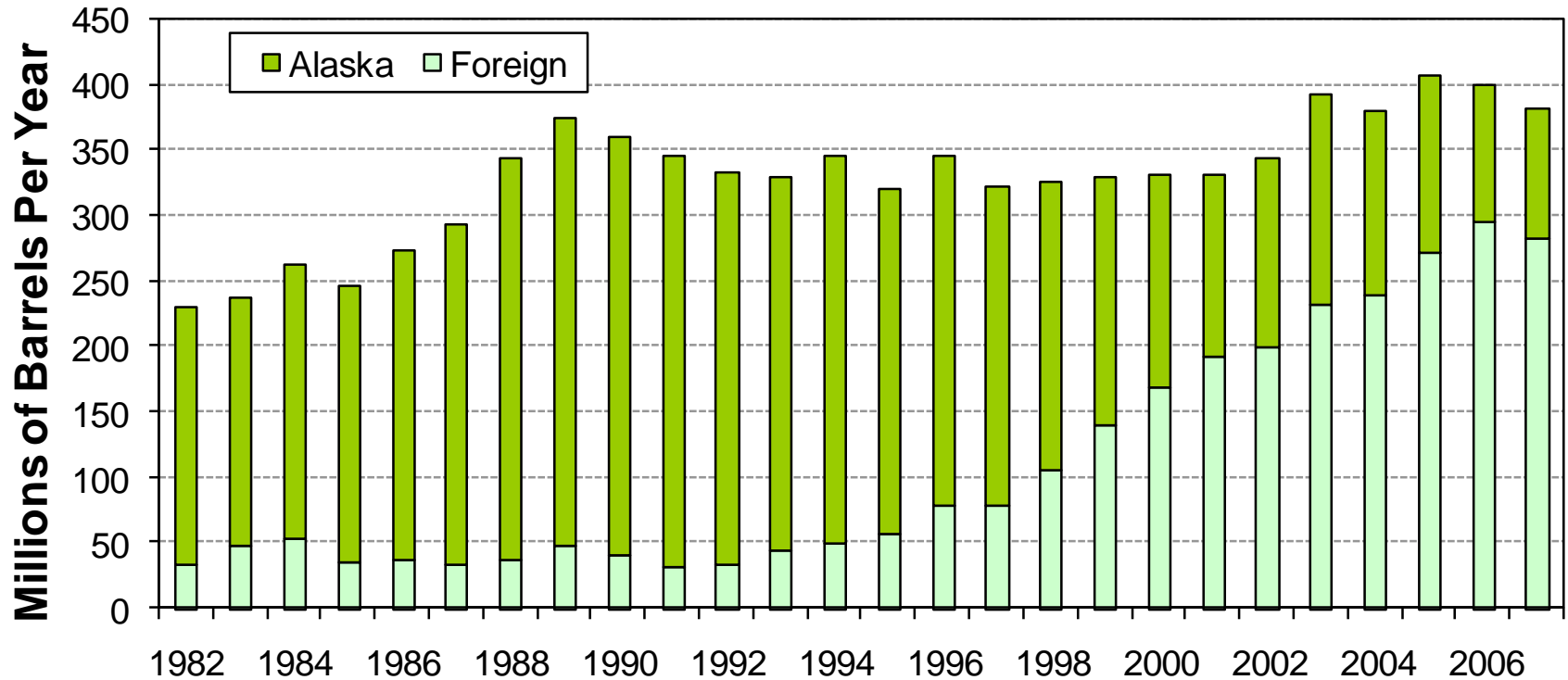


# CA Refineries - Crude Oil Supply Sources





## California Crude Oil Imports 1982 through 2007





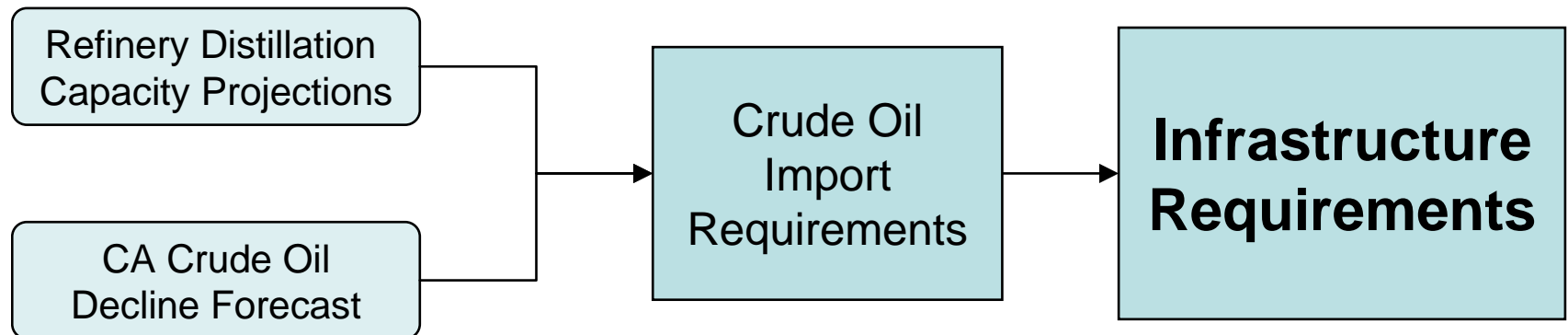


## California Crude Oil Imports – Historical

- Imports of crude oil have increased as California crude production fell and refineries processed additional oil
- Total imports of crude oil have increased 19% between 1995 and 2007
- Imports of Alaska crude oil declined a total of 62% between 1995 and 2007
- The largest increase has been for foreign crude oil imports
  - 14.3% per year increase
  - Nearly 5 times greater compared to levels of 1995
- What is the outlook for crude oil imports for California and what are the primary factors influencing the forecasts?

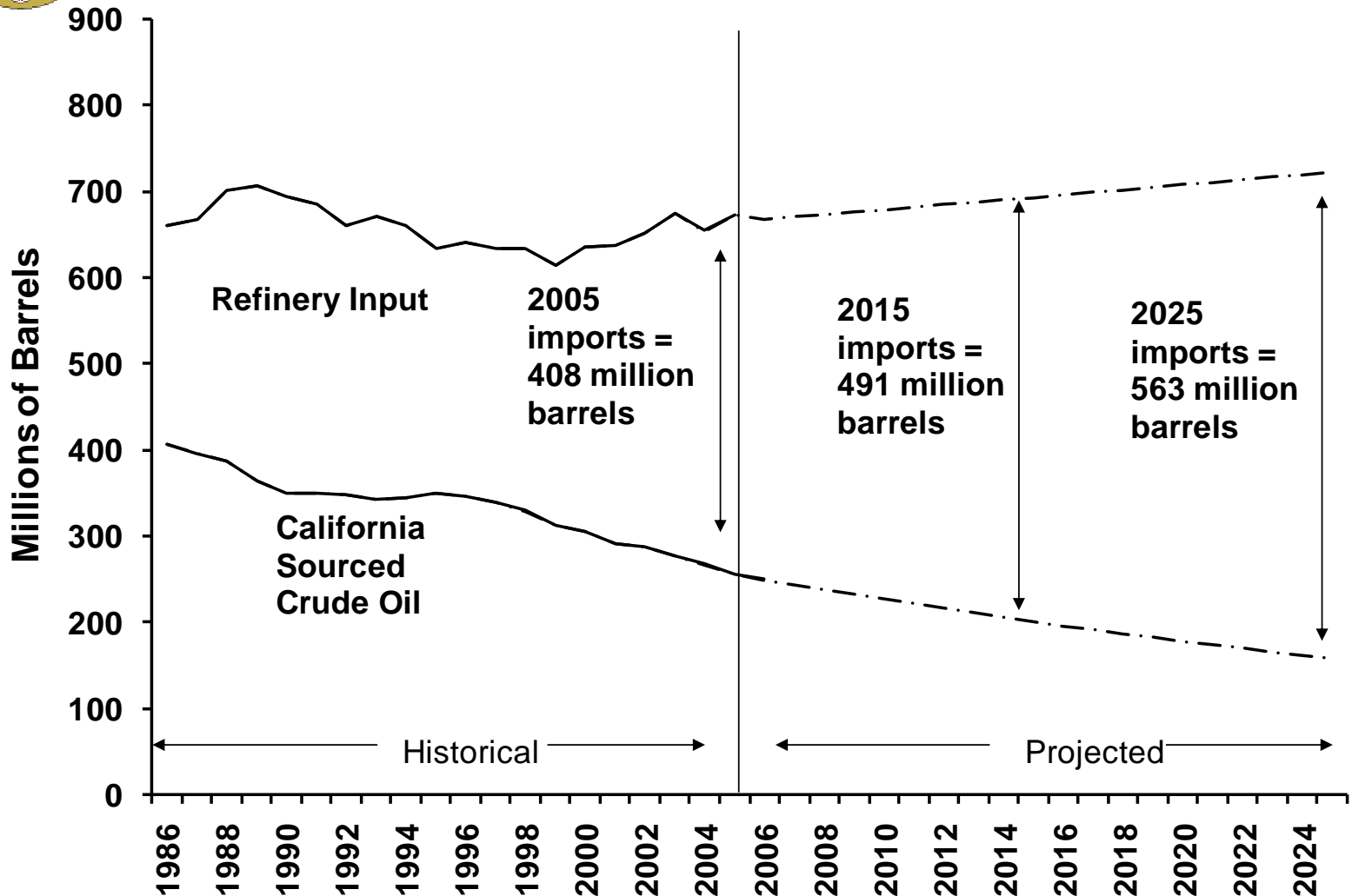


# Crude Oil Import Forecast - Approach



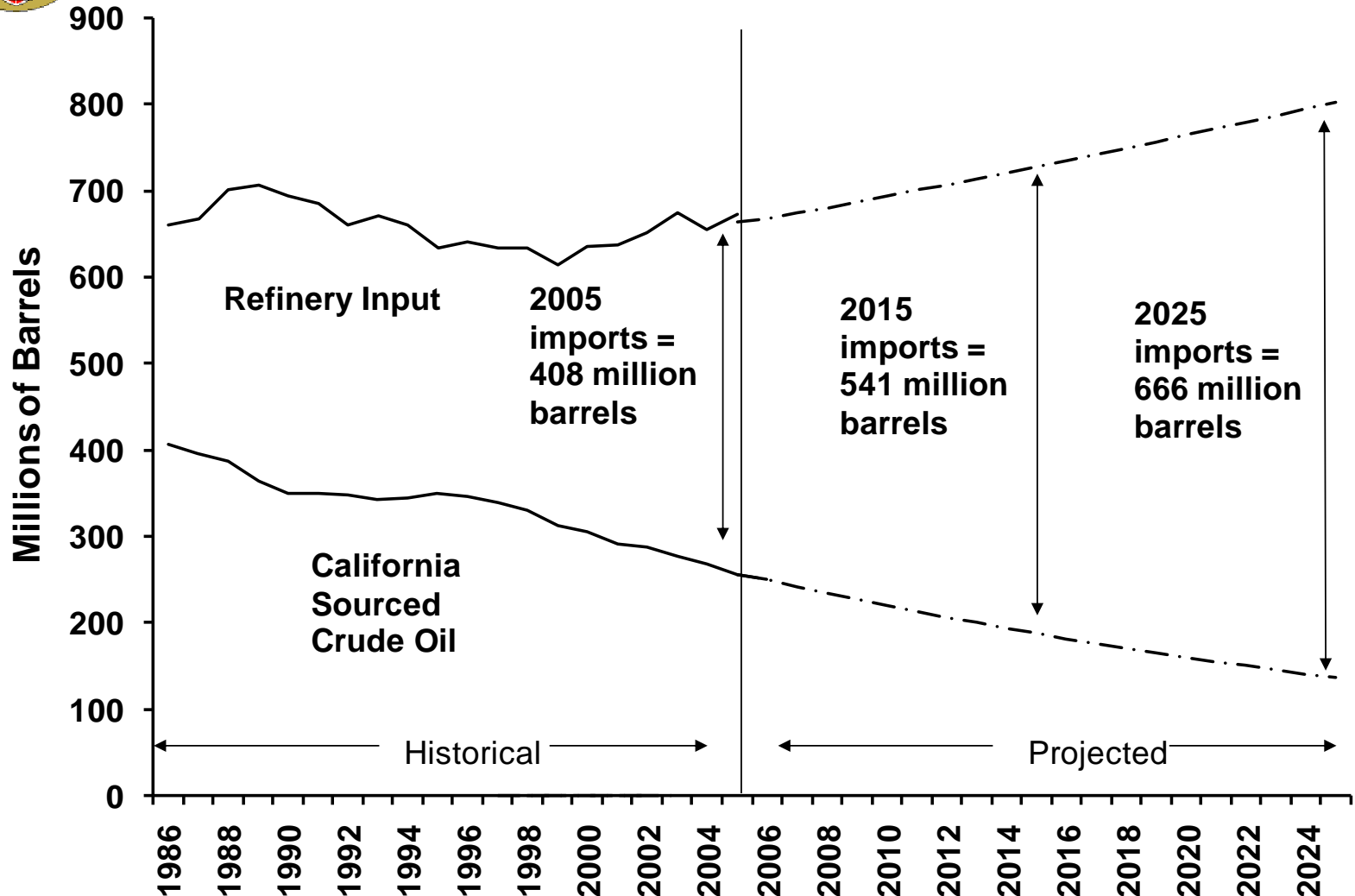


# California Crude Oil Imports – Low Forecast





# California Crude Oil Imports – High Forecast





## California Crude Oil Imports - Forecast

- Crude oil imports are forecast to increase in California due to:
  - Continuing decline of local crude oil production
  - Gradual expansion of the capacity of California refineries to process crude oil – referred to as “refinery creep”
- The lower estimate for increased crude oil imports assumes that crude oil production declines at a slower pace (2.4% per year) & expansion of distillation capacity is at a smaller rate (0.4% per year)
- The higher estimate for incremental crude oil imports assumes that the production of California crude oil declines at a steeper pace (3.1% per year), while refiners expand distillation capacity at a higher rate (nearly 1% per year)



## Crude Oil Imports – Entire State

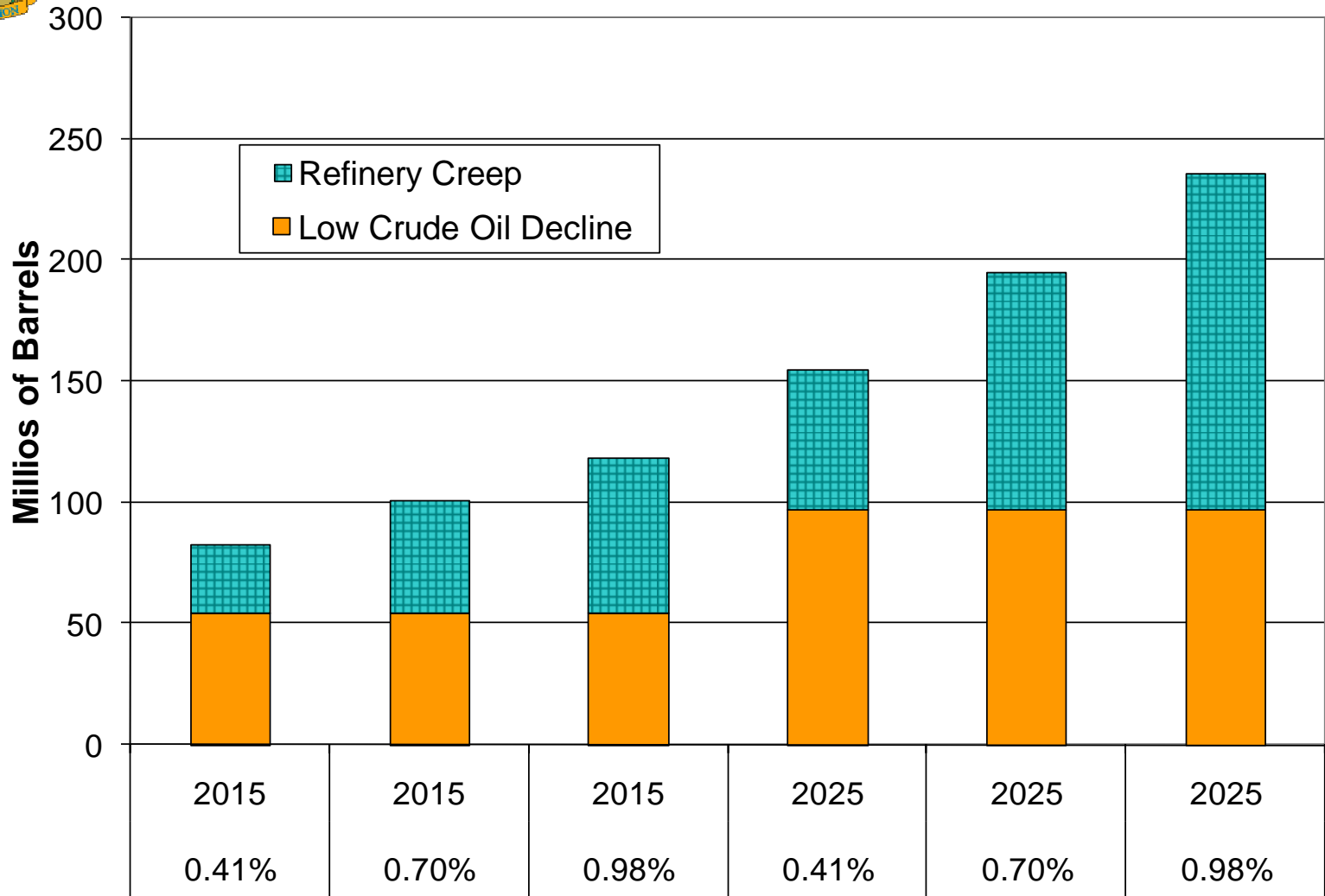
Incremental California Crude Oil Imports - Millions of Barrels				
Distillation Capacity Growth Rate	Low Rate of Crude Oil Decline - 2.4%		High Rate of Crude Oil Decline - 3.1%	
	2015	2025	2015	2025
0.41 Percent	83	155	97	177
0.70 Percent	101	195	115	217
0.98 Percent	119	236	133	258

- Waterborne crude oil imports forecast to increase by 20 to 38% by 2015 & 32 to 63% by 2025, compared to 2005
- Southern California is forecast to receive 60% of the oil imports
- Even if refinery capacity remained fixed, oil imports would increase by 13 to 17% by 2015 & 24 to 29% by 2025 due to declining crude oil production in California



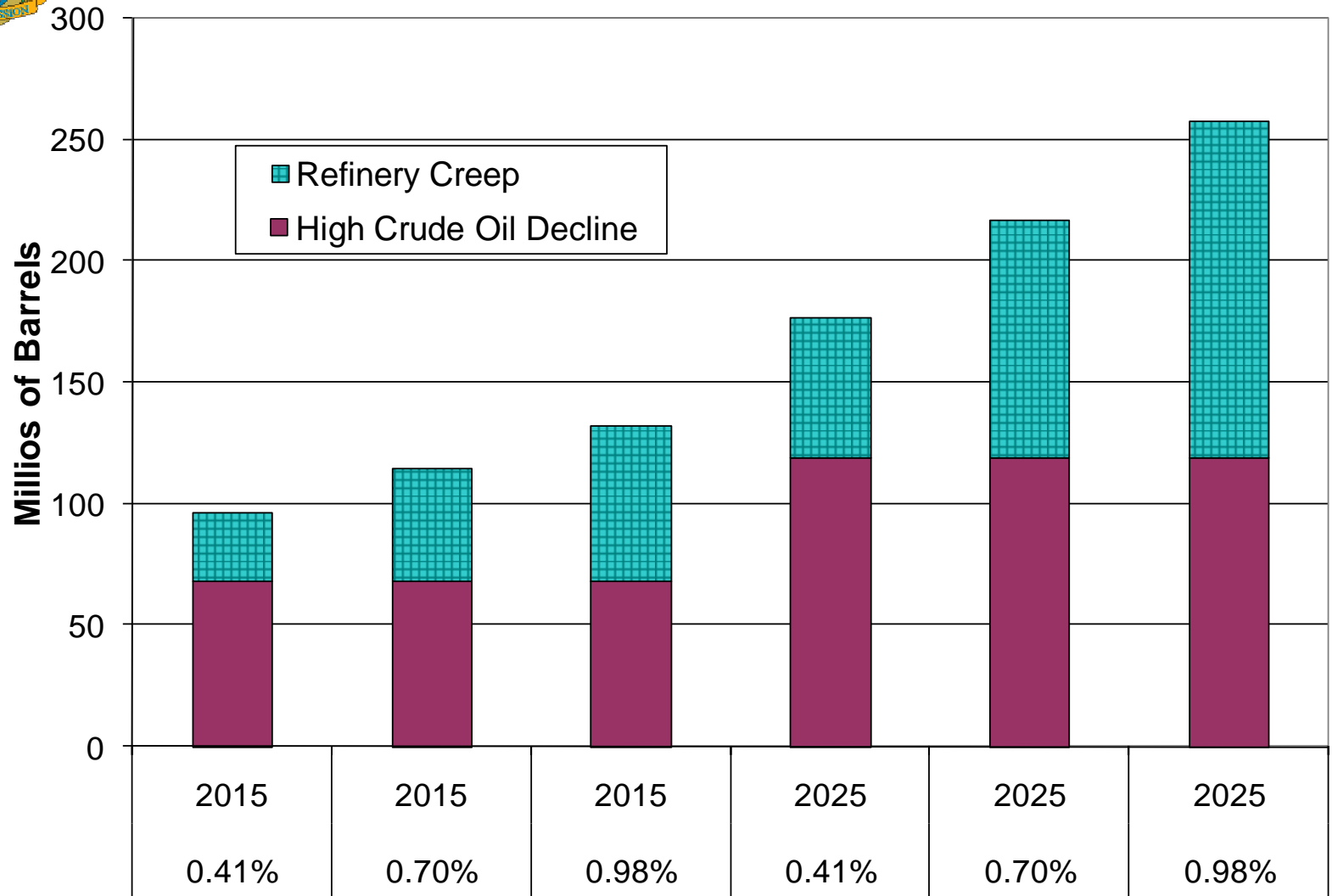


# Incremental Imports – Low Case



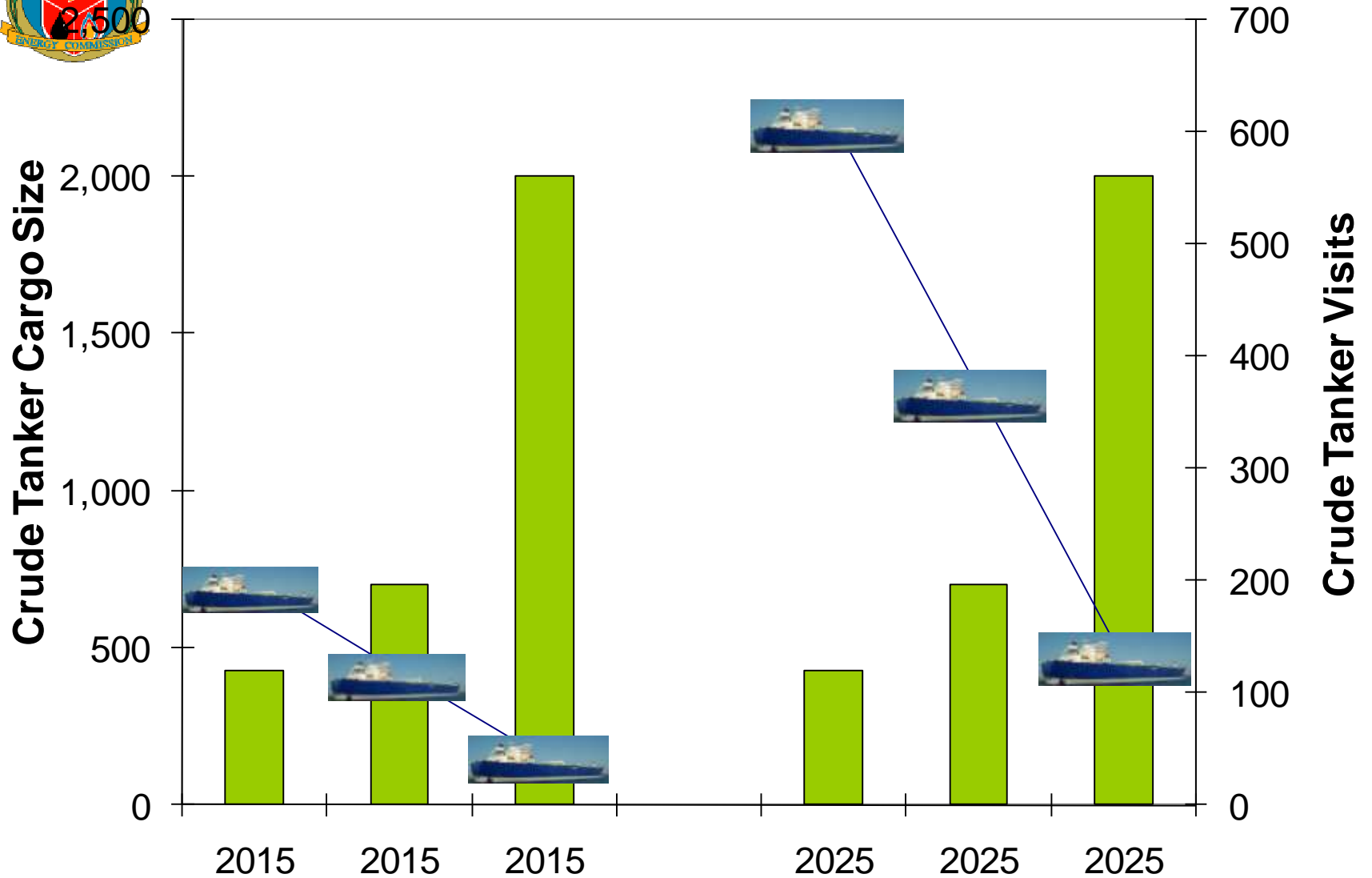


# Incremental Imports – High Case





# Additional Crude Oil Tanker Visits



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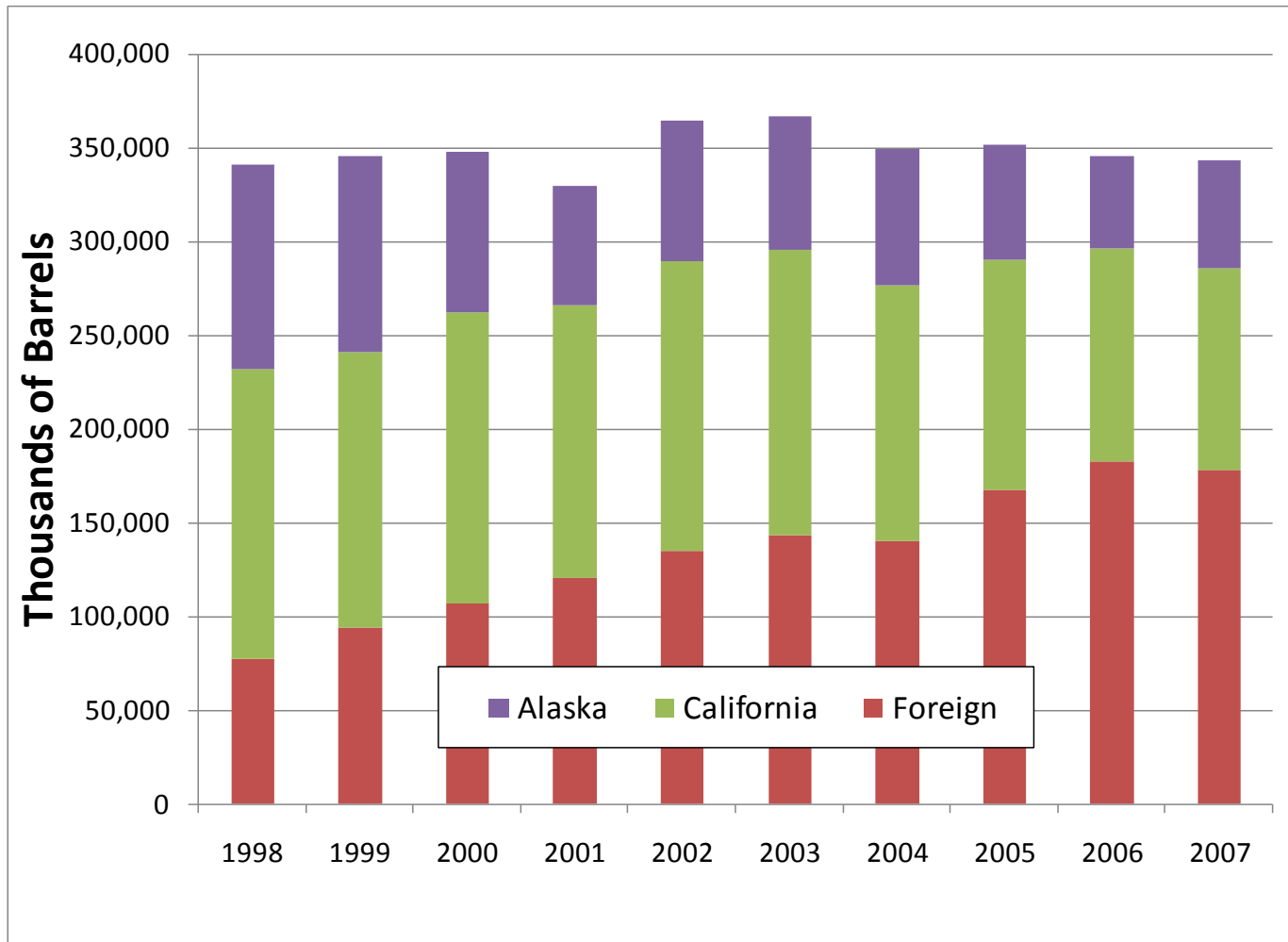
## Crude Oil Imports - Additional Capacity

Incremental Crude Oil Storage (Millions of Barrels)			
Low Case		High Case	
2015	2025	2015	2025
3.6	6.8	5.8	11.3
7.0	13.1	11.2	21.7

- Assuming a throughput design similar to the Pier 408 project, crude oil storage tank capacity would need to be expanded between 3.6 and 5.8 million barrels by 2015
- Slower throughput rates increase these estimates to between 7 and 11.2 million barrels of additional capacity



# Crude Oil Receipts Southern California Refineries





## Crude Oil Imports – Southern California

Incremental <b>S. Calif.</b> Crude Oil Imports - Millions of Barrels				
Distillation Capacity Growth Rate	Low Rate of Crude Oil Decline - 2.4%		High Rate of Crude Oil Decline - 3.1%	
	2015	2025	2015	2025
0.41 Percent	50	93	58	106
0.70 Percent	61	117	69	130
0.98 Percent	71	142	80	155

- Southern California crude oil imports are forecast to increase by 50 to 80 million barrels per year by 2015, an increase of 22 to 35% compared to 2005
- Longer term, incremental imports of crude oil for the region are forecast at 93 to 155 million barrels per year by 2025, between 35 and 68% greater than 2005 levels





## Factors Increasing Forecast Uncertainty

- Distillation capacity growth rates may plateau
  - AB 32 could defer or eliminate distillation expansion plans
  - Although crude oil imports would be reduced compared to the forecasted volumes, imports of transportation fuels could be increased as a direct consequence
- New technology to reduce decline rate for California oil production
  - Expanded offshore development from existing platforms
  - Long-reach directional drilling from on-shore locations
  - Increased injection of CO<sub>2</sub>



# IEPR Proceedings

## Petroleum Infrastructure

- Energy Commission develops an energy policy document every two years – referred to as the Integrated Energy Policy Report (IEPR)
- Since 2003, one of the primary transportation issue has been adequacy of the state’s petroleum infrastructure to accommodate the anticipated growth of crude oil and transportation fuel imports
- From the 2005 IEPR:
  - *Despite recent and planned improvements, California still needs to expand its marine terminal capacity, marine storage, and the pipelines that connect marine facilities and refineries with main product pipelines.*
  - *Most of the required expansion is needed in the Los Angeles Basin, which faces a number of barriers including scarcity of land, pressure to remove a portion of existing facilities in favor of container cargo facilities, and new standards for marine terminals.*



# IEPR Proceedings

## Crude Oil Infrastructure

- Energy Commission staff analysis has identified the incremental capacity need for a large crude oil import facility somewhere in the San Pedro Harbor
- An important and underlying assumption in the crude oil import forecast is that the proposed project at Pier 400 would be constructed
- From the 2007 IEPR:
  - *The Crude Oil Import Marine Facility Project at Pier 400 in the Port of Los Angeles has been significantly delayed. This facility is a critical element of the assumption of adequate capacity through 2015.*
  - *Without an expansion of the existing crude oil import capability for the San Pedro harbor, refiners will eventually be forced to reduce production of transportation fuels as they run out of options to import additional crude oil.*



## Crude Oil Infrastructure – Recent Developments

- Port of Los Angeles recently issued a draft SEIS/SEIR for public comment on the proposed crude oil import terminal project on Pier 400, referred to as the Pacific L.A. Marine Terminal LLC Project
- Energy Commission submitted a comment letter to the Port of LA on August 14, 2008
- An excerpt from the August 14<sup>th</sup> letter reads:
  - *We believe the proposed Pacific Marine Terminal Project would address one of the most pressing and immediate transportation energy infrastructure needs identified in the IEPRs. It would provide necessary new facilities to improve and expand the marine crude oil infrastructure to help ensure reliability of needed crude oil imports.*



# Contact Information



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# **CA Marine Terminal Infrastructure Constraints & Outlook**

**Prevention First 2008**

Long Beach, CA

September 9, 2008

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**California Energy Commission**

[www.energy.ca.gov](http://www.energy.ca.gov)



# Permitting Challenges

## Liquid Transportation Fuels

- Energy Planning Results
- Infrastructure Needs
- Regulatory Framework
- Challenges & Guidelines



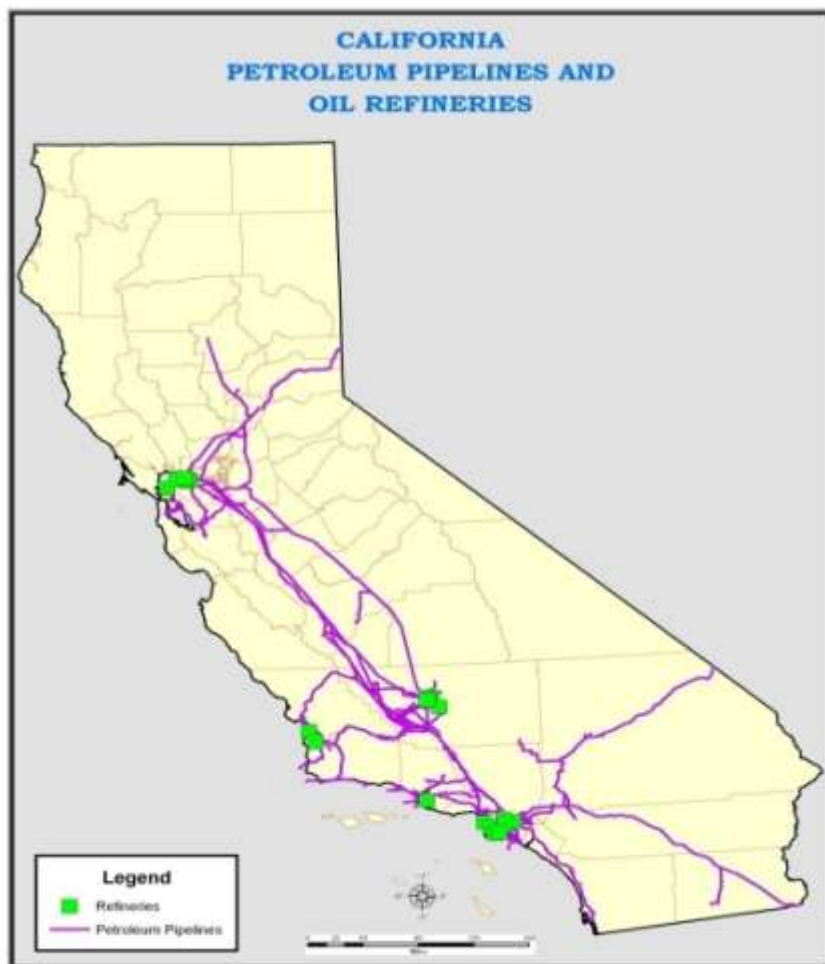
## 2007 IEPR:

- CA needs reliable & safe supply of fuels
- Constraints lead to higher costs
- Need robust, environmentally & technologically sound infrastructure





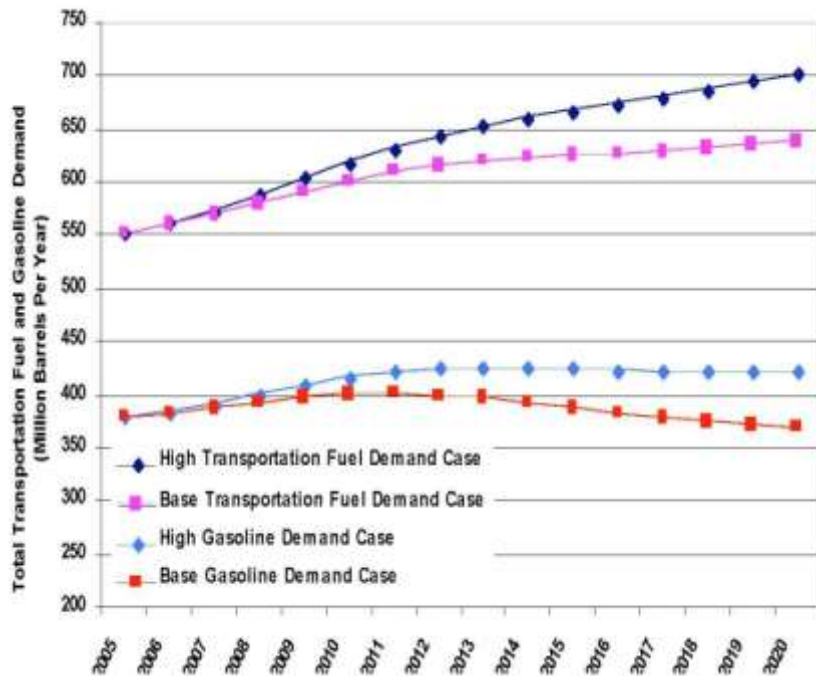
# CA Fuels Infrastructure



- 51 Marine Terminals
- 52 Storage/Distribution Facilities
- 22 Refineries
- 5,560 Miles of Pipeline



# Concerns



- Growing demand for fuel products
- Infrastructure at or near capacity
- Capacity may decline
- Infrastructure must upgrade or expand



# Infrastructure Needs

- Ongoing maintenance, repairs & replacements
- Future expansions for all fuels
  - including clean/alternative fuels
- Federal plans for energy corridors
- Continuing need for permits



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COMMISSION

2008 BEST PERMITTING PRACTICES  
GUIDELINES FOR LIQUID TRANSPORTATION  
FUELS INFRASTRUCTURE

STAFF REPORT

May 2008  
CEC-700-2008-0025F



Arnold Schwarzenegger, Governor



# Complex Regulatory Framework



**Key:**

**Federal Agencies, Tribal Governments, Local Jurisdictions, State Agencies**



# Permitting Could Involve Any Of:

- 25 state/federal agencies
- 58 counties
- 478 cities
- 2,300 special districts
- 107 sovereign Native American nations





# Permits

Federal/Tribes	State/Regional	Local
<ul style="list-style-type: none"> <li>•Army Corps</li> <li>•Bureau of Land Management</li> <li>•National Park Service</li> <li>•Fish &amp; Wildlife Service</li> <li>•Aviation Admin.</li> <li>•Tribes</li> </ul>	<ul style="list-style-type: none"> <li>•Caltrans</li> <li>•Regional Water Boards</li> <li>•Coastal Commission</li> <li>•Bay Commission</li> <li>•Air Quality Man. Districts</li> <li>•OSHA</li> <li>•Toxics</li> <li>•Fish &amp; Game</li> </ul>	<ul style="list-style-type: none"> <li>•Cities</li> <li>•Counties</li> <li>•Ports</li> <li>•Airports</li> <li>•Special Districts</li> </ul>



# Consultations

Federal/Tribes	State/Regional	Local
<ul style="list-style-type: none"> <li>•NOAA Fisheries</li> <li>•Advisory Council on Hist. Preserv.</li> <li>•Tribal Monitors</li> <li>•Fish &amp; Wildlife Service</li> <li>•Bureau of Indian Affairs</li> <li>•Coast Guard</li> </ul>	<ul style="list-style-type: none"> <li>•Historic Preservation Officer</li> <li>•Air Resources Board</li> <li>•Dept. of Fish &amp; Game</li> <li>•Lands Commission</li> </ul>	<ul style="list-style-type: none"> <li>•Resource Conservation Districts</li> </ul>





# Leases/Agreements & Approvals

<b>Federal/Tribes</b>	<b>State/Regional</b>	<b>Local</b>
<ul style="list-style-type: none"><li>•Bureau of Indian Affairs</li><li>•Forest Service</li></ul>	<ul style="list-style-type: none"><li>•Dept. of Fish &amp; Game</li><li>•Fire Marshall – Office of Pipeline Safety</li><li>•Public Utilities Commission</li><li>•Lands Commission</li></ul>	<ul style="list-style-type: none"><li>•Cities</li><li>•Counties</li><li>•Notification Centers</li><li>•Ports/Airports</li></ul>



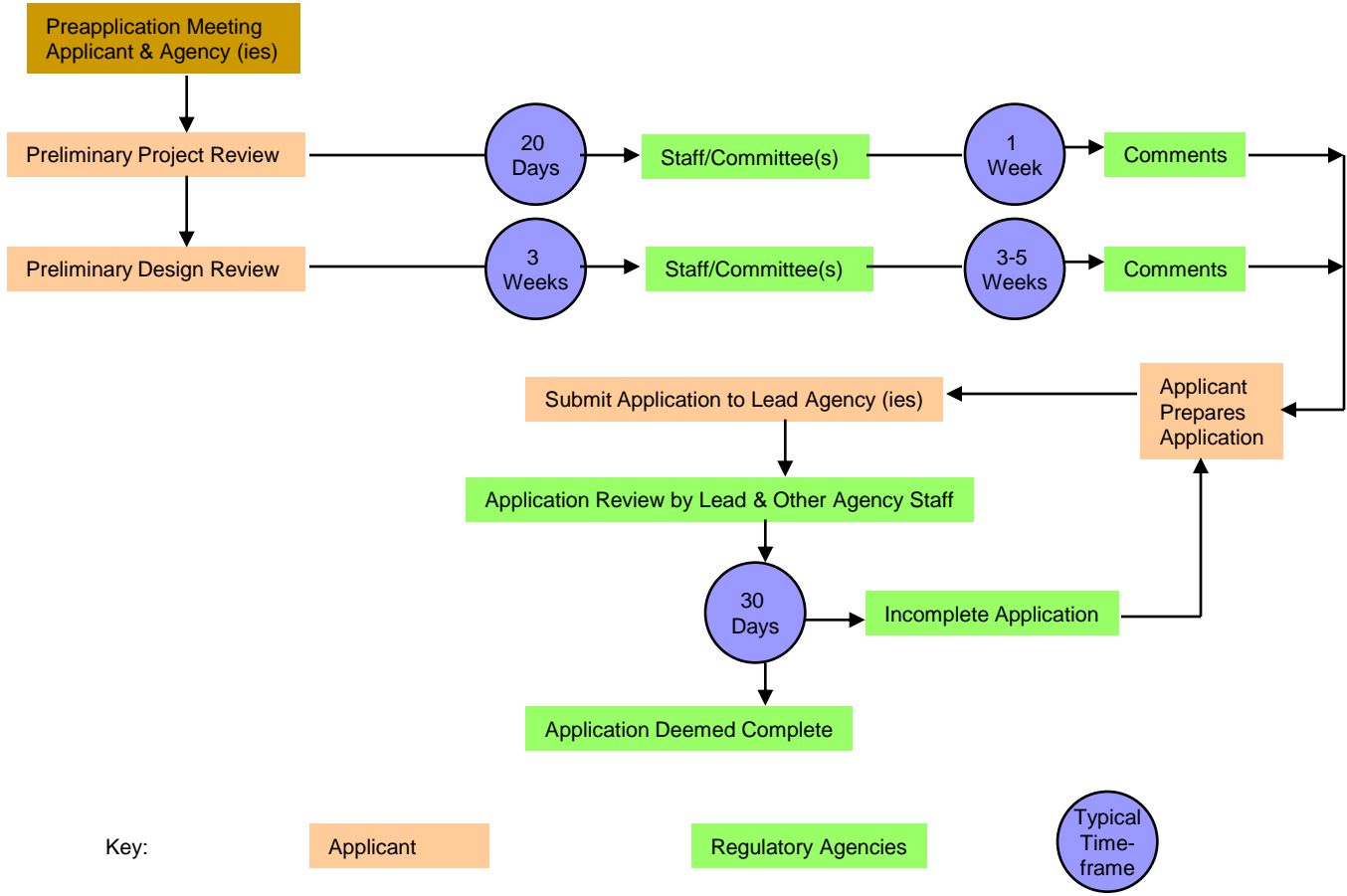
# Certifications/Decisions & Determinations

<b>Federal/Tribes</b>	<b>State/Regional</b>	<b>Local</b>
<ul style="list-style-type: none"><li>•Lead NEPA Agencies</li></ul>	<ul style="list-style-type: none"><li>•Lead CEQA Agencies</li><li>•Coastal Commission</li><li>•Bay Commission</li><li>•Lands Commission</li><li>•Regional Water Boards</li></ul>	<ul style="list-style-type: none"><li>•Lead CEQA Agencies</li></ul>



# Typical Permitting Process

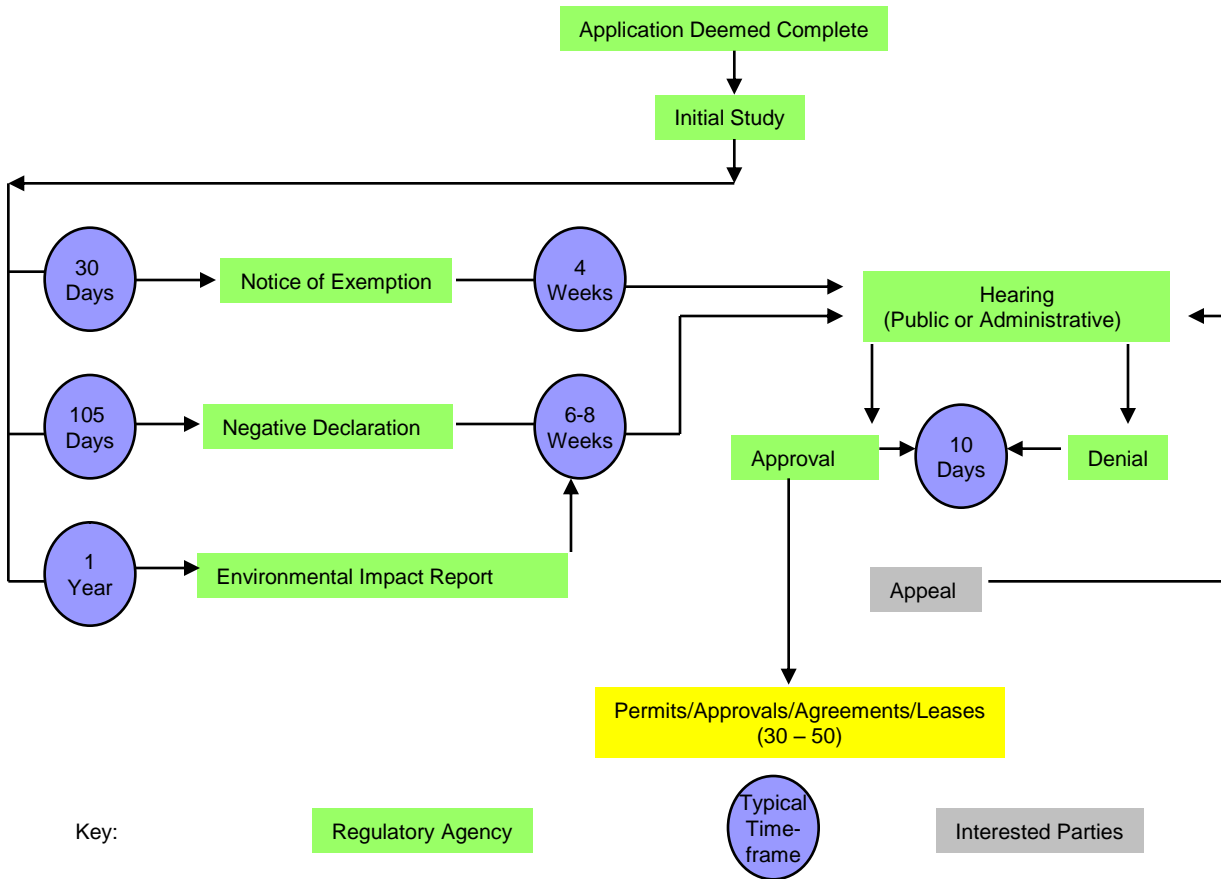
## Completing Application





# Typical Permitting Process

## Post - Application





# Typical Permitting Timeframes

- Non-emergency, exempt from CEQA
  - About 6 months
- EIR or EIR/EIS required:
  - 1-5 to ??? Years
    - Depends on complexity, location, # of permits & level of controversy



# Challenges...

- Incomplete applications
- Questions on applicability of laws
- Lack of agency coordination
- Inexperienced staff
- Agency consultation/approval delays



# ...Challenges

- Inconsistent agency decisions
- Balancing impacts & need for fuels
- Concerns draw out environmental review process
- Lack of information on statewide needs



# Results:

- Regulatory challenges can delay permitting
- Many problems are with processes
- Need better coordination & info transfer
- Some practices can serve as models





# Permitting Guidelines...

- Make use of pre-app. meetings
- Identify key agencies
- Provide timely consultations/comments
- Agency partnering



## ...Guidelines...

- Coordinate agency reviews
- Joint-agency working groups
- Keep to timelines/milestones
- Consider expedited agency reviews



## ...Guidelines...

- Buffers around facilities
- Facility master planning
- Ensure adequately trained staff
- Seek personnel with energy experience



## ...Guidelines

- Identify “chain of command”
- Use clear criteria for decisions
- Publish model decisions
- Use gov. relations & public outreach
- Expand CEC’s participation



# Permitting Guidelines Common Themes

- Applicants and agencies share responsibility for timely processes
- Applicants must be pro-active
- Agencies must coordinate and cooperate