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Proceeding: 2028 General Rate Case
Application: A.26-06-015
Exhibit: SDGE-06.1-WP-S

SUPPLEMENTAL WORKPAPERS TO

PREPARED DIRECT TESTIMONY

OF DEVIN K. ZORNIZER

(GAS MAJOR PROJECTS)

ON BEHALF OF SAN DIEGO GAS & ELECTRIC COMPANY

REVISED

BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE STATE OF CALIFORNIA

VOLUME 2 OF 6

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SDG&E Moreno Compressor Modernization Project Workpaper

Pages 2 – 19

**SDG&E Moreno Compressor Modernization
Project Workpaper**

Supplemental Workpaper

Moreno Compressor Modernization

1. Executive Summary

San Diego Gas and Electric (SDG&E) is requesting approval to recover costs for the forecasted amount above the cost cap imposed in the 2024 GRC for the Moreno Compressor Modernization (MCM) project. In Decision D.24-12-074, the Commission authorized a cost cap of \$409.7 million in direct 2021 dollars, based on a project estimate developed at approximately 30 percent design maturity, and allowed SDG&E to seek recovery of the MCM project cost upon completion and placement in service through a Tier 2 Advice Letter¹.

The current forecast exceeds the authorized cost cap by \$86,402,164² when compared to the 2021-dollar authorized cost cap escalated to nominal 2025 dollars. The MCM Project plans to commence construction in 2026 and is scheduled to be placed into service in 2028.

At the time the initial cost estimate was developed, engineering and design were approximately 30 percent complete. Consistent with industry standards, including those established by AACE International, estimates prepared at this level of design maturity are preliminary in nature and carry a broader range of uncertainty due to incomplete scope definition, reliance on assumption, and limited vendor pricing. Under AACE's estimate classification system, a 30% design estimate aligns with a Class 3 estimate, typically based on parametric methods, preliminary quantities, allowances, and conceptual execution strategies rather than finalized drawings and construction methodologies. As such, these are expected to evolve as engineering advances and project risk are reduced.

Since the 2024 GRC was filed in May 2022, the project design has matured to nearly 95 percent completion, providing a clearer understanding of the engineering scope, construction requirements, and vendor pricing. Implementation of post-GRC building and fire code revisions and SCE-driven requirements increased engineering effort, extended the schedule, and refined the project scope without changing the project's fundamental purpose. These combined factors, along with additional environmental regulations, have

¹ D.24-12-074 at 196-199

² This estimated over the cost cap amount is a 15 percent increase from the originally authorized cost cap amount when escalated to nominal 2025 dollars

contributed to the updated project forecast and the resulting request to recover the amount above the originally authorized cost cap.

Industry practice recognizes that cost changes between early design estimates and later-stage estimates are driven by the reduction of uncertainty as engineering advances. AACE guidance further emphasizes that contingency included in early-stage estimates is intended to address undefined scope, execution risks, and market variability, and that such contingency is progressively refined or reduced as risks are better defined and mitigated. Accordingly, later-stage forecasts provide a higher degree of accuracy and confidence than earlier estimates. The resulting forecast increase associated with advancing from approximately 30 percent design to near-final engineering is reasonable, expected, and consistent with recognized industry estimating practices and the Company's established project controls and risk management processes.

2. Commission Authorization and Cost Cap Framework

In Decision D.24-12-074, the Commission authorized a cost cap of \$409.735 million for the MCM project, which would be subject to a Tier 2 Advice Letter once the project is completed and placed in service³. The authorized cost cap includes the project costs that were already incurred during plant construction⁴. To avoid duplication, the Decision prohibited the recovery of any related financing, direct, indirect, or overhead costs adopted elsewhere in the Decision until the project is placed into service.

The authorized cost cap was established based on the information available at the time of the 2024 GRC proceeding, which included a project estimate developed at approximately 30 percent design maturity, regulatory and permitting requirements then in effect, and a project schedule that assumed the timely receipt of required permits and third-party services. As discussed in subsequent sections of this workpaper; following the 2024 GRC filing and Commission decision, several post-GRC regulatory, environmental, and third-party utility requirements emerged that materially affected the project's scope, schedule, and cost that were not reflected in the original authorized forecast.

³ D.24-12-074 at 196-199

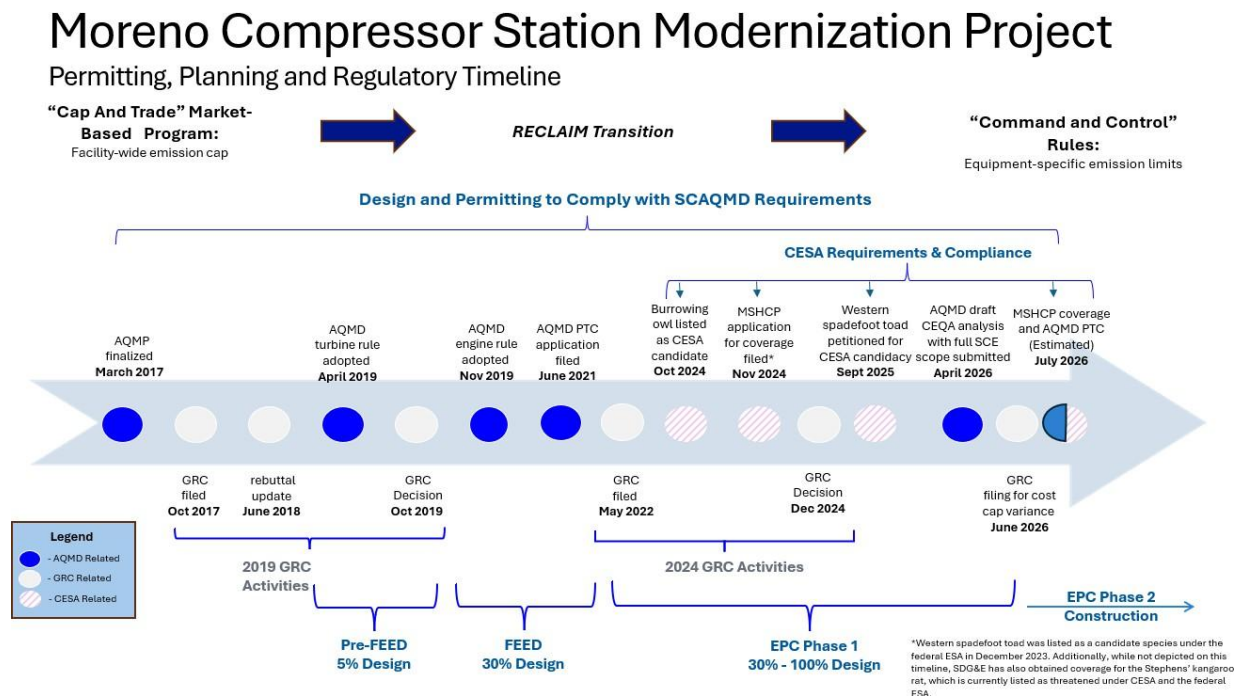
⁴ Construction Work in Progress - CWIP

3. Permitting, Planning, & Regulatory Timeline

Since the filing of the 2024 General Rate Case (GRC), there have been several changes to the environmental, third-party utility and building code requirements applicable to MCM project. When the 2024 GRC was filed in May of 2022, the MCM project's request reflected a cost estimate at approximately 30 percent Front-End Engineering Design (FEED) and was based on the regulatory, permitting, and third-party utility requirements in effect at that time.

Following the GRC filing and Commission decision, several external compliance requirements and third-party utility conditions applicable to the project were adopted, modified, or clarified. These developments were not fully known, nor reasonably foreseeable at the time of the GRC estimate. Please see Figure-1 for a depiction of the timeline of these external compliance requirements.

Figure-1
Moreno Compressor Station Modernization Permitting, Planning and Regulatory Timeline



Summarized in the figure above, SCAQMD published their Air Quality Management Plan (AQMP) in March 2017. SDG&E was made aware of the impact that the implementation of

the AQMP could have on the Moreno Compressor Station, and began evaluating compliance requirements, as addressed in SDG&E's 2019 GRC.

Shortly after the 2019 GRC Decision was issued, SCAQMD adopted Rule 1134, Emissions of Oxides of Nitrogen from Stationary Gas Turbines, and Rule 1110.2, Emissions from Gaseous- and Liquid-Fueled Engines (and companion Rule 1100, Implementation Schedule for NOx Facilities), which established new emissions limits. Informed by SDG&E's progress on FEED, SDG&E submitted the Permit to Construct to SCAQMD in June 2021.

With SDG&E's FEED nearing completion, in May 2022, SDG&E served testimony to present the MCM project in SDG&E's 2024 GRC.

The finalization of FEED provided the basis of the competitive solicitation and selection of the MCM EPC contractor which was executed in March 2023. Detail engineering by the EPC contractor is continuing and is currently at 95% maturity.

In December 2024, the CPUC issued their Decision in SDG&E's TY 2024 GRC. Detailed engineering continued to advance concurrently with SCAQMD's review of the project. SCAQMD provided a draft PTC on April 4, 2024, and SDG&E is expecting the PTC to be issued in July 2026.

With regulatory authorization and permits pending issuance, SDG&E and the EPC contractor anticipate commencing construction in 2026 with an estimated in-service date in 2028.

3.1 Building Code & Fire Code Changes

Following the filing of the 2024 GRC, the applicable California Building Code transitioned from the 2019 edition to the 2022 edition, and updated provisions of the International Fire Code (IFC)⁵ and California Fire Code⁶ became effective. These code updates are mandatory for new construction in California and did not provide grandfathering for projects that had not yet commenced construction.

Implementation of these updated codes was required to maintain structural, seismic, and life-safety compliance. Due to the project being in a later stage of design development, implementation of these code changes required revisions to project design criteria and facility configuration beyond those reflected in the original GRC estimate.

⁵IFC, 2021, section 1207

⁶ CFC 2022, section 1207

These post-GRC code requirements included but were not limited to:

- Updated seismic design criteria under the 2022 California Building Code
- Revised structural and foundation requirements
- Additional fire protection and life-safety requirements

3.2 Environmental & Permitting Developments

After the 2024 GRC filing, SDG&E pursued additional species coverage due to regulatory changes governing protected species. Changes to the listing status and potential listing of certain species under the California Endangered Species Act (CESA) expanded the applicable scope of protected species. Under CESA, both listed species and candidate species are afforded legal protection, and projects must evaluate and implement appropriate compliance approaches, including avoidance and minimization measures and, where necessary, pursuing a take authorization or coverage. As a result, SDG&E performed additional environmental analyses and pursued additional permits, including coverage under the Western Riverside Multiple Species Habitat Conservation Plan (MSHCP).

In parallel, changes associated with third-party electrical service scope required updates to the South Coast Air Quality Management District's (SCAQMD) environmental analysis. These developments affected the timing of the California Environmental Quality Act (CEQA) review and accordingly, the issuance of the project's Permit to Construct (PTC) authorization, which directly impacted the project's schedule.

3.3 Third-Party Utility Requirements – Southern California Edison (SCE)

The 2024 GRC submittal included Southern California Edison (SCE) providing electrical service at 33 kV. Following the completion of environmental surveys, the required upgrade to the proposed 33 kV service route was determined to be impracticable. As a result, SCE identified an alternative electrical service from a 12 kV distribution system.

3.4 Schedule & Escalation Impacts

Changes to building codes, environmental requirements, and third-party utility developments described in sections 3.1 through 3.3 materially affected the timing of permitting approvals, third-party coordination, and construction readiness for the MCM project. These developments extended the anticipated timeline for receiving the PTC and have delayed the start of construction relative to the schedule assumed in the 2024 GRC forecast.

The resulting extension of the overall project execution period increased the project's exposure to inflationary pressures which affected labor, materials, and contractor pricing.

These impacts were further compounded by the unusually elevated inflation experienced in the post-COVID period, which significantly exceeded the historical and forecasted inflation levels assumed at the time of the 2024 GRC. These escalation impacts are not cost drivers but are an unavoidable result of schedule extensions caused by the requirements necessary to advance the project.

4. Design Development

The principal components of the MCM Project have remained unchanged since approval in the 2024 GRC. However, following Commission approval, the project design advanced from approximately 30 percent FEED to nearly 95 percent completion. This means the building and fire code revisions requirements described in Section 3 have been incorporated into the finalized engineering drawings, equipment specifications, construction work scopes, and installation quantities. The third-party utility engineering and design effort for the voltage stabilizing devices is ongoing awaiting selection of the equipment vendor and final integration.

The most notable design developments include:

- Integration of voltage stabilizing devices required by SCE as a condition of electric service to avoid system impacts
- Revision of electrical layouts and battery system configurations to comply with the updated International Fire code (IFC, 2021, section 1207) and the California fire code (CFC 2022, section 1207) which resulted in greater separation of uninterruptable power supply batteries and additional battery storage enclosure
- Compliance with changes to the California Building Code edition from 2019 to 2022, which resulted in additional quantities of concrete and steel
- Incorporation of updated geotechnical report which required deeper foundations
- Finalization of material quantities and installation scopes necessary to deliver a code-compliant facility
- Modifications to natural gas compressor pipelines
- Integration of a natural gas blowdown transfer system
- Additional controls and instrumentation equipment room

As design progressed, the level of engineering detail necessary to support construction and commissioning activities increased. This resulted in increases in engineering effort, construction support, and commissioning and startup planning consistent with the current scope and schedule. As a result of these factors and a mature project design nearing 95 percent, the project team can now provide a more accurate and informed estimate.

5. Updated Cost Summary

The table below summarizes the authorized cost cap for the MCM project and the comparison to the current project forecast. The cost cap authorized in the 2024 GRC was established in 2021 dollars and excludes Construction Work in Progress recorded through 2021 as well as costs estimated for work outside the 2024 GRC timeframe. For purposes of comparison to the current forecast, SDG&E escalated the authorized cost cap from its original 2021-dollar basis to nominal 2025 dollars using the annual escalation index as provided by the Global Insight Index in Q4 of 2025.

Table – 1
Authorized Cost Cap and Comparison to Current Project Forecast

Description	Amount (\$)	Index Year	Formula
GRC Submitted Cost (2024 GRC)	430,048,330	2021 Dollars	A
Construction Work in Progress (CWIP)	19,960,330	2021 Dollars	B
GRC Submitted Cost (2028 & 2029)	353,000	2021 Dollars	C
GRC Cost Cap (Final Decision)	409,735,000	2021 Dollars	$D = A - B - C$
Escalated Cost Cap (Nominal)	577,951,702	Nominal Dollars	$F = D * \text{Esc}$
Project Forecast	664,353,866	Nominal Dollars	G
Estimated Cost Variance	86,402,164	Nominal Dollars	$H = G - F$

Esc = Escalation, based on an annual index as provided by the Global Insight Index, Q4 2025

5.1 Cost Descriptions

- **General Rate Case (GRC) Submitted Cost:** Total cost submitted for 2024 GRC
- **Construction Work in Progress (CWIP):** Construction Work in Progress (CWIP) from 2015-2021 refers to the costs of assets that are not yet completed but are currently under construction. These assets will eventually become part of rate base once the project is finished and placed into service.
- **GRC Submitted Cost (2028 & 2029 Estimation):** The cumulative cost of work estimated for 2028 and 2029, outside of the 2024 GRC.
- **GRC Cost Cap (Final Decision):** Approved cost cap via the 2024 GRC. This amount is in 2021 direct dollars.
- **Escalated Cost Cap (Nominal):** Approved cost cap escalated in accordance with Global Insight as of Q4 2025 (excludes CWIP).
- **Project Forecast:** Latest forecasted project cost estimate.
- **Estimated Cost Variance:** Cost difference between the Project Forecast and the Escalated Cost Cap.

6. Estimated Cost Variance

The estimated cost variance of \$86,402,164 is due to the following cost categories that have changed from the 2024 GRC submittal reflecting the current project design maturity.

Table – 2
Cost Category Variances from 2024 GRC to Current Project Forecast

Cost Categories	2024 GRC Cost Cap (2021 \$)	Escalated Cost Cap (Nominal \$)	Revised Project Cost (Nominal \$)	Variance (Nominal \$)
Direct Cost	\$409,735,000	\$577,951,703	\$664,353,866	\$86,402,164
Design & Engineering	\$46,693,243	\$66,339,735	\$112,751,393	\$46,411,658
Material & Equipment	\$103,319,421	\$157,802,202	\$159,487,882	\$1,685,680
Construction	\$201,526,674	\$271,127,892	\$299,323,635	\$28,195,743
3rd Party Electrical Service Upgrade	\$886,407	\$1,259,369	\$4,423,299	\$3,163,930
Site Work & Civil	\$13,537,053	\$19,232,858	\$24,139,732	\$4,906,874
Environmental	\$851,779	\$1,210,170	\$3,035,385	\$1,825,215
Company Labor & Project Services	\$41,758,528	\$59,328,706	\$59,504,984	\$176,278
Other	\$1,161,895	\$1,650,770	\$1,687,556	\$36,786

6.1 Estimated Cost Variance Reasons

The following sections describe the primary reasons for the estimated cost variances by cost category relative to the escalated 2024 GRC authorized cost cap, consistent with the cost categories shown in Table-2. As discussed in Sections 3 and 4, these variances reflect the implementation of post-GRC regulatory, environmental, and third-party requirements and the progression of project design from preliminary to near-final design.

6.1.1 Design & Engineering

Costs in this category increased primarily due to post-2024 GRC changes in applicable building and fire codes and an updated geotechnical report. The transition from the 2019 to 2022 California Building Code increased the design's seismic values and concrete section thicknesses. In addition, an updated geotechnical report issued in 2024, resulted in significant quantity increases of deep foundation piles. These factors increased the complexity of the design and required additional engineering efforts to revise structural, civil, and support system designs. The updates in the International Fire code (IFC, 2021,

section 1207) and the California fire code (CFC 2022, section 1207) now mandate a greater separation of Uninterruptible Power Supply (UPS) batteries and necessitate a new Power Distribution Center (PDC) rather than placement within the existing Operations Room.

The 2024 GRC assumed SCE would provide electrical service from a 33kV system but after a detailed review, SCE will now serve the MCM project from a 12kV system. An electrical power study for operating the Electric Driven Compressors showed adverse impacts on SCE's system and their system reliability to serve customers and requires SDG&E to install voltage stabilizing devices which were not included in the original forecast. These changes required additional engineering analysis and design revisions beyond the assumptions reflected in the original 2024 GRC submittal.

In addition, as the design progressed from 30 percent maturity in 2021 to approximately 95 percent in 2026, modifications to pipeline design for the natural gas compressor pipelines were identified, as well as the need for additional space for the growth of instrumentation and controls equipment to operate the new facility. The project also integrated a natural gas blowdown transfer system to reduce the volume of gas released to the atmosphere by transferring gas into the transmission pipeline systems prior to performing maintenance on the compressor units.

Collectively, these factors contributed to an extended design and engineering duration from 18 to 41 months and resulted in a cost increase of approximately \$36.2 million, 61 percent.

In addition, the project now requires expanded engineering support staffing during construction resulting in a cost increase of approximately \$10.2 million, 154 percent, compared to the 2024 GRC submittal.

6.1.2 Material & Equipment

The project costs submitted in the 2024 GRC were based on 30 percent design maturity. As the project design matured, the electrical bulk quantities and cost increased by approximately \$4.3 million, an 82 percent increase. This category is further impacted by the increased quantities of steel and concrete as described in the Construction section below due to the implementation of the California Building Code transition from the 2019 edition to the 2022 edition. These increased material quantities resulted in approximately \$7.5 million, a 46 percent increase in material and equipment cost relative to the 2024 GRC submittal. In addition, the procurement of the voltage stabilizing devices mentioned in the Design and Engineering section increased costs in this category by approximately \$5 million compared to the 2024 GRC submittal.

However, pricing and quantities reductions in areas such as control systems, piping, mechanical equipment, and other miscellaneous items resulted in a decrease since the 2024 GRC submittal of approximately \$15.1 million. The combined price increases and decreases in this category resulted in approximately \$1.7 million net cost increase.

6.1.3 Construction

Construction costs increased primarily due to increased material quantities, installation complexity resulting from updated building code requirements, the revised geotechnical recommendations, as well as construction staffing and commissioning support.

Compliance with the 2022 California Building Code and an updated geotechnical report from 2024, resulted in substantial increases in concrete, structural steel, and deep foundation pile quantities. The 2024 GRC submittal assumed 12,661 cubic yards of concrete, whereas the current design includes 22,225 cubic yards, a 76 percent increase. Structural steel quantities similarly increased from 1,086 tons in the 2024 GRC submittal to 1,764 tons in the current design, representing a 62 percent increase. These increases in concrete and structural steel resulted in combined additional costs of approximately \$27.1 million.

Since the 2024 GRC submittal, instrumentation and controls costs increased by approximately \$8.4 million due to higher quantities, an 82 percent increase, and increased installation unit rates, a 95 percent increase. Similarly, the electrical bulks cost increased by approximately \$5.1 million due to higher quantities, a 10 percent increase, and increased installation unit rates, a 13 percent increase. Additionally, the installation unit rates for the two compressor buildings and the equipment storage shelter increased by approximately \$6.0 million, a 425 percent increase. The square footage of insulation quantities used for pipelines and buildings increased by 28 percent and the pricing increased by approximately \$4.8 million, a 3,045 percent increase. In addition, a warranty cost of approximately \$2.5 million for the EPC contractor to provide a warranty for two years after project completion was not included in the 2024 GRC submittal. The installation of voltage stabilizing devices mentioned in the Design and Engineering section increased costs in this category by approximately \$5 million compared to the 2024 GRC submittal.

Additional cost increases of approximately \$16.9 million, a 42 percent increase, were driven by increased construction management staffing levels to oversee construction subcontractors, as well as increases of approximately \$10.7 million, a 482 percent increase, for commissioning and startup support necessary to manage project execution and ensure successful commissioning and startup activities compared to the 2024 GRC submittal.

While the updated geotechnical report contributed to the increased quantities of concrete and structural steel, the greatest impact was to the number of deep foundation piles required. The number of piles increased from 545 in the 2024 GRC submittal to 852 in the current design, a 56 percent increase, however, the unit rate cost decreased by approximately \$7.1 million, a 46 percent reduction. Additionally, reductions in price and quantities in areas such as piping (\$26.1 million), EPC contractor Fee (\$24.2 million), and other miscellaneous items (\$0.9 million), resulted in a decrease since the 2024 GRC submittal of approximately \$58.3 million. The combined price increases and decreases in this category resulted in approximately \$28.2 million net cost increase.

6.1.4 Third-Party Electrical Service Upgrade

The 2024 GRC submittal included Southern California Edison (SCE) providing electrical service at 33 kV. Following the completion of environmental surveys, the required upgrade to the proposed 33 kV service route was determined to be less environmentally preferable than other potential routes. In addition, the 33 kV service was unlikely to be available to provide electric service within three years of PTC issuance, as required by the PTC.

As a result, SCE identified an alternative electrical service from its 12 kV distribution system for the additional costs of approximately \$3.1 million, to upgrade the electrical infrastructure.

6.1.5 Site Work & Civil

The increase in costs for this category is primarily attributable to subcontractor price increases from 2021 which were incorporated into the 2024 GRC submittal, amounting to approximately \$5.0 million.

6.1.6 Environmental

Due to recent changes to the listing and potential listing of species under the California Endangered Species Act (CESA), SDG&E has since sought additional take coverage for species that were not previously listed. The western burrowing owl officially became a candidate species under the CESA in October 2024, and the California Fish and Game Commission is expected to decide whether to designate the western spadefoot toad as a candidate species in Summer 2026. Under CESA, candidate species are afforded full protection of the law. SDG&E is pursuing coverage for these species under the Western Riverside Multiple Species Habitat Conservation Plan (MSHCP). In addition, the MCM Project required new technical analysis regarding the SCE scope of work to support the South Coast Air Quality Management District's (SCAQMD) environmental analysis.

Further, the Project will incur additional costs associated with environmental monitoring and compliance during construction, specifically to identify and avoid environmental

issues and comply with the requirements of the MSHCP. Collectively the cost in this category has increased by approximately \$1.8 million, a 151 percent increase.

7. Project Timing Changes

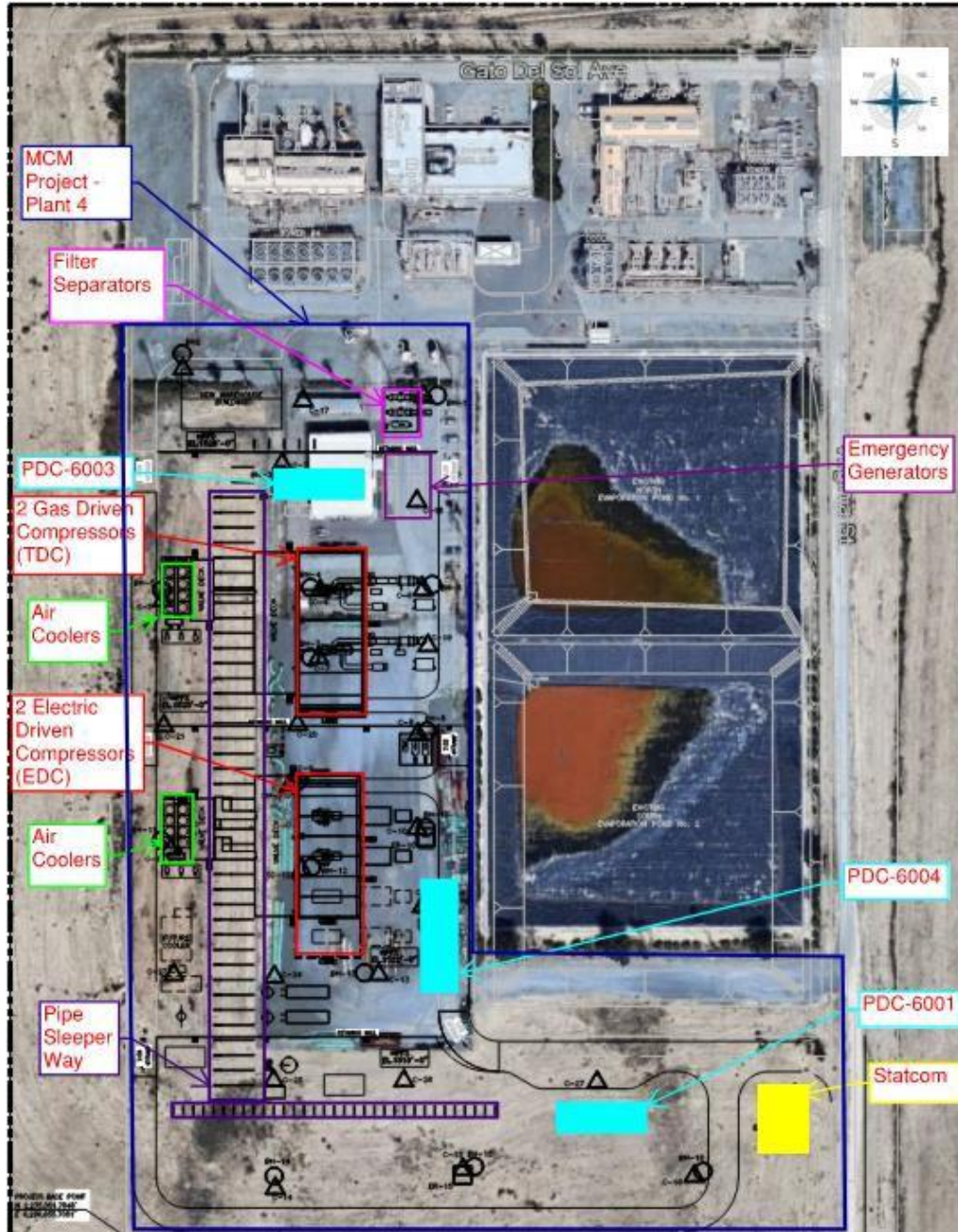
When the 2024 GRC was filed, the project was to be completed and constructed by June 2026; however, the current forecasted Construction Finish date is in 2028.

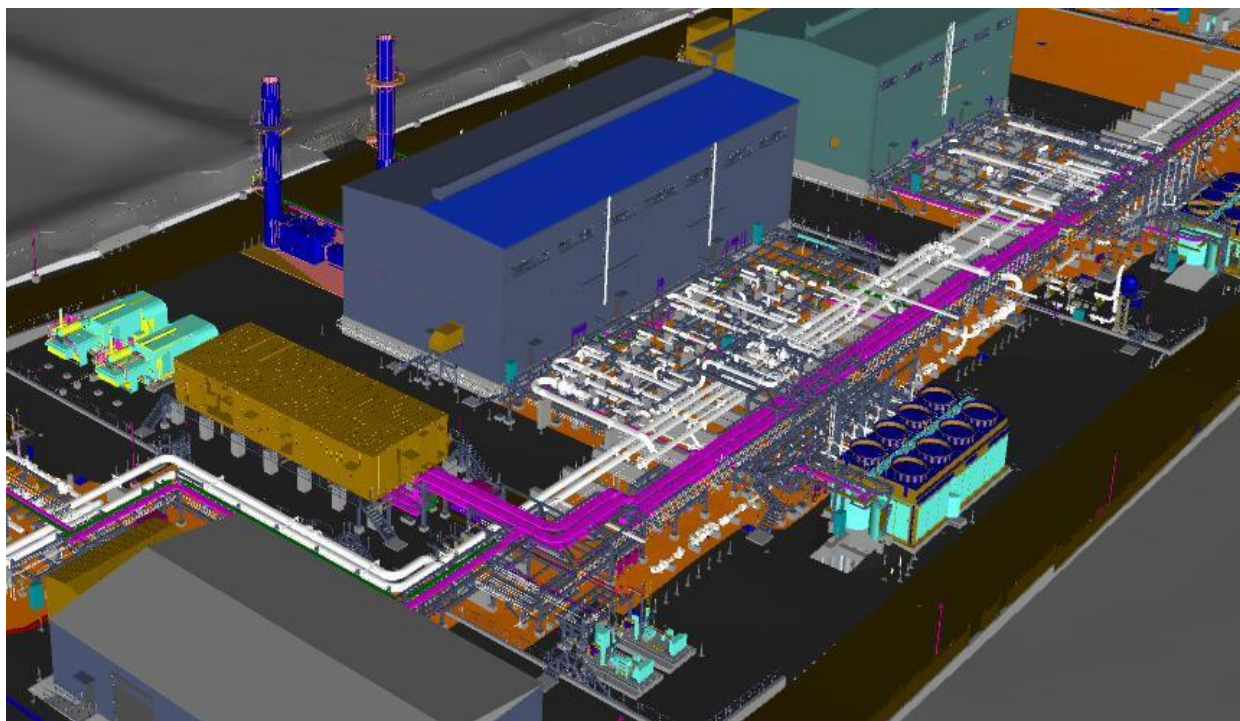
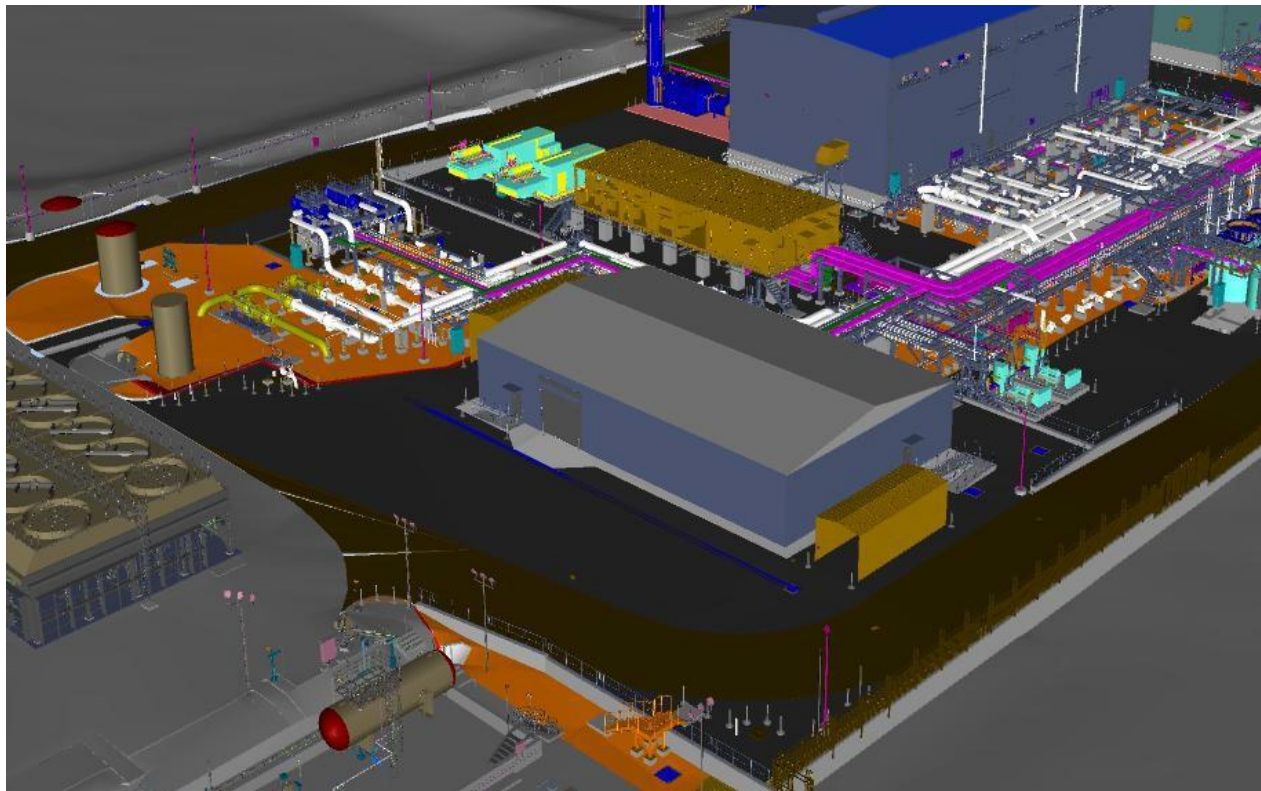
- The delay resulted from additional biological permitting and the impacts of SCE electrical service upgrades on the submittal timeline of the draft California Environmental Quality Act (CEQA) analysis to the South Coast Air Quality Management District (SCAQMD), which has delayed PTC issuance and consequently, the project construction start date.
- The original anticipated PTC issuance date at the time of the 2024 GRC submittal was June 2023, with construction start of March 2024 and completion in June 2026 resulting in 27 months of construction. The PTC issuance date is now expected to be July 2026 with mobilization in August 2026, and the preliminary schedule reflects completion in September 2028 resulting in 27 months of construction.

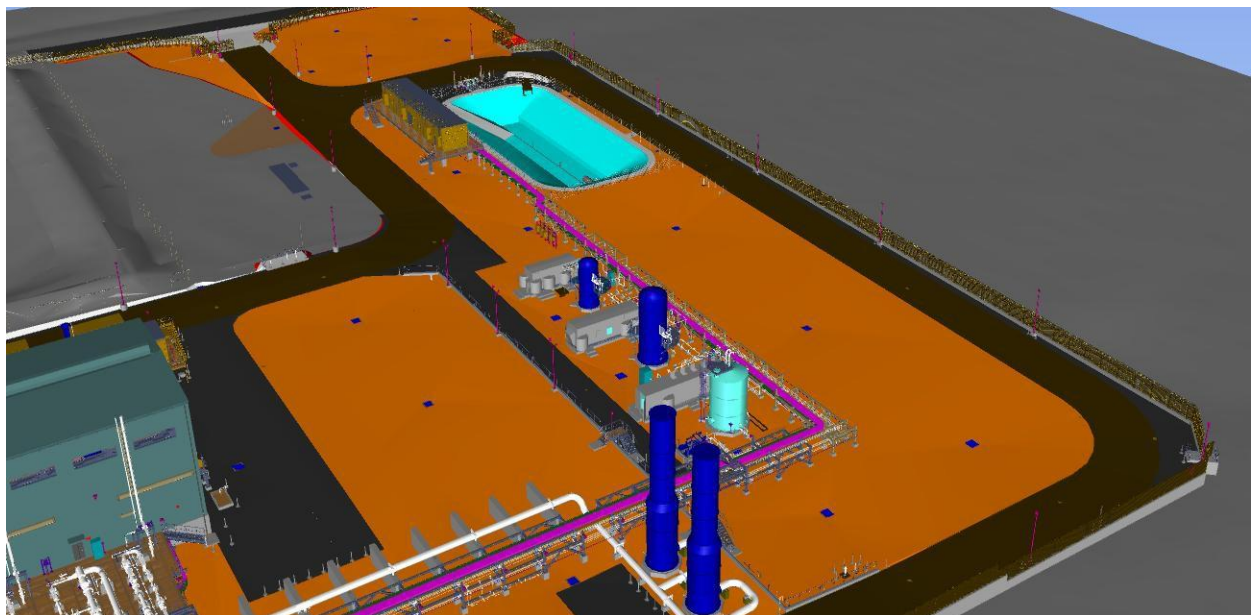
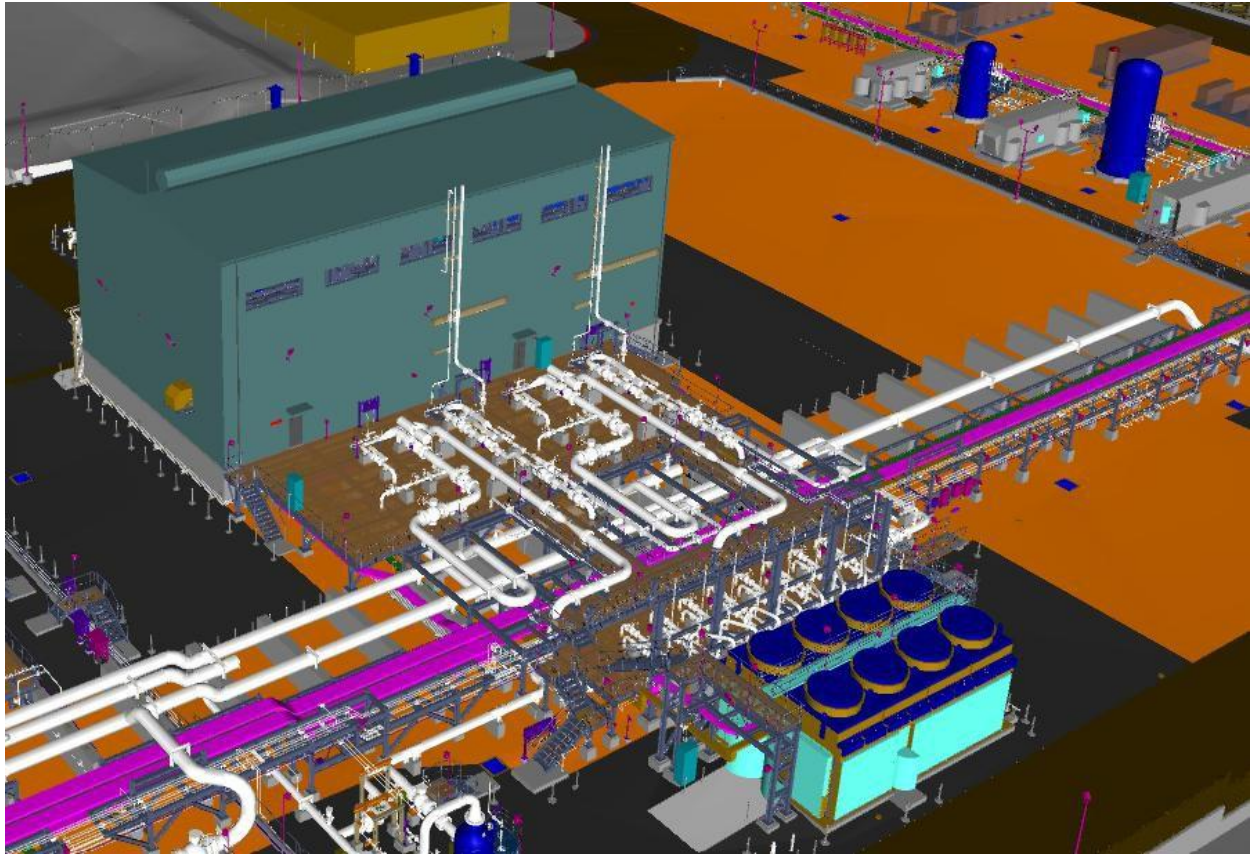
8. Conclusion

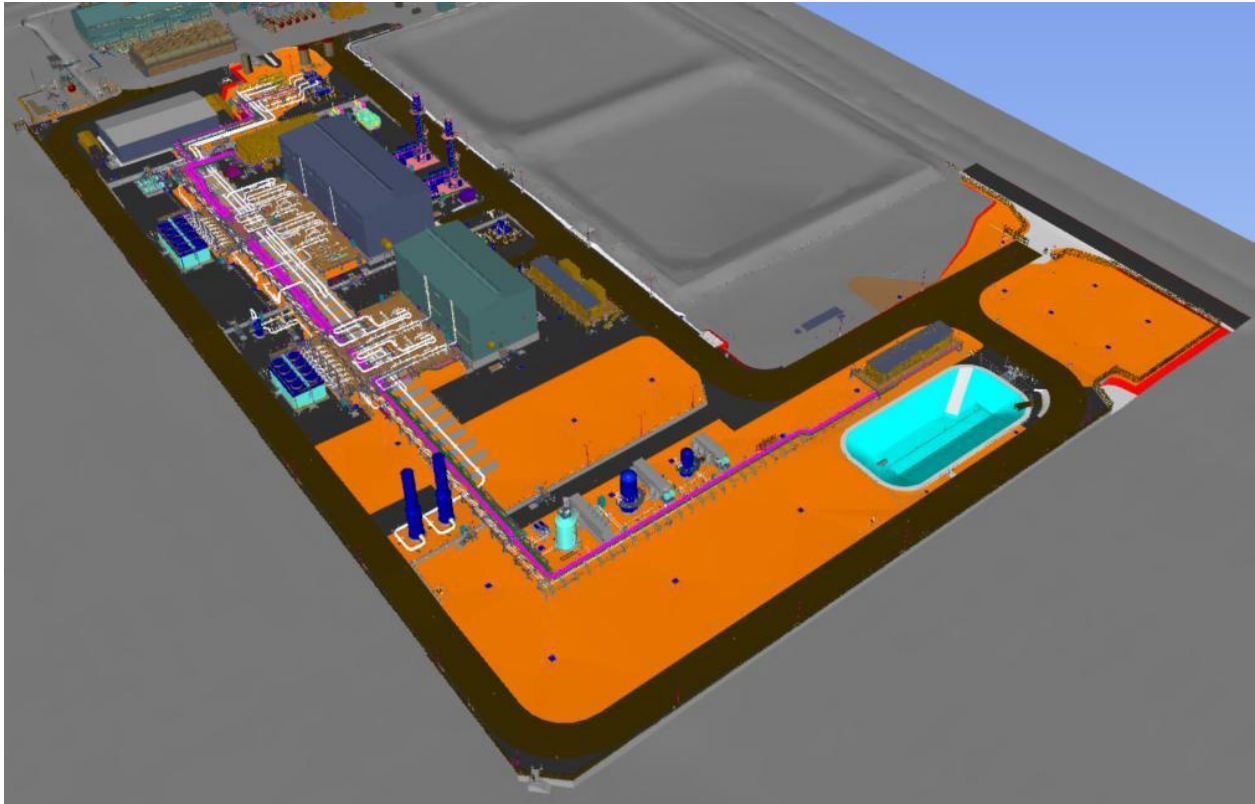
SDG&E will continue to implement value engineering and cost avoidance activities during project execution to prudently manage the total cost of the MCM project for the benefit of customers. These efforts include ongoing commercial negotiations with the Engineering, Procurement and Construction (EPC) contractor on the final price and utilizing contract terms as well as employing strategic construction execution strategies to hold the EPC contractor to a firm construction completion date. SDG&E remains committed to managing the MCM project in a manner that reflects the finalized scope, regulatory requirements, and Commission expectations described in this workpaper.

APPENDIX A
MCM PROJECT SCOPE LAYOUT

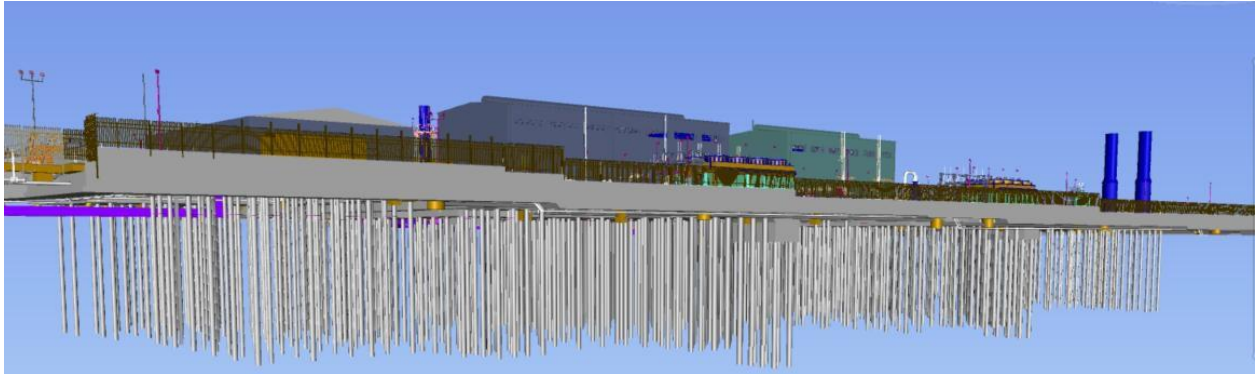








The figure below represents the current design of 852 Piles:



The figure below represents the previous design of 545 Piles:

