BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE STATE OF CALIFORNIA

FILED
09/30/22
04:59 PM
A2202007

Application of SOUTHERN CALIFORNIA GAS COMPANY (U 904 G) for Authority to Establish a Memorandum Account for the Angeles Link Project	Application 22-02-007 (Filed February 17, 2022)

SOUTHERN CALIFORNIA GAS COMPANY (U904G) RESPONSES TO SEPTEMBER 22, 2022 ADMINISTRATIVE LAW JUDGE EMAIL RULING DIRECTING APPLICANT TO ADDRESS QUESTIONS

MELISSA HOVSEPIAN
Attorney for
SOUTHERN CALIFORNIA GAS COMPANY
555 West Fifth Street, GT-14E7
Los Angeles, CA 90013
Telephone: (213) 244-3978
Facsimile: (213) 629-9620
E-mail: mhovsepian@socalgas.com

JENNIFER K. ROY
Attorney for
SOUTHERN CALIFORNIA GAS COMPANY
LATHAM & WATKINS LLP
12670 High Bluff Drive
San Diego, CA 92130
Telephone: (619) 523-5400
Facsimile: (619) 523-5450
E-mail: jennifer.roy@lw.com

CHARLES C. READ
Attorney for
SOUTHERN CALIFORNIA GAS COMPANY
CHARLES C. READ LAW, P.C.
199 S. Los Robles Ave., Suite 535
Pasadena, CA 91101
Telephone: (626) 578-5700
E-mail: charles.read@charlesreadlaw.com

September 30, 2022

BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE STATE OF CALIFORNIA

Application of SOUTHERN CALIFORNIA GAS COMPANY (U 904 G) for Authority to Establish a Memorandum Account for the Angeles Link Project	Application 22-02-007 (Filed February 17, 2022)

SOUTHERN CALIFORNIA GAS COMPANY'S RESPONSES TO SEPTEMBER 22, 2022 ADMINISTRATIVE LAW JUDGE EMAIL RULING DIRECTING APPLICANT TO ADDRESS QUESTIONS

Applicant Southern California Gas Company ("SoCalGas" or "Company") hereby submits its responses to the questions posed in Administrative Law Judge Elaine Lau's September 22, 2022 Email Ruling Directing SoCalGas to Address Questions (the "Email Ruling") related to SoCalGas's Application for Authority to Establish a Memorandum Account ("Memo Account") for the Angeles Link Project ("Application"). In addition, per Judge Lau's request in the Email Ruling, the slides that SoCalGas presented during a July 20, 2022 informational webinar regarding the Angeles Link Project ("Angeles Link" or the "Project") are attached hereto as Attachment A.

The questions set forth in the Email Ruling concern potential offtakers of green hydrogen supplied by the Project, demand for green hydrogen in the Los Angeles Basin, and Project planning and design. It is critical to note that the Project is currently in the earliest conceptual stages, and as such, many details regarding these and other issues will be developed during Phase 1 activities.[1] SoCalGas has committed to share the planning and technical information developed during Phase 1 with the California Public Utilities Commission (the "Commission"),

[1] See, e.g., Application, pp. 23-25; SoCalGas Opening Brief, Att. A, pp. A-1 to A-2.

the Planning Advisory Group, and relevant stakeholders.[2] Accordingly, the responses below are based on SoCalGas's existing customer data and initial research and assumptions regarding hydrogen fuel-switching capabilities, which is subject to further refinement and confirmation during Phase 1.

Question 1: In its Opening Brief, SoCalGas describes that existing natural gas ratepayers that are in hard-to-electrify sector[s], such as industrial and process heating, heavy duty transportation, and dispatchable power can potentially switch to clean hydrogen gas as a cleaner energy alternative and to reduce the natural gas demand served by Aliso Canyon. Please confirm whether these ratepayers that SoCalGas described above are its non-Core ratepayers. If not, please clarify who are the existing ratepayers that can potentially use clean hydrogen as a substitute for natural gas.

Response: Supplying green hydrogen as a clean fuel could directly benefit both existing and potential future ratepayers. Existing ratepayers that are in hard-to-electrify sectors identified thus far would fall under Electric Generation (end-use is 100% noncore), Commercial (end-use is 21% noncore and 79% core), Industrial (end-use is 87% noncore and 13% core), and natural gas vehicle ("NGV") (end-use is 100% core) categories, as well as the non-residential portion of SoCalGas's Wholesale category (for example, local municipalities and other gas companies served by SoCalGas).[3]

Heavy-duty transportation, not currently served by a gas utility (e.g., those not covered by the NGV category above), is anticipated to comprise a large segment of the future green

[2] SoCalGas Opening Brief, pp. 54-56; SoCalGas Reply Brief, pp. 48-50.
[3] See California Gas and Electric Utilities, *2022 California Gas Report*, available at https://www.socalgas.com/sites/default/files/Joint_Utility_Biennial_Comprehensive_California_Gas_Report_2022.pdf. The terms electric generation, commercial, industrial, and wholesale have the same meaning as ascribed in the 2022 California Gas Report.

hydrogen market and could likely be core service. Additionally, an indirect substitution of natural gas by green hydrogen could occur due to the reduction of production of fuels for which natural gas acts as a feedstock, such as diesel. Thus, a wide variety of customers and non-customers could benefit from Angeles Link given the clean air benefits (criteria pollutants) and greenhouse gas ("GHG") reductions the green hydrogen transportation system is expected to provide.

Question 2: If the Angeles Link project constructed a clean hydrogen gas system for service in the Los Angeles Basin area, approximately what percentage of SoCalGas's existing non-Core ratepayers can potentially take service of the clean hydrogen gas as a substitute for natural gas? If SoCalGas cannot provide a concise estimate, can SoCalGas estimate whether these ratepayers who may potentially use clean hydrogen as a substitute for natural gas constitute a majority (more than 50%), minority (less than 50%), or half (at around 50%) the share of current non-Core ratepayers? If so, please provide the approximate share.

Response: Based upon information currently available, we currently estimate that approximately 50% or more of SoCalGas's current retail noncore customers could potentially take service of green hydrogen gas as a substitute for natural gas.[4] There is also some number of larger core industrial process customers, core NGV, end-users currently served by Wholesale customers of SoCalGas, and non-utility served heavy-duty transportation entities, for whom

[4] The estimates in response to Questions 2 and 3 are based on an assumption that 25% of current noncore Commercial customers, 50% of current noncore Industrial customers, and 75% of existing Electric Generation customers are eligible to convert to hydrogen fuel, based on SoCalGas's customer data and current understanding of hydrogen conversion capabilities and existing technology availability. This estimate does not take into account all sectors that could be capable of conversion (including those in the core and Wholesale categories), and the ultimate percentage of customers that are eligible to convert to hydrogen fuel could be higher than estimated.

green hydrogen may present a clean fuel alternative. The actual number of customers that may ultimately take service from Angeles Link will be influenced by many factors, including routing, technical advancements, national, state, and local policy considerations, time, and cost. Further analysis of green hydrogen demand and initial and subsequent end users will be conducted as part of Phase 1 Pre-Engineering and Design activities.[5]

Question 3: Hypothetically, if all eligible non-Core ratepayers switch their service from natural gas to clean hydrogen gas, approximately what percent of its non-Core sales would switch over from natural gas to clean hydrogen gas? If SoCalGas cannot provide a concise estimate, can SoCalGas estimate whether these constitute a majority (more than 50%), minority (less than 50%), or half (at around 50%) the share of current non-Core sales? If so, please provide the approximate share.

Response: Based upon information currently available, we currently estimate that more than 50% of SoCalGas's current retail noncore sales (i.e., deliveries) could potentially be substituted by the service of green hydrogen gas. There is also some number of larger core industrial process customers, core NGV, end-users currently served by Wholesale customers of SoCalGas, and non-utility served heavy-duty transportation entities, for whom green hydrogen may present a clean fuel alternative. The actual current noncore sales that may ultimately take service from Angeles Link will be influenced by many factors, including routing, technical advancements, national, state, and local policy considerations, time, and cost. Further analysis of green hydrogen demand and initial and subsequent end users is to be conducted as part of Phase 1 Pre-Engineering and Design activities.[6]

[5] Application, p. 23.
[6] *Ibid.*

Question 4: In its Reply Brief, SoCalGas states it is planning to assess "phased systems and shorter pipelines closer to and within the Los Angeles Basin." Can SoCalGas describe and provide details on the "phased systems and shorter pipelines closer to and within the Los Angeles Basin" mentioned in its Reply Brief?

Response: To advance a reliable and liquid market for supply that in turn can develop a deeply decarbonized clean fuels network for the State, it is important that potential hydrogen transport system configurations take into account how to best optimize permitting, construction, and cost reductions in scoping production and offtake potential for the long-term planning horizon in 2030 and beyond.

SoCalGas intends to further assess phased development opportunities for the Project during Phase 1 activities, in consultation with relevant stakeholders and the Planning Advisory Group, and will report to the Commission on such analyses, including cost of hydrogen considerations.[7] As a potential example of Project phasing, SoCalGas may initially construct the Project pipeline system as an initial phase, and later add compression to the system in subsequent phases to allow for additional green hydrogen transportation capacity. Similarly, SoCalGas may, in subsequent Project phases, construct additional laterals to the Project pipeline backbone system, connecting the system to additional renewable energy resources capable of producing green hydrogen for delivery to the Los Angeles Basin. This approach, to scope and plan for the deeply decarbonized end-state in mind for California, is consistent with the Department of Energy's recently released National Clean Hydrogen Strategy and Roadmap which emphasizes

[7] Application, pp. 23-25, 29-30; SoCalGas Opening Brief, p. 55; *id.*, Att. A, pp. A-1 to A-2; SoCalGas Reply Brief, p. 47.

the importance of "matching the scaleup of clean hydrogen supplies with a concomitant and growing regional demand."[8]

Respectfully submitted,

By: */s/* Melissa Hovsepian

Melissa Hovsepian
Assistant General Counsel - Regulatory
SOUTHERN CALIFORNIA GAS COMPANY
555 West Fifth Street, GT-14E7
Los Angeles, CA 90013
Telephone: (213) 244-3978
Facsimile: (213) 629-9620
E-mail: mhovsepian@socalgas.com

September 30, 2022

[8] U.S. Department of Energy, National Clean Hydrogen Strategy and Roadmap (Sep. 2022), p. 64, available at: https://www.hydrogen.energy.gov/pdfs/clean-hydrogen-strategy-roadmap.pdf.

ATTACHMENT A

SLIDES PRESENTED DURING JULY 20, 2022 SOCALGAS ANGELES LINK WEBINAR

July 2022

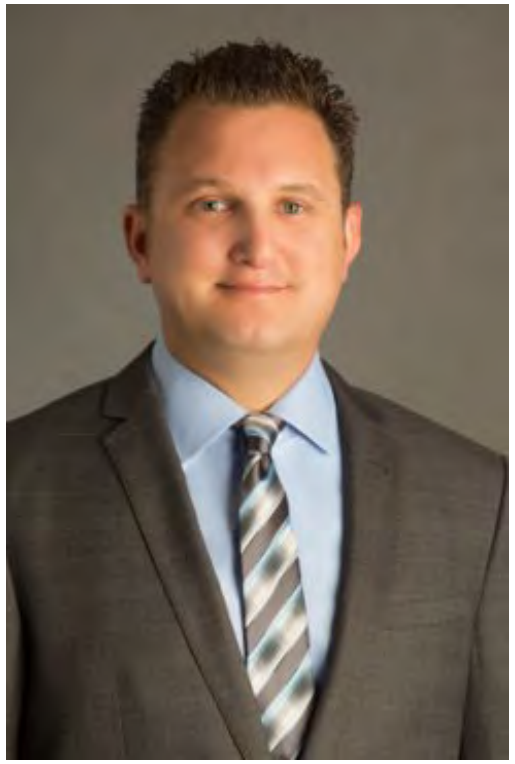
ANGELES LINK

Shaping the Future:
Informational webinar on Angeles Link

SoCalGas

Today's Speakers

Yuri Freedman
Senior Director
Clean Energy Innovations



Devin Zornizer
Vice President
Construction

Armando Infanzon
Director
Clean Energy Innovations

SoCalGas™

How to Use Teams Live

- Attendees are invited to view the webinar via the web browser app or the mobile app
- Q&A feature will be open, questions may be submitted with your name displayed or anonymously
- Presentation will be available on our website following webinar

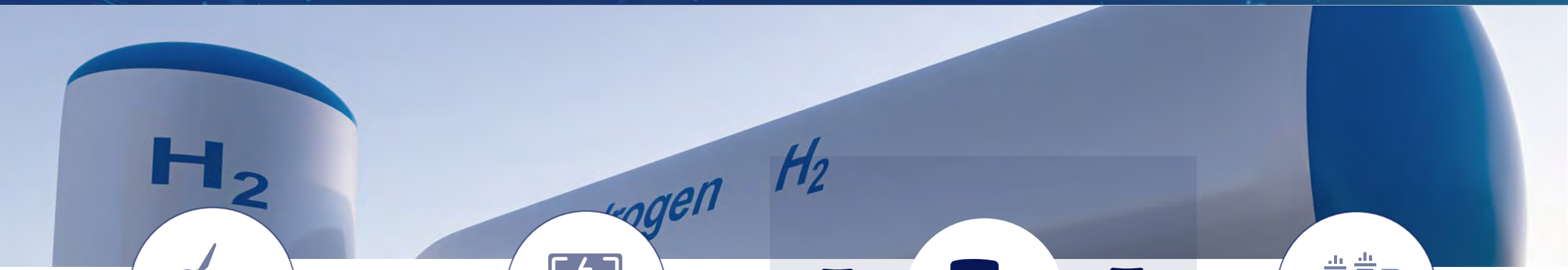
SoCalGas

Agenda

- Angeles Link Overview
- Description of the Pre-Feasibility Study
- Next Steps
- Questions & Answer

Angeles Link Overview

How Could It Work?



25-35 GW
Curtailed/New/Solar/Wind
2 GW Batteries

Start with 100% renewable electricity

10-20 GW
Electrolyzers

Convert it into green hydrogen with advanced electrolyzers

Hydrogen infrastructure

Deliver it into LA Basin by pipeline

14.3 million tons of CO_2 emissions eliminated

Use it to decarbonize sectors that can't be plugged in

SoCalGas

SHAPING THE FUTURE:

Basic Principles Angeles Link Supports

Advancing wider climate, clean air goals core to project rationale

Focused on hard-to-electrify sectors (not homes or passenger cars)

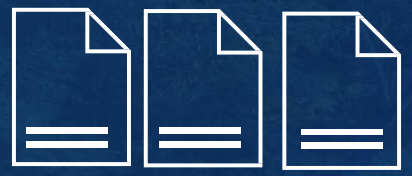
Stakeholders' views solicited and interests considered each and every step of the way

Help to facilitate retirement of Aliso Canyon

SoCalGas™

SHAPING THE FUTURE:

PRE-FEASIBILITY STUDY AND PROPOSED PROJECT PHASES



Technical Analyses & Reports/Pre-Feasibility Study

Angeles Link project planning is divided into three phases:

Phase 1
Pre-Engineering, Design, Environmental Review

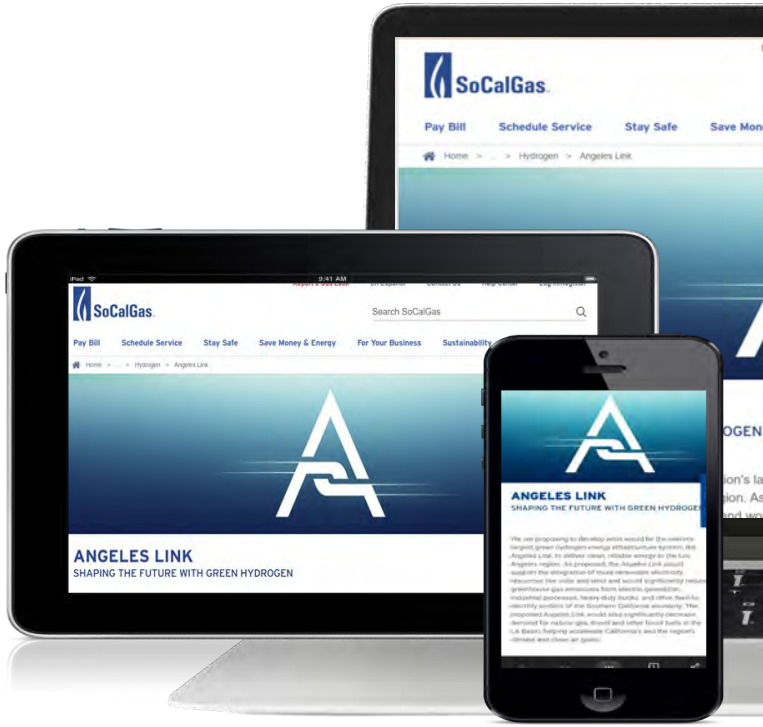
Phase 2
Identify Preferred Option, Refine Design & Environmental Review

Phase 3
Develop Certification of Public Convenience and Necessity Application, CEQA Analysis

Continuous Stakeholder Engagement

Technical Analyses and Reports

- Multiple analyses, reports and several appendices being used to inform Angeles Link development are available on the Angeles Link website
- Collectively, the reports present evidence that a green hydrogen infrastructure project is conceptually feasible
- The information we're sharing includes the technical pre-feasibility study of a green hydrogen infrastructure project like Angeles Link and identifies potential issues that need further study and review
- We'll be describing the overarching pre-feasibility study



SoCalGas

Pre-Feasibility Study

- The key objective of the pre-feasibility study was two-fold:
  - Assess high-level constructability of green hydrogen project under various scenarios
  - Identify critical factors determining project feasibility for deeper analysis
- Results of the study indicate that a project with parameters envisioned in the Angeles Link development process can be constructed
- Critical factors determining project feasibility such as:
  - Future demand for green hydrogen
  - Aspects of green hydrogen production
  - Siting and permitting of pipeline and facilities
  - Potential storage options
- Those key factors will be subject to in-depth analysis in Phase 1 of the Angeles Link

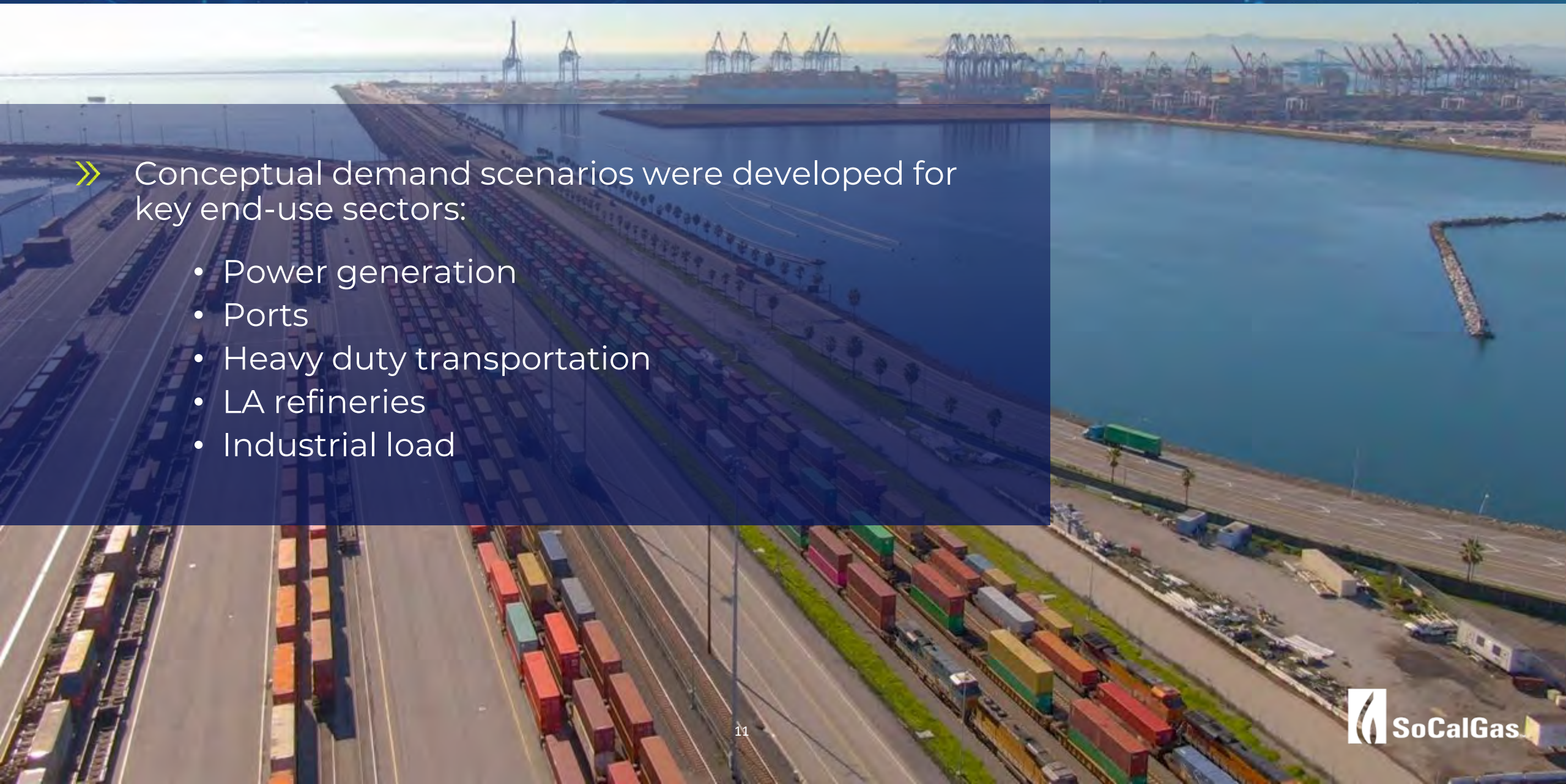
SoCalGas

Important Considerations

- Safety is Foundational
  - Compliance with state and federal requirements
  - Adherence to industry design and construction principles associated with these types of facilities
- Technical
  - Pipeline Siting & Rights-of-Way
  - Permitting
- Resources
  - Water
- Environmental
  - GHGs
  - Air Quality
  - Leakage
- Stakeholder Engagement
  - Environmental Justice
  - Disadvantaged Communities

SoCalGas

Conceptual Green Hydrogen Demand Scenarios

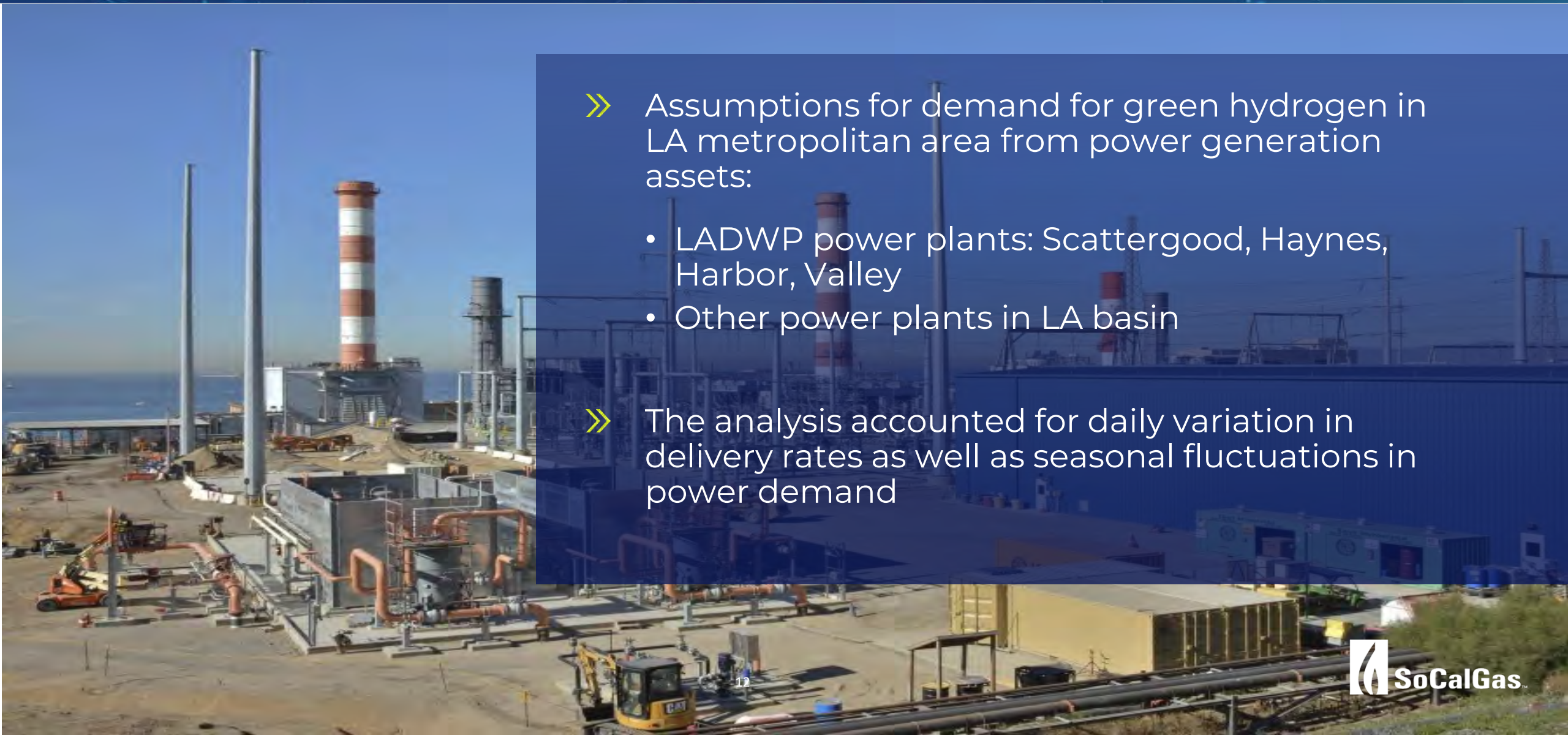


- Conceptual demand scenarios were developed for key end-use sectors:
  - Power generation
  - Ports
  - Heavy duty transportation
  - LA refineries
  - Industrial load

SoCalGas

Conceptual Green Hydrogen Demand Scenarios

Power Generation

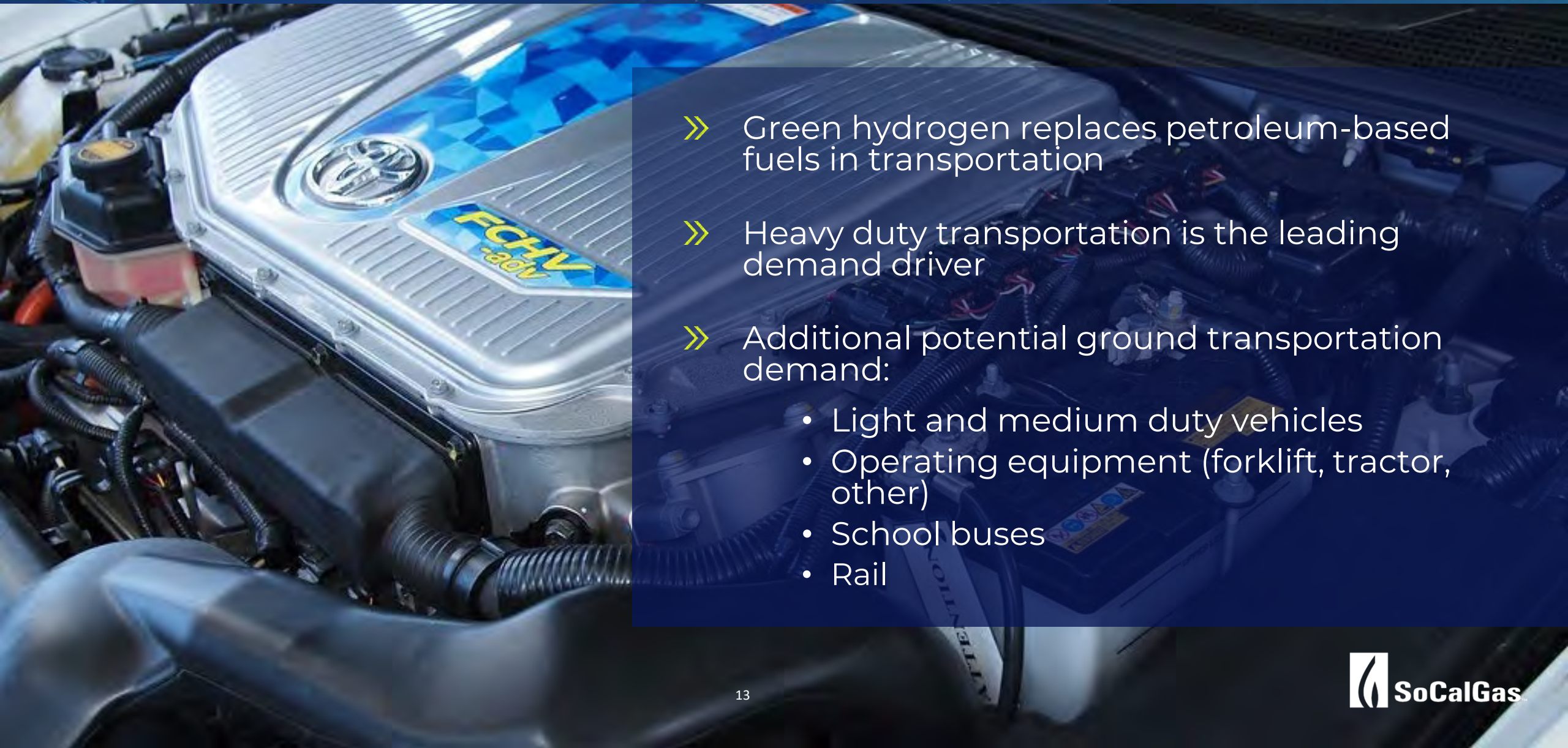


- Assumptions for demand for green hydrogen in LA metropolitan area from power generation assets:
  - LADWP power plants: Scattergood, Haynes, Harbor, Valley
  - Other power plants in LA basin
- The analysis accounted for daily variation in delivery rates as well as seasonal fluctuations in power demand

SoCalGas

Conceptual Green Hydrogen Demand Scenarios

Transportation



- Green hydrogen replaces petroleum-based fuels in transportation
- Heavy duty transportation is the leading demand driver
- Additional potential ground transportation demand:
  - Light and medium duty vehicles
  - Operating equipment (forklift, tractor, other)
  - School buses
  - Rail

SoCalGas

Conceptual Green Hydrogen Demand Scenarios

Industrial

- Opportunities for green hydrogen – it can replace:
  - Gray hydrogen currently used in industrial processes
  - Natural gas consumption in the industrial sector as an energy source
- Industrial sectors with potential demand for green hydrogen:
  - Refineries
  - Cement plants
  - Steel
  - Chemical plants
  - Other

SoCalGas

Conceptual Green Hydrogen Production Scenarios

- Pre-feasibility study evaluated availability of land and water resources needed for siting of renewable power production facilities and operation of electrolyzers
- All scenarios assume co-located utility-scale solar PV only
- Scenarios assume battery systems are deployed alongside solar to optimize renewable energy use
- While the project focuses on developing a green hydrogen transport system, further analysis of production potential can help inform routing analysis

SoCalGas

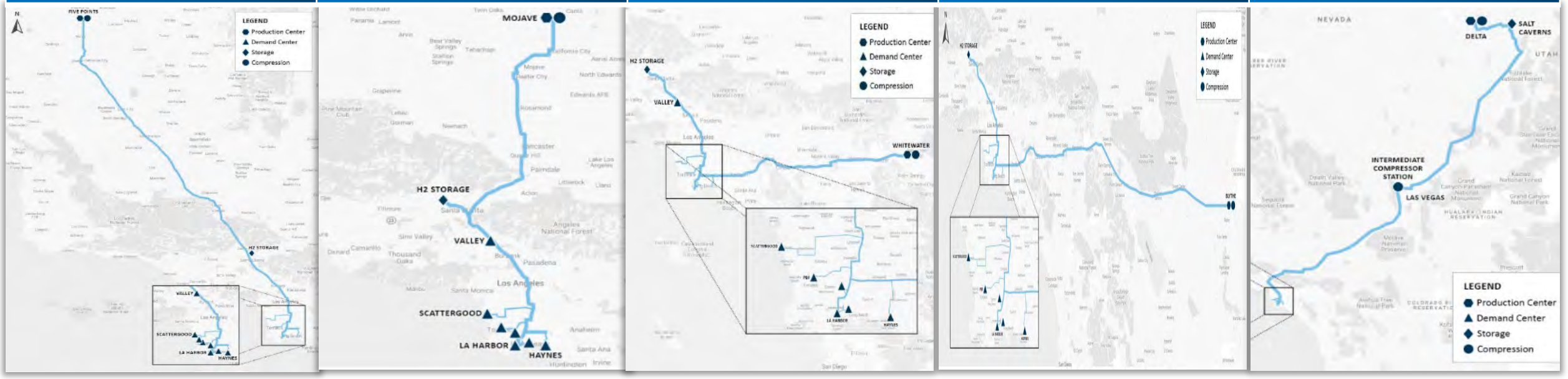
Conceptual Green Hydrogen Infrastructure Systems

- Transmission & Distribution pipelines connect green hydrogen production centers to demand centers and storage
- Compressors and pipeline system to accommodate the average flow rate during peak production hours
- Pipeline systems sized for higher flow rates and volume needed at certain times of day or during specific seasons (hot weather events)

SoCalGas

Conceptual Green Hydrogen Infrastructure Alternatives 1-5

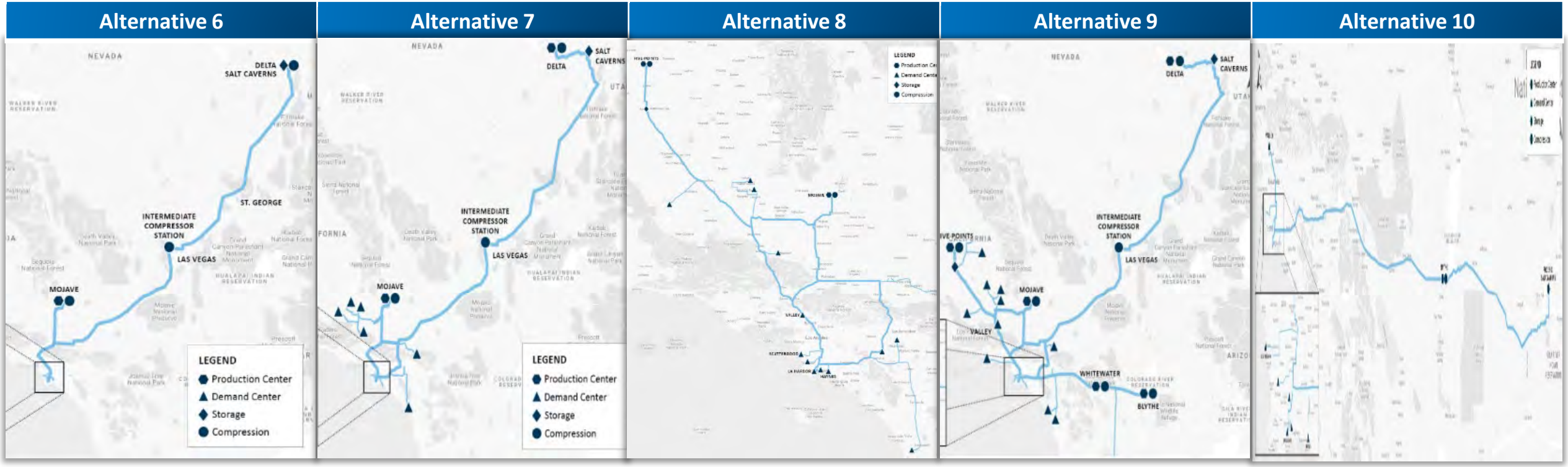
Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5



- Pre-feasibility study reviewed a broad range of potential routing scenario options
- These scenarios, in consultation with stakeholders, may inform development of potential route(s) for Angeles Link

SoCalGas

Conceptual Green Hydrogen Infrastructure Alternatives 6-10



- Pre-feasibility study reviewed a broad range of potential routing scenario options
- These scenarios, in consultation with stakeholders, may inform development of potential route(s) for Angeles Link

SoCalGas

Conceptual Green Hydrogen Systems - Storage

- Assumes green hydrogen is compressed at the rate produced
- Assumes some green hydrogen immediately moved to satisfy demand, while some stored during off-peak renewable hours, using
  - Excess Pipeline Capacity
  - Underground Storage (salt caverns, abandoned oil/gas reservoirs)
  - Above Ground Storage (pressurized gas, liquid hydrogen)
- Hydrogen storage is used to:
  - Manage variation in daily green hydrogen production rate
  - Account for seasonal variation in production rates and demand rates
  - Provide backup supply during system disruption (100% backup rate if possible) or lower production rates
- While the project focuses on developing a green hydrogen transport system, further analysis of storage potential can help inform routing analysis

Next Steps – Angeles Link Phase 1 Technical Activities

Please type any questions into the Q&A.

SoCalGas™

SHAPING THE FUTURE:

How to Stay Engaged

Visit socalgas.com/angeleslink for more information or scan this QR code

Sign up for our email newsletter at socalgas.com/angeleslink

SoCalGas