Crude Oil Quality Group

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By

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WSPA and its members

- Oldest petroleum trade association in the nation; formed in 1907
- 26 member companies that explore, produce, transport, refine and market
- Six states (CA, WA, OR, NV, AZ, HI)
- 511,701 jobs (178,369 direct jobs, 300,397 indirect)
- $173 billion in total sales
- $27 billion annual payroll
- $6 billion annual property taxes

Sources: LECG Corp., A Profile of the Petroleum Sector Estimates for 2004
State Lands Commission, Minerals Management Service
Overview

– California Production

– Supply & Demand

– Infrastructure & Permitting

– Climate Change – AB32
  • Low Carbon Fuel Standard
California Production
California conventional fuel supplies

**Petroleum (2006)**
- In-State - 37%
- Alaska - 21%
- Foreign - 42%

**Electricity (2006)**
- In-State - 78%
- Imports - 22%

**Natural Gas (2005)**
- In-State - 15%
- Canada - 23%
- Rockies - 24%
- Southwest - 38%

Source: California Energy Commission
Supply – All Sources of Oil in California 2005

- Alaska, 22.00%
- Saudi Arabia, 14.16%
- Ecuador, 10.04%
- Iraq, 5.07%
- Mexico, 2.86%
- Angola, 1.91%
- Brazil, 1.85%
- Argentina, 0.92%
- Canada, 0.73%
- Columbia, 0.62%
- Oman, 0.44%
- Others, 2.03%
- California, 37.37%
Supply – California Production

- California crude oil production has declined 23 percent since 1996
- Alaskan production is expected to decline about 1.5 percent per year until 2016

Sources: California Energy Commission
Alaska Department of Revenue

Source: Petroleum Industry Information Reporting Act
Supply and Demand
Supply and Demand - Global

- World oil market characterized by rising consumption, moderate non-OPEC supply growth, falling inventories, and rising demand for OPEC oil
- "...if consumption growth continues, as expected, tight global oil market conditions will likely persist through 2008."
- World oil consumption to increase by 1.4 million barrels per day in 2008
- China, Brazil, the U.S., and Middle East countries expected to remain the main engines of oil consumption growth

Source: Energy Information Administration, Short-Term Energy and Winter Fuels Outlook, October 9, 2007 Release
Supply and Demand - Global

World Oil Consumption

Million barrels per day

Total Consumption
Annual Growth
Forecast


-0.5 0.0 0.5 1.0 1.5 2.0 2.5 3.0

Million barrels per day

China United States Other Countries

Source: Energy Information Administration, Short-Term Energy and Winter Fuels Outlook, October 9, 2007 Release
Supply and Demand - US

U.S. Crude Oil Production

- Lower 48 Production
- Alaska Production

Million barrels per day

Annual Growth

-1.4% -3.1% -5.9% -1.0% -0.3% -1.0% -1.1% -4.6% -4.4% -0.8% 1.3% 3.9%


Change from Prior Year

Forecast

Source: Energy Information Administration, Short-Term Energy and Winter Fuels Outlook, October 9, 2007 Release
Supply and Demand - California

- CA now consumes 44 to 45 million gallons of gasoline and 10 million gallons of diesel fuel per day
- Demand for transportation fuels increased nearly 50% in last 20 years
- Number of refineries producing gasoline in California dropped from 32 in mid-1980s to 14 today
- California now imports 3.5 million gallons of gasoline per day
- Transportation fuel infrastructure is having difficulty keeping up with rapidly growing population and demand

Sources: California Energy Commission
Infrastructure/Permitting
Imports: Projected gasoline and diesel demand

- **Demand Without Greenhouse Gas Regulations**
  - 2003: 15 Billion Gallons
  - 2025: 25 Billion Gallons

- **Demand With Greenhouse Gas Regulations**
  - 2003: 19 Billion Gallons
  - 2025: 24 Billion Gallons

- **Projected Imports**
  - 2003: 1.9 Billion Gallons
  - 2025: 4.6 Billion Gallons

- **In-State Refinery Production Supplied to California**

Source: California Energy Commission
California is an energy Island

Time required to ship crude oil or products from:
- Pacific NW: 8 to 10 days
- Gulf Coast: 14+ days
- Middle East: 40 days
- Far East: 40 days

Source: California Energy Commission
Infrastructure and transportation fuel supply

- Demand for transportation fuels is outpacing supply
- Future energy needs will be addressed through imports
- California already dependent on waterborne deliveries
- Marine infrastructure is a critical chokepoint
- Local and regional congestion and air quality programs will influence future energy supplies
- Permitting issues impact future energy supplies
Western States Petroleum Association

AB 32/Low Carbon Fuel Standard
California: AB 32

- Directs CA Air Resources Board to develop regulations to reduce
  - Statewide GHG emissions to 2000 levels by 2010
  - 1990 levels by 2020 – a 25 percent reduction
  - 80 percent by 2050

- Budget of $36 million and 126 new CARB positions
- Early actions selected for quick start to implementation
Governor’s Low Carbon Fuel Standard (LCFS)

- Reduce “carbon intensity” of transportation fuel sold in California by 10 percent by 2020
- Capture over half of CO2 to return vehicles to 1990 levels; replace 20% of petroleum use
- CARB lists LCFS as a “discrete early action” under AB 32 on June 30, 2007
- Applies to all refiners, blenders, producers or importers of transportation fuels
- May be met through market-based methods
- Requires a full fuel cycle analysis
Western Regional Climate Action Initiative

- 5 western governors announce regional effort to address climate change
- Now includes CA, WA, OR, AZ, NM, UT, British Columbia, Manitoba
- Sets goal of designing market-based trading program within 18 months
- Establishes goal of setting regional emission reductions within 6 months
- Created Climate Registry with 20 states, numerous tribes and Canadian provinces
State climate change initiatives

**Hawaii:** Goal of reducing statewide greenhouse gas emissions to 1990 levels by the year 2020

**Nevada:** Climate Change Advisory Committee to recommend greenhouse gas emissions reduction strategies

**Arizona:** Climate Executive Committee to implement emission reduction goals

**Oregon:** Climate Change Research Institute, Global Warming Commission, greenhouse gas reduction goals; Portland biofuels mandates

**Washington:** Executive Order established emissions standards and goals
Estimated costs to implement AB 32/LCFS

Examples of new costs associated with increased ethanol use

Predictive Model - CEC cost estimates of E10 usage

- Estimated cost to consumers/businesses: 4.2 to 6.5 cents per gallon of gasoline ($716 million to $1.1 billion per year)
- Estimated capital cost to refiners: $825 million to $1.2 billion

Estimated costs to implement AB32/LCFS

Cumulative costs to CA economy for GHG cap and trade program

- $100 billion to $511 billion (discounted net present value from 2010 through 2050)


Profs. Alexander Farrell and Daniel Sperling; LCFS estimates

- If CO$_2$e is priced at $25 per ton, the estimated costs to consumers would be 21 cents per gallon of gasoline

- Final report indicates compliance costs for refiners cannot be estimated at this time

Ten keys to successfully achieving the goals

- Keep it simple and flexible - business must be able to comply
- Market mechanisms are a big part of the answer – no “leakage”
- Regulatory certainty and credit for early actions are musts
- Cost-effectiveness must be built into the solutions
- Advanced technology is the key
- Reliable science-based modeling tools are essential – diminish uncertainty
- Clear milestones are imperative – to ensure we are on the right path
- Understand there is no silver bullet – competing vs complimentary policies
- Look for harmonization with other GHG reduction efforts
- Must deliver affordable, reliable fuels to consumers
Where do we go from here?

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