SoCalGas

Angeles Link Phase 1 Reasonableness Review
Chapter 5 Workpaper: Engineering & Design

I. Introduction

This workpaper provides details on the prudent and reasonable activities taken to develop the Angeles Link Phase 1 Engineering & Design Studies[1] in compliance with Decision (D.) 22-12-055 (Phase 1 Decision).[2] This workpaper details study costs and management and cost control measures. The total loaded cost associated with the Engineering & Design Studies is approximately $3.7 million in operating and maintenance (O&M) expenditures for Phase 1 activities.[3]

II. Study Costs

A combination of internal and external resources were utilized to execute the Engineering & Design Studies. Direct costs for these activities reflect labor costs (e.g., internal personnel) and non-labor costs (e.g., third-party contractors and miscellaneous costs associated with supporting Angeles Link Phase 1 activities).[4] Indirect costs reflect costs for overhead loaders.[5] The total loaded costs for the Engineering & Design Studies is $3.7 million. Table 1 below provides additional cost details.

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1 The Engineering & Design Studies include the following: Evaluation of Applicable Safety Requirements (Safety Study), Workforce Planning & Training Evaluation (Workforce Study), Pipeline Sizing & Design Criteria (Design Study), Preliminary Routing/Configuration Analysis (Routing Analysis).

2 Phase 1 Decision at 73-75 (Ordering Paragraphs (OP) 3(a), 3(d), 3(e), 3(h), 5(a)-5(e)). The activities were scoped and conducted in compliance with the Phase 1 Decision in its entirety, which includes broader requirements than those required for cost recovery, including OP 6 (*id.* at 75-77). Phase 1 Decision OP 6 requirements to advance to Phase 2 are being addressed in A.24-12-011.

3 Expenditures for these activities were incurred from January 2023 through December 2024, with some discrete trailing charges in 2025.

4 Refer to Chapter 1 (Direct Testimony of Shirley Arazi and Amy Kitson) for a description of miscellaneous costs.

5 Refer to Chapter 6 (Direct Testimony of Jenny Chhuor and Michael W. Foster) for a description of the overhead costs.

Table 1: Engineering & Design Studies Total Costs (in millions)

Study	Labor	Non-Labor	Overheads	Total Loaded Costs
Safety Study	$0.2	$0.2	$0.2	$0.6
Workforce Study	$0.2	$0.3	$0.2	$0.7
Design Study	$0.2	$0.5	$0.2	$0.9
Routing Analysis	$0.3	$1.0	$0.2	$1.5
Total Costs	**$0.9**	**$2.0**	**$0.8**	**$3.7**

A. Labor Costs

Labor costs for the Engineering & Design Studies total $0.9 million and consist of support from SoCalGas personnel within the Angeles Link organization (e.g., project managers, directors, and subject matter experts (SMEs), as well as from other departments such as general administration, regulatory and policy, and public affairs).[6] The Angeles Link organization collaborated with subject matter expertise within the company,[7] helping reduce costs and reliance on third-party contractors and allowing for alignment with company standards, industry codes, and technical requirements.

Labor costs reflect the following activities:

- Defined study objectives and developed scope of work.
- Provided oversight of third-party contractor activities including budget and schedule management.
- Conducted working sessions with third-party contractor.
- Identified interdependencies with other Phase 1 Studies.

[6] Refer to Chapter 1 (Direct Testimony of Shirley Arazi and Amy Kitson) for additional labor cost details.

[7] Safety Strategy & Culture and Safety & Excellence; Emergency Management & Preparedness; Hydrogen Blending Strategy; Integrity Management; Gas Engineering; Gas Transmission Planning, Gas Transmission, and Gas Transmission Operations; Labor Relations & Wellness, Organizational Effectiveness, Workforce Planning Program, and Talent Acquisition; Construction, Complex Facilities, and Project Controls & Estimating; Strategy & Sustainability; Pipeline Operations; Integrated Infrastructure Planning; Public Policy & Planning and Regional Public Affairs; and Land & Right-of-Way and Franchise Policy.

- Coordinated with internal subject matter experts and third-party contractors to prepare technical content.
- Prepared for stakeholder meetings, including presentations.
- Reviewed stakeholder feedback and meeting themes.
- Supported development of written responses and incorporation of stakeholder feedback into ongoing study workstreams as appropriate.
- Managed contract scope adjustments including adjustments driven by stakeholder feedback.
- Collaborated on technical evaluation and report development.
- Developed preliminary cost estimate calculations.
- Provided technical guidance based on internal engineering, design, and operations knowledge.

B. Non-Labor Costs

Non-labor costs for the Engineering & Design Studies total $2.0 million and consist of third-party contractor costs and miscellaneous expenses. Examples of non-labor cost activities include the following:

- Conducted technical evaluations, including coordination and data exchange with other Phase 1 Studies.
- Developed and refined studies to incorporate evolving study needs and feedback.
- Collaborated with SoCalGas and other third-party contractors to align efforts.
- Managed the studies through cost tracking, schedule oversight, and overall progress monitoring.
- Reviewed milestone deliverables, quarterly reports, and stakeholder comments and responses, as appropriate.
- Performed employment impact analysis.
- Conducted energy reliability and resiliency review.

The following sections provide details on the third-party contractors and contract amendments necessary to conduct the Engineering & Design Studies.

1. Burns & McDonnell (BMcD)

SoCalGas awarded BMcD a contract for a not-to-exceed (NTE) amount of $1,889,257 under their existing Master Services Agreement (MSA)[8] on a time-and-material[9] basis to develop the Engineering & Design Studies.[10]

The Engineering & Design Studies were consolidated under a single contract to facilitate streamlined communication, coordination, and alignment across workstreams. Itemized costs were tracked for each individual study within the overall contract structure, enabling flexibility to incorporate evolving technical requirements and study scopes, while managing costs. This integrated and adaptive contracting approach supported cost controls and study management in the following ways:

- Project management controls were implemented early, including weekly coordination meetings between SoCalGas and BMcD. These evolved into focused, study specific meetings as scopes were finalized.
- Bi-monthly updates on schedule and cost estimates, along with monthly updates on progress of deliverables and upcoming milestones.
- Regular coordination across the Angeles Link organization[11] and internal SMEs for review of technical analysis and to confirm alignment across Phase 1 Studies.

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8 Where applicable, SoCalGas entered into agreements that were set at market-based rates stemming from previous competitive solicitations (e.g., MSA) to select vetted and qualified firms and leverage their particular expertise in preparing each study.

9 A time-and-material contract is the type of project agreement where costs are incurred for the actual time spent on the project and the cost of materials used.

10 The Angeles Link Phase 1 Studies covered by this agreement include the Evaluation of Applicable Safety Requirements (Safety Study), Workforce Planning & Training Evaluation (Workforce Study), Pipeline Sizing & Design Criteria (Design Study), Preliminary Routing/Configuration Analysis (Routing Analysis), and Production Planning & Assessment (Production Study). *See* Chapter 3 (Direct Testimony of Vijai Atavane) for further details on Production Study.

11 Refer to Chapter 1 (Direct Testimony of Shirley Arazi and Amy Kitson) for further details regarding the Angeles Link organization.

- Priorities were regularly reassessed to maintain consistency, maximize value, and meet downstream deliverables.
- Scope adjustments were made as needed to reflect stakeholder feedback and study developments.
- A structured approach to invoicing and cost tracking, including reviews of invoices in conjunction with progress updates, deliverables, and working sessions to evaluate study content alongside associated expenditures.

SoCalGas executed an amendment to the BMcD contract to reallocate $11,020 in funding from the Design Study to the Safety Study to address stakeholder feedback, bringing the total authorized amount for the Safety Study to $108,697. The total BMcD cost incurred for the Safety Study was $103,267.

To address stakeholder feedback, SoCalGas executed an amendment to the BMcD contract to reallocate funds from the Design Study to the Workforce Study and increase funding to complete a preliminary employment impact analysis, totaling $108,696. The total authorized amount for the Workforce Study was $173,121 and the total cost incurred was $164,008.

SoCalGas executed an amendment to the BMcD contract to reallocate $80,284 in funding between the Design, Workforce, and Safety studies to address stakeholder feedback, bringing the total authorized amount for the Design Study to $525,344. Subsequently, in response to stakeholder feedback received and to better align third-party areas of focus, the third-party storage technology analysis was moved to the Production Study. The total cost incurred for the Design Study was $377,040.

SoCalGas executed an amendment to the BMcD contract to increase funding by $264,237, bringing the total authorized amount for the Routing Analysis to $581,889. This change was driven by internal SME input and stakeholder feedback such as review of additional Engineering, Social, and Environmental considerations. The expanded analysis also supported the incorporation of preliminary data and analyses from other Phase 1 Studies identifying the potential areas of clean renewable hydrogen production and demand. The total cost incurred for the Routing Analysis was $578,147.

2. Other Contractors

SoCalGas engaged additional third-party contractors to support specific areas as necessary.

a) Center for Hydrogen Safety (CHS)[12] – Safety Study

Given the foundational nature of safety to Angeles Link, and in response to stakeholder feedback in accordance with OP 3(e) and OP 5(d),[13] SoCalGas requested a third-party review of the Safety Study by the Hydrogen Safety Panel (HSP).[14] In January 2024, SoCalGas awarded Center for Hydrogen Safety (CHS) a not-to-exceed contract for $60,000 for the HSP review. The contract supported review of the Safety Study, the Design Study, and the Routing Analysis. The CHS contract was managed prudently by establishing review cycles and target deadlines, consolidating comments from multiple internal SMEs, and conducting meetings and communication with HSP as needed to reduce potential revisions, avoid unnecessary budget increases, and maintain the integrity of third-party review. The total cost incurred by CHS for the Safety Study was $20,000.

b) Det Norske Veritas (DNV) – Workforce Study

In response to stakeholder interest[15] in workforce planning, training, and employment opportunities, SoCalGas engaged DNV through an existing MSA to create a joint industry partnership and develop a conceptual hydrogen certification pathway to educate a range of personnel and potentially inform future training programs and workforce planning. In October 2023, SoCalGas approved DNV to develop the initial hydrogen certification pathway structure and learning design, which could serve as the basis for subsequent training materials development, for a firm-fixed-price of $15,500. The contract was managed prudently with SoCalGas strategically leveraging internal

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[12] CHS is a not-for-profit corporate membership organization within the American Institute of Chemical Engineers (AIChE).

[13] Phase 1 Decision at 74-75 (OP 3(e), 5(d)).

[14] The Hydrogen Safety Panel was founded by the U.S. Department of Energy to develop and implement guidance, procedures, and best practices that would support safety in the operations, handling, and use of hydrogen and hydrogen systems. *See* Center for Hydrogen Safety, *Hydrogen Safety Panel, available at:* https://www.aiche.org/chs/hydrogen-safety-panel.

[15] Phase 1 Decision at 74-75 (OP 3(e), 5(d)).

expertise from the Gas Engineering & System Integrity and Human Resources departments to review materials and provide feedback as needed. The total cost incurred by DNV for the Workforce Study was $15,500.

c) RSI Pipeline Solutions, LLC (RSI) – Design Study

For the Design Study, in April 2024, in response to stakeholder feedback,[16] SoCalGas engaged RSI through an existing MSA to provide technical expertise on pipeline materials and the feasibility of repurposing natural gas infrastructure for hydrogen use.

In May 2024, SoCalGas approved RSI to conduct a literature review on pipeline repurposing, with an estimated cost of $10,500, billed on a time-and-materials basis under the existing agreement with SoCalGas. The contract was managed prudently with SoCalGas strategically leveraging internal expertise from the Integrity Management department, when possible, to manage costs. The total cost incurred by RSI for the Design Study was $5,276.

d) Paragon Partners Consultants, Inc (Paragon) – Routing Analysis

SoCalGas selected Paragon to support the Routing Analysis through right-of-way evaluation, which included research such as review of easements and property rights. Paragon is a specialized land services firm under a MSA with SoCalGas, which provided pre-negotiated terms and conditions.

SoCalGas awarded Paragon a contract for a not-to-exceed amount of $230,000 on a time-and-material basis to develop the right-of-way evaluation. The contract was managed prudently by leveraging internal expertise from the Gas Engineering Land & Right-of-Way department to manage costs. The total cost incurred by Paragon for the Routing Analysis was $229,996.

[16] *Id.*