WESTERN STATES PETROLEUM ASSOCIATION

CEC's IEPR Workshop
Transportation Fuel Infrastructure Issues

Crude Oil Infrastructure Overview and Issues

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WSPA
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Who is WSPA

- Represent 26 petroleum companies in 6 western states
- California, Washington, Oregon, Nevada, Arizona, Hawaii
- 7 offices, 21 employees

TESORO

bp

ConocoPhillips

ExxonMobil

Chevron

OXY

AERA

U.S. Oil Trading LLC
U.S. Oil & Refining Co.

Berry Petroleum Company

VENOCO, INC

PXP
Plains Exploration & Production Company

SENECA RESOURCES

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State Goal: Reducing emissions/carbon from the transportation sector -

while ensuring adequate, reliable and
affordable supplies of transportation fuels

- Vehicles
  - ✓ Emissions
  - ✓ CAFÉ
- Lower carbon Fuel
- Consumers
  - ✓ Vehicle choice
  - ✓ Fuel choice
  - ✓ VMT
  - ✓ Land use engineering

Transportation fuels backdrop in CA

Mandates

- Federal RFS2
- CARB LCFS
- CARB Clean Fuel Outlet
- Fuel Specifications

Incentives

- AB118 program/other

Considerations/Challenges

- Demand/Supply
- Legislative/Regulatory/Local Requirements
- Environmental impacts
- Investment/Business case
- Price/Market issues
- Consumer choice
- Infrastructure/distribution
- Etc.

IEPR general port/terminal infrastructure issues

- If rate of decline in CA/ANS crude oil production is accurate, can we assume this means declining need for port/terminal tankage/storage?
- What if port infrastructure expansion is needed to handle crude oil and product imports and/or petroleum product exports?
- What if port infrastructure expansion is needed for alternative fuel/blendstocks to comply with RFS2 and CA LCFS?
- Port infrastructure issues traditionally take long time to be approved/permitted – many levels of decision-making
- What are the cost implications and energy security implications of infrastructure developments?

CARB Low Carbon Fuel Standard

- Adopted April 2009
- Reduce full fuel cycle “carbon intensity” (C.I.) of transportation fuel pool at least 10% by 2020; a reduction of 16MMT of GHG emissions; 10% of total GHG reductions to meet AB32 target
- Intended to drive market toward innovative, low carbon fuels
- Applies to all refiners, blenders, producers or importers
- Considers direct and indirect land use changes
- Includes periodic reviews – 2011, 2014
- Board revisions to regulation in 2011

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ARB LCFS – Periodic Review 2011

General Issues – CEC input to ARB periodic review advisory panel

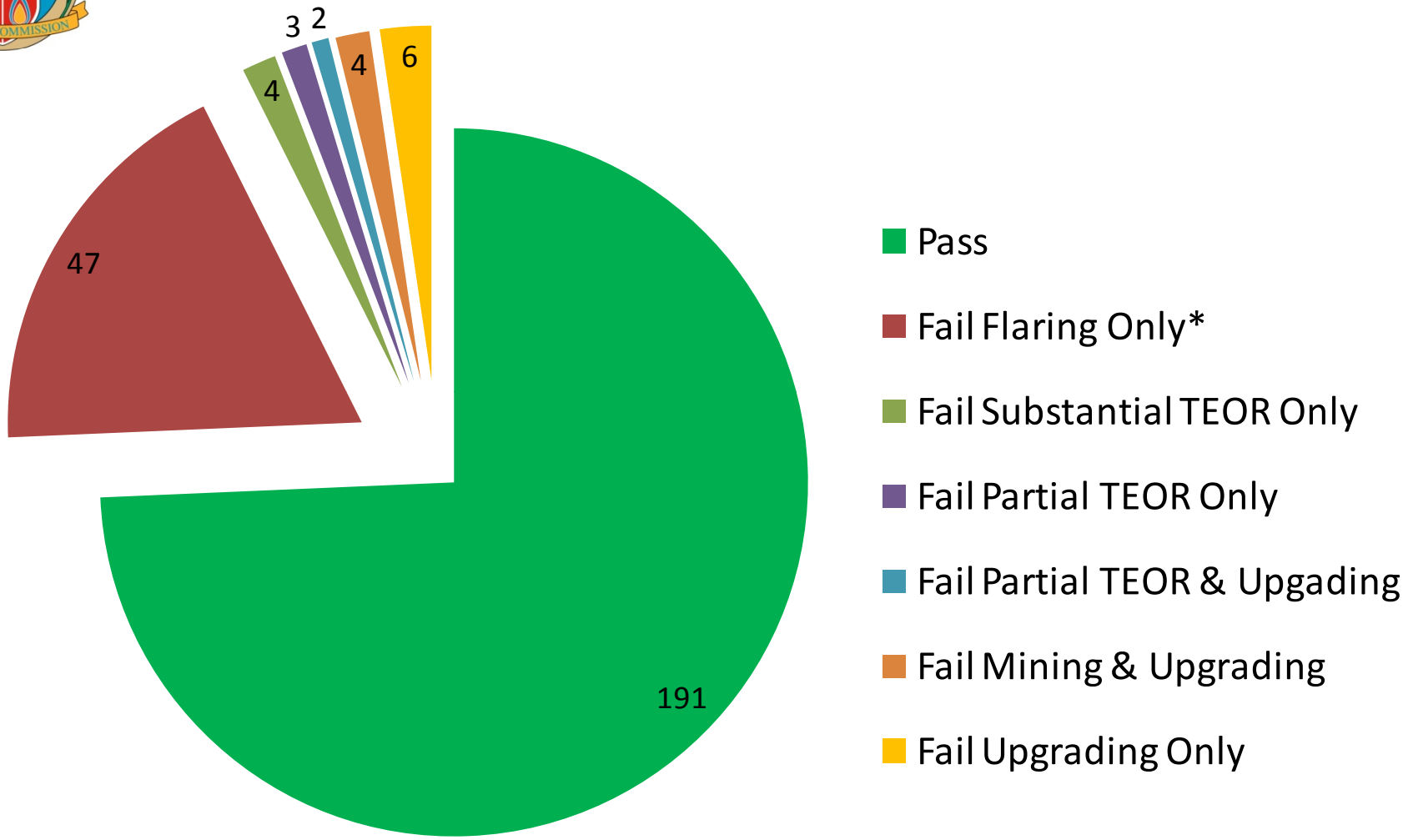
Topic 1: Progress against targets
Topic 2: Compliance schedule
Topic 3: Lifecycle assessment
Topic 4: Advances in production
Topic 5: Ultralow carbon fuels
Topic 6: Supply and commercialization
Topic 7: Impact on State Fuel Supplies
Topic 8: Revenue and consumers
Topic 9: Public health impacts
Topic 10: Air quality impacts
Topic 11: Hurdles or barriers
Topic 12: Economics
Topic 13: Harmonization
Topic 14: High carbon intensity crude oil
Topic 15: Credit trading market

CA LCFS crude oil & HCICO treatment

- Defines high carbon-intensity crude oil (>15 g CO2e/MJ)
- Regulation baseline is 2006 CA crude mix >2% by volume – average CI basket
- If using a crude not in baseline mix, ARB developing approval process for deriving the C.I. of the fuel → Crude Oil Screening Process – either non-HCICO or process identifies whether high/not
- Methods used to produce and transport crude can result in a higher carbon-intensity rating for a feedstock as part of the gasoline/diesel pathway; wide variation depends on extraction & refining process, use of cogeneration, etc.
- ARB planning to develop one or more pathways with high carbon intensity crude oil -- may include oil sands, TEOR, upgraded crude…
- Would require significant additional reduction in CI of gasoline/diesel blendstocks/other to compensate for HCICO deficit
- ARB crude oil differentiation treatments could effectively embargo Canada's oil sands, which are an important, reliable energy supply source for the U.S.

Source: California Air Resources Board, Low Carbon Fuel Standard; Alberta Energy Research Institute, Life Cycle Analysis of North American and Imported Crude Oils

Summary of Screening Results



* Drops to 35 if EIA oil production & updated NOAA data used to calculate flaring intensity

California Energy Commission

Source: CEC Analysis.

ARB LCFS Crude Oil Issues

Crude Differentiation Approach – Issues for CEC Review

- Implications
  - Crude shuffling, increased GHG emissions
  - Energy security (incremental crude location)
  - Refinery configurations dictate crude slate, potential closures/sale
  - Change in amounts of crude oil processed, product exports
  - Infrastructure requirements for fuels/blendstocks needed to compensate for HCICO deficit
- ARB's Assumptions
  - Other countries will change oil production practices (e.g. reduce flaring)
  - Detailed information is available on crudes worldwide
  - Refineries will always produce fuel for CA, will pay higher prices for low CI crude and no impact on fuel supplies or fuel prices (credit purchases)
  - Refineries can process all crude oils, or will alter crude purchases
  - Oil industry will assume the financial risks for additional infrastructure

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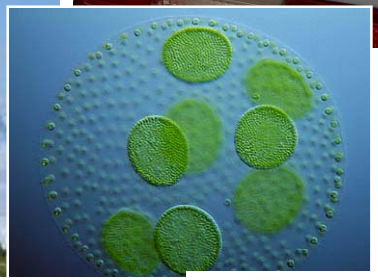
We are leaders in alternatives and renewable fuels

Petroleum Plus



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