

# Southern California Crude Oil Outlook Summary Update

Prepared  
for  
Plains All American Pipeline, L.P.  
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# Major Changes Since Previous (July 2007) Assessment

## ➤ **U.S. Real Estate Crisis and World Financial Crisis**

- ❖ Deep recession in U.S. and most other parts of the world.
- ❖ Unprecedented decline in U.S. demand for petroleum products demand.
- ❖ Slight reduction in refinery crude runs, less imported products.
- ❖ 2008 Southern California crude oil imports were near 2006 levels.

## ➤ **Federal Legislation**

- ❖ Energy Independence and Security Act (EISA) of 2007
  - Renewable Fuel Standard (ethanol) – from 7.5 BGal./Yr. in 2012 to 36 BGal./Yr. in 2020, caps corn-based ethanol at 15 BGal./Yr.
  - Fossil Fuel content of gasoline and diesel to decline from 96% in 2006 to 83% in 2030.
  - Higher C.A.F.E. standards for new light duty vehicles rising to 35 mpg in 2021.

# Major Changes Since Previous (July 2007) Assessment (continued)

## ➤ **State of California Legislation**

### ❖ **Amended CARB 3 Model Certification**

- Revised certification model for gasoline will increase ethanol blending from 5.7% to 10% of finished CARB 3 gasoline.
- Current schedule for implementation is December 31, 2009.

### ❖ **Assembly Bill AB 32**

- Mandates that California Green House Gas (GHG) emissions in 2020 will be 25% below 1990 levels.
- Implementation of the regulations to be finalized in 2012.

## ➤ **GHG Cap and Trade**

- ❖ Western Climate Initiative (WCI) – joined by California, four other western states, and two western Canadian provinces.
- ❖ Establishes a regional cap and trade mechanism.
- ❖ Coordinates with AB 32 – joins CA to regional GHG trading system.
- ❖ Objective is to reduce GHG emissions to 15% below 2005 levels by 2020.

# Key Assumptions Used in Assessments

## ➤ **ANS Crude Oil**

- ❖ Current (2008) production of 702 MB/D will decline at an average of 2.1% per year through 2023.
  - Derived from the State of Alaska's 2008 forecast.
  - Overall decline rate lower than in the 2006 forecast due primarily to significantly lower 2007 and 2008 ANS actual production volumes versus forecast.
- ❖ ANS is supplied preferentially to Alaska and the Pacific Northwest first.
  - Most of Alaska's needs are inland and not accessible to imports.
  - Difficult marine import logistics and calcined coke production in the Pacific Northwest.
- ❖ Deliveries to Hawaii are currently zero and assumed to continue to be so in the future.

# Key Assumptions Used in Assessments (continued)

## ➤ **ANS Crude Oil (continued)**

- ❖ Balance goes to California with preference given to Northern California.
  - Southern California refiners continue to appear poised to be “weaned” away from ANS more rapidly.

# Key Assumptions Used in Assessments (continued)

## ➤ **California Crude Oil**

- ❖ Current (2008) production of 646 MB/D will decline at 3.5% per year through 2023.
  - Decline rate unchanged from 2007 assessment.
  - Supported by five year history in a generally rising price environment.
- ❖ Crude is preferentially supplied to Bakersfield and Santa Maria area refineries first.
  - These areas do not have access to imports.
  - Flying J refinery (or proxy) assumed to restart operations in 2010.
- ❖ Balance goes to Northern and Southern California with preference given to the North.
  - Recognition of logistical difficulty of marine imports relative to Southern California.

# Key Assumptions Used in Assessments (continued)

## ➤ Refinery Runs

- ❖ 2007 Assessment assumed 1.25% increase in refinery runs per year (2007-2021) and new capacity addition of 50 MB/D in 2012.
  - These assumptions are likely unrealistic in current economic and market turmoil.
- ❖ For the current assessment three 15-year (2009-2023) alternative scenarios were examined to reflect future economic and fuels market uncertainties. No new capacity was added.
  - **Scenario A:** 1% per year increase in refinery runs through 2023.
  - **Scenario B:** 1% per year increase in refinery runs for first five years, 0.5% per year for next five years, and no increase for the last five years (through 2023).
  - **Scenario C:** 1% per year increase in refinery runs for the first seven years, and no increase for the last eight years (through 2023).



# Key Assumptions Used in Assessments (continued)

## ➤ Crude Oil Imports

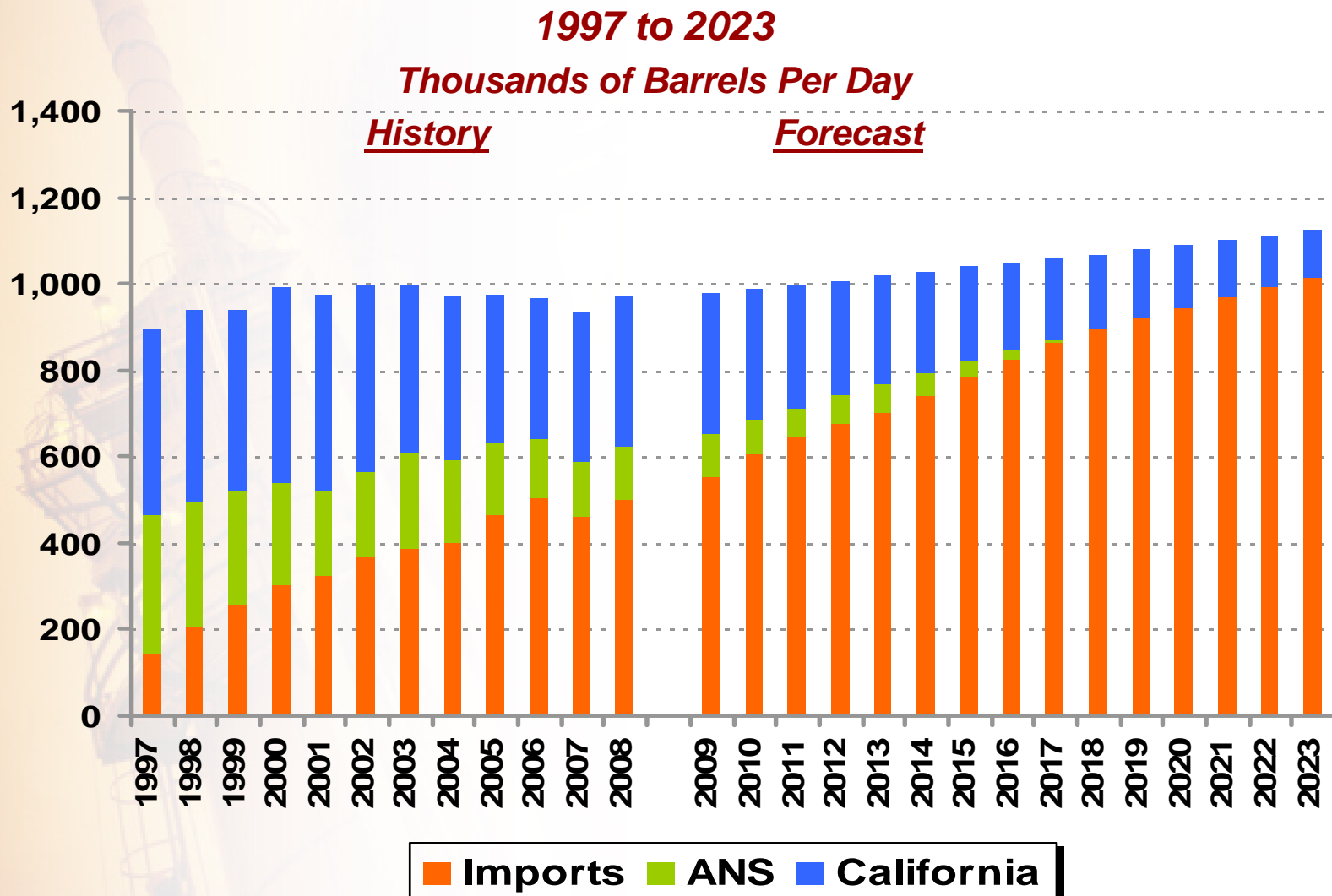
- ❖ Imports are currently sourced from the Middle East, Latin America, and West Africa, with some small volumes from the Pacific Rim and Canada.
- ❖ Current level and distribution of crude imports, escalated for capacity creep, remains through projected period.
- ❖ Increasing shortfall of ANS and California crudes made up with additional imports.
  - ANS: Generally replaced by Middle East crudes.
  - California Crudes: Generally replaced by a combination of crudes from Latin America, West Africa, Canada, and the Middle East.



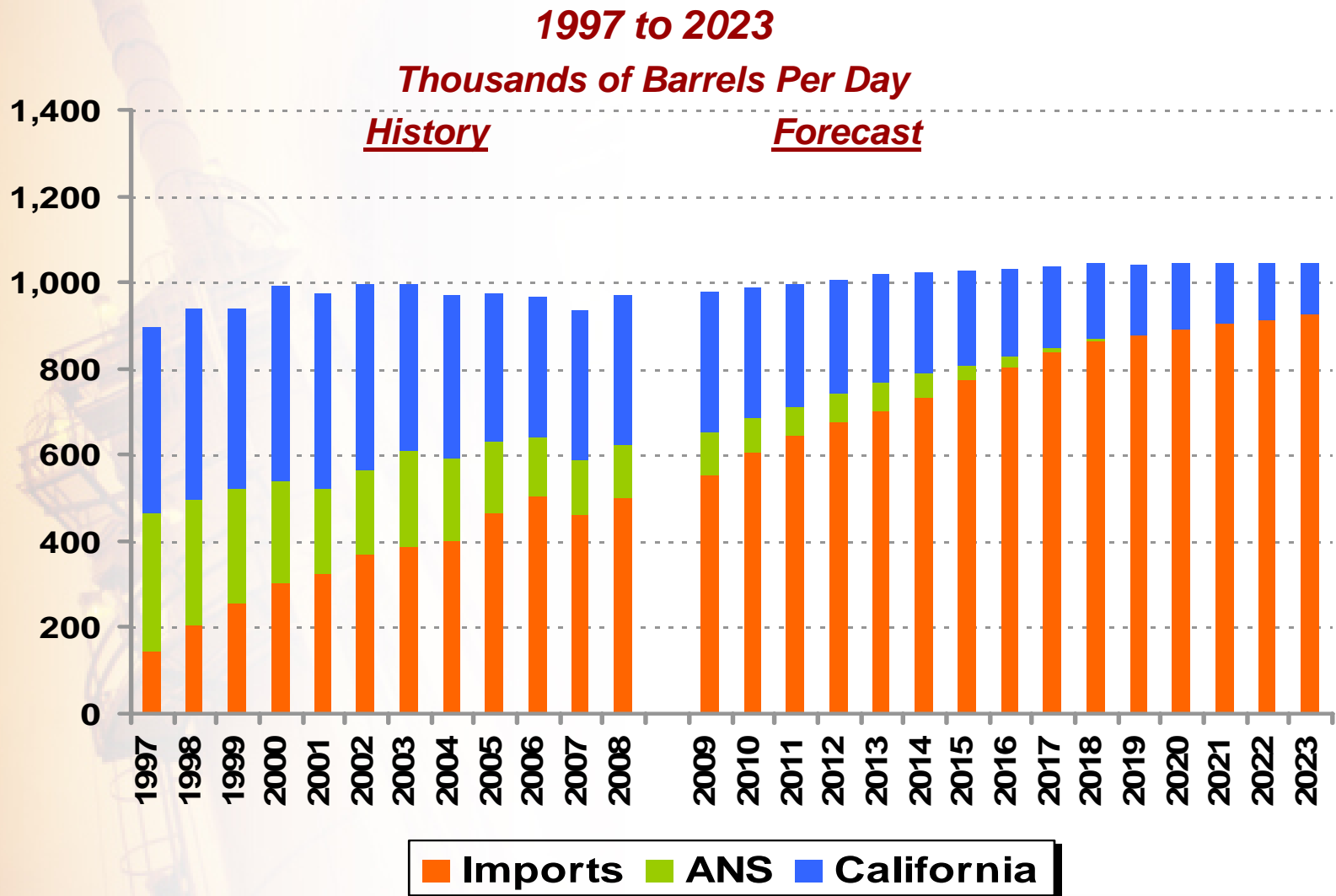
## Key Assumptions Used in Projections (continued)

- **Incremental Canadian imports will be high TAN, high sulfur, heavy oil sands based crude oil.**
  - ❖ Projected to be available starting in 2016.
  - ❖ Pipelined to deepwater port in Northern British Columbia.
- **Incremental West African imports will be high TAN, low sulfur, heavy crudes.**

# Southern California Refinery Crude Oil Runs Scenario A

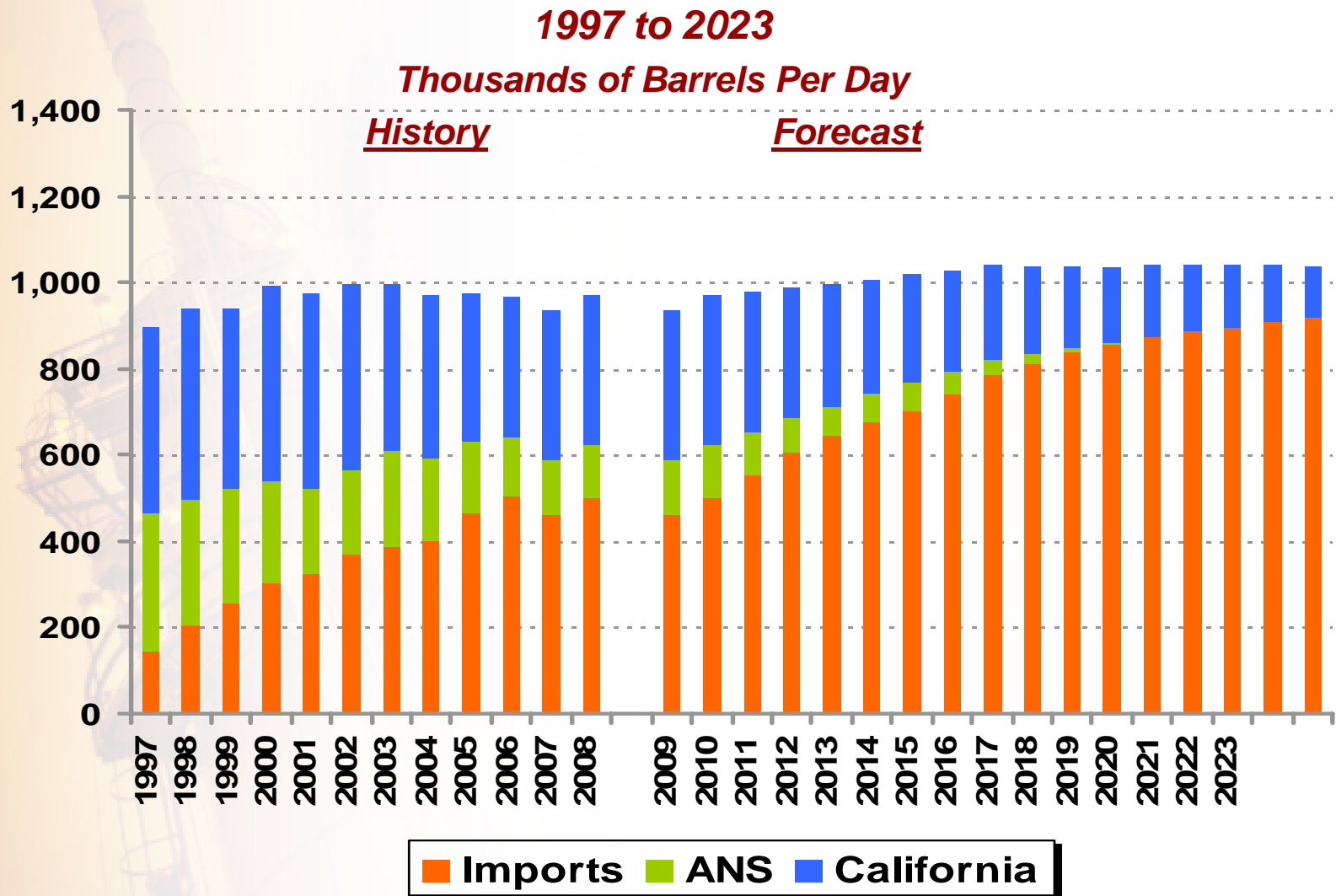


# Southern California Refinery Crude Oil Runs Scenario B



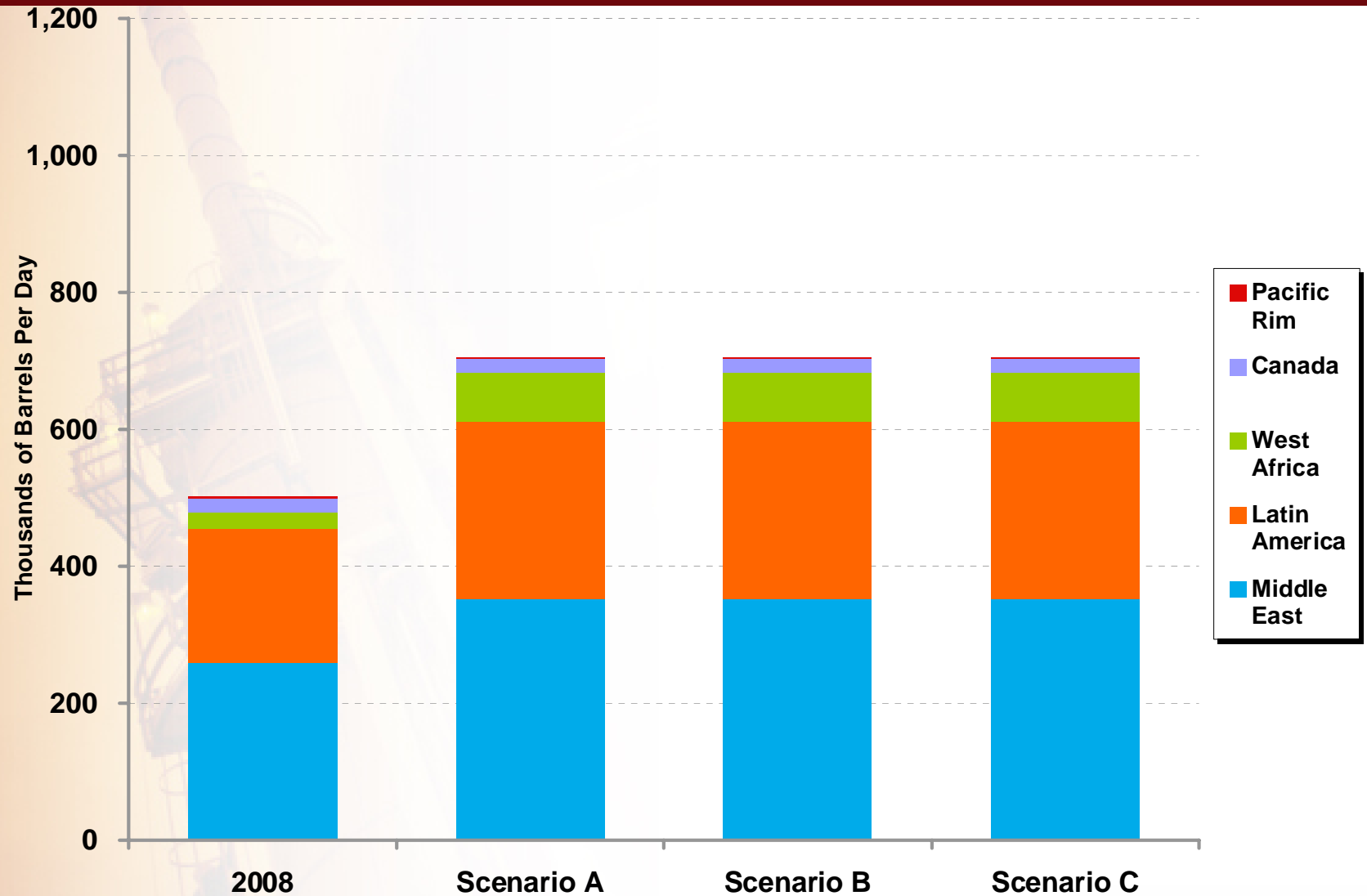
# Southern California Refinery Crude Oil Runs

## Scenario C



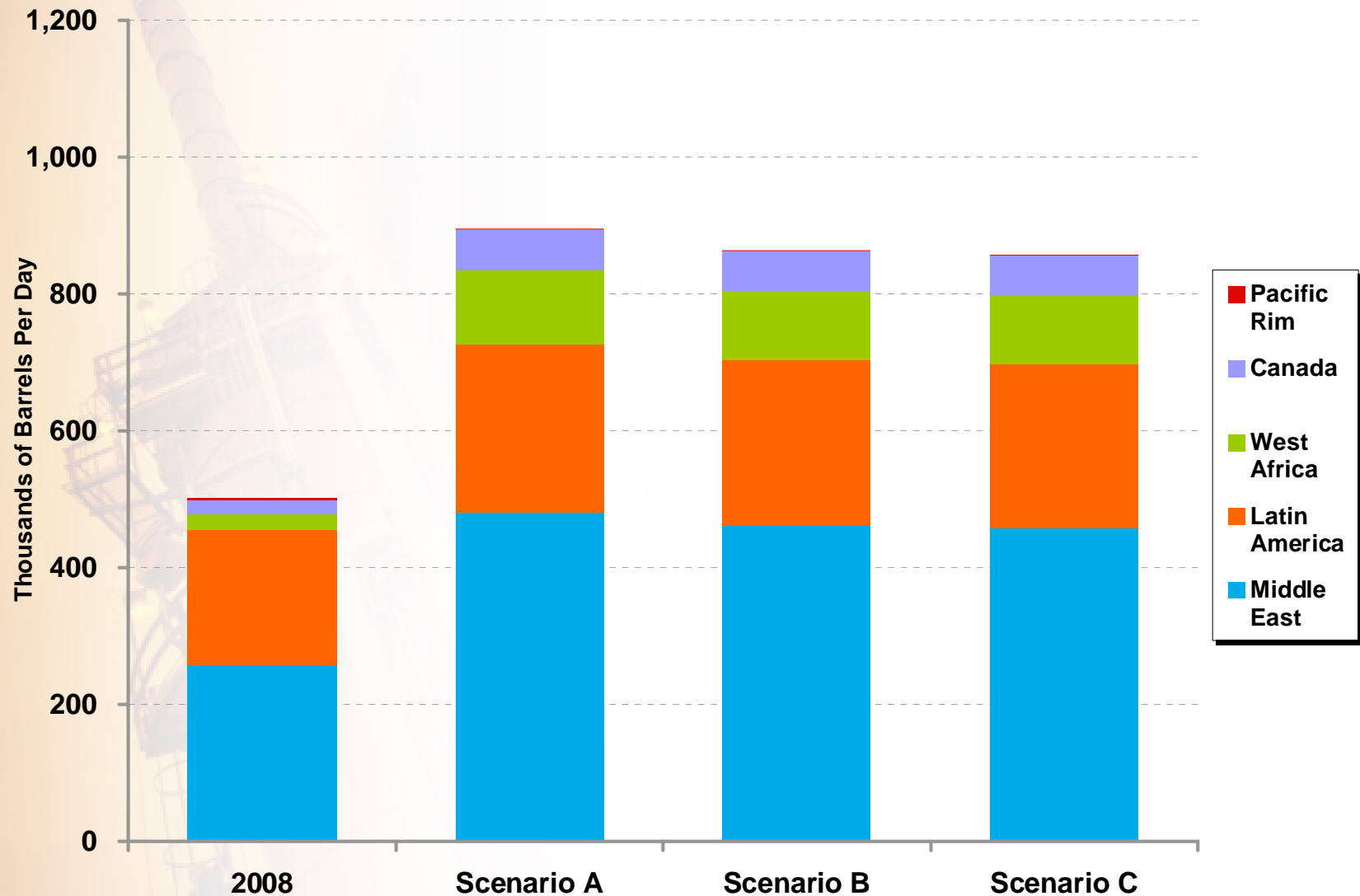
# Southern California Imports

## 2008 Actual and 2013 Assessments



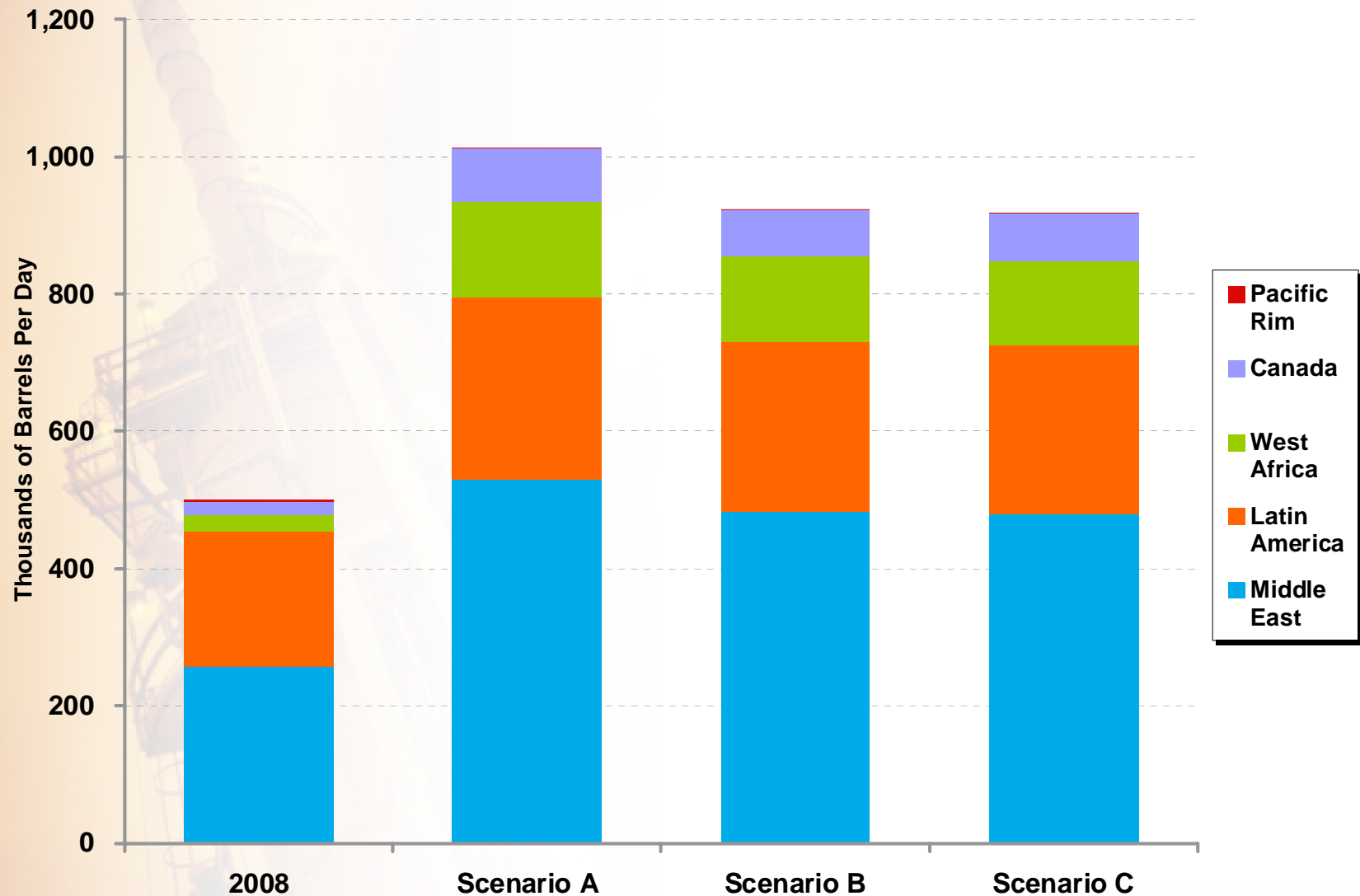
# Southern California Imports

## 2008 Actual and 2018 Assessments



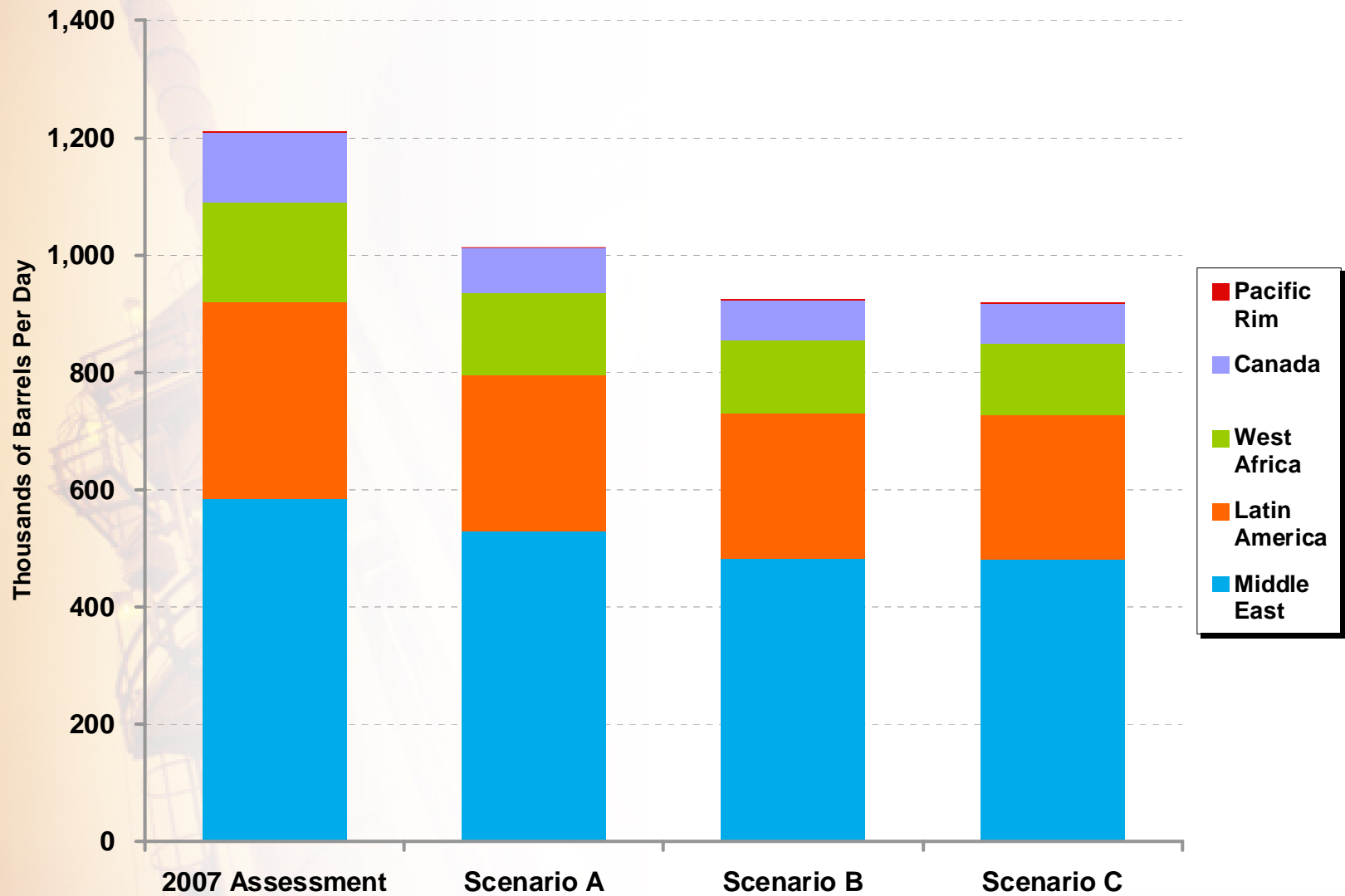
# Southern California Imports

## 2008 Actual and 2023 Assessments





# Southern California Imports – 2023



# Southern California Updated Observations

➤ **Future Southern California crude supply will continue to be increasingly dominated by imports. By the end of the forecast period (2023):**

- ❖ Crude imports will be about 900-1,015 MB/D (roughly 80-90% of total crude runs) versus current level of about 500 MB/D (about 52% of total crude runs).
- ❖ The Middle East will be the primary source of total crude imports.
  - About 500 MB/D or about 50% of total crude imports.

# Southern California Updated Observations (continued)

- ❖ Imports of “new” Canadian crude, starting in 2016, will increase to about 70-80 MB/D.
- ❖ Imports of new West African crudes will increase from current low levels to about 120-140 MB/D.
- ❖ Latin American imports will increase steadily to about 250-270 MB/D from the current level of 200 MB/D.
- ❖ Imports from the Pacific Rim will be minimal.

# Limitations

The information contained in this study was developed based on information available to us at the time this study was prepared. Analysis, data, and conclusions are limited by the assumptions stated herein and any other specific limitations noted. We relied on the veracity of publicly available information and other non-confidential information unless we had specific reason to doubt it.

Baker & O'Brien's compensation for this work was not, and is not, contingent upon any transaction, contract execution, or estimate of value that might favor the cause of Plains All American Pipeline, L.P., their subsidiaries, or any other party.

We reserve the right to amend and/or supplement this study in the event that additional information, valid at the time this study was issued, becomes available in the future.