



CAST

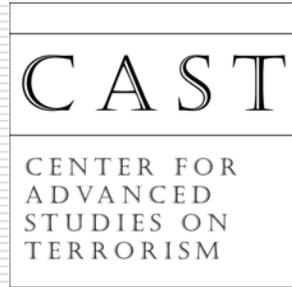
CENTER FOR ADVANCED STUDIES ON TERRORISM

Strategic Crude Oil Reserve: Supply Security

Seth K. Jacobson
Senior Research Fellow

April 15, 2009

Executive Summary

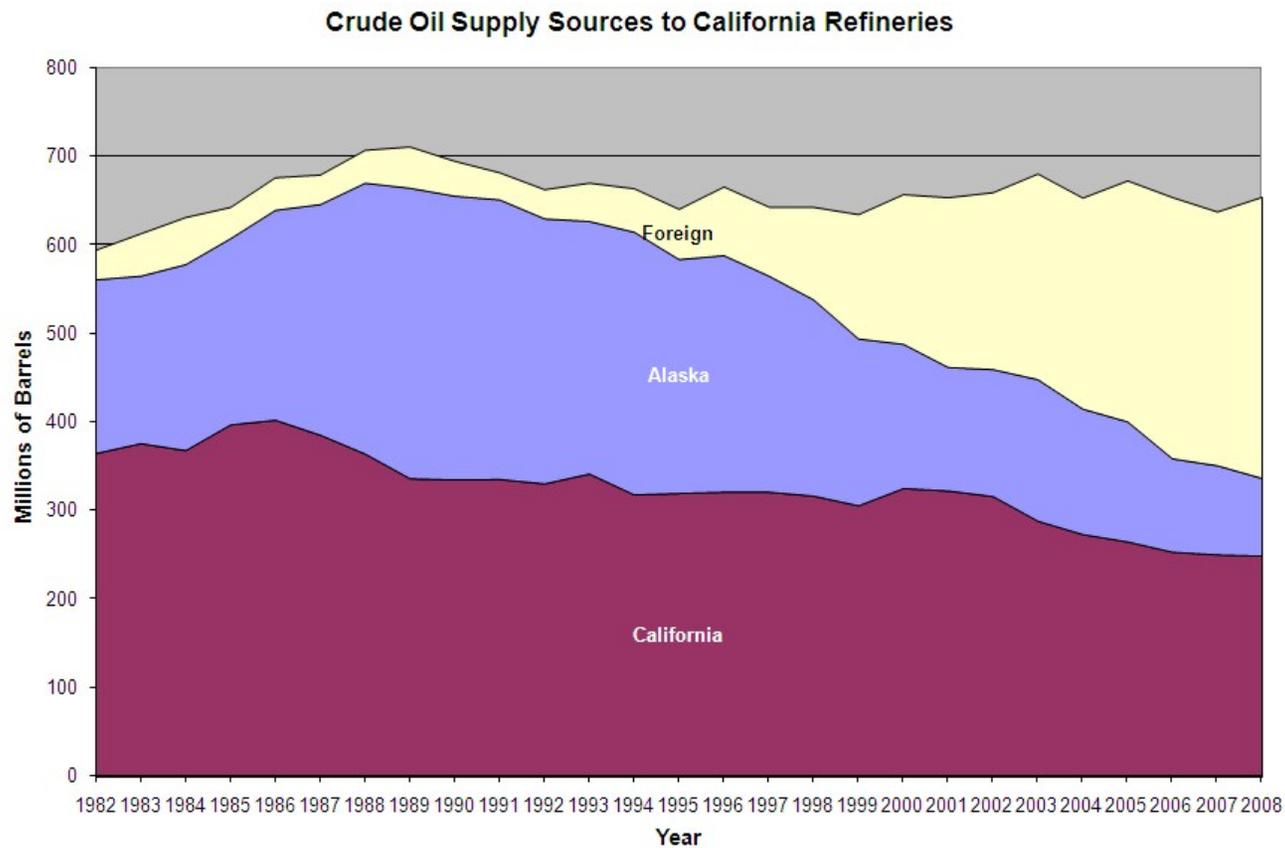


- Los Angeles and western states: escalating vulnerability to attacks on key oil imports
- Incentive for attack increases with ROI
- US withdrawal from Iraq heightens need for resilience to disruption of imported Iraqi oil
- SPR-West to provide surge capacity

Regional Crude Sources: Past Peak Production

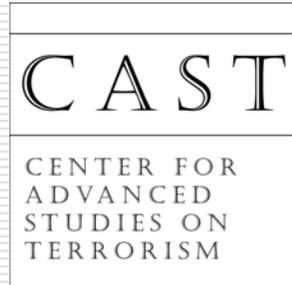
CAST

CENTER FOR
ADVANCED
STUDIES ON
TERRORISM



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

Petroleum: LA's Vulnerability

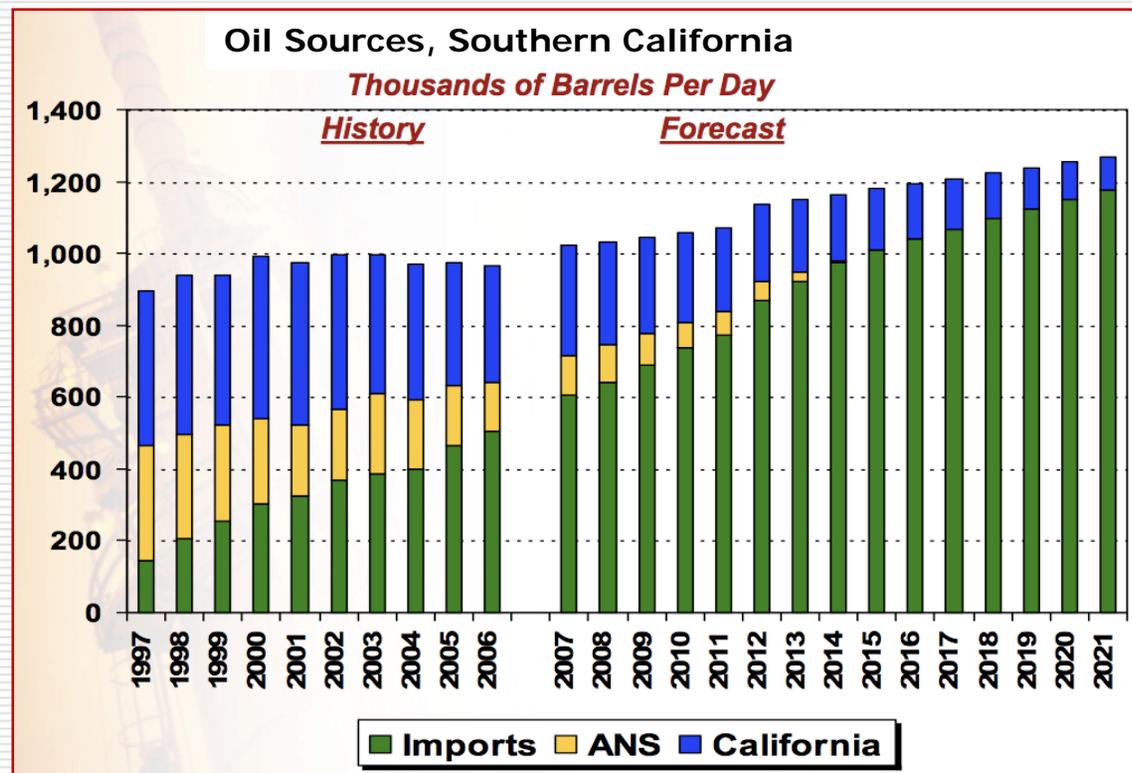


- Systemic demand of a megacity
 - Greater Los Angeles: 5 counties, 18MM pop., 34,000 sq. mi.
 - Transportation: Workers, products and students
 - Security: Public safety, public health and sanitation
 - Infrastructure: Asphalt, concrete and machine operations

 - 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
-

Foreign Oil: LA's Rising Dependence



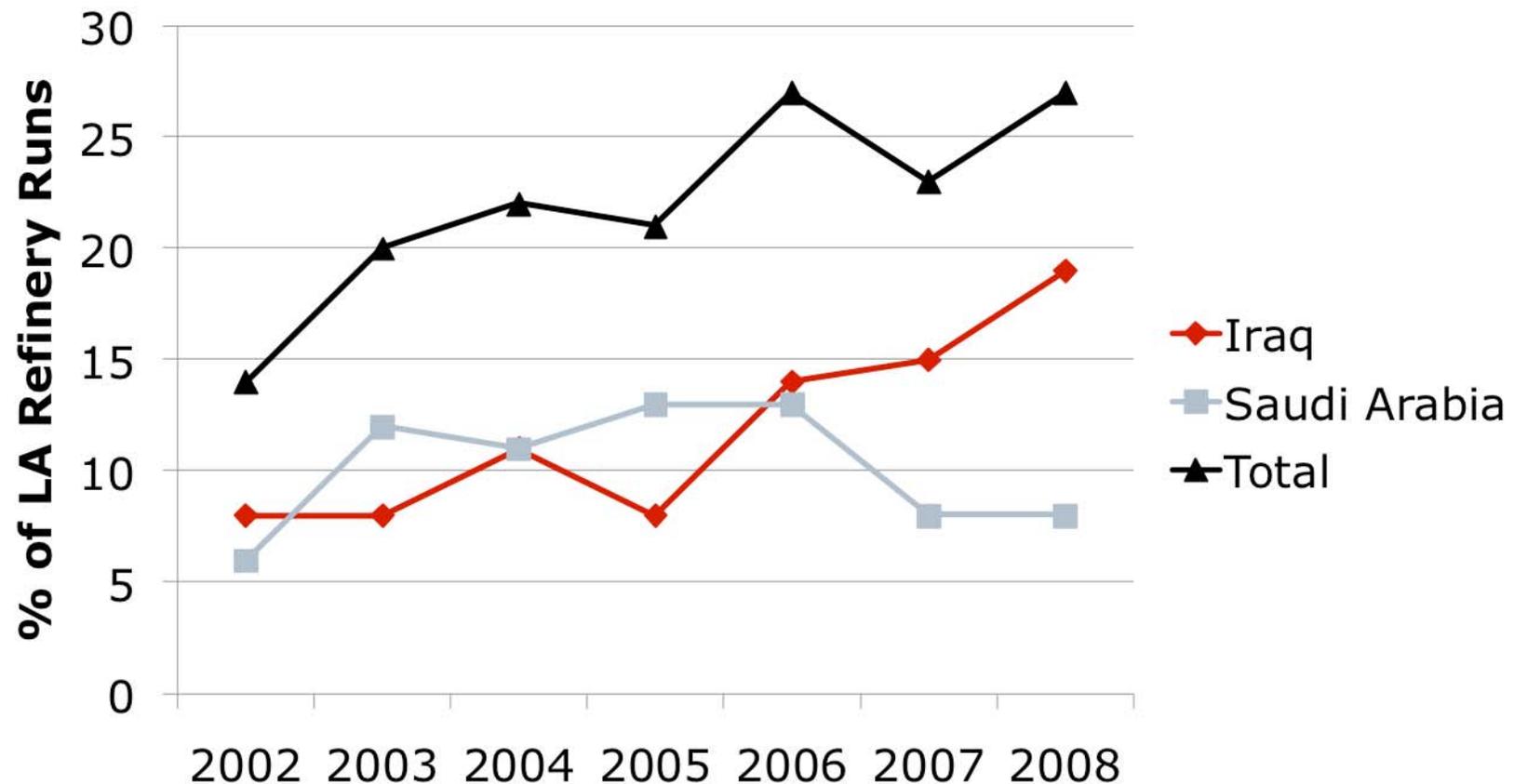
LA Refineries: Now Importing Majority of Crude

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

Iraqi Oil: LA's Growing Reliance

CAST

CENTER FOR
ADVANCED
STUDIES ON
TERRORISM

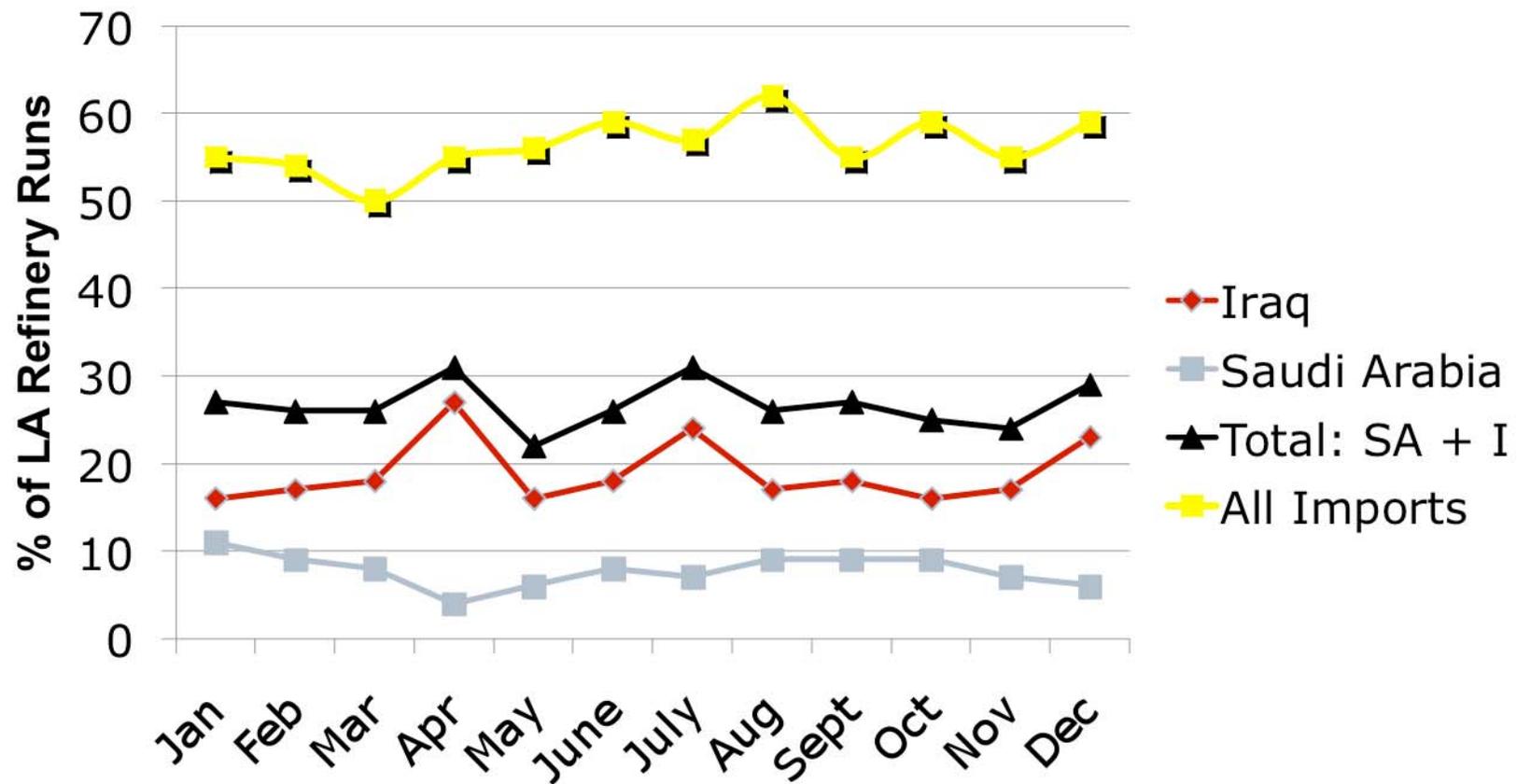


Sources: CEC analysis, EIA data

2008 Recession: LA Oil Imports Unabated

CAST

CENTER FOR
ADVANCED
STUDIES ON
TERRORISM



Petro-Terror: Disrupting Oil Supplies



-
- 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

CAST

CENTER FOR
ADVANCED
STUDIES ON
TERRORISM

- 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

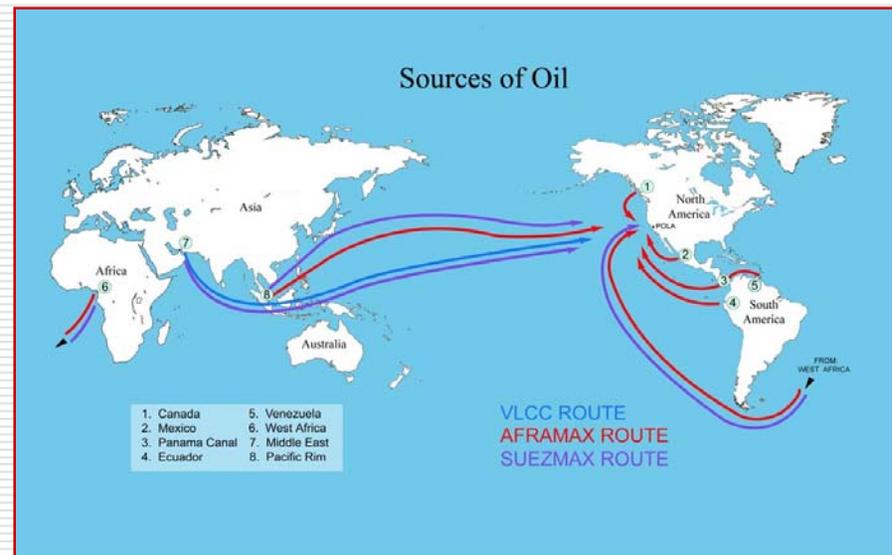
CAST

CENTER FOR
ADVANCED
STUDIES ON
TERRORISM

- **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

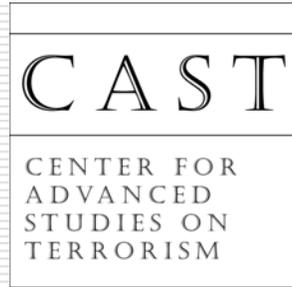
ROI & Threat: Correlating with Oil Price

- 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



□ 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

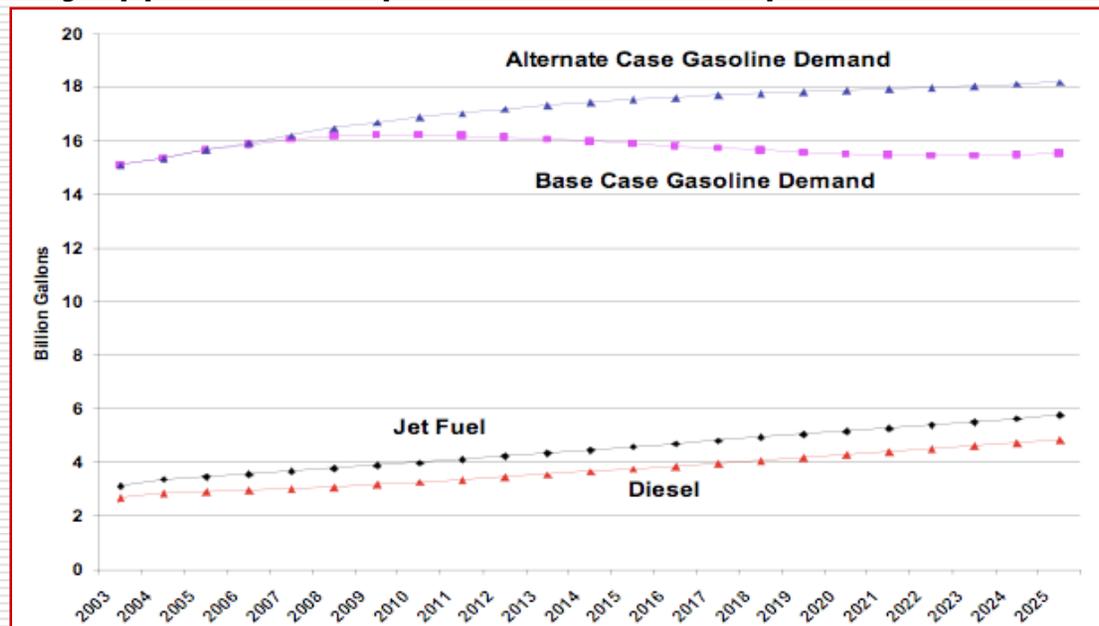
□ LA Example: Earthquake Preparedness

- 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.”

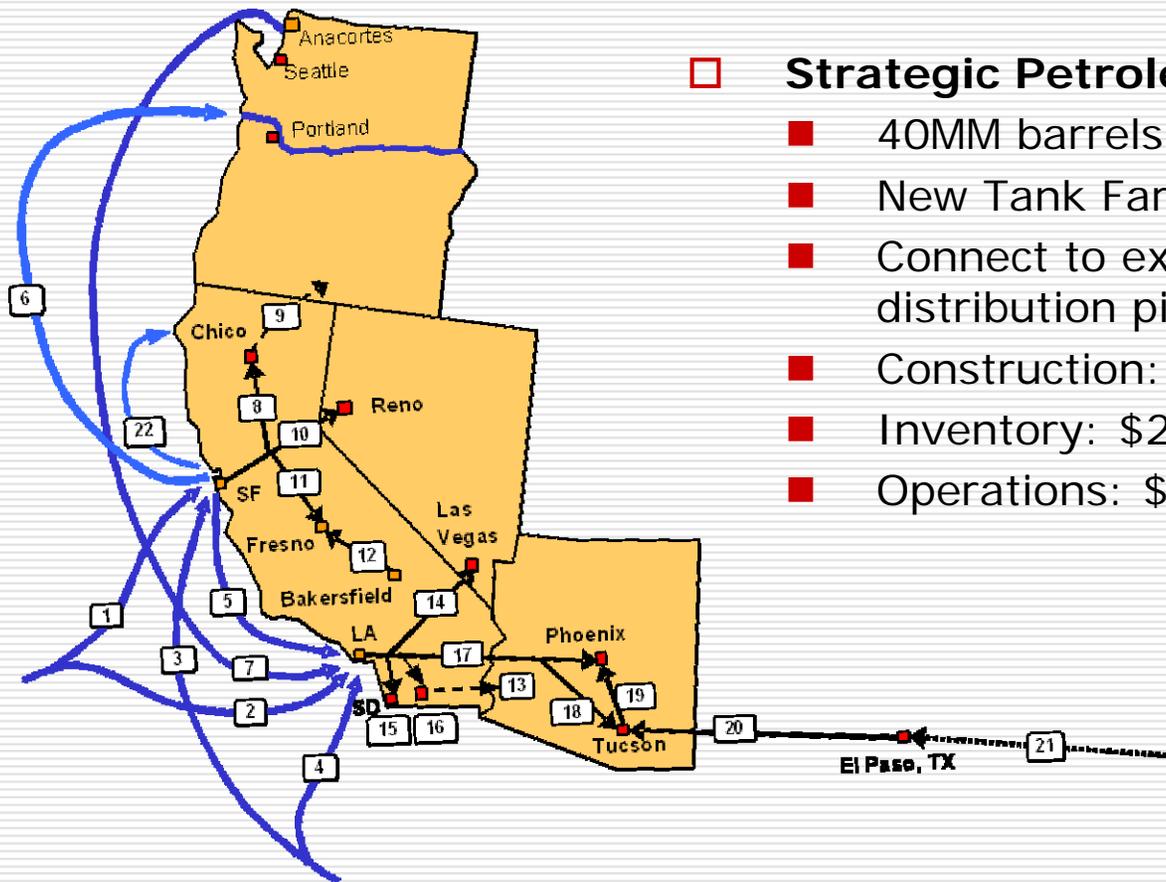


CEC Model Base Case: AB 1493 compliance with GHG reductions for motor vehicles

SPR-West: Local Surge Capacity

CAST

CENTER FOR
ADVANCED
STUDIES ON
TERRORISM



□ 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.)