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# Strategic Crude Oil Reserve: Supply Security

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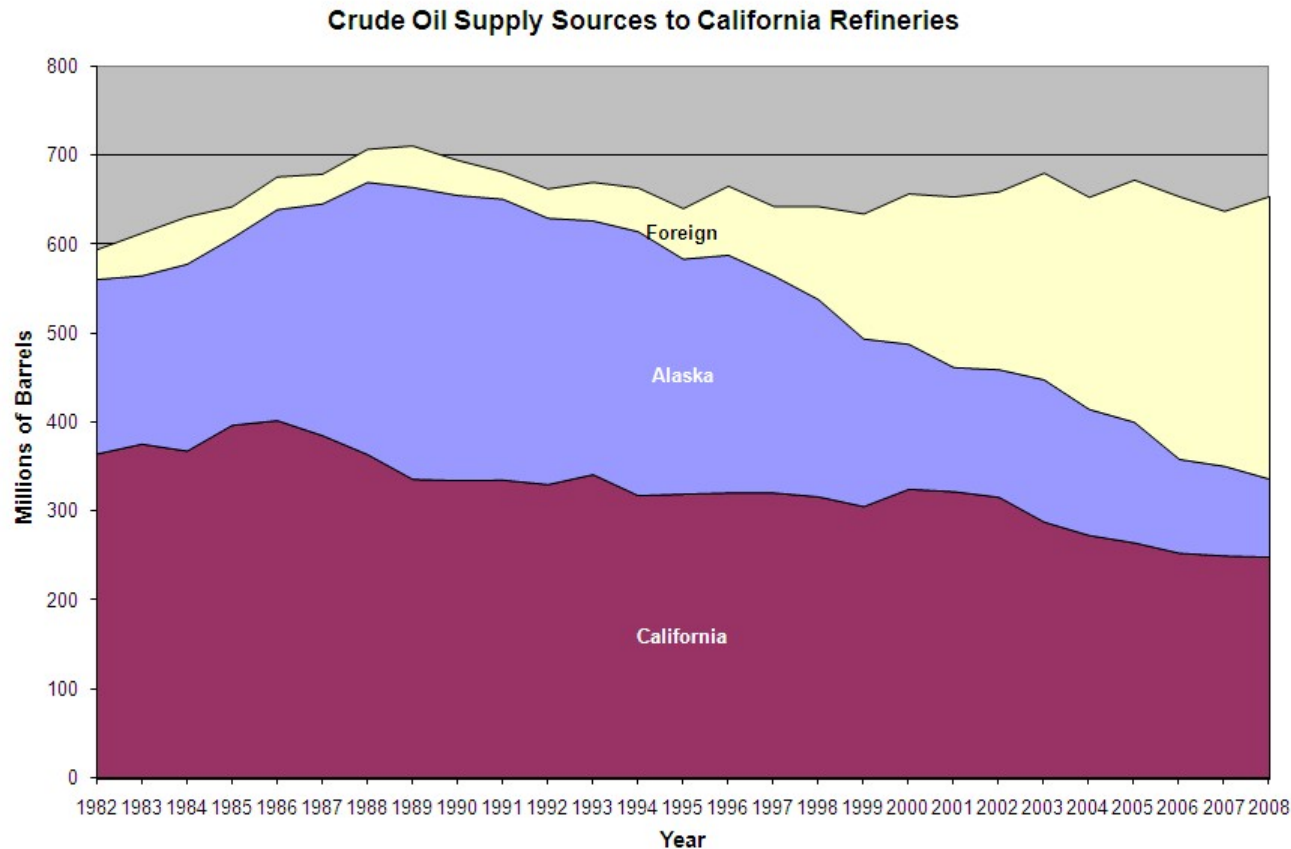
*April 15, 2009*

# Executive Summary

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- Los Angeles and western states: escalating vulnerability to attacks on key oil imports
- Incentive for attack increases with ROI
- US withdrawal from Iraq heightens need for resilience to disruption of imported Iraqi oil
- SPR-West to provide surge capacity

# Regional Crude Sources: Past Peak Production



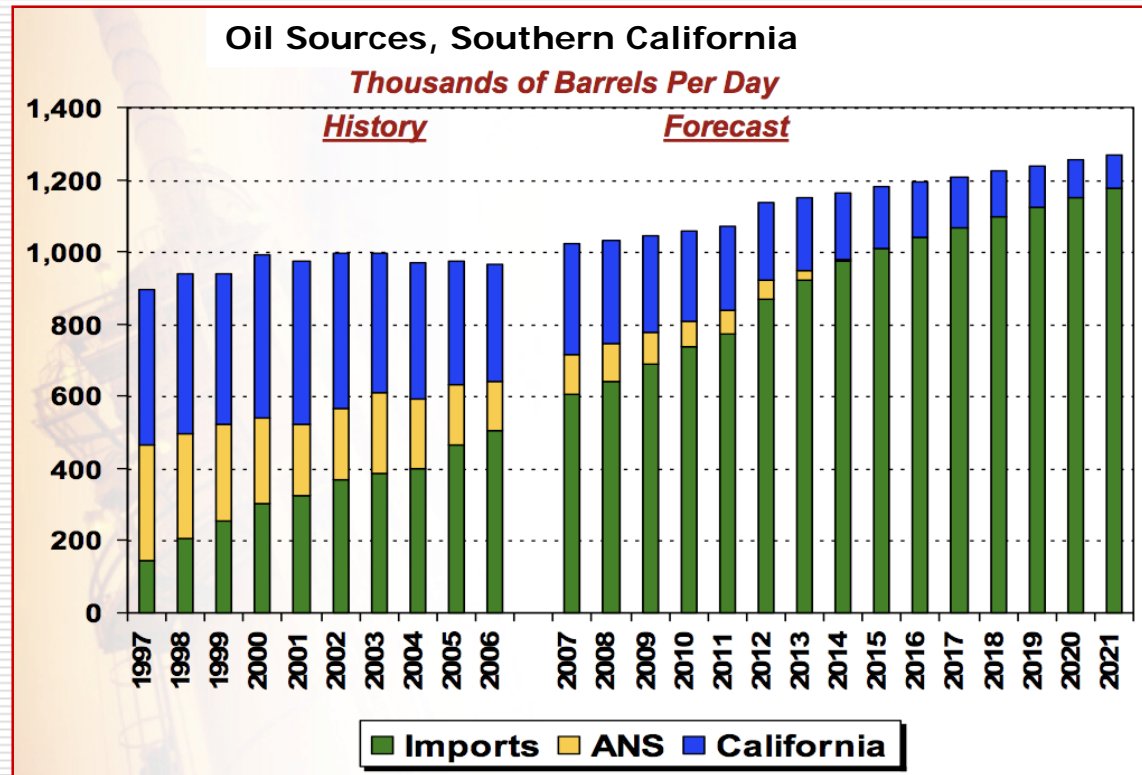
**1986-2008, Domestic Production Declines: CA: -38%; AK, -63%**

# Petroleum: LA's Vulnerability

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- ❑ Systemic demand of a megacity
    - Greater Los Angeles: 5 counties, 18MM pop., 34,000 sq. mi.
    - Transportation: Workers, products and students
    - Security: Public safety, public health and sanitation
    - Infrastructure: Asphalt, concrete and machine operations
  - ❑ Regional economic impact beyond commuting
    - \$800B Gross Product, 6% of US GDP
    - Ports/shipping
    - Airports/tourism
    - Consumer spending
  - ❑ Refineries also serve southwestern US
    - Las Vegas, San Diego, Phoenix, Tucson
    - About 25 million Americans – over 8% of the US population
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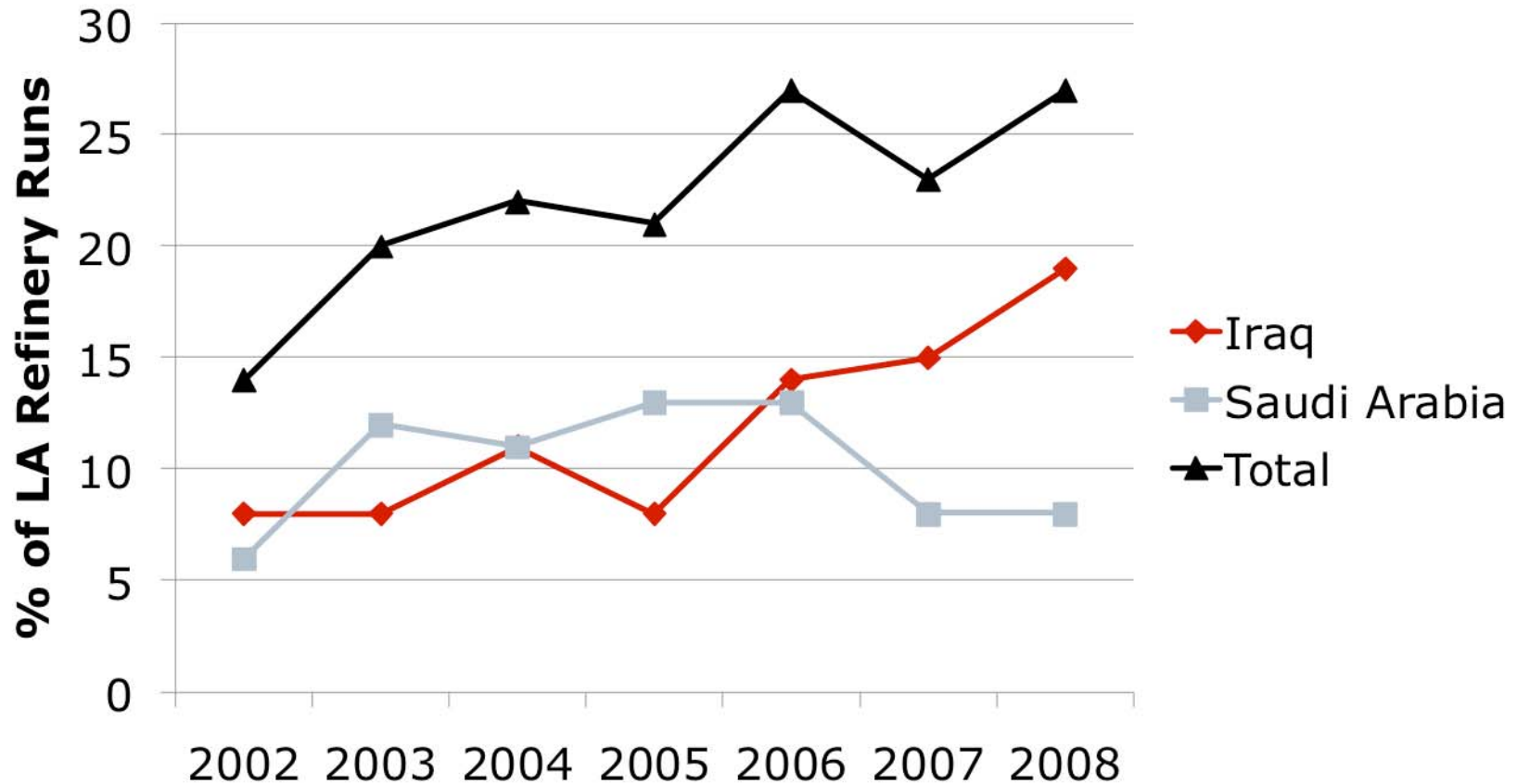
# Foreign Oil: LA's Rising Dependence



## LA Refineries: Now Importing Majority of Crude

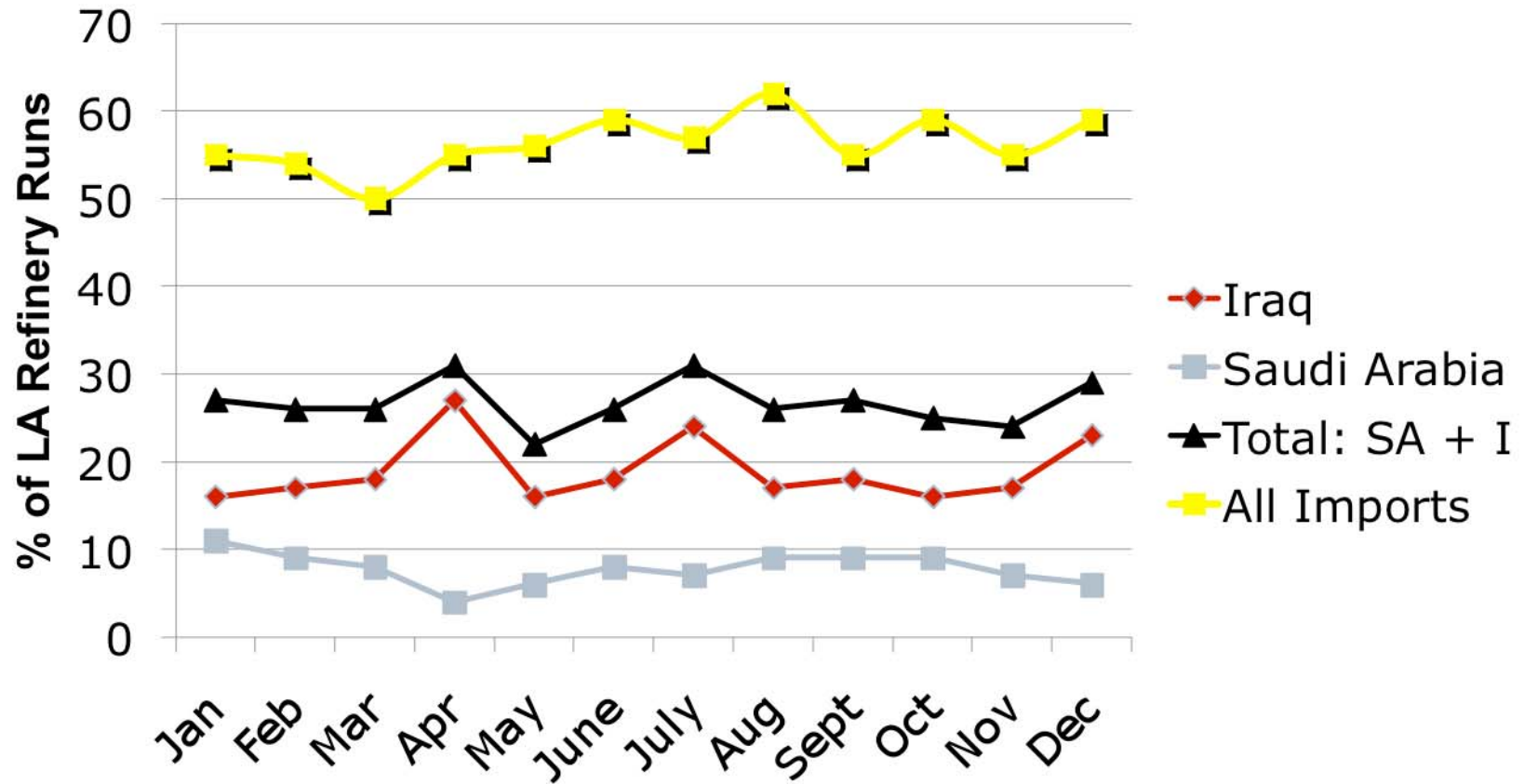
- 2006: 56% of LA refinery runs
- 2015: 0% from Alaska
- 2021: 90% of LA refinery runs

# Iraqi Oil: LA's Growing Reliance



Sources: CEC analysis, EIA data

# 2008 Recession: LA Oil Imports Unabated



Sources: CEC analysis, EIA data

# Petro-Terror: Disrupting Oil Supplies

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- AQ Petro-Attacks
    - Iraq, Saudi Arabia, Yemen
    - Repeated attacks on targets
  - 4GW: User-Friendly Knowledge Networks
    - Open Source: Share, Adapt, Use, Improve & Re-Share
    - Global development and dissemination of best practices
    - Beyond AQ: Shi'ite (militias), Leftist (FARC), Tribal (MEND)
  - More Attacks Anticipated



# Petro-Terrorists: Assumptions about Al-Qaeda

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- ❑ Goal: Drive infidels, apostates, “impure” from (Islamic) world, establish Caliphate
- ❑ Strategy: “Bleed Until Bankruptcy”
  - Inflict unbearable costs on US economy
  - Erode US public support for funding war
  - Stimulate regional withdrawal
- ❑ Tactics: 4th Generation Warfare
  - Asymmetric
  - Net-centric
  - Polis-targeted (Terror, IO, Economic, etc.)
  - Use of networks to strike from a distance

# Using the Network: LA's Global Supply Chain

## □ Infrastructure

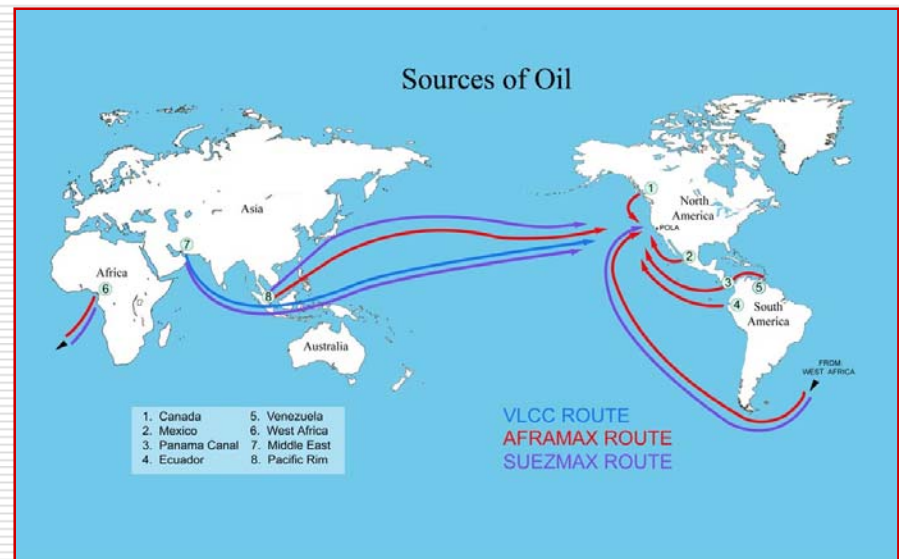
- Iraq & Saudi Arabia

## □ Tankers

- In/Near Port
- Straits of Hormuz, Malacca

## □ Benefits to Jihadists

- **Return on Investment (ROI):**  
Cheaper, but same \$\$\$ impact as US attack
- **Logistics:** Easier to plan, execute and repeat
- **PR:** noticed by both local and US media, public, government



Global Flows of Crude Oil into LA Region

# ROI & Threat: Correlating with Oil Price

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- ❑ AQ are rational actors
  - Use ROI in target evaluation (implicitly/explicitly)
  - Higher ROI increases incentive for AQ to attack
- ❑ ROI from an attack on oil infrastructure increases with rising market price of oil
  - Higher oil price increases incentive for AQ to attack
  - May be less incentive to attack today at \$50/bbl than at \$147/bbl
- ❑ Withdrawal of US forces + higher oil prices
  - Potential: lower cost to attack + increase in benefit = higher ROI
  - Many regional actors using similar tactical evaluation
    - ❑ AQ, Other Sunni Groups, Shiites, Kurds
  - ✓ May increase threat of disruption of Iraqi oil exports

# Resilience to Supply Chain Disruptions

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## □ Resilience in Emergency Management context

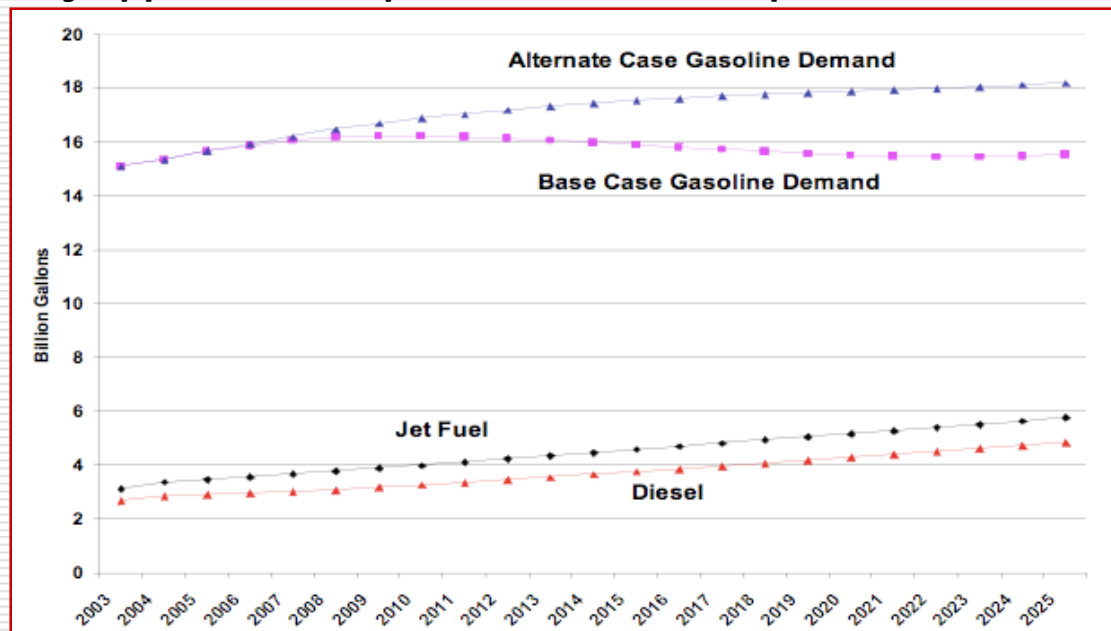
- "The ability to dynamically mitigate and dampen system shocks."1
- "...reducing...vulnerability to high-impact/low-probability disruptions...[by] building in capabilities for bouncing back quickly."2

## □ LA Example: Earthquake Preparedness

- Distributed Mitigation: Earthquake-proofing, kits, CERT
- Policy: Building codes, unified command, training
- Public-Private Initiatives: Infrastructure, capital infusion
- Surge Capacity: MOUs with other municipalities
- Leadership: Vision + Action (Riordan: 1994, Northridge)

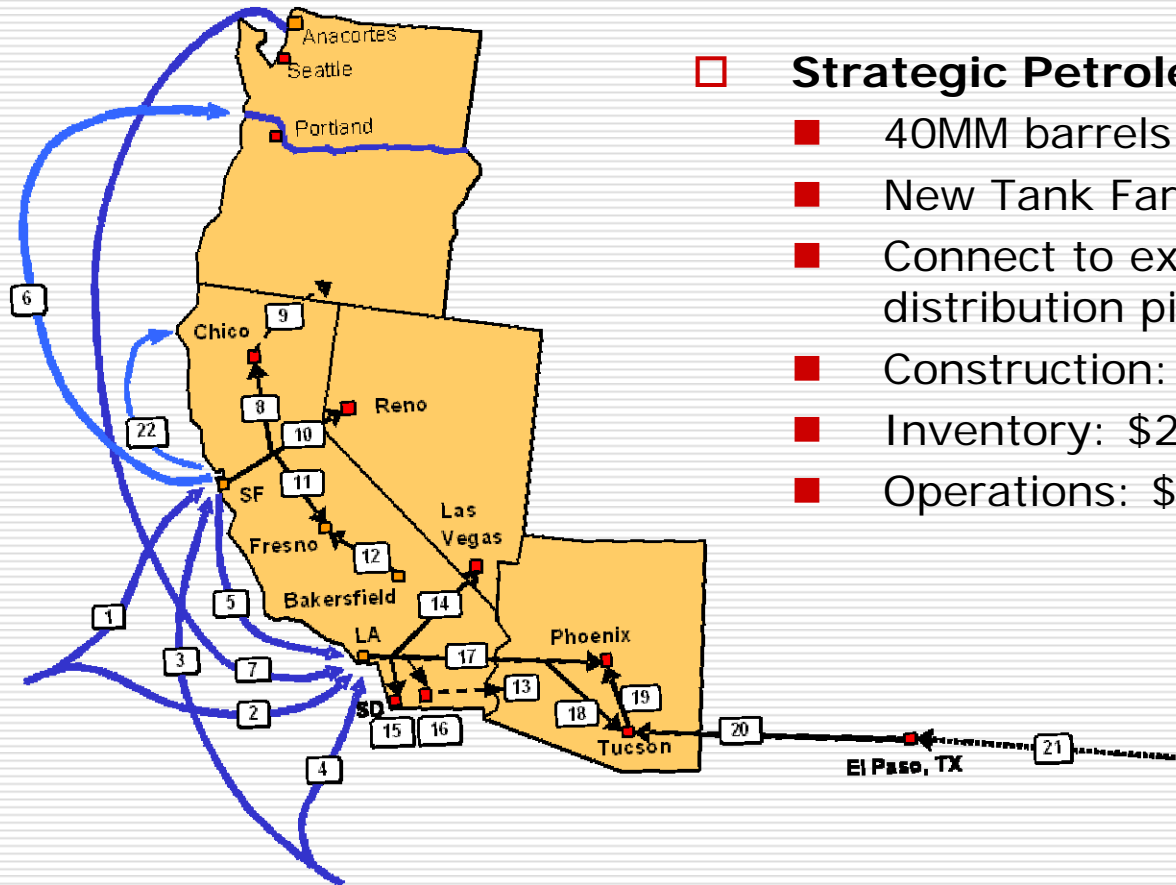
# Regional Best Practices: Reducing Consumption

- ❑ Public Policy: HOV lanes, transit oriented development, alternative fuel fleets, etc.
- ❑ Citizen Action: Ridesharing, public transportation, telecommuting, etc.
- But California Energy Commission staff:  
**“Reducing the rate of demand growth for traditional transportation fuels...will not have any appreciable impact on crude oil imports.”**



CEC Model Base Case: AB 1493 compliance with GHG reductions for motor vehicles

# SPR-West: Local Surge Capacity



## □ Strategic Petroleum Reserve – West

- 40MM barrels: 30 days inventory
- New Tank Farm in Central Valley
- Connect to existing import and distribution pipelines
- Construction: \$3 Billion (2008 est.)
- Inventory: \$2 Billion (\$50/bbl)
- Operations: \$20MM/yr (2008 est.)