Application No: A.14-12-016
Exhibit No: ______________
Witness: Hugo Mejia

Application of San Diego Gas & Electric Company (U 902 G) and Southern California Gas Company (U 904 G) to Recover Costs Recorded in their Pipeline Safety and Reliability Memorandum Accounts	Application 14-12-016 (Filed December 17, 2014)

PREPARED SUPPLEMENTAL TESTIMONY OF

HUGO MEJIA

SOUTHERN CALIFORNIA GAS COMPANY

AND

SAN DIEGO GAS & ELECTRIC COMPANY

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

April 17, 2015

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PREPARED SUPPLEMENTAL TESTIMONY OF

HUGO MEJIA

I. INTRODUCTION

Pursuant to the April 1, 2015 Assigned Commissioner and Administrative Law Judges' Scoping Memo and Ruling, and the April 6, 2015 Administrative Law Judge's Ruling Correcting the Schedule in the Scoping Memo and Ruling, I submit the following supplemental testimony in support of the Application of Southern California Gas Company (SoCalGas) and San Diego Gas & Electric Company (SDG&E) to Recover Costs Recorded in Their Pipeline Safety and Reliability Memorandum Accounts (PSRMAs). This supplemental testimony further addresses the standards and practices employed by SoCalGas and SDG&E to implement and execute our Pipeline Safety Enhancement Plan (PSEP), PSEP execution, and additional detail regarding the scope, construction, and costs of the PSEP projects included within the scope of this application.

II. PSEP STANDARDS AND PRACTICES

PSEP is subject to robust guidelines and oversight to comply with SoCalGas and SDG&E's internal standards and applicable laws and regulations. These applicable regulations include the Code of Federal Regulations, Title 49, Part 192, (49 CFR 192), which provides requirements for Materials (Subpart B), Pipe Design (Subpart C), Design of Pipeline Components (Subpart D), Welding of Steel in Pipelines (Subpart E), General Construction Requirements for Transmission Lines and Mains (Subpart G), and Test Requirements (Subpart J). In addition to its specific requirements, the Federal Code also "incorporates by reference" the requirements of industry standards such as the American Society for Mechanical Engineers (ASME), American National Standards Institute (ANSI), American Petroleum Institute (API) and American Society for Testing and Materials (ASMT). These industry standards provide methodologies and calculations for more specific and technical requirements addressed in the code. In addition, Commission General Order (GO) 112-E provides additional requirements with respect to the design, construction, testing, maintenance, and operation of utility gas gathering, transmission and distribution piping systems.

SoCalGas and SDG&E's internal standards have been developed to address applicable laws and regulations, and internal standards contains references to the regulations that are being addressed. These internal standards are reviewed both on a periodic basis and ad-hoc basis, as regulations are changed and updated. For each project, internal standards and practices are employed to govern the design analysis, materials purchased, and construction practices. To illustrate, Appendix A in my testimony lists applicable SoCalGas and SDG&E Gas Standards.

SoCalGas and SDG&E's Gas Standards are driven by dual objective: complying with applicable laws and regulations and promoting safety and operational efficiency. The Gas Standards are the policies and documents that demonstrate compliance with applicable state and federal requirements. The Commission's Safety and Enforcement Division (SED) regularly reviews the natural gas transmission and distribution functions for each utility providing natural gas in the state. The Commission compares the functions of transmission and distribution with requirements set out by GO 112-E, as well as federal standards. Through these reviews, SED is able to evaluate and provide input on the sufficiency of the Gas Standards in complying with the GO 112-E and referenced provisions of Title 49 of the Code of Federal Regulations (49 CFR). Additionally, the Gas Standards are regularly reviewed and updated by SoCalGas and SDG&E

personnel and contractors[1] to promote both compliance with laws and regulations and to reflect industry standards and SoCalGas and SDG&E's best practices.[2] These Gas Standards form the foundation for SoCalGas and SDG&E's PSEP standards and practices.

1. PSEP Design Standards and Practices

PSEP design standards and practices address materials to be used and proper design in accordance with GO 112-E and applicable federal laws and regulations. PSEP design standards and practices enable: (1) the development of specific engineering requirements for materials used in PSEP projects; (2) preparation of designs that comply with applicable laws, permits, SoCalGas/SDG&E, and industry standards; (3) utilization of applicable engineering and design standards developed for PSEP; (4) consistent design and material requirements for the various engineering design firms contract to assist with design development; and (5) the development of a project-specific design basis for each PSEP project. While many industry standards are incorporated by reference in the Gas Standards,[3] the following industry standards are generally applied when designing facilities:

Steel Line Pipe	API 5L
Steel Line Pipe Grade B	ASTM A 106
Valves	API 6D

[1] For example, when PSEP was first initiated, PSEP contractors reviewed policies, procedures, technical specifications and work instructions. This review was done to, where possible, incorporate improvements and enhance the content.

[2] When unique situations require additional Gas Engineering guidance, PSEP seeks out the assigned Gas Standard "owner" for solutions. A gas standard owner is the subject matter expert responsible for updating standards for compliance to applicable codes. For example, in situations that require an exception to an applicable Gas Standard, the appropriate Gas Standard owner is consulted and if the exception is an acceptable accommodation, the Gas Standard owner will document their approval.

[3] For example, designs are also reviewed for conformance with ANSI B31.8, "Gas Transmission and Distribution Piping Systems." Additionally, each pipeline segment may have additional design components. To illustrate, PSEP pipeline facilities also include, as applicable, cathodic protection systems designed to satisfy the requirements of 49 CFR 192, NACE Standard RPO 0169, NACE Standard TM0497, and applicable Gas Standards.

High Yield Weld Fittings	Manufacturers Standardization Society (MSS) SP 75
Grade B Weld Fittings	ASTM A234
Flanges	ANSI B16.5
Forged Steel Weld Fittings	ASTM A105
Pressure Vessels	ASME VIII
Welding	API 1104
Cathodic Protection	National Association of Corrosion Engineers (NACE) RP-0169
AC Mitigation	NACE RP-0177
National Electric Code	National Fire Protection Association (NFPA) 70

Finally, the design specifications, testing requirements and testing results are documented and retained for the life of the asset to demonstrate compliance, and support the operation, maintenance, and design level of each new segment of pipeline intended to operate at a pressure greater than 100 pounds per square inch gauge (psig).

2. <u>PSEP Materials Standards and Practices</u>

Once the PSEP project has been scoped, designed, and approved, materials are ordered that comply with SoCalGas and SDG&E's Materials Specifications for Gas Operations (MSPs). Unless otherwise specified, API 5L pipe, with the specific approved grades and wall thicknesses, are used. These wall thicknesses and grades for each diameter pipe are as specified in applicable standards and MSPs. The required wall thicknesses for the various class locations are determined and verified using design data. Generally, the following MSPs apply:

Pipe	MSP 41.06.1	Pipe - Steel, Grades A25 Through X70
Fittings	MSP 52.83	Fittings - Forged Steel
	MSP 52.96	Fittings – Butt-Weld Steel
Valves	MSP 58-15.1	Valves - Ball, Small (High Pressure)
	MSP 58-15.2	Valves; Ball, Steel Floating
	MSP 58-20	Valves - Check
	MSP 58-82	Valves; Ball, Steel, Trunnion Mounted
Coatings	MSP 44-50	Fusion Bonded Epoxy External Line Pipe Coating
	MSP 44-50.1	Fusion Bonded Epoxy External Fitting Coating

MSP 44-50.4 Powder Coating for External Protection of Pre-fabricated Gas Components

MSPs are used for each purchase and outline the instructions and expectations for shop inspections and quality assurance. To validate adherence to these standards, SoCalGas and SDG&E may inspect and test materials to help verify the accuracy of the manufacturer's certification and testing, to promote compliance with company requirements and, if applicable, the MSP's Quality Control Inspection Instructions (QCII). Documentation of compliance and certification is retained.

3. <u>Construction Standards and Practices</u>

Construction is subject to extensive standards, practices, and guidelines. First, SoCalGas and SDG&E have explicit guidelines on how contractors are qualified to work on our system.[4] Contractors are not permitted to commence working on our system until they have demonstrated compliance with applicable requirements and Gas Standards and demonstrated appropriate financial and insurance capabilities.[5]

In addition to these threshold requirements to begin work, SoCalGas and SDG&E have implemented comprehensive standards that address, among other areas, excavation, coating

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[4] Contractors are thoroughly vetted and must, among other requirements, have a record of job and safety performance; demonstrate approved production and technical equipment and facilities; demonstrate approved Operator Qualification program as required by 49 CFR 192.801 through 192.809; demonstrate an adequate quality assurance and safety program; have a Department of Transportation (DOT)-and Company-approved Alcohol & Drug Testing Program in accordance with the DOT CFR, Title 49, Part 40 and Part 199 regulated by the Pipeline & Hazardous Materials Safety Administration (PHMSA) or Part 382 if contractor's employees perform commercial motor vehicle driver functions regulated under the DOT Federal Motor Carrier Safety Administration's (FMCSA) Part 382; demonstrate the contractor is meeting State and Federal requirements for the installation and construction of natural gas pipelines (49 CFR 190, 191, 192) Cal Occupational Safety and Health Administration (OSHA) or any other state requirements; and maintain a California Contractors State License.

[5] Contractors are not to commence any work until the enrollment in the Owner Control Insurance Program (OCIP) is completed. All required forms are received, approved and a Certificate of Insurance is provided.

application and inspection, welding, welding inspection, trenching, cover, and pressure testing.[6] Prior to starting work, as a part of the agreement with the contractor, contractors are provided an index of standards, practices, guidelines, and requirements; as applicable, contractors are provided updates when issued. SoCalGas and SDG&E monitor and document compliance with applicable standards, laws, and requirements.

Direct management of the project construction activities is the responsibility of SoCalGas and SDG&E's Construction Management organization. The organization is structured to provide oversight and monitor whether construction is meeting quality standards in a safe construction environment at economical total cost. The organization also provides extensive oversight with regard to safety, environmental protection, site security, construction contract management and administration, planning, scheduling, progress control, cost control, inspection, job site material and logistics management and job site customer interface management. For example, during construction, inspection reports are generated to detail the work, photograph aspects of the work, and document the standards applicable to the work performed during the day (as well as compliance with those standards). The PSEP organization, as well as third party inspection services, may be used to verify compliance with standards.

In addition, the Project Manager and other key members of the Project Management Team provide assistance to Construction Management and provide management and project support; particularly engineering, constructability, procurement follow-up, inspection/expediting of purchased equipment and materials and other specialized services as may be required to support construction. While each construction activity is subject to extensive guidelines,

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[6] *see, e.g.*, Appendix A.

standards, and requirements; one area, welding, was raised in response to our initial application and merits specific mention and discussion.

i. Welding and Welding Inspection

For welders, SoCalGas and SDG&E adhere to applicable laws, regulations, and Gas Standards for welder qualification and re-qualification. As such, SoCalGas and SDG&E qualify and re-qualify Company and Contractor welders in accordance with Title 49 of the CFRs.[7]

SoCalGas and SDG&E prepare a Welder Qualification Test Report when a welder is qualified, maintain a list of qualified personnel, and conduct destructive testing on steel weld samples submitted by welders in accordance with 49 CFR 192 and API 1104 (revision incorporated by reference in 49 CFR Part 192). Subsequently, welders must regularly be requalified. Qualification compliance is monitored by requiring welders to carry proof of certification, verifying their qualifications when performing welding or joining operations.

To provide further oversight, welding inspections are performed by qualified welding inspectors and each weld undergoes non-destructive examination (NDE).[8] Inspection of a weld takes multiple forms. First, the welding inspector performs quality checks prior to and during the welding process. Second, the welding inspector performs a visual inspection of the weld. Finally, an NDE technician inspector performs non-destructive testing, such as radiographic or ultrasonic inspection. Company and contract personnel performing non-destructive testing are

[7] Part 192, 192.227 Qualification of welders, and 192.229 Limitations of welders

[8] Qualified inspectors must demonstrate knowledge and understanding of high pressure steel pipeline materials and components; be CWI (Certified Welding Inspector), CPWI (Certified Pipeline Welding Inspector) or an equivalent certification or training deemed acceptable; demonstrated experience and knowledge in API Standard 1104; have NDT (non-destructive testing) experience and or certification preferred for RT (radiographic) and PT (penetrant) inspections; passing required PSEP operator qualification (OQ) Covered Common Tasks (CCTs); be qualified to perform visual weld inspection in accordance with the recommendation of ASNT or any recognized certification program that is acceptable to the Company; and qualified under task 0811 to perform Visual Inspection of Welding and Welds.

certified according to API-1104 and ASNT-SNT-TC-1A and provide, upon request, a current certification record demonstrating qualification for Task 1.25-0601 – Radiography Examination – 49 CFR 192.243 Nondestructive Examination.

III. PSEP EXECUTION

1. <u>PSEP Project Scope</u>

The decision to test or replace a particular pipeline segment and the inclusion of accelerated and incidental mileage within the scope of a project are important parts of PSEP project execution. As such, early stages of project execution involve planning efforts to scope the project. These efforts are reasonably and prudently designed to involve data gathering to design, scope, and finalize the project.

During Stage 1, a pipeline is evaluated to determine: (1) any changes in records from the 2011 filing; (2) whether further research of records may be beneficial; and (3) the specific start and stop location of the segment to be tested or replaced. These results are presented at a Stage Gate review meeting with PSEP leadership to obtain approval to proceed to Stage 2. Additionally, in Stage 1 the pipeline or valve project is set up in all the project tracking and accounting systems.

During Stage 2, project teams evaluate options for testing or replacement of the required segments approved in Stage 1. This evaluation also includes review of potential accelerated or incidental mileage that can be included within the scope to avoid future costs and operational impacts incurred having to subsequently undertake a separate project on the same line.[9] Options to test or replace are presented to PSEP leadership at a Stage Gate review meeting to seek approval to proceed to Stage 3. PSEP leadership also evaluates additional mileage presented and based on future cost avoidance or constructability needs will approve the inclusion of accelerated or incidental mileage within the scope of the project. While these decisions are project-specific, and addressed at the project level later in my testimony, there are some general considerations and factors.

Assessing potential customer impact is an important first step. If necessary, costs to provide alternate means of service during the time that each section is to be out of service is calculated. Next, the number of test sections is determined. Further engineering review takes into consideration the age and condition of the pipe that would still remain in the system. As a prudent operator, SoCalGas and SDG&E identify situations where not replacing the pipeline, but testing it, will require incurring incremental expenditures to make the line piggable (capable of In-Line Inspection) by removing obstructions, such as back-to-back fittings, short radius ells, pressure control fittings, unbarred tees, and any other obstructions in the pipeline. Also as part of the testing program, critical wrinkle bends and other pipeline anomalies, such as miter bends, leak clamps, and pressure control fittings are removed, so the pipeline can be hydrostatically tested without incident and the pipeline can be filled with water, dewatered, and dried using pigs. If the pipeline is replaced, the piggability will be provided for and wrinkle bend and other

[9] Accelerated miles are miles that would otherwise be scheduled to be addressed in a later phase of PSEP under the approved prioritization process, but are being advanced to Phase 1A to realize operating and cost efficiencies. Incidental miles are miles not scheduled to be addressed in PSEP, but are included where it is determined to improve cost and program efficiency, address implementation constraints, or facilitate continuity of testing.

pipeline anomalies will be eliminated by the retirement of the existing pipe. New lines can have structural advantages compared to earlier vintage lines that improve the overall quality and extend the life of the pipeline asset; as such, replacement of a pipe may reduce expenditures incurred and presented in a future regulatory proceeding.

Next, other engineering factors should be considered depending on the situation of each pipeline. Examples include relocation of the pipeline if it is known that it will need to be moved in the future, and burying the pipeline deeper to reduce the possibility of outside damage.

Again, for projects presented in this application, the decisions and rationale are addressed further below.

2. PSEP Cost Tracking and Categorization

To properly track costs to the appropriate category and project, projects and cost categories are assigned a unique internal order number that is used to track costs associated with that project or activity. Work Order Authorizations (WOA) are first initiated for projects at Stage 1 to capture project costs associated with planning and preliminary design efforts.[10] At Stage 3, a more detailed cost estimate is developed for projects based on information obtained during preliminary design efforts. The detail cost estimates are used to update the WOA. The WOA is routed for approval to the appropriate level person in the company per SoCalGas and SDG&E's internal review policy. If projects are required to be separated into different sections due to constructability, pipeline attribute, or other reasons, separate work orders may be (but are not necessarily) opened up to capture costs of the separate sections.

[10] An initial Phase I WOA will typically range from $200,000 to $500,000.

PSEP assigns each cost to the categories based on SoCalGas and SDG&E guidelines. SoCalGas and SDG&E labor is incurred and assigned bi-weekly. Other costs, such as third-party labor, are assigned as they are incurred and invoiced. Costs are categorized based on SoCalGas and SDG&E's accounting cost element categories:

- Labor: SoCalGas and SDG&E employee labor costs.
- Employee expenses: company employee costs for travel, lodging, meals, training, and other similar costs.
- Material: costs for purchased pipes, fittings, valves and miscellaneous materials.
- Permits and Right of way: cost associated to acquire permits
- Service: third-party supporting service costs and may include costs from construction, engineering, environmental, survey and other services, such as training.
- Property Tax: portion of property taxes on construction work in progress (CWIP) for capital projects.
- AFUDC - (Allowance for Funds Used during Construction): interest utilities are allowed to earn for funds used during construction for capital projects.
- Overheads: represents certain indirect costs which are associated with direct charges (i.e., payroll taxes).

Within these cost categories, costs are further tracked to a greater level of specificity. Similarly, each contractor is expected to set up a separate PSEP project account that will do the following:

- Isolate all costs associated with the project
- Document information and contractual terms and thus become part of the permanent project file
- Document changes in terms and conditions during the life of the project, including project closeout, and update the financial system when a change order is received
- Provide the basis generating project invoices

By requiring contractors to implement robust tracking procedures, the PSEP Project Management Office (PMO) is better able to track and monitor performance against budgets. While budgets may be modified, modifications must be reviewed and approved by the appropriate level of management.

3. PSEP Seven Stage Review Process

As explained in the Prepared Direct Testimony of Rick Phillips, the Seven Stage Review Process sequences and schedules PSEP project workflow deliverables. The Seven Stage Review Process promotes, among other things that the proper remediation action takes place, planning and engineering design are properly executed, accurate cost estimates are developed, and records are included in the final project packages.[11] During the Seven Stage Review Process there are numerous notable activities, but the decisions most affecting project scope is the decision to test and replace, divide segments, and include accelerated and incidental mileage.

i. Stage 1

As discussed earlier, Stage 1 is where the WOA is initiated. The initial WOA is used to track costs for the early stage investigation and validation of Category 4 Criteria mileage and present a project recommendation and package for approval to Stage 2. Notable Stage 1 activities include:

- Issue initial WOA to evaluate and define project objectives.
- Begin process to develop project scope and initial Feature Study Map.
- Gather data from Initial Filing / National Transportation Safety Board (NTSB) / Big 8 / High Pressure Pipeline Database (HPPD) extract.
- Document changes between Initial Filing, valve list and current data.
- Identify Criteria miles.
- Develop Preliminary Test vs. Replace Decision Tree and Segment Explanation Form.
- Research pipe segment history.
- Perform high level environmental review.
- Conduct Stage 1 Gate review.

[11] The Seven Stage Review Process began being implemented by the PSEP Organization in second quarter 2013. Thus, PSEP projects that were initiated prior to that time did not follow this formalized process. A similar, but less formal, project execution methodology was employed in those instances.

ii. Stage 2

Stage 2 is where SoCalGas and SDG&E analyze data for selection of testing or replacement and confirm the Stage 1 Decision Tree outcome. Next, options are presented and considered prior to proceeding to the next stage. Notable Stage 2 activities include:

- Confirm project objectives – scope, cost, schedule to support the update WOA.
- Define construction strategy, sequence and package plan.
- Conduct field investigations by multidiscipline team for scoping and constructability.
- Coordinate with District Operations for property access.
- Send out utility request letter for as-builts.
- Validate tap information with Operations.
- Complete Test vs. Replace Study.
- Preliminary test pressure evaluation.
- Meet with PSEP valve team to coordinate work, if applicable.
- Identify customer / system impacts with Region.
- Identify environmental & permitting requirements.
- Prepare (or submit if complete) materials for detailed Environmental Review Form.
- Initiate Project Execution Plan for Stage 3.
- Identify long lead critical materials.
- Initiate Risk Register (include Region Engineering).
- Engage with Capacity Planning, Environmental, Gas Control, Marketing, Region teams, Pipeline Integrity Group and Land Services.
- Engage with Community Outreach and conduct site visit with Community Outreach and Regional Public Affairs Manager(s).
- Initiate design basis.
- Identify potholing requirements.
- Conduct Stage 2 Gate Review.

iii. Stage 3

Stage 3 is where a project execution plan is finalized, baseline schedules are developed, funding estimates are developed, and project funding is obtained. Notable Stage 3 activities include:

- Finalize project objectives – scope, cost, schedule to support the update WOA.
- Update construction strategy, sequence and package plan.
- Continue field investigations by multi-discipline team for scoping and constructability.
- Identify municipal ministerial permit (technical and construction) requirements from city, county, state, and regulatory agencies.

- Prepare preliminary design drawings and overview sketch.
- Define long lead material and pricing.
- Complete design reviews for constructability, safety, maintainability, operability and environmental constraints.
- Understand customer interruption requirements.
- Update Risk Register with an assessment and identification session (with stakeholders).
- Submit detailed environmental review.
- Prepare applications for long lead and environmental permits / licenses and identify any required mitigation plans.
- Finalize project foot-print (disturbance area).
- Complete and issue Project Execution Plan.
- Complete budget estimate and integrated project schedule.
- Prepare and submit an updated WOA, if appropriate.
- Notify and update internal stakeholders – Region Directors, Energy Markets, Account Executives, etc.
- Initiate Liquefied Natural Gas (LNG)/Compressed Natural Gas (CNG) Plan, if applicable.
- Conduct Stage 3 Gate Review.

iv. Stage 4

For Stage 4, design and construction documents and necessary permits and authorizations are completed and pipeline materials are purchased, received, and prepared to turnover to contractors. Notable Stage 4 activities include:

- Implement management of change procedures.
- Complete procurement of pipeline materials.
- Retain certifications and proofs.
- Conduct design reviews, operating, maintenance, constructability, and environmental constraints; incorporate into the design.
- Finalize design based on input from Region, Gas Control, Operations, Marketing, etc.
- Issue construction documents (IFC) and work packages (95% engineering completion) at scheduled milestones.
- Confirm construction scopes of work, control estimates, schedules, and environmental compliance management plan and requirements.
- Submit long lead and environmental permit applications.
- Obtain applicable regulatory and municipal authority approvals (e.g., Commission, environmental, resource agencies, cities, etc.).
- Engaging site inspectors and providing necessary information.
- Implement any mitigation plans required to achieve permits.
- Prepare project procedures and specifications to include permit requirements to mitigate environmental impacts during site activities.

- Coordinate work with District Operations.
- Negotiate temporary easements.
- Confirm Communication Plan.
- Develop gas handling / tie-in procedures, Lock-Out-Tag-Out (LOTO).
- Conduct Construction Readiness Review (CRR). (Pre- Request for Proposal (RFP) & Pre Contract Award)

v. <u>Stage 5</u>

During Stage 5, construction contractors are mobilized and monitored to document: (1) progress; (2) compliance; (3) conduct testing; and (4) maintain project scope quality, budget and schedule as funded. This activity better enables SoCalGas and SDG&E to react to issues and non-conformances. Notable Stage 5 activities include:

- Mobilize to Sites.
- Receive environmental clearances and agency permits prior to starting any field work.
- Acquire construction equipment, materials and support services.
- Review and approve construction contractor's schedules and plans.
- Manage site activities including safety, Quality Assurance (QA), security, and environmental compliance.
- Conduct pre-construction / construction site inspections and monitoring; fulfill applicable environmental / permitting compliance requirements.
- Ensure outage dates are met, customer impacts are managed and tie-in outage coordination is conducted.
- Review submittals, NDE, material certifications, completion sheets, red-lines, etc.
- Continue risk / change management.
- Manage ready for commission process and turnover as systems are completed.
- Achieve construction completion.
- Complete site restoration.
- Reconcile field documentation.
- Conduct as-built surveying.

vi. <u>Stage 6</u>

During Stage 6, commissioning and operating activities are performed to achieve completion certification for the project. Notable Stage 6 activities include:

- Select and align team to project objectives.
- Coordinate inspections by regulatory authorities.
- Plan sequential testing and start-up of completed systems.

- Assist with operator training.
- Record changes to construction documents.
- Continue change management.
- Complete pre-startup Safety Review.
- Provide technical support.
- Inspect and document that site restoration is complete.
- Continue to conduct environmental inspections / monitoring / reporting per environmental permit requirements, if applicable.
- Coordinate and prepare environmental closeout documentation.

vii. Stage 7

During Stage 7, regulatory, contractual, archival activities are performed to close the project in an orderly manner and issue acceptance certificates. Notable Stage 7 activities include:

- Conduct lessons learned sessions for total project.
- Close all purchase orders.
- Submit Notices of Termination for environmental permits.
- Assemble and archive project documentation.
- Return SoCalGas/SDG&E assets to service.
- Resolve claims or disputes.
- Resolve warranty issues.
- Obtain acceptance from Operations.
- Prepare project benchmarking data and feed back into system.
- Verify final invoices paid.
- Prepare final cost accounting.
- Reconcile close-out documents.
- Verify required documentation is transferred to system of record.

IV. COMPLETED PSEP PROJECTS

1. Line 2000-A

Line 2000 is an approximately 225-mile pipeline of varying diameter (18 inches, 26 inches and 30 inches) that transports gas from the California/Arizona border at Blythe to the Los Angeles Basin. Due to length of this pipeline, the disparate location of Category 4 segments along the length of the pipeline, and for constructability reasons, SoCalGas and SDG&E separated the Line 2000 project into four phases, Line 2000-A, Line 2000-B (Bridge), Line

2000-C and Line 2000-West. The costs presented in this Application are for the successful completion of a hydrotest of the first phase, Line 2000-A.

A. Scope

In our initial PSEP filing submitted in 2011 in Rulemaking (R.) 11-02-019, Line 2000 was identified as a 117.6 mile hydrotest project, comprised of approximately 55 Criteria Miles and 63 Accelerated Miles, as depicted in Table 1 below.

Table 1

	Action	Category 4 Criteria Miles	Accelerated Miles	Total Miles
Line 2000	Hydrotest	55.027	62.574	117.600

Line 2000-A project was initiated in October 2012. At that time, the PSEP organization was not yet fully staffed to a level sufficient to take on a project of this size. Therefore, as an interim measure to begin the design and engineering phase of the project "as soon as practicable," Line 2000-A was assigned to SoCalGas' Project Construction Management (PCM) group. The PCM manages major pipeline construction projects for both SoCalGas and SDG&E. Although the project was initiated by the PCM group, PSEP leadership remained closely involved with the project from its inception.

In designing and planning the Line 2000-A hydrotest, the PCM team complied with applicable SoCalGas and SDG&E policies and procedures, as discussed above. Because this project was initiated prior to the implementation of the formal PSEP Seven Stage Review Process, it was not subject to that formal process. Rather, a similar decision methodology was employed, which incorporated many of the same attributes and goals that form the foundation for the Seven Stage Review Process.

As explained in the Prepared Direct Testimony of Rick Phillips (Chapter 1), at the outset of each PSEP project, the project execution team reviews current and historical documentation to determine the project's scope. As discussed above, numerous factors, including cost, pipe condition, constructability and customer impacts are considered in determining the project scope.

Through this initial process of reviewing current and historical documentation, SoCalGas and SDG&E successfully reduced the scope of the Line 2000 project by over 55 miles, as depicted in Table 2 below.

Table 2

	Action	Category 4 Criteria Miles	Accelerated Miles	Total Miles
Line 2000	Hydrotest	34.174	28.245	62.419

This reduction in scope was accomplished in three ways. First, through the Stage one detailed review of historical data and records, pressure test records were identified for approximately 17 miles of pipeline that were previously categorized as Category 4. Second, approximately 5 miles of Category 4 pipeline were removed from the scope because those miles no longer meet the definition of Criteria mileage.[12] Third, through thoughtful design of the project in four parts, SoCalGas and SDG&E were able to remove approximately 38 miles of pipeline previously categorized as Accelerated Miles from the scope of the project. These

[12] Mileage may no longer be considered Criteria mileage under one of the following conditions: 1) if the pressure on the line is reduced such that it no longer falls within the scope of PSEP; 2) the location of the pipeline is reclassified such that the pipeline no longer falls within the scope of Phase 1 of PSEP; or 3) through pipeline analysis, SoCalGas and SDG&E perform work to validate pipeline features to confirm that the pipeline does not fall within the scope of PSEP. In this case, the mileage reduction is primarily attributable to reclassification of pipe that was previously categorized as located in HCAs to non-HCA.

reductions and additions in scope, and the reasons for those reductions and additions, are summarized in Table 3 below.[13]

Table 3

Reason for Change	Category 4 Criteria Miles (decrease)	Accelerated Miles (decrease)
Test Information Found	(16.865)	-
No longer criteria mileage	(5.192)	-
Revised test limits, footage was filed as accelerated, not required in Phase 1A	-	(37.883)
Mileage added	1.204	3.554

As explained above, due to the long length of Line 2000, the disparate locations of Category 4 segments along that length, and for constructability reasons, Line 2000 was separated into four phases. The scope of the first phase Line 2000-A, is shown in Table 4:

Table 4

	Action	Category 4 Criteria Miles	Accelerated Miles	Incidental Miles	Total Miles
Line 2000-A	Hydrotest	11.372	2.375	1.185	14.932

B. Construction

On August 1, 2013, as the PSEP organization became more fully staffed, management of Line 2000-A was transferred from PCM to PSEP. From this point onward, PSEP managed and executed the Line 2000-A hydrotest. In order to maintain an effective transition, PSEP and PCM worked together for a few months before PSEP took complete ownership of the project.

In June 2013, SoCalGas and SDG&E conducted a competitive solicitation to select a qualified construction contractor to complete Line 2000-A under a fixed-price contract.

[13] Updates to database reflecting HCAs in the area.

SoCalGas and SDG&E received six bids from contractors previously identified as qualified to perform this type of transmission pipeline work, consistent with SoCalGas and SDG&E's standards and procedures. PSEP awarded the contract for the Line 2000-A project to the second lowest bidding contractor, because the lowest bidding contractor had a scheduling conflict that precluded the contractor from initiating construction "as soon as practicable."

Line 2000-A was successfully hydrotested in ten sections. Construction on Line 2000-A took place from June 2013 to December 2013 with each of the ten sections returned to service once tied in. Tie-ins occurred from July to December 2013, and the final section of the project was placed back into service in December 2013.

Originally, SoCalGas and SDG&E planned to hydrotest Line 2000-A in nine sections: BAN-11, BAN-11A, BEAU-12, RIV-13, RIV 14/15, COR-16, COR-17, COR-18 and CHINO-19. Due to a land use issue with an impacted resident, however, SoCalGas and SDG&E were required to divide COR-18 into two separate hydrotests, COR-18 and COR18-A. Thus, Line 2000-A was ultimately hydrotested in 10 sections. As discussed in greater detail below, this schedule and scope modification caused a significant change to the cost of the fixed-price contract that was agreed upon between SoCalGas and SDG&E and the retained construction contractor prior to construction. The ten Line 2000-A project sections were addressed as follows:

BAN-11, BAN-11A: BAN-11 and BAN-11A are adjacent sections. BAN-11 was split from BAN-11A because BAN-11 is located in a Class 1 High Consequence Area (HCA) and the pipe cannot withstand a hydrotest pressure of at least 1.5 times MAOP, as is required for Class 3 locations. BAN-11A, a Category 4 Criteria segment located in a Class 3 location, was hydrotested to pressures greater than or equal to 1.5 times MAOP.

BAN-11A, BEAU-12: There is 5.60 miles of Category 1 pipe between BAN-11A and BEAU-12. Therefore, the BAN-11A pressure test was designed to end after the Category 4 Criteria section, to avoid including 5.6 miles of incidental mileage to the scope of the project.

BEAU-12, RIV-13: The distance between BEAU-12 and RIV-13 is 25.13 miles, consisting of Category 1 and Category 4 non-Criteria pipe. Category 4 non-Criteria pipe extends 7.80 miles to the west of BEAU-12 and 17.21 miles to the east of RIV-13. SoCalGas and SDG&E designed BEAU-12 to end after the Category 4 Criteria section, to avoid including the additional 7.80 Accelerated Miles to the west of Beau 12 in the scope of the project. The pressure tests of Beau-12 and RIV-13 were completed separately to avoid the inclusion of an additional 25.3 miles of incidental mileage within the scope of the project.

RIV-13, RIV-14/15: RIV-13 and RIV-14/15 are adjacent. The test was nevertheless split between these two sections because Service Line (SL) 41-146 needed to be kept in service to avoid impacting two district regulator stations and seven customers. The length of RIV-13 is 2.177 miles.

RIV-14/15, COR-16: RIV-14/15 and COR-16 are 24 feet apart. The test was split between these two sections at Mainline Valve (MLV) #19 to keep SL 41-07 in service.[14] The length of RIV-14/15 is 3.013 miles.

COR-16, COR-17: COR-16 and COR-17 are 32 feet apart. The test was split between these two sections at MLV #20 to keep SL 41-09 in service.[15] The length of COR-16 is 4.123 miles.

[14] SL 41-07 is not bridled to another Transmission line, but is bridled on either side of MLV 19.
[15] SL-41-09 is not bridled to another Transmission line, but is bridled on either side of MLV 20.

COR-17, COR-18: COR-17 and COR-18 are adjacent. These sections were split at this location, and bypass SL 41-227-BR1 installed, to supply SL 41-111 and a non-core customer during the COR-18 hydrotest. The length of COR-17 is 0.990 miles. During the design and engineering phase, SoCalGas and SDG&E identified three core customers and one non-core customer as potentially impacted. After further investigation, the project team determined that only two customers needed temporary gas support. Based on the required loads for these customers, SoCalGas had historically utilized CNG to supply service for these volumes on a temporary basis. Other potential options considered were the installation of a valve to create a new test break and bridle around the valve to serve customer from either side while the other is tested and the utilization of Liquefied Natural Gas. Those options were not selected, because both are more complicated and expensive, as compared to utilizing CNG to serve customers temporarily.

COR-18, COR-18A: COR-18 and COR-18A are adjacent. These sections were tested separately because a new tap, Tap 183.15, was placed into service while planning the hydrotest. SoCalGas and SDG&E changed the design of this section to account for activation of the new tap. A pressure control fitting and bridle arrangement was installed to keep the tap active while COR-18 and COR-18A were tested.

COR-18A, CHINO-19: There is 164 feet of Category 1 pipe between COR-18A and CHINO-19. The COR-18A test was ended after the Category 4 Criteria section to avoid impacting a Pressure District by isolating Supply Lines west of COR-18A.

Consistent with SoCalGas and SDG&E's pressure testing procedures and standards, replacement pipe was installed at the tie-in to each hydrotest segment. The total length of these replacement sections is identified as "Replacement" in Table 5 below, which summarizes the final scope of Line 2000-A:

Table 5

	Action	Category 4 Criteria Miles	Accelerated Miles	Incidental Miles	Total Miles
Line 2000-A	Hydrotest	11.630	1.214	2.351	15.195
	Replacement	0.097	-	-	0.097

C. Cost

As filed back in 2011, the cost of pressure testing Line 2000 was estimated to be $77,980,300 in direct costs. Once SoCalGas and SDG&E split the project into separate phases, SoCalGas and SDG&E opened a preliminary Work Order Authorization of $12,728,000 in direct costs. As discussed above, a preliminary WOA is initiated with a tentative budget to cover the costs of planning and preliminary design efforts, until an update WOA can be developed and refined using a revised, and more detailed, scope of work. Subsequently, once a construction contractor was selected through a competitive solicitation process, the cost estimate and WOA were updated to $20,250,000 in loaded costs. The final project cost was $26,374,878.[16]

The costs of construction for Line 2000-A exceeded initial estimates due to unanticipated circumstances that impacted the scope and schedule of the project. First, as mentioned above, splitting COR-18 into two sections increased added costs, because a number of activities that would have been done once for the entire section, were required to be performed twice. Additional significant changes to the scope of work that were not anticipated in the initial estimate include:

[16] These are direct and indirect costs: O&M - $21,315,883, Capital - $5,058,995.

- A deduction of $40,000 to eliminate installation of a 30-inch Pressure Control Fitting and foundation.
- An addition of $55,000 to cover the costs to excavate, prepare pipe and install a 30-inch PC fitting, four-inch tap and four-inch PC fitting on an existing supply line. This cost includes all coating, backfill and cleanup.
- An addition of $165,000 to install a test tie-in and remove appropriate 700 feet of four-inch temporary supply line, tap PC fitting and tie in. This cost includes assisting the hot tap provider during the tapping and stopping of the 30-inch PC fitting. The costs also include backfill and final cleanup.
- A deduction of $25,000 due to the reduction in length of the COR-18 test segment to 5,046 feet. The reduced price is accounts for the reduction in labor and equipment time.
- An addition of $220,000 to add one additional test segment, COR 18A. This cost includes the cost to excavate, perform isolation of taps within the new test segment, prepare pipe and perform cut and cap of 30-inch pipeline to isolate the new test section (COR-18A).
- An addition of $380,000 to perform water fill, hydrostatic test, dewater and drying of approximately 5,208 feet of section COR-18A. The cost includes installation and removal of test heads, installation and removal of all water fill, test and de-watering piping, connection to water source, tanks, pumps and test heads and all associated piping and test lines. This cost also includes all back fill, grading, restoration, paving, striping and final clean up.
- An addition of $10,000 to fabricate and hydrostatically test a tie-in section for the west end of COR-18A.

- An addition of $52,000 to perform the final tie-in at the east end of COR-18A and reconnect taps.
- An addition of $234,325 to replace 30-inch pipe wrinkle bends along BAN-11A and RIV-14/15 on a time-and-material basis in accordance with the Time and Material Rate Sheet included in the Contractor's Proposal.[17]
- An addition of $2,704– to assist with pipe inspection in a bell hole, providing blasting and cleaning of pipe on a time-and-material basis, per the Time and Material Rate Sheet included in Contractor's Proposal.
- An addition of $47,078– to compensate Contractor on a Time-and-Material basis Per the Time and Material Rate Sheet included in Contractor's Proposal, for changes in scope and delays in obtaining material, delay to dispose of test water and delay due to standby caused by operations. This includes additional costs to provide standby first aid-qualified personnel for an asbestos abatement crew.
- An addition of $390,889 to replace 30-inch pipe wrinkle bends along COR-16 and BEAU-12on a Time-and-Material basis in accordance with the Time and Material Rate Sheet included in Contractor's Proposal. [18]
- An addition of $25,650 to assist with a pipe inspection in a bell hole, providing blasting and cleaning of pipe on a Time-and-Material basis per the Time and Material Rate Sheet included in Contractor's Proposal.

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[17] The costs of removing wrinkle bends along BAN-11A and RIV-14/15 were paid for by Pipeline Integrity and are not requested in this Application.
[18] The costs of removing wrinkle bends along COR-16 and BEAU-12 were paid for by Pipeline Integrity and are not requested in this Application.

- An addition of $172,229 to compensate Contractor on a Time-and-Material basis per the Time and Material Rate Sheet included in Contractor's Proposal for changes in scope to provide additional hydrotest equipment, replace concrete vault at RIV-13, install additional piping and excavation/backfill at Clearwater bypass and remove concrete slurry over pipe at Beau-12. This cost also includes the pick-up of additional materials for the project.
- An addition of $42,000 to perform additional work requested by Company per Table B-2 Additional Work, Contractor's Proposal – Schedule B and compensate Contractor for a delay for the tie-in in excess of 12 hours and for additional 30-inch welds in the trench.

The above changes total $1,731,875.

Upon completion of each hydrotest section, and once the pipeline is put back into service the construction equipment is demobilized and the construction area is cleaned according to conditions identified in the permits.

2. <u>Lines 42-66-1 and 42-66-2</u>

Lines 42-66-1 and 42-66-2 are high pressure distribution lines of varying diameter (four inches, eight inches and twelve inches) located in the city of La Habra.

A. Scope

Lines 42-66-1 and 42-66-2 are short segments identified as replacement projects in the initial PSEP filing in R.11-02-019. The scope of the project, as filed in R.11-02-019, is summarized in Table 6 below.

Table 6

	Action	Category 4 Criteria Miles	Accelerated Miles	Total Miles
Line 42-66-1	Replacement	0.036	-	0.036

Line 42-66-2	Replacement	0.026	0.002	0.028

Line 42-66-1 and 42-66-2 initiated in November 2012. Because the PSEP Organization was not yet fully up in running at that time, the project was planned and executed by the SoCalGas Distribution Organization. The Distribution Organization followed applicable SoCalGas and SDG&E policies and procedures in completing the project.

Because this project was initiated prior to the implementation of the formal PSEP Seven Stage Review Process, it was not subject to that process. Rather, a similar decision methodology was employed that incorporated many of the same attributes and goals that form the foundation for the Seven Stage Review Process. Further, since the scope identified in the filing was less than 1,000 feet in length, the segments were identified for replacement, unless further analysis indicated it would be more appropriate to hydrotest. Due to the extremely short length of pipe to be replaced, it was determined that replacement would be the most cost-effective option.[19]

During the scoping part of this project, Distribution determined that there was no operational benefit to replacing both Line 42-66-1 and Line 42-66-2, because the piping could be configured in such a way that Line 42-66-2 could be shortened by abandoning the portion of the line that was not required. Line 42-66-1 could be replaced and extended so that the pipe layout was simplified, while keeping its same function. Lines 42-66-1 and 42-66-2 could not be taken out of service simultaneously, so the replacement for 42-66-1 was completed before the abandonment of 42-66-2. Additionally, in conformance with the Company standard for pipelines traversing a railroad line, SoCalGas and SDG&E designed the replacement to be encased and laid deeper than a typical pipeline.

[19] Additionally, concerns were raised that it might not be feasible to shut-in a connected regulating station (shut in was only feasible under warm conditions)

Figure 1 below shows the piping in place at the beginning of the project (Red Lines) and what was planned (Blue Lines). This project, as executed, fulfilled the same ongoing use-function with a simplified approach to remediate the Category 4 Criteria mileage identified in the 2011 PSEP filing.

Figure 1: Picture of the pipeline alignment (red – old; blue – new)

The actual scope of the project, as designed and executed is summarized in the Table 7 below.

Table 7

	Action	Category 4 Criteria Miles	Accelerated Miles	Incidental Miles	Total Miles
Line 42-66-1	Replacement	0.035	-	-	0.035
Line 42-66-2	Abandonment	0.028	-	-	0.028

B. Construction

In August 2013, SoCalGas and SDG&E conducted a competitive solicitation to select a qualified construction contractor to complete construction for Lines 42-66-1 and 42-66-2 under a fixed-price contract. SoCalGas and SDG&E received three bids from contractors previously identified as qualified to perform this type of transmission pipeline work, consistent with SoCalGas and SDG&E's standards and procedures. SoCalGas and SDG&E selected the contractor that submitted the lowest bid to complete the project.

Construction on the project took place from early October to December 2013, with the line returned to service in December 2013. Once the line was hydrotested and put back in service, there were about two additional weeks of cleanup work to be done, ensuring the area was returned to the way it was found, before demobilization.

C. Costs

As filed in R.11-02-019, the total direct cost for both Lines 42-66-1 and 42-66-2 was $520,900. A preliminary WOA in the amount of $395,525 was issued on July 19, 2013. On October 9, 2014, the WOA was updated to $555,960 in direct and indirect costs to reflect expected increased costs stemming from the need to provide full-time construction inspection and prepare as-built survey drawings for the newly-constructed line.

The total cost for this project was $914,179 in direct and indirect costs. The main drivers for the increase from the filing was the cost of construction, project management, and construction inspection costs being higher than originally estimated in the filing. More specifically, a deviation – change to the type of tie-in that occurred – contributed to the cost increase. The region planned to do a cold tie-in (the method of making a connection to existing piping with no gas flowing through the pipe. This means that a pipe cannot continue to be in operation whilst maintenance or modifications are being done to it). However, due to the configuration of the tap valves coming off the transmission line, consistent with SoCalGas and

SDG&E practice and to provide safe working conditions, the tie-in was changed to a hot tie (the method of making a connection to existing piping without the interruption of emptying that section of pipe of gas. This means that a pipe is isolated while still having gas in it).

SoCalGas had already secured the necessary right-of-way (ROW) for the work area; the only additional permit that was required was for the railway crossing permit to allow the pipeline to be jack and bored under the railway crossing.

3. Playa Del Rey – Phases 1 and 2

Playa Del Rey is a SoCalGas storage field located in the city of Playa del Rey. Portions of high pressure pipe throughout the storage field fall within the scope of PSEP.

A. Scope

In our initial PSEP filing submitted in 2011, SoCalGas and SDG&E identified approximately two miles of high pressure Playa del Rey piping to be hydrotested, as summarized in Table 8 below.

Table 8

	Action	Category 4 Criteria Miles	Accelerated Miles	Total Miles
Playa Del Rey Storage Field	Hydrotest	1.918	-	1.918

During the initial scoping phase, in October 2012, Category 4 mileage for this project was reduced through the through the Stage 1 detailed review of historical data and records.

To leverage economies of scale and efficiencies, SoCalGas and SDG&E planned the PSEP-related work to be included within the scope of a larger infrastructure project at the SoCalGas Playa del Rey Storage Field, which, among other elements, included hydrotesting of

1,885 feet of pipe. Due to the complexity of the pipeline system at the storage field and multiple design pressures, the project was divided up into six separate hydrotests.

During the scoping phase, an overpressure incident occurred causing a field shutdown in January 2013. This field shutdown presented an opportunity to accelerate portions of the Playa Del Rey piping to be hydrotested as part of PSEP, namely the Phases 1 and 2 hydrotests. The actual phase 1 & 2 Scope executed is summarized in the Table 9 below:

Table 9

	Action	Category 4 Criteria Miles	Accelerated Miles	Incidental Miles	Total Miles
Playa Del Rey Storage Field Phase 1&2	Hydrotest	0.102	-	-	0.102

Playa Del Rey Phases 1 and 2 was planned and executed by The Storage Team (Storage). Storage complied with applicable SoCalGas and SDG&E policies and procedures in planning and executing this project.

Because this project was initiated prior to the implementation of the formal PSEP Seven Stage Review Process, it was not subject to that process. Rather, a similar decision methodology was employed that incorporated many of the same attributes and goals that form the foundation for the Seven Stage Review Process.

B. Construction

There are several Category 4 injection and withdrawal pipelines at the Playa Del Rey Storage Field. The majority of these pipelines are concentrated within the "upstairs" portion of the station. The plan was for these pipelines to be hydrostatically tested (plus a five percent (5%)

spike). As noted above, during the scoping part of this project, SoCalGas and SDG&E decided to execute the project in six phases.

Unlike the other projects presented in this Application, for the Playa Del Rey storage facility work, it was determined that it would be appropriate to sole-source the work on a Time-and-Material basis. This was because the selected contractor had extensive (12 years) experience performing repair and maintenance work at Playa Del Rey (meaning, the contractor is familiar with the existing soil conditions, pipe and substructure locations and requirements for water/soil remediation). In addition, the contractor was already authorized and certified to perform this type of work at Playa Del Rey, and was scheduled to be onsite to perform similar pressure test work on other pipes. While the coordination of work between two different contractors would create issues due to the limited working space, and limited time, allotted for completion of the projects; the use of the one experienced contractor allowed SoCalGas and SDG&E to combine the work (saving projects costs, eliminating recurring mobilization fees, scheduling problems, and work location conflicts). As such, sole sourcing to this contractor was deemed efficient and prudent.

The project was in construction for approximately three and a half (3.5) months from January 2013 to April 2013 with the line being back in service in April 2013. Hydrostatic testing of Phase 1 was successfully completed on March 18, 2013. The 25 line segments tested are part of the withdrawal system located in the "upstairs" area of the storage field. Hydrostatic testing of Phase 2 was successfully completed on March 28, 2013. The 13 line segments tested are part of the withdrawal system located in the "upstairs" area of the storage field. Once the piping was tested and put back in service. SoCalGas and SDG&E completed about four weeks of cleanup work to restore the area before demobilizing.

C. Costs

As filed in R.11-02-019, the total direct costs for Playa Del Rey were estimated to be $600,000. The costs sought in this Application for Phase 1 & 2 of the project is $683,036 in direct and indirect costs. This includes only the portion of costs attributed to the PSEP work. Other costs pertaining to the overpressure incident are not included. In addition, approximately $180,000 in post-1961 costs are excluded.

Because the scope was within a SoCalGas facility, there were no permit issues.

4. Line 45-120XO1

Line 45-120XO1 is a very short section of high pressure distribution piping near Newhall Station in the city of Santa Clarita.

A. Scope

In the initial R.11-02-019 PSEP filing, Line 45-120XO1 was identified for replacement, as summarized in Table 10 below.

Table 10

	Action	Category 4 Criteria Miles	Accelerated Miles	Total Miles
Line 45-120XO1	Replacement	0.002	0.006	0.008

The Line 45-120XO1 was initiated in December 2012 and is the first project completed under PSEP. Because the PSEP Organization was not yet fully up and running at that time, the project was planned and executed by the Distribution Organization, in accordance with applicable Company policies and procedures.

Because this project was initiated prior to the implementation of the formal PSEP Seven Stage Review Process, it was not subject to this process. Rather, a similar decision methodology was employed that incorporated many of the same attributes and goals that form the foundation for the Seven Stage Review Process.

Since the scope identified in the filing was less than 1,000 feet in length, the segment was identified for replacement unless further analysis indicates it would be more appropriate to hydrotest. Due to the extremely short length of pipe to be replaced, it was determined that replacement would be the most cost effective option.[20]

The actual scope executed is summarized in Table 11 below.

Table 11

	Action	Category 4 Criteria Miles	Accelerated Miles	Incidental Miles	Total Miles
Line 45-120XO1	Replacement	0.008	0.00	0.001	0.01

B. Construction

In August 2013, SoCalGas and SDG&E conducted a solicitation to identify a qualified contractor to complete construction of the Line 45-120XO1 project. SoCalGas and SDG&E received two bids from qualified bidders and selected the contractor that submitted the lowest-priced fixed-cost bid.

[20] In addition to the line being less than 100 feet and located in a busy street, there were potential operational complications from taking Line 45-120X01 out of service for an extended period of time. .

Construction began on the replacement project in September 2013 and the line was returned to service in December 2013.[21]

C. Costs

In 2011, SoCalGas and SDG&E estimated the total direct cost for Line 45-120XO1 to be $187,200.

In February 26, 2013, SoCalGas and SDG&E initiated a preliminary budget of $540,712 in direct and indirect costs. On September 5, 2013, the budget was increased to $941,629 in direct and indirect costs to reflect cost increases experienced during construction. Specifically, increased Company labor costs stemming from Transmission employees performing hot ties during construction (this was due to a faulty valve at the tie-in to Line 85); underestimated cost of night work; the unexpected need for the installation of a two-inch temporary bypass and regulator station; and changed Cathodic Protection requirements necessitating two large diameter insulating joints.

The final cost for this project was $886,148 (direct and indirect costs). The primary drivers for the increase in costs as compared to the 2011 filing are the construction, project management and construction inspection costs being higher than originally estimated in the filing. Additional changes that contributed to the cost increase were:

- An addition of $6,465 because during excavation, the contractor discovered that the site had been previously excavated and backfilled with two slack slurry. The excavation of two slack slurry requires additional man hours and the use of a backhoe equipped with a hydraulic breaker.
- An addition of $2,776 to provide a vacuum truck to be on standby during hydrotest operations, which was not contemplated in the original scope of work.

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[21] As part of two subsequent projects in the area, Line 45-120XO1 was subsequently removed from service and abandoned.

- An addition of $37,408 because the tie in took a total of 34 hours to complete, whereas SoCalGas and SDG&E initially estimated the tie-in would be completed in 12 hours.
- An addition of $4,758 to cover the cost of asphalt repairs required by the City of Santa Clarita that were not planned for in the original bid submittal.

Once the line was replaced and put back in service there were about two weeks of cleanup work to be done, ensuring the area was returned to the way it was found, before demobilizing.

V. IN-PROGRESS PSEP PROJECTS

1. Line 32-21

In R.11-02-019, SoCalGas and SDG&E's workpapers identified Line 32-21 as a replacement project. Line 32-21 is located in Alhambra, South Pasadena, Pasadena, and Altadena. As filed in R.11-02-019, the scope of the lines was as follows:

Table 12

	Action	**Category 4 Criteria Miles**	**Accelerated Miles**	**Total Miles**
Line 32-21	Replacement	8.590	1.641	10.230

The initial filing cost for Line 32-21 was $38,423,000 in direct costs.

When PSEP began, Line 32-21 was a Distribution region planned and executed project since PSEP did not yet have sufficient staff to manage the project. It was determined the Distribution region would plan the project under the oversight of PSEP and would assist in construction activities. Ultimately, it was decided that the project should be fully managed by PSEP, which occurred in November 2013. During oversight of the project, the Distribution region complied with applicable Company policies and procedures. However, because this project was initiated prior to the implementation of the PSEP Seven Stage Review Process, it was not formally subject to the Seven Stage Review Process discussed above. Once the project was officially transferred to PSEP, a Project Manager was assigned and the project followed the Seven Stage Review Process going forward.

Stage 1 – Initiation

During Stage 1, a pipeline is evaluated to identify and confirm all required segments that need to be replaced or hydrotested to comply with Commission directives. The team is tasked with defining the limits of the scope and identifying the Category 4 Criteria mileage that requires remediation. Line 32-21 has approximately 8.5 miles of Category 4 Criteria miles spread out along the entire length of the pipeline.

Due to Stage 1 records review and the lowering of MAOP on several sections which reduced the SMYS under 20%, the scope at the end of Stage 1 was as follows:

Table 13

	Action	**Category 4 Criteria Miles**	**Accelerated Miles**	**Total Miles**
Line 32-21	Replacement	7.07	-	7.07

Stage 2 – Selection

During Stage 2, the team evaluated the segments approved in Stage 1. Line 32-21 was partitioned into three sections: Section One (32-21 A), Section Two - North (32-21 B North) and Section Two – South (32-21 B South).

Section One (32-21-A): The majority of this section of the pipeline is 20 inch installed in 1948. The integrity of the pipeline was investigated and it was found that this section of the pipeline had anomalies such as mitre bends and wrinkle bends. There were five mitre bends, 13 assumed short radius elbows and 11 wrinkle bends which needed to be replaced to make the line capable of In-Line Inspection (ILI).

Three options were presented to PSEP leadership:

- Hydrotest (Total Cost - $3.7MM – direct costs)
  - While hydrotesting was presented as being the least disruptive construction method to the community and the lowest cost, SoCalGas would have been unable to verify pipeline integrity with In-Line Inspection (ILI) tools. This option would also result in a longer outage for customers, if compared to replacing the section of the pipeline. There would also be incremental costs associated with providing Liquefied Natural Gas (LNG)/Compressed Natural Gas (CNG) to keep customers on line. New lines will also be made piggable where practical, enhancing future ability to assess the line's integrity.
- Retrofit and Hydrotest (Total Cost - $6.9MM – direct costs)
  - As part of the In-Line Inspection (ILI) program, critical wrinkle bends and other pipeline anomalies, such as mitre bends, and pressure control fittings must be removed since the inspection tools will not pass through these items. Future pipeline integrity verification would be less expensive using a Magnetic Flux Leakage (MFL) and/or Transverse Flux Inspection (TFI) ILI tool as opposed to pressure testing. This option has the longest outage duration of the three options, therefore increasing the incremental costs associated to providing LNG/CNG to keep customers on line. The construction method is moderately disruptive to the community.
- Replace (Total Cost - $9.1MM – direct costs)
  - While replacement provided the shortest outage duration of all three options (limited to tie-in) it would be the most costly when compared to hydrotesting the line. However once the costs associated with retrofitting the pipeline were added, as well as the anticipated costs associated with providing CNG/LNG to keep two core customers on line, it became more cost effective to replace the line. This is because replacing the pipeline would only cost 30 percent more than retrofitting the pipeline and hydrotesting it. New lines can have structural advantages compared to earlier vintage lines that improve the overall quality and life of the pipeline asset. Subsequent pipeline integrity verification will be less expensive using a MFL to TFI tool. That said, the construction method would be the most disruptive to the community, although the shortest outage time.

Risks identified were:

- Continuity of service is disrupted longer than planned
- Disposal of test water
- Test failure
- CPUC delays affecting construction season
- Discovery of hazardous material

Section Two (32-21-B North): the integrity of the pipeline was investigated and it was found that this section of the pipeline has a small number of wrinkle bends and Short Radius Ells and is not piggable.

Three options were presented to PSEP leadership:

- Hydrotest (Total Cost - $4.7MM – direct costs)
  - Replace 16 feet of 12 inch pipe with 20 inch pipe and valve. Two hydrotests including three stopples. Provide a combination of a temporary bypass and Compressed Natural Gas (CNG)/ Liquefied Natural Gas (LNG) to support customers during the downtime on the pipeline.
  - While hydrotesting was presented as being the least disruptive construction method to the community and the lowest cost, SoCalGas would be unable to verify pipeline integrity with In-Line Inspection (ILI) tools. This option would also result in a longer outage for the customer, if compared to replacing the section of the pipeline, and there would be incremental costs associated to providing Compressed Natural Gas (CNG)/ Liquefied Natural Gas (LNG) to keep customers on line. The vintage of the segments in the section are predominantly 1948. New lines will also be made piggable where practical, enhancing future ability to assess the line's integrity.
- Retrofit and Hydrotest (Total Cost - $8.3MM – direct costs)
  - As part of the In-Line Inspection (ILI) program, critical wrinkle bends and other pipeline anomalies, such as mitre bends, and pressure control fittings must be removed since the inspection tools will not pass through these items. Future pipeline integrity verification would be less expensive using a MFL to TFL pig as opposed to hydrotesting. The added cost to replace the limited number of wrinkle bends, miter bends, etc. in this section did not increase this option's cost enough to justify replacement. This option has the longest outage duration of the three options, therefore increasing the incremental costs associated with providing Compressed Natural Gas (CNG) to keep customers on line. The construction method is moderately disruptive to the community.
- Replace (Total Cost - $10.4MM – direct costs)
  - While replacement provided the shortest outage duration of all three options (limited to tie-in) it would be the most costly when compared to hydrotesting the line. This section of pipe would also have incremental costs associated to providing LNG/CNG to keep customers on line. Subsequent pipeline integrity verification will be less expensive using a MFL or TFI tool. The construction method would be the most disruptive to the community, although the shortest outage time.

Section Three (32-21 B South): the integrity of the pipeline was investigated and it was found that this section of the pipeline has one miter bend with Long Radius Ells and Short Radius Ells and is not piggable.

Three options were presented to PSEP leadership:

- Hydrotest (Total Cost - $5.2MM – direct costs)
  - Replace 59 feet of 10 inch and 16 inch with 20 inch pipe and valve. Hydrotest Heads at the Alhambra Station and Huntington/Garfield Intersection. A Liquefied Natural Gas (LNG) Feed will be required to maintain service to the Pasadena Power Plant.
  - Replace sixteen wrinkle bends and ten Short Radius Ells with 3R Ells.
  - While hydrotesting was presented as being the least disruptive construction method to the community and the lowest cost, SoCalGas would be unable to verify pipeline integrity with In-Line Inspection (ILI) tools. The vintage of the segments in the section are predominantly 1952-53. New lines will also be made piggable where practical, enhancing future ability to assess the line's integrity.
- Retrofit and Pressure test (Total Cost - $10.1MM – direct costs)
  - Replace 59-feet of 10 inch and 16 inch with 20 inch pipe and valve. Pressure Test Heads at the Alhambra Station and Huntington/Garfield Intersection. A Liquefied Natural Gas (LNG) Feed will be required to maintain service to a noncore customer.
  - Replace thirteen Short Radius Ells and one miter bend with 3R Ells. As part of the hydrotesting program, critical wrinkle bends and other pipeline anomalies, such as miter bends, and pressure control fittings must be removed since the inspection tools will not pass through these items. Future pipeline integrity verification would be less expensive using a MFL or TFI tool as opposed to hydrotesting. This option has the longest outage duration of the three options, therefore increasing the incremental costs associated to providing LNG/CNG to keep customers on line. The construction method is moderately disruptive to the community.
- Replace (Total Cost - $14.6MM – direct costs)
  - Abandon and replace with 20 inch pipe and valve. A LNG feed will be required to maintain service to the noncore customer.
  - While replacement provided the shortest outage duration of all three options (limited to tie-in) it would be the most costly when compared to hydrotesting the line. Subsequent pipeline integrity verification will be less expensive using a MFL to TFI. The construction method would be the most disruptive to the community, although the shortest outage time.

Once the options for whether to hydrotest or replace were investigated and the costs to manage customer impacts were weighed against the costs and benefits of having a new pipeline, which would lower future costs and risks by improving the quality of the pipeline asset, the following recommendations were made.

- 32-21 A Section One - Replace the pipeline and install new 20 inch pipe from the intersection of Fair Oaks and Alessandro to the intersection of Pasadena Ave and Walnut St. The cost to retrofit this section so it would be piggable and then hydrotest it was estimated to be only 30 percent less than replacement of this section
- 32-21 B Section Two – North – The cost to retrofit the wrinkle bends, miter bends, SR ells, etc. did not add sufficient costs to this project to make the replacement option practical. Testing the pipeline it is the least expensive method that is only moderately disruptive to the community.
- 32-21 B Section Two – South – The cost to retrofit the wrinkle bends, miter bends, SR ells, etc. did not add sufficient costs to this project to make the replacement option practical. Testing the pipeline it is the least expensive method that is only moderately disruptive to the community.

Updated scope at the end of Stage 2 was:

Table 14

	Action	**Category 4 Criteria Miles**	**Accelerated Miles**	**Incidental Miles**	**Total Miles**
Line 32-21-A	Replacement	1.47	-	-	1.47
Line 32-21-B North	Hydrotest	1.57	0.11	1.46	3.14
Line 32-21-B South	Hydrotest	2.11	-	1.73	3.84

Stage 3 – Definition

During Stage 3, the project execution plan was finalized, baseline schedules developed, funding estimates developed, and project funding obtained. Based on there being no constructability need to include this additional mileage the accelerated and incidental mileage was reviewed and taken out of Line 32-21 scope.

Updated scope as of 12 June 2014:

Table 15

	Action	**Category 4 Criteria Miles**	**Accelerated Miles**	**Incidental Miles**	**Total Miles**
Line 32-21 A	Replacement	1.475	-	-	1.475
Line 32-21 B North	Hydrotest	1.577	-	-	1.577
Line 32-21 B South	Hydrotest	2.113	-	-	2.113

Changes since 12 June 2014

Stage 4 – Detailed Design/ Procurement

During Stage 4, SoCalGas had multiple meetings with the City of Pasadena over a 12 month period related to the planned replacement of the section in Pasadena. It was learned the City was planning to install a new 135 KV electric line in the same alignment SoCalGas had proposed the replacement section. Due to the amount of existing substructures in the streets that the electric line could use for its proposed alignment, the only option available was to use a joint trench for the electric line and our pipeline. SoCalGas determined the risks associated with a joint trench with a 135 KV electric line were too great. The decision was made to hydrotest the existing section, and allow the City to use the alignment for their new electric line.

2. <u>Line 37-18-F</u>

In R.11-02-019, SoCalGas and SDG&E's workpapers identified Line 37-18-F as a replacement project. Line 37-18-F begins at the intersection of 190th Street and Crenshaw Blvd in Torrance and ends at the intersection of 190th and Vermont Avenue in Los Angeles, primarily installed in 1946. As filed in R.11-02-019, the scope of the lines was as follows:

Table 16

	Action	Category 4 Criteria Miles	Accelerated Miles	Total Miles
Line 37-18-F	Replacement	2.057	-	2.057

The initial filing cost for Line 37-18-F was $8,248,700 in direct costs.

Phase 1 – Initiation

During Stage 1, a pipeline is evaluated to identify and confirm all required segments that need to be replaced or tested to comply with Commission directives. The team is tasked with defining the limits of the scope and identifying the Category 4 Criteria mileage that must be addressed. Line 37-18-F has approximately 2.057 miles of Category 4 Criteria miles; all but 0.0012 miles were installed in 1946.

The line was installed in 1946 and strength test documentation was not located for this work order during a search of the regional bases and our off-site document storage contractor. The majority of the line still maintains the initial configuration except for V-37-18-05 valve set (0.0012 miles), replaced in 1965.

Updated scope at the end of Stage 1 was:

Table 17

	Action	Category 4 Criteria Miles	Accelerated Miles	Total Miles
Line 37-18-F	Replacement	2.056	-	2.056

Stage 2 – Selection

During Stage 2, the team evaluated the segments approved in Stage 1. It was determined that Line 37-18-F can be addressed as one section. The integrity of the pipeline was investigated and it was found that this section of the pipeline had no active or previous leaks identified, no wrinkle bends, no drips recommended for removal, and required no TFI retrofits.

Two options were presented to PSEP leadership:

- Hydrotest
  - After research and analysis of Line 37-18-F and its overall history and condition hydrotesting was presented as being the least disruptive construction method to the community and the lowest cost.
- Replace
  - In the case of 37-18-F the cost of replacing the pipe is not justifiable because the pipeline did not require retrofitting or have known anomalies.

Once the options for whether to hydrotest or replace were investigated. The costs to manage customer impacts were weighed against the costs and benefits of having a new pipeline, which would lower future costs and risks by improving the quality of the pipeline asset. Then, recommendation to pressure test 37-18-F was made given the overall history and condition of the asset.

Updated scope at the end of Stage 2 was:

Table 18

	Action	**Category 4 Criteria Miles**	**Accelerated Miles**	**Total Miles**
Line 37-18-F	Hydrotest	2.057	-	2.057

Stage 3 – Definition

During Stage 3, the project execution plan was finalized, baseline schedules developed, funding estimates developed, and project funding obtained.

The Total Install Cost estimate established during Stage 3 was $5,225,000 in direct costs.

Stage 4 – Definition

During Stage 4, design and construction documents and necessary permits and authorizations are completed; pipeline materials are purchased, received, and prepared to turnover to contractor.

Permitting for Line 37-18-F has taken longer than originally scheduled. The City of Los Angeles and California Transportation Authority permits have been in the works for over eight (8) months. Additionally, a cost savings practice on this project will be the reuse of hydrotest water from other projects in the vicinity.

Scope as of 12 June 2014:

Table 19

	Action	**Category 4 Criteria Miles**	**Accelerated Miles**	**Incidental Miles**	**Total Miles**
Line 37-18-F	Hydrotest	2.057	-	-	2.057

Changes since 12 June 2014

The cost is trending higher ~$7MM. There were sixteen to twenty (16-20) taps that were not identified and included in the earlier estimate and two large core customers that need Liquefied Natural Gas (LNG) due to their large consumption volume.

3. Line 41-116BP1

In R.11-02-019, SoCalGas and SDG&E's workpapers identified Line 41-116BP1 as a replacement project. Line 41-116BP1 is located in the City of Corona along Magnolia Ave. As filed in R.11-02-019, the scope of the lines was as follows:

Table 20

	Action	**Category 4 Criteria Miles**	**Accelerated Miles**	**Total Miles**

Line 41-116BP1	Replacement	0.002	-	0.002

The initial filing cost for Line 41-116BP1 was $152,000 in direct costs. This project is being managed by Distribution (region) with PSEP oversight.

Phase 1 – Initiation

During Stage 1, a pipeline is evaluated to identify and confirm all required segments that need to be replaced or hydrotested to comply with Commission directives. The project team tasked with defining the limits of the scope and identifying the Category 4 Criteria mileage that requires remediation. Line 41-116BP1 is a 0.002 mile segment containing all Category 4 Criteria originally installed in 1957.

Stage 2 – Selection

During Stage 2, the project team evaluated the segments approved in Stage 1. Line 41-116BP1 can be addressed as one section as pipeline segments that are less than 1,000 feet in length are set to be replaced unless further analysis indicates it would be more appropriate to hydrotest. SoCalGas and SDG&E anticipate replacing or abandoning these short segments because the logistical costs associated with hydrotesting (permitting, construction, water handling, and service disruptions for non-looped system) can approach or exceed the cost of replacement, as supported in my Prepared Direct Testimony.

Stage 3 – Definition

During Stage 3, the project execution plan was finalized, baseline schedules developed, funding estimates developed, and project funding obtained.

The cost estimate established during Stage 3 was $127,734 (loaded cost).

Scope as of 12 June 2014:

Table 21

	Action	Category 4 Criteria Miles	Accelerated Miles	Incidental Miles	Total Miles
Line 41-116BP1	Replacement	0.002	-	-	0.002

Changes since 12 June 2014

This project is still in Stage 3 with preliminary design work being done in the distribution region for the replacement of the supply line. This supply line is one of three supply lines (SL 41-116, SL 41-116BP1 and SL 41-201) that comprise the inlet piping to the Distribution Magnolia Regulator Station. The replacement of all three supply lines will be planned and installed concurrently minimizing the cost and operational impact from this work, as separate shutdowns of the lines would be required if not done concurrently.

4. <u>Line 404</u>

In R.11-02-019, SoCalGas and SDG&E's workpapers identified Line 404 as a hydrotest project. The original PSEP filing with the CPUC included 37.80 miles of hydrotest of which approximately 24.45 miles were determined to meet the Category 4 Criteria. As filed in R.11-02-019, the scope of the lines was as follows:

Table 22

	Action	Category 4 Criteria Miles	Accelerated Miles	Total Miles
Line 404	Hydrotest	24.45	13.35	37.80

The initial filing cost for Line 404 was $14,011,550 (direct cost).

Stage 1 – Initiation

During Stage 1, a pipeline is evaluated to identify and confirm all required segments that need to be replaced or hydrotested comply with Commission directives. The team is tasked with defining the limits of the scope and identifying the Category 4 Criteria mileage that requires remediation. Line 404 begins at the Ventura/Olive St. Compressor Station in Ventura, continues east through Somis and Thousand Oaks, and ends at Haskell Station in Encino. The line is in a Class 3 location throughout populated areas in Ventura, Somis, Thousand Oaks, Westlake Village, Oak Park, and Encino.

During the Stage 1 review of pipeline records to scope this line, several acceptable strength test documents between 1956 and 2007 were discovered; reducing Category 4 Criteria mileage to approximately 5.576 miles over nine sections. In addition to the pipeline sections requiring mitigation, four mainline valves along the line are straddled by small segments of Category 4 Criteria pipe and will also require mitigation.

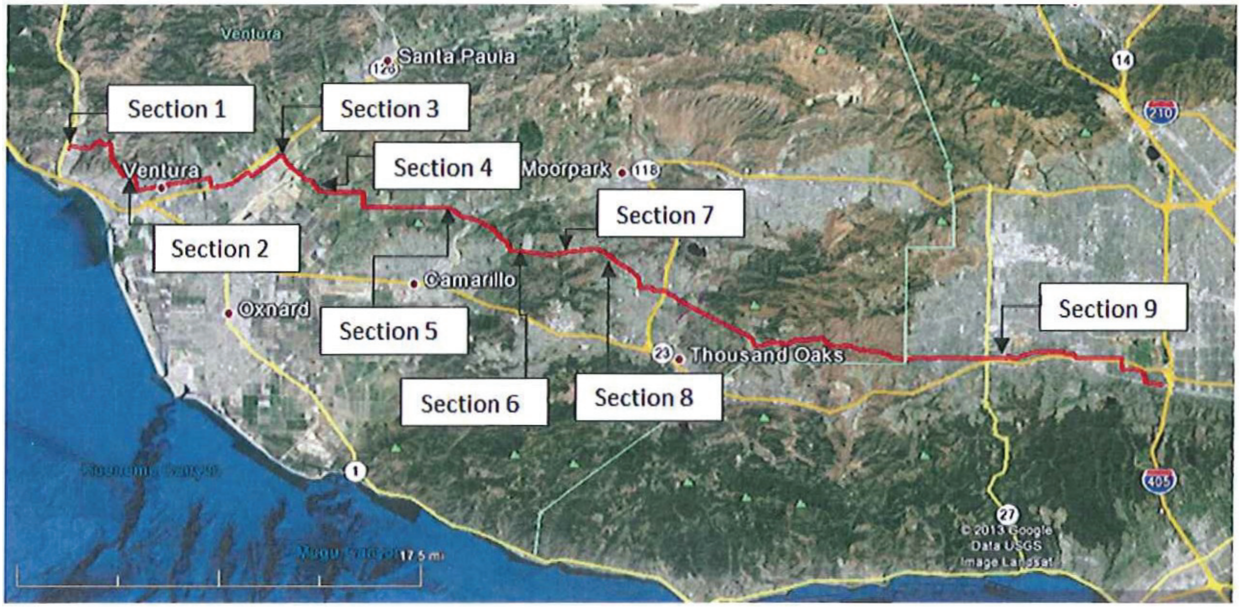
The updated scope at the end of Stage 1 was:

Table 23

	Action	**Category 4 Criteria Miles**	**Accelerated Miles**	**Total Miles**
Line 404	Hydrotest/Replace	5.576	3.045	8.621

Stage 2 – Selection

During Stage 2, the PSEP team evaluated the segments approved in Stage 1. Upon further investigation of the scope, many of the sections that were originally filed as hydrotest sections will be replaced as determined by hydrotest versus replacement studies. A total of nine sections have been identified along L-404 to capture all Category 4 Criteria pipe.



Section One of Line 404 consists of two Category 4 Criteria segments totaling 309 feet in addition to a 41 foot segment of Incidental, non-criteria pipe. Segment One is 246 feet of 12 inch with unknown attributes. Segment Two is 41 feet of incidental footage. Segment Three is 63 feet of 18 inch installed in 1944. The three segments of this section are located primarily within the Olive St/ Ventura Compressor Station in Ventura, CA. To address these segments, two options were presented to PSEP leadership:

- Hydrotest (Total Cost - $985,830 - direct costs)
  - The Section One hydrotest alternative would consist of a hydrotest from STA -0+92 to STA 1+95 and would test through mainline valve 404-0.10-0. The test would include approximately 41 feet of incidental pipe including the pig launcher piping at this location. The test section and valve will be hydrotested in place. The cost estimate generated was $985,830 direct costs. In addition to clearing the Category 4 Criteria segment with a Subpart J compliant strength test, the hydrotest alternative allows for the existing pipeline to remain in place minimizing impact to third parties. The smaller excavation will decrease the potential of damaging station equipment such as instrumentation lines, gauge lines, and sensing lines.
- Replacement (Total Cost - $874,670 - direct costs)
  - The Section One replacement alternative would consist of replacing the Category 4 Criteria segments. The valve section will remain in place while Category 4 Criteria pipe on either side is replaced. Encroachment into the neighbor's property will

require the removal and restoration of a precast concrete wall and driveway flatwork. Pipe sections removed from the station will require proper disposal. The cost estimate generated was $874,670 direct costs. Replacement provides an opportunity for a reduction in threat potential beyond assessment of threats activated by hoop stress.

Replacement of the 18 inch pipe of Segment Two and Three is recommended because it is the least cost alternative and provides superior benefits. Though slightly more impactful to the station and neighbor during construction, the benefits of new pipe with lower costs make this the preferred alternative.

Section Two of Line 404 consists of seven segments; three are Category 4 Criteria segments totaling 1,240 feet, another 246 feet of Accelerated Category 4 Criteria pipeline, and 2,021-feet of Incidental pipe. The Category 4 Criteria pipe was installed in 1944.

Pipeline Integrity completed an In-Line Inspection (ILI) of the line at this location in 2007. The analysis revealed five metal loss anomalies within the test limits of the proposed section. The identified corrosion anomalies are not expected to cause failure of the pipe during hydrotesting and will allow for continued use in its current condition. Pipeline Condition Maintenance Reports (PCMR) in the vicinity indicates the Coal Tar pipe coating is in "Good" condition. There exists a 132 foot long pipe span which will require additional support during a hydrotest. The span must be retrofitted to comply with SoCalGas Standard 182.0095 maximum span lengths of 85 feet and 55 feet for gas and water filled conditions respectively. Retrofitting the span creates significant environmental challenges. Lead times for environmental permits at this location may be substantial.

Distribution Region Engineering has indicated that Section Two has no customer impacts on the distribution system. However, Transmission Planning identified significant impacts with respect to the Transmission line1220. Specifically, a 12 inch tap, which feeds Mandalay and

Oxnard EG customers via L-8109. Account Executives representing these customers will need to coordinate the shutdown during periods of low demand. Valves 404-0.00-0 at Ventura Compressor Station and 404-4.48-0 at N. Mills Rd. are used for the shutdown.

Two options were presented to PSEP leadership:

- Hydrotest (Total Cost - $1.9MM – direct costs)
  - The hydrotest alternative would consist of a hydrotest from STA 185+89 to STA 221+11. This includes hydrotesting through the existing 18 inch mainline ball valve 404-3.71-0. The highest pressure during the spike will be lower than the calculated burst pressure provided by Pipeline Integrity from the In-Line Inspection data. Since the criteria segment exists across a canyon, extending the ends to accessible areas is recommended for constructability. The western side of the potential hydrotest is adjacent to a ridge top and requires minimal extension; the eastern side can be moved to a graded area adjacent to a business parking lot. The extension of the hydrotest ends would add approximately 0.42 miles of incidental pipe minimizing environmental impacts and improve constructability.
  - A retrofit of the span will be required to comply with SoCalGas standards of support spacing in addition to preventing structural failure posed by the added weight of water during a hydrotest. Design considerations will include the addition of a support in the environmentally sensitive canyon. Alternate designs such as support via a crane or temporary bridge will also require permitting in the canyon environment. The cost estimate was $1,895,225 in direct costs. A hydrotest of this section will clear the Category 4 Criteria segment with a Subpart J compliant strength test and accelerating 246 feet of Phase 1B pipe. The hydrotest will assess threats activated by hoop stress such as corrosion, manufacturing defects and latent third party damage. Finally, this alternative allows the existing pipeline to remain in place, minimizing land acquisition and construction work.
- Replacement (Total Cost - $2.5 MM – direct costs)
  - The Section Two, replacement alternative would consist of a 1,240 feet of Category 4 Criteria and 246 feet of PSEP Phase 1B pipe from STA 185+89 to STA 201+24; the existing 18 inch mainline ball valve 404 -3.71-0 would be retained. The replacement would consist of an open trench, offset replacement with 18 inch diameter pipe and fittings. The existing 18 inch pipeline would be abandoned in place.
  - A new span will be required to comply with SoCalGas Standards. Alternate crossing methods such as horizontal directional drilling will be explored during the detailed engineering phase. Installation of a new span will most certainly trigger extensive environmental permits; preliminary indications from the environmental group suggest

permit lead times will be at least six to twelve (6-12) months and include re-vegetation and restoration measures. The cost estimate was $2,449,159 in direct costs. The pipeline threats that will be reduced with replacement include external corrosion, manufacturing and fabrication related defects. The advantage comes from technology advances in pipe manufacturing, coating and 100 percent radiographic inspection of girth welds. Additional benefits include replacement of the span. Finally, the replacement option provides a shortened clearance timeline of approximately two days, as compared to the Hydrotest clearance of at least two weeks.

The replacement of Section Two is recommended. Costs for replacement are higher but the benefits of a replacement outweigh the savings. Replacement of the span will incorporate current span design technology in accordance with current SoCalGas Gas Standards. Modern design is significant; furthermore, many of the challenges of replacing the span will be shared with a retrofit of the existing line. An additional reason to replace is the ability to minimize the shutdown window and manage the risk of successfully supporting the Mandalay and Oxnard EG customers. Replacement provides the added benefits of modern pipe construction, coating, and welding.

Section Three of Line 404 extends from STA 631+45 to STA 659+58 on Darling Road in Saticoy, CA. This section of L-404 was installed in 1944 on Work Order 37500 and runs through an agricultural field. Section Three includes one Category 4 Criteria segment of 1,027 feet and two segments of accelerated pipe totaling 1,336 feet. An additional 450 feet of incidental pipe has been added to this section to improve constructability, provide reasonable space for a staging area, and minimize crop impacts.

Information provided by Pipeline Integrity indicates existing corrosion issues within this section at STA 658+90.87. The identified corrosion is not expected to cause failure of the pipe during testing and will allow for continued use in its current condition. Pipe Condition and

Maintenance Reports (PCMR) in this vicinity indicate that the Coal Tar pipe coating is in "Good/Fair" condition.

Distribution region engineering has indicated that this section will have customer impacts requiring CNG feeds. Engineering has identified two taps; usage loads for one customer indicate CNG bottle feeds during an outage will suffice, the other tap can be supported by Line 406 through a bridled connection.

Two options were presented to PSEP leadership:

- Hydrotest (Total cost - $1.3MM – direct costs)
  - The strength test alternative consists of a hydrotest of the existing pipeline from an open area on Darling Road (STA 631+45) to MLV 404-12.5-0 (STA 659+58) near the pig receiver. The hydrotest would be performed while the line is shut-in between valves 404-8.11-0 on Kimball Rd. and 404-12.5-0 at the Santa Clara River. Cost estimates are $1,327,970 in direct costs. In addition to clearing the Category 4 Criteria segment with a Subpart J compliant strength test, this alternative would have the added benefit of accelerating Phase 1B Category 4 Criteria pipe. Hydrotest locations are in relatively non-impactful areas, staging areas are available and customer service outages are manageable. The hydrotest will assess threats activated by hoop stress such as corrosion, manufacturing defects and latent third party damage. Finally, this alternative allows the existing pipeline to remain in place, minimizing land acquisition and construction work.
- Replace (Total cost - $1.5MM – direct costs)
  - The replacement alternative includes only the Category 4 Criteria and accelerated segments from 635+95 to STA 647+41. This alternative consists of an open trench, offset replacement with 18 inch diameter pipe and fittings. The existing 18 inch pipeline would be abandoned in place. This alternative would result in crop damage impacts to property owners. Cost estimates are $1,527,767 in direct costs.
  - The pipeline threats that will be reduced with replacement include external corrosion, manufacturing and fabrication related defects. The advantage comes from technology advances in pipe manufacturing, coating and 100 percent radiographic inspection of girth welds. Finally, the replacement option provides a shortened clearance timeline of approximately two days, as compared to the hydrotest clearance of at least two weeks.

Section Three is recommended for hydrotest. The hydrotest alternative allows for the strength testing of remaining Category 4 non-criteria pipe at this location and will avoid another mobilization in the same location. Furthermore, the hydrotest would be less impactful to the farm owner, require less land acquisition, and produce a Subpart J compliant strength test.

Section Four of Line 404 extends from STA 748+46 to STA 792+36 in Camarillo, CA. across the Saticoy Country Club. This section of Line 404 was installed in 1944. There are three segments of PSEP Category 4 Criteria pipe totaling 1,902 feet within this section and it traverses Saticoy Country Club. An additional two segments of Category 4 not criteria pipe totaling 2,475 feet are also included in this this section.

Pipe Condition and Maintenance Reports (PCMRs) located in this vicinity indicate the existing condition of the Coal Tar pipe coating is "Good". As-built drawings indicate that there are sixty three (63) existing wrinkle bends within the 1944 pipe segments.

Distribution region engineering has indicated that Section Four will have five taps impacted between mainline valves 404-13.48-East side of Santa Clara River and 404-16.99-0 on Walnut Ave which can be supported by CNG. Transmission Planning identified no capacity issues within this segment. An outage can be supported at any time of the year for duration of four weeks.

- Hydrotest (Total cost - $1.3MM – direct costs)
    - For section four, the hydrotest alternative would consist on one 4,390 feet Hydrotest from STA 748+46 to STA 792+36. The test would capture 2,475 feet of Phase 1B pipe for constructability and staging purposes. Within the test section there is one District Regulator station that feeds The Saticoy Country Club which will require CNG bottle feed during the outage for the test. Cost estimates were $1,300,855 direct costs. This alternative will clear the Category 4 Criteria with a Subpart J compliant test. Additionally, a hydrotest will result in minimal impacts to the Saticoy Country Club community.
- Replacement ($4.2MM – direct costs)

- The replacement alternative would capture all Category 4 Criteria and some of the Category 4 Criteria PSEP Phase 1B pipe. Replacement would be achieved through open trench, offset alignment with 18 inch diameter pipe and fittings for the segments outside the Country Club. HDD method will be pursued for the segments inside the Country Club to minimize impacts to property owners and the Saticoy Country Club. A preliminary look by Regional Public Affairs has concluded further investigation into possible revenue loss claims by the Golf Course will need to be considered; easement documents and right of way will need to be reviewed. Cost estimates are $4,224,517 in direct costs. The Replacement will result in the clearance of the Category 4 Criteria PSEP segment. Furthermore, the 1944 vintage pipe will be replaced and the Category 4 Criteria PSEP segment cleared; added benefits include modern pipe construction, coating, welding and technology.

Section Four is recommended for replacement. The added benefits associated with modern pipeline installation outweigh the benefits of the hydrotest alternative. These benefits include: removal of the existing wrinkle bends, modern pipe construction, coating, and welding.

Section Five of Line 404 extends from STA 1065+53 to STA 1097+57 in Camarillo, CA. This section of Line 404 was installed in 1944 and 1951 respectively. The west side of this section starts along East Los Angeles Blvd., ending at Somis Station; there are three segments within this section that are PSEP Category 4 Criteria totaling 3,171 feet. An additional 40 feet long segment of Category 4 Criteria PSEP Phase 1B is also included in this section.

Pipe Condition and Maintenance Reports (PCMRs) completed in this vicinity indicate the existing condition of the pipeline coating as "Good". As-built drawings catalog one (1) existing wrinkle bend within this section.

Distribution region engineering has indicated that Section Five has eight taps impacted if mainline valves 404-16.99- 0 and 404-20.80-0 at Somis Station are used for the shutdown. Transmission Planning identified no capacity issues within this segment. An outage can be supported at any time of the year for duration of four weeks.

- Hydrotest (Total cost - $1.6MM – direct costs)
  - The test alternative for Section Five would consist of one 3,171 feet long hydrotest from STA. 1065+53 to STA. 1097+64. There are no taps within the test segment that need to be isolated, however there are eight (8) taps that require CNG support for the duration of the hydrotest shutdown. Cost estimates were $1,556,722 in direct costs. This alternative will clear the Category 4 Criteria with a Subpart J compliant test. Additionally, a hydrotest will result in minimal traffic control permits along Hwy118, a major thoroughfare.
- Replacement (Total cost - $4.1MM – direct costs)
  - The replacement alternative will replace the Category 4 Criteria segments from 1065+53 to STA 1097+64 and a portion of Category 4 Criteria PSEP Phase 1B pipe. The replacement would consist of an open trench, offset alignment with 18 inch diameter pipe and fittings. The existing 18 inch pipeline would be abandoned in place. This alternative will result in increased costs for traffic control and safety. Cost estimates were $4,073,725 in direct costs. The Replacement will result in the clearance of the Category 4 Criteria PSEP segment. Further, more the 1944 vintage pipe will be replaced and the Category 4 Criteria PSEP segment cleared; added benefits include modern pipe construction, coating, welding and technology and shorter shutdown duration minimizing Compressed Natural Gas (CNG) support for the eight customers within the shutdown section.

The replacement alternative is the recommended alternative. The added benefits associated with pipeline safety outweigh the benefits of the hydrotest alternative. These benefits include: modern pipe construction, coating, welding and removal of the existing wrinkle bend.

Section Six of Line 404 extends from STA 1097+64 to STA 1167+16 in Somis, Ca. This section of L-404 was installed in 1944. There are four segments of PSEP Category 4 Criteria pipe within this section across Somis Station and Calleguas Creek totaling 498 feet, another 6,254 feet of incidental pipe are included within this section.

PSEP criteria Segments Six and Seven across Calleguas Creek consisted of 14 inch diameter pipe. These segments were recently replaced by the Pipeline Integrity team as part of their In-line Inspection upgrade. Completion sketches and strength test documentation is still pending for this upgrade. The PSEP criteria Segments One and Two were hydrotested as part of the installation of the Pig Launcher inside SoCalGas' Somis Station. Therefore, no further action is required from PSEP for this section beyond tracking of the strength test records and completion drawings for this section.

Section Seven of Line 404 extends from STA 1180+64 to STA 1483+11 in Somis, CA. The majority of this section was installed in 1944. The west side of this section starts at Valve set 404- 22.36-0 and ends at STA 1483+11; there are five (5) segments within this section that are PSEP Category 4 Criteria. This section of L404 is currently not piggable, but the ILI team is retrofitting this section and is scheduled to inspect the line in April of 2014. Pipe Condition and Maintenance Reports (PCMRs) located in this vicinity indicate the existing condition of the pipeline coating is "Good". As-built drawings indicate that there are ninety-two existing wrinkle bends within the 1944 pipe segments.

Distribution region engineering has indicated that Section seven (7) has five (5) taps impacted if mainline valves 404-22.36-0 East of Somis and 404-30.48-0 at Moorpark Rd. are used for the shutdown. An outage can be supported year round for duration of four (4) weeks.

- Hydrotest (Total cost - $3.5MM – direct costs)
  - The hydrotest alternative is the only viable alternative considering the planned investment of retrofitting the pipeline for In Line Inspection. The test will start at Valve 404-22.36-0 at STA 1180+64 and head east to STA 1483+11for a total of 30,247 feet. This test would include additional incidental footage to capture the entire Category 4 Criteria PSEP Phase 1B pipe. All these segments will be tested in one hydrotest. Cost estimates were $3,456,201 in direct costs. The hydrotest alternative will clear the Category 4 Criteria with a Subpart J compliant test. Extending the test limits will avoid re-mobilization in Phase 1B to test or replace the remaining Category 4 PSEP non-criteria pipe.

The hydrotest alternative is the only viable alternative. Combining the criteria, incidental and accelerated segments (21 total) into one test segment is viable, cost effective and minimizes impacts to existing property owners.

Section Eight of Line 404 extends from STA 1483+11to STA 1520+07 in Thousand Oaks, CA. This section of L-404 was installed in 1944. The west side of this section starts along the north- western base of the ridge and heads south-east behind a suburban housing development.

This section of Line 404 is currently not piggable but the Pipeline Integrity team was retrofitting and intending to perform ILI in April of 2014. Pipe Condition and Maintenance Reports (PCMRs) located in this vicinity indicate the existing condition of the Coal Tar pipe coating is in "Good" condition. As-built drawings indicate that there are twenty existing wrinkle bends, six wrinkle bends are within the Category 4 Criteria segment. Additionally, there is a three quarter (¾) inch bottom drip at STA. 1495+00, at the base of the hill, which needs to be removed.

Distribution region engineering has indicated that Section Eight will impact one district regulator if mainline valves 404-27.6-0 and valve 404-30.48-0 are used for the shutdown. An outage can be supported during spring, summer and fall for duration of four weeks.

- Hydrotest (Total Cost - $1.2MM – direct costs)
    - The hydrotest alternative is the only viable alternative considering the planned investment of retrofitting the pipeline for In-Line Inspection (ILI). The hydrotest alternative would consist of a single hydrotest of the existing pipeline in this section. This test will start at STA 1483+11 and head south-east ending at STA 1520+07. This includes additional incidental footage to ensure that the entire Category 4 Criteria section is encompassed. Although significant elevation changes along this section exist, a hydrotest remains a feasible option from preliminary calculations. The shut-in of this section will be between valves 404-27.6-0 and 404-34.48-0. Cost estimates

were $1,174,027 in direct costs. This alternative will clear the Category 4 Criteria with a Subpart J compliant strength test. Additionally, this will result in minimal impacts to the nearby housing community. Extending the test limits will avoid re-mobilization in Phase 1B to hydrotest or replace the remaining Category 4 PSEP non-criteria pipe.

The hydrotest alternative will capture Phase 1B pipe and tie-in to the end of the Section seven hydrotest.

Section Nine of Line 404 extends from STA 2332+42 to STA 2341+79 heading east from Westside Station in Woodland Hills, CA. This section of L-404 was installed in 1944 on Work Order 37500. The west side of this section starts within Westside Station and includes one PSEP Category 4 Criteria segment.

Information provided by Pipeline Integrity indicates no evidence of known, existing corrosion issues within this section. Pipe Condition and Maintenance Reports (PCMRs) could not be located in this vicinity to indicate the existing condition of the pipeline coating.

Distribution region engineering has indicated that Section Nine has no customer impacts if mainline valves 404-44.59-0 at Westside Station and valve 404-47.14-0 at Canoga Ave. are used for the shutdown. There are three supply lines, six regulator stations and one customer within the shutdown section which are bridled to parallel transmission Line 404. An outage can be supported at any time of the year for duration of four weeks.

- Hydrotest (Total Cost - $1.5MM – direct costs)
  - The hydrotest alternative would consist of a hydrotest of the existing pipeline. This test will start at Westside Station at STA 2332+42 and head east towards Burbank Ave., ending at STA 2353+99. The shut-in of this section will be between valves 404-44 .59-0 and 404-47. 14-0. Cost estimates were $1,450,691in direct costs. This alternative will clear the Category 4 Criteria with a Subpart J compliant strength test. Extending the test limits will avoid significant traffic impact on Burbank Ave and Valley Cir Blvd., additional incidental footage is included to take the test end section out of a busy intersection. Community impacts will be less than that of a replacement

since the west end is within Westside station and the east end is out in the street and away from homes. The hydrotest will assess threats activated by hoop stress such as; corrosion, manufacturing defects and latent third party damage. Finally, this alternative allows the existing pipeline to remain in place, minimizing land acquisition and construction work.

- Replacement ($1.4MM – direct costs)
  - The replacement alternative will replace only the Category 4 Criteria segment from STA 2332+42 to STA 2341+79. The replacement would consist of an open trench, offset replacement with 18 inch diameter pipe and fittings. The existing 18 inch pipeline would be abandoned in place. This alternative will result in extensive impacts to property owners. Cost estimates were $1,403,291in direct costs. The pipeline threats that will be reduced with replacement include external corrosion, manufacturing and fabrication related defects. Replacement will result in a short period shut-in on Line 404 on between mainline valves 404-44 .59-0 and 404-47.14-0. Replacement will result in the clearance of the Category 4 Criteria PSEP segment. Further, more the 1944 vintage pipe will be replaced and the Category 4 Criteria PSEP segment cleared; added benefits include modern pipe construction, coating, welding and technology.

The replacement alternative is the recommended alternative due to the lower cost and added benefits. In addition to removing 1944 pipe, a concurrent PSEP replacement project at this location on the parallel Line 406 is scheduled, which can be coordinated to minimize impacts to property owners at this location.

Once the options for whether to hydrotest or replace were investigated and the costs to manage customer impacts were weighed against the costs and benefits of having a new pipeline, which would lower future costs and risks by improving the quality of the pipeline asset the following decisions were made.

- 404 Section One –Replacement
- 404 Section Two – Hydrotest
- 404 Section Three – Hydrotest
- 404 Section Four – Replacement
- 404 Section Five – Replacement

- 404 Section Six – No Scope as Pipeline Integrity replaced this scope as part of an ILI upgrade
- 404 Section Seven – Hydrotest
- 404 Section Eight – Hydrotest
- 404 Section Nine – Replacement

Updated scope at the end of Stage 2 was:

Table 24

	Action	**Category 4 Criteria Miles**	**Accelerated Miles**	**Total Miles**
Line 404	Hydrotest/Replace	5.576	3.045	8.621

Stage 3 – Definition

During stage 3, the project execution plan was finalized, baseline schedules developed, funding estimates developed, and project funding obtained.

As of the 12th June this project was in the early stages and of Stage three (3) the Total Install Cost (TIC) estimate was being developed.

Scope as of 12 June 2014:

Table 25

	Action	Category 4 Criteria Miles	Accelerated Miles	Incidental Miles	Total Miles
Line 404 – Section 1	Replace	0.059	0.000	0.008	0.067
Line 404 – Section 2	Hydrotest	0.235	0.027	0.443	0.705
Line 404 – Section 3	Hydrotest	0.223	0.226	0.097	0.545
Line 404 – Section 4	Replace	0.363	1.016	0.000	1.379
Line 404 – Section 5	Replace	0.607	0.296	0.000	0.903
Line 404 – Section 7	Hydrotest	2.958	1.244	1.591	5.793
Line 404 – Section 8	Hydrotest	0.189	0.479	0.033	0.701
Line 404 – Section 8A	Replace	0.006	0.000	0.000	0.006
Line 404 – Section 9	Replace	0.177	0.000	0.000	0.177
Line 404 – Valve 1	Replace	0.003	0.000	0.003	0.006
Line 404 – Valve 2	Replace	0.001	0.000	0.005	0.006
Line 404 – Valve 3	Replace	0.004	0.000	0.002	0.006
Line 404 – Valve 4	Replace	0.003	0.000	0.004	0.007

Changes since 12 June 2014

For project cost savings the following changes have been made:

- The hydrotest scope for section two has been increased to include Phase 1B scope.
- New replacement scope has been added as section 3A. This is currently two 14 inch non-piggable parallel lines. The plan is to replace them with one 20 inch piggable line. It is Phase 1B scope and has been added to avoid the need to remobilize in the same area and incur additional mobilization costs.
- New replacement scope added as section 4A. This is currently two 14 inch non-piggable parallel lines. Will be replaced with one 20 inch piggable line. It is Phase 1B scope and has been added been added to avoid the need to remobilize in the same area and incur additional mobilization costs.
- Section Four and Five switched to a hydrotest – Accelerated and incidental scope was added to the scope of work so that Sections Four and Five are now combined into one larger hydrotest project. Impact to the neighboring community is kept to a minimum with the hydrotest alternative. There is also a valve relocation that has been added where we will relocate the valve out a public right of way into a safer area.
- The hydrotest scope for Sections Seven and Eight has increased. Accelerated and incidental miles were added to the scope of work brought into the scope of work so that Sections Seven and Eight are now combined into one larger hydrotest project. This change will also result in minimal impacts to the neighboring housing community and

Highway 118. Extending the test limits will avoid the need to remobilize in the same area again to replace the remaining Category 4 non-criterial pipe in future phases of PSEP.

- Section Nine has switched to a hydrotest and the scope for Section Nine has increased. The test was extended in order to limit the impact to traffic along Burbank Blvd., additionally; the test option allows the existing pipe to remain in place, which minimizes the impact to neighbors as well as additional costs associated with land acquisition and easements.

5. <u>Line 406</u>

In R.11-02-019, SoCalGas and SDG&E's workpapers identified Line 406 as a hydrotest project. Line 406 begins at the Ventura/Olive Street Compressor Station in Ventura, continues east through Somis and Thousand Oaks, and ends at Burbank Blvd & Lindley Ave in Encino. As filed in R.11-02-019, the scope of the lines was as follows:

Table 26

	Action	**Category 4 Criteria Miles**	**Accelerated Miles**	**Total Miles**
Line 406	Hydrotest	7.8625	12.8375	20.7000

The initial filing cost for Line 406 was $12,148,100.

Phase 1 – Initiation

During Stage 1, a pipeline is evaluated to identify and confirm all required segments that need to be replaced or tested to comply with Commission directives. The team is tasked with defining the limits of the scope and identifying the Category 4 Criteria mileage that requires remediation.

During the Stage 1, the mileage on Line 406 to be tested or replaced by PSEP in Phase 1A was reduced to approximately half of a mile due additional records found during the Stage 1 scoping. Some sections of non-criteria Category 4 pipe may be accelerated in Phase 1A with the criteria mileage tests. A total of 3 test sections have been identified along Line 406 to capture all Category 4 Criteria pipe.

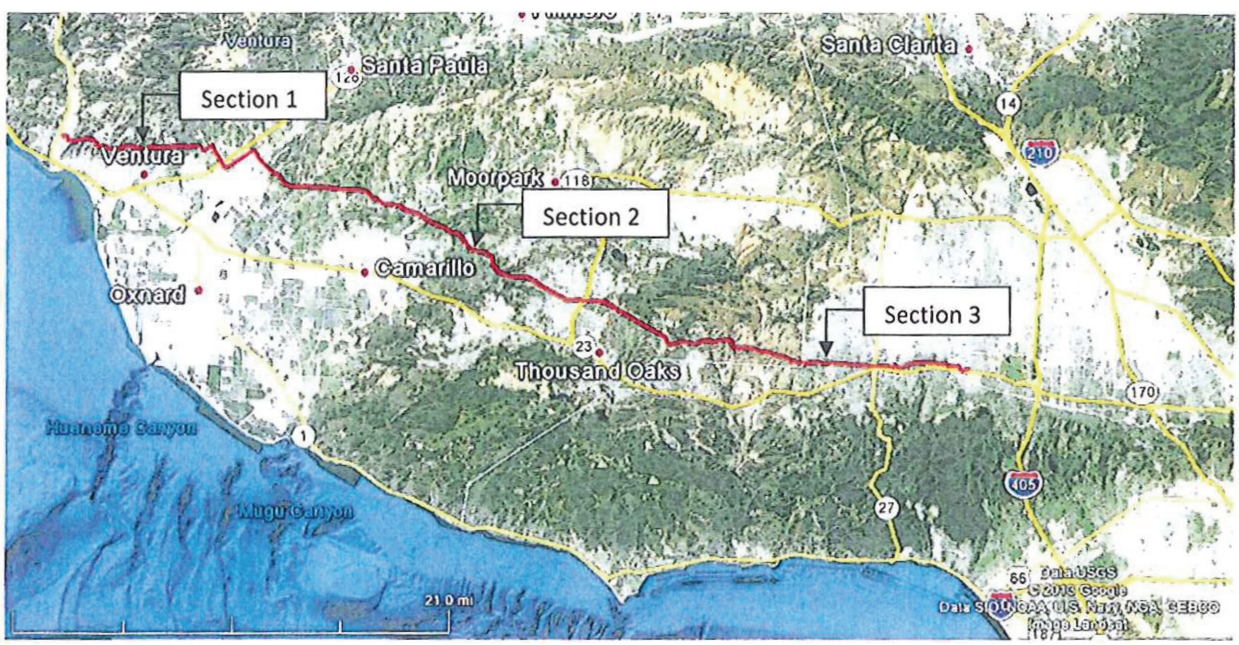
Updated scope at the end of Stage 1 was:

Table 27

	Action	**Category 4 Criteria Miles**	**Accelerated Miles**	**Total Miles**
Line 406	Hydrotest	0.518	0.000	0.518

Stage 2 – Selection

During Stage 2, the team evaluated the segments approved in Stage 1. Upon further investigation of the scope, many of the sections that were originally filed as hydrotest sections will be replaced as determined by hydrotest versus replacement studies. A total of three sections have been identified along Line 406 to capture all Category 4 Criteria pipe.



Section One of Line 406 is a 683' CAT 4 criteria segment that starts in the hills north of Ventura by Hall Canyon Road (STA 239+26). The section extends east, ending just west of the baseball fields at Arroyo Verde Park (STA 246+50). The criteria segment and adjacent pipe were installed in 1952.

Pipeline Integrity completed an Inline Inspection of the line at this location in 2007. The analysis revealed two metal loss anomalies in the vicinity of the CAT 4 criteria section. The anomalies were found at STA 253+33. 13 and STA 253+34.79 and have predicted burst pressures of 1,000 psig and 1,412 psig respectively per the ASME Modified B31G Method. Pipeline Condition Maintenance Reports (PCMRs) in the vicinity indicate the Coal Tar coating is in "Poor/Fair" condition. The metal loss anomaly will require mitigation prior to a hydrotest because the predicted burst pressure is lower than the required minimum test pressure.

Distribution region Engineering has indicated that Section One has no customer impacts if mainline valves 406-0.00-0 at Ventura Compressor Station and 406-5.53-0 at N. Victoria Ave. are used for the shutdown. Additionally, an outage can be supported in any season for the duration of four weeks, making hydrotesting a viable alternative. Section One has been divided up into five segments.

Two options were presented to PSEP leadership:

- Hydrotest (Total Cost - $1,379,963 - direct costs)
  - For Section One, the strength test alternative will consist of a Hydrotest from STA 239+26 to STA 254+23. Since the criteria segment exists entirely on a steep slope, extending the ends to accessible areas will be recommended for constructability. The uphill side of the potential test is adjacent to a ridge top and should require minimal extension; the downhill side can be moved to a graded area adjacent to the baseball fields of Arroyo Verde Park. The extension of the test ends will add approximately 0.15 miles of incidental pipe to the hydrotest option and will require the mitigation of the previously mentioned metal loss anomaly. An additional issue with this location is the class location change at the border of the Category 4 Criteria segment and the

incidental pipe on the downhill end. Spike testing the segment while meeting the required x1.5 multiplier in a Class 3 location will expose the lower elevations of the test section to a hoop stress of 102% SMYS and increase the risk of a failure. Solutions to address this issue are as follows:

        - Seek Engineering approval to exceed 100% SMYS.
        - Request internal approval from Gas Engineering to exclude the spike test in order to not exceed 100% SMYS (The lower elevations will see 86% SMYS without the spike).
        - Test the criteria mileage commensurate with the class 1 location designation to a minimum pressure of 1.25. The Class 3 location would not experience a 1.5xMAOP test pressure and notification to the CPUC would be required. The Class 3 portion of this section was pressure tested to 1.5xMAOP in 1971.
    - In addition to clearing the Category 4 Criteria segment with a Subpart J compliant strength test, this alternative will also mitigate the pipeline anomaly identified by the Pipeline Integrity group and ease constructability issues by including the incidental footage on Arroyo Verde Park side. This alternative also allows the existing pipeline to remain in place, minimizing land acquisition and construction work.
- Replacement (Total Cost - $1,318,024 - direct costs)
    - The Section One, replacement alternative consists of replacing only the Category 4 Criteria segment from STA 236+66 to STA 246+49. This would consist of an open trench, offset replacement with 22-inch diameter pipe and fittings. The existing 22-inch pipeline would be abandoned in place. This alternative will provide new modern pipe coating for the segment. The replacement option will provide a shortened clearance timeline of two days, as compared to the hydrotest clearance of two weeks.

The main challenges of this particular hydrotest are the increased risks of failure due to the class location and elevation issues. Replacement of this 1952 pipe will be challenging due to terrain, however, the added benefits of modern pipe construction, coating and welding, in addition to cost estimates being within 5% of each other, make replacement the recommended alternative.

Section Two of Line 406 extends from STA 1189+97 to STA 1240+88 on Santa Rosa Road in Camarillo, CA. This section of Line 406 was installed in 1951 and runs through an agricultural field. There are two segments within this section, one of which is Category 4 criteria. The accelerated footage can be added to this section to increase tested mileage in a single mobilization, or as needed to improve constructability. The criteria section of this line is only 592' long and completely within the property of the farm owner.

Information provided by Pipeline Integrity indicates no evidence of known, existing corrosion issues within this section. Pipe Condition and Maintenance Reports (PCMRs) in this vicinity indicate that the Coal Tar pipe coating is in "good" condition.

In regards to a shutdown, distribution Region Engineering has indicated that this section will have customer impacts requiring CNG feeds. Engineering has identified three taps which feed five customers; usage loads for these customers indicate CNG bottle feeds will suffice during the potential outage.

In addition to the two alternatives presented below to mitigate the CAT 4 criteria section, an optional 32-foot section of PSEP Phase 2 pipe located within the shut-in valves (upstream of MLV 406-25.06-0, from STA 1322+70 to STA 1323+02) can be replaced. Section Two has three segments, the third being the optional Phase 2 segment that can be done to safe having to remobilize in the future.

Two options were presented to PSEP leadership:

- Hydrotest (Total Cost - $1,729,053- direct costs)
  - Section Two, hydrotest alternative will consist of a hydrotest of the existing pipeline from an open area on Hilltop Ln. (STA 1189+97) to just before a crop trucking area adjacent to Santa Rosa Ave. (STA 1240+88). While the hydrotest is being performed and the line shut-in between valves 406-19.48-0 and 406-25.06-0, the 32-foot section of Phase 2 pipe adjacent to valve 406-25.06-0 can be replaced. In addition to clearing the Category 4 Criteria segment with a Subpart J compliant strength test, this alternative will have the added benefit of accelerating close to a mile of Phase 2 Category 4 pipe. Test locations are in relatively non-impactful areas, staging areas are available and customer service outages will be manageable.

- Replacement (Total Cost - $1 ,262,271 - direct costs)
  - Section Two, replacement alternative will include only the Category 4 Criteria segment from 1234+96 to STA 1240+88. This alternative would consist of an open trench, offset replacement with 22-inch diameter pipe and fittings. The existing 22-inch pipeline would be abandoned in place. This alternative will result in extensive impacts to property owners as it would cut across a field of crops. A parallel replacement will allow for a short duration shut-in on Line 406 between mainline valves 406-19.39-11 and 406-25.06-0. Replacement will result in the clearance of the CAT 4 criteria PSEP segment and have the added benefits of modern pipe construction, coating, and.

For Section Two, the benefits of a replacement over a hydrotest are not significant enough to warrant a decision inconsistent with the PSEP filing. While the cost estimates for the Hydrotest are higher, the Hydrotest alternative accelerates close to a mile of Phase 2 pipe. Additionally, the hydrotest will be less impactful to the farm owner, require less land acquisition and still produce a Subpart J compliant strength test. The recommended alternative will be to hydrotest this section.

Section Three of Line 406 extends from STA 2245+10 to STA 2255+11 on Burbank Blvd. in Woodland Hills, CA. This section of L-406 was installed in 1949 and 1951 on WOs 61000 and 75007 respectively. The west side of this section starts within Westside Station; there are two segments within this section that are PSEP Cat 4 criteria.

Information provided by Pipeline Integrity indicates no evidence of known, existing corrosion issues within this section. No Pipe Condition and Maintenance Reports (PCMRs) were located in this vicinity to indicate the existing condition of the pipeline coating. As-built drawings indicate that there are five existing wrinkle bends within the 1949 pipe segment.

Distribution region engineering has indicated that Section 3 has no customer impacts if mainline valves 406-44 .59-0 at Westside Station and valve 406-47.14-0 at Canoga Ave. are used for the shutdown. There are five Supply lines, five regulator stations and 1customer within the shutdown section which are bridled to parallel transmission L-404. An outage can be supported at any time of the year for duration of four weeks.

Two options were presented to PSEP leadership:

- Hydrotest (Total Cost - $1,422,092 - direct costs)
  - Section Three hydrotest alternative will consist of a hydrotest of the existing pipeline. This test will start at Westside Station at STA 2245+10 and head east towards Burbank Ave., ending at STA 2266+92. This includes additional incidental footage to take the test end out of the busy intersection at Valley Circle Blvd., and Burbank Blvd. The shut-in of this section will be between valves 406-44.59-0 and 406-47.14-0. This alternative will clear the Category 4 Criteria with a Subpart J compliant strength test. Extending the test limits will avoid significant traffic impact on Burbank Ave and Valley Cir Blvd., additional incidental footage is included to take test end section out of a busy intersection. Community impacts will be less than that of a replacement since the west end is within Westside station and the east end is out in the street and away from homes.
- Replacement (Total Cost - $ 1 ,572,540 – direct costs)
  - Section Three, replacement alternative will replace only the Cat 4 Criteria segment from 2245+10 to STA 2255+11. The replacement would consist of an open trench, offset replacement with 20-inch diameter pipe and fittings. The existing 20-inch pipeline would be abandoned in place. This alternative will result in extensive impacts to property owners. An open trench replacement in an alignment parallel to the existing pipeline will result in a short period shut-in on Line 406 on between mainline valves 406-44.59-0 and 406-47.14-0. Replacement will result in the clearance of the Category 4 Criteria segment. Further, more the five existing wrinkle bends within the criteria segment will be removed. 1949 vintage pipe will be replaced and the Category 4 Criteria segment cleared; added benefits include modern pipe construction, coating, welding and technology.

While the cost estimate for a replacement is incrementally higher, the replacement alternative is the recommended alternative due to the condition of the pipe. In addition to removing 1949 vintage pipe, the existing five wrinkle bends will be removed. Furthermore, replacing these segments will provide a modern pipe coating.

Once the options for whether to hydrotest or replace were investigated and the costs to manage customer impacts were weighed against the costs and benefits of having a new pipeline, which would lower future costs and risks by improving the quality of the pipeline asset the following decisions, were made.

- 406 Section One – Replacement
- 406 Section Two/ Two A – Hydrotest/ Replacement
- 406 Section Three – Replacement
- 406 Section Four – Replacement done by Pipeline Integrity

Updated scope at the end of Stage 2 was:

Table 28

	Action	**Category 4 Criteria Miles**	**Accelerated Miles**	**Incidental Miles**	**Total Miles**
Line 406	Hydrotest/ Replace	0.526	0.828	0.037	1.391

Stage 3 – Definition

During Stage 3, the project execution plan was finalized, baseline schedules developed, funding estimates developed, and project funding obtained. Due to HCA and class location the scope for Line 406 initially proposal was updated to include five sections due to two additional category 4 criteria sections being identified that were not in the original filing.

- 406 Section One – Replacement
- 406 Section Two/ Two A – Hydrotest/ Replacement
- 406 Section Three – Replacement
- 406 Section Four – Replacement done by Pipeline Integrity – Not PSEP Funded
- 406 Section Five – Replacement

The estimate for the Line 406:

- Section One – $2,732,108.26 (direct costs)
- Section Two – $3,107,457.34 (direct costs)
- Section Three –$4,258,924.45 (direct costs)
- Section Five – $1,176,866.85 (direct costs)

Updated scope at the end of Stage 3 was:

Table 29

	Action	Category 4 Criteria Miles	Accelerated Miles	Incidental Miles	Total Miles
Line 406	Hydrotest/ Replace	0.521	0.828	0.057	1.406

Stage 4 – Detail Design/ Procurement

During Stage 4, design and construction documents and necessary permits and authorizations are completed; pipeline materials are purchased, received, and prepared to turnover to contractor.

As of June 12, 2014 Line 406 was in Stage 4.

Scope as of 12 June 2014:

Table 30

	Action	Category 4 Criteria Miles	Accelerated Miles	Incidental Miles	Total Miles
Line 406 – Section 1	Replace	0.129	0.014	0.003	0.146
Line 406 – Section 2	Test	0.168	0.808	0.034	1.010
Line 406 – Section 2A	Replace	0.000	0.006	0.000	0.006
Line 406 – Section 3	Replace	0.191	0.000	0.020	0.211
Line 406 – Section 4	Replace	0.008	0.000	0.000	0.008
Line 406 – Section 5	Replace	0.025	0.000	0.000	0.025

Changes since 12 June 2014

For project cost savings, the following changes have been made:

- The hydrotest scope for section two has been increased to include Phase 1B scope.

- Section Three switched to a hydrotest – The scope will be extended to limit the impact to traffic along Burbank Blvd. Additionally, the hydrotest option allows the existing pipe to remain in place, which minimizes the impact to neighbors as well as additional costs associated with land acquisition and easements.

6. Line 407

In R.11-02-019, SoCalGas and SDG&E's workpapers identified Line 407 as a hydrotest project. Line 407 begins in Encino, continues south through the Santa Monica mountains, and ends at Western Terminal Station in Los Angeles. As filed in R.11-02-019, the scope of the lines was as follows:

Table 31

	Action	**Category 4 Criteria Miles**	**Accelerated Miles**	**Total Miles**
Line 407	Test	6.251	0.049	6.300

The initial filing cost for Line 407 was $5,125,850.

Phase 1 – Initiation

During Stage 1, a pipeline is evaluated to identify and confirm all required segments that need to be replaced or tested to comply with Commission directives. The PSEP team is tasked with defining the limits of the scope and identifying the Category 4 Criteria mileage that requires remediation.

Line 407 begins in Encino, continues south through the Santa Monica mountains, and ends at Western Terminal Station in Los Angeles. The line is primarily in a class 3 HCA in Encino, in a class 1 location through the Santa Monica Mountains, and in a class 3 and 4 HCA in Los Angeles.

The line was first installed in 1951. The line was tested in several sections in the populated areas, per construction specifications. A Pipeline Database Update Form was submitted to and approved by Pipeline Integrity in order to document the sections that had a strength test performed, in addition to what was already recorded in the feature study. The construction specifications did not give instructions to test through the class 1 location in the Santa Monica Mountains. Subsequently, a large section of Line 407 in Encino was tested in 1955.

The feature study had documented strength tests for all subsequent work orders except two:

- Approximately 7' of 30" main was replaced in 1963 in response to third party damage. Strength test documentation was not located during a search of the region bases and Iron Mountain.
- In 2007, Line 407 was retrofitted for in-line inspection and strength test documentation was located during the electronic search phase in Pipeline Database Management System (PDMS).

Additional strength test documentation located during the search phases reduced the category 4 criteria mileage by 5.15 miles. At the completion of our review, 1.45 miles of category 4 criteria remain on Line 407. The cost was prorated from that of the filing to $1,211,490 until Stage 3 when a more detailed cost estimate is completed.

Updated scope at the end of Stage 1 was:

Table 32

	Action	**Category 4 Criteria Miles**	**Accelerated Miles**	**Total Miles**
Line 407	Test	1.45	0.0248	

Stage 2 – Selection

During Stage 2, the project team evaluated the records to determine scope and segmentation and determined that the scope could be further reduced. The project was divided into two hydrotest sections. The remediation options analysis was done on the start and end points of each test and these were presented to PSEP Leadership.

Line 407 North:

- Option 1: $1,695,000 (direct costs)
  - North Hydrotest (Ventura Blvd. to Mulholland Dr.) – The benefit of beginning the 14,526 foot hydrotest at Ventura Boulevard and ending it at Mulholland Drive would mean there would be less impact to the community. Ending the hydrotest at Mulholland Drive rather than at Caballero reduces the grading and clearing required so will impact the cost. The cost is higher that option 2.
- Option 2: $1,408,000 (direct costs)
  - North Hydrotest (Lindley Ave. to Caballero Canyon) – The only benefit of beginning the 6,205 foot hydrotest at Lindley Avenue and ending it at Caballero Canyon is the cost is lower than option 1. The drawback of option 2 is that there is a potential for delays to the project due to addressing the community concerns with the project start and end points. The impact to the community is significant and project site preparation and grading efforts that would be required in Caballero Canyon are more difficult than usual.

Line 407 South:

- Option 1: $1,750,000 (direct costs)
  - South Hydrotest (Sullivan Canyon to San Vincente Blvd.) – The benefit of beginning the 14,621 foot hydrotest at Sullivan Canyon and ending it at San Vincente Boulevard would mean there would be less impact to the community. There is also a more accessible work location. The cost is higher than option 2.
- Option 2: $1,140,000 (direct costs)
  - North Test (Sullivan Canyon to Old Ranch Road) – The only benefit of ending the 5,317 foot hydrotest at Old Ranch Road is the cost is lower than option 1. The drawback of option 2 is that there is a potential for delays to the project due to addressing the community concerns with the project end point. The impact to the community is significant and it is difficult to access Old Ranch Road.

Risks identified were:

- In-Line Inspection and ECDA results are required to finalize the scope
- Weather – the canyon location is susceptible to flash flooding and work shutdown
- Operations resource availability
- Road work moratorium during the holiday season

Once the two hydrotest options were presented, the team recommended option one for the North Hydrotest and option one for the South Hydrotest. This was due to the importance of ensuring we maintain a good relationship with the community, as we had the option to be less disruptive.

PSEP Leadership decided:

- North Hydrotest – Option 1 Hydrotest (Ventura Blvd. to Mulholland Dr.)
- South Hydrotest – Option 2 Hydrotest (Sullivan Canyon to Old Ranch Road)

Updated scope at the end of Stage 2 was:

Table 33

	Action	**Category 4 Criteria Miles**	**Accelerated Miles**	**Incidental Miles**	**Total Miles**
Line 407	Hydrotest	1.053	0.830	0.000	1.883

Stage 3 – Definition

During Stage 3, the project execution plan was finalized, baseline schedules developed, funding estimates developed, and project funding obtained. Based on there being a constructability need to include this additional mileage there is accelerated or incidental mileage currently involved in the Line 407 scope.

The estimate established during Stage 3 was $ $6,115,356.17 in direct costs.

An additional cost that was not in the Stage 3 estimate was to include the 12 inch cross over connection with 12 inch valve so that the valve team could come back and connect to the flange of a valve. This was a cost savings/efficiency to the PSEP valve project.

Stage 4 – Detail Design/ Procurement

During Stage 4, design and construction documents and necessary permits and authorizations are completed; pipeline materials are purchased, received, and prepared to turnover to contractor.

Noise was a concern that required our attention to keep the community satisfied. This limited our work hours and we had to relocate a customer to alternative accommodation due to noise, although a noise variance permit was obtained to allow longer working hours.

The construction contract was bid out for the north section and was a fixed bid; this was before the Performance Partnerships were put in place. The south section was awarded to a Performance Partner. The project schedule on the south section was driven by the bird nesting season as this could potentially cause delays and increase project costs if this risk was realized.

Stage 5 – Construction

As of June 12, 2014 Line 407 was in Stage 5.

Scope as of 12 June 2014:

Table 34

	Action	**Category 4 Criteria Miles**	**Accelerated Miles**	**Incidental Miles**	**Total Miles**
Line 407 – Section 1	Test	0.892	0.623	1.190	2.705
Line 407 – Section 2	Test	0.162	0.122	0.007	0.291

North section:

A challenge the team had to work with on the north section was not having the available land space needed to park baker tanks that were required to store the water from the hydrotest. The volume of water we had was greater than the number of baker tanks that could fit in the laydown area. The laydown area was secured before the seven day constraint was known.

Pipeline Integrity and Gas Transmission Operations expressed concerns with leaving water in the pipe longer than seven days, wanting the line dried within seven days of filling it.

To work with this constraint vacuum trucks were called in to remove the water; adding additional cost.

A unique feature about the north section of the pipeline is the change in elevation from where the water was kept to where it was pumped into the pipe.

There was approximately $200,000 in change orders the reasons and amounts are listed below:

- $18,187,880 – Providing office trailer for contractor
- $2,000 – grind asphalt to recess plates at Lindley
- $20,492,380 – T&M for extended de-watering time due to lower discharge rate
- $10,059.91 – Purchase 4" and 6" pipe, fittings and valves for fill/de-water line with material markup.
- $12,500.00 – Install additional 240' of k-rail with plywood on top for protection of passers by
- $12,737.89 – Extra time and material costs because of the District's splitting the isolations between two separate days.
- $7,705.78 – extra Time and Material costs because the excavation at Lindley had to be dug to a depth of 12' instead of the 10' shown on the prints.
- $35,000 – extra cost to use two 90's to bring 30" pipe up out of the excavation to avoid damage to another party’s pipeline.
- $10,000.00 – add sound proofing to two fill pumps and 8 inch feeder pump
- $3,500.00 – delay for 1 inch nipples
- $9,000.00 – bell hole testing
- $14,500.00 – extra coating repair at Mulholland
- $36,600.00 – tie-in day extra hours
- $2,500.00 – standby time for truck
- $2,500.00 – grind and repave potholes per LA City Inspector
- $7,500.00 – replace 12 inch pipe support at Mulholland

South section:

The area where this section is located is environmentally sensitive. Extra tree trimming had to be done to allow for the construction equipment to access the trail.

There was approximately $200,000 in change orders the reasons and amounts are listed below:

- $8,788.53 – Delays in pre-mobilization tree trimming, RFI includes additional, man hours and wood chipper
- $ 29,610.12 – New Scope Item: Potholing for line 3003 at the request of the valve project team
- $ 1, 531.40 – overtime to expedite backfilling of north excavation at request of SoCal Gas

Changes since 12 June 2014

- Line 407 is in Stage 6.

7. Line 1004

In R.11-02-019, SoCalGas and SDG&E's workpapers identified Line 1004 as a hydrotest project. Line 1004 begins at the Goleta Storage Field, parallels Highways 1 and 101 for approximately 20 miles, and ends at the Ventura Compressor Station. As filed in R.11-02-019, the scope of the lines was as follows:

Table 35

	Action	**Category 4 Criteria Miles**	**Accelerated Miles**	**Total Miles**
Line 1004	Test	12.718	6.9830	19.700

The initial filing cost for Line 1004 was $7,087,400.

Phase 1 – Initiation

During Stage 1, a pipeline is evaluated to identify and confirm all required segments that need to be replaced or tested to comply with Commission directives. The PSEP team is tasked with defining the limits of the scope and identifying the Category 4 Criteria mileage that requires remediation.

The line was first installed in 1944. Documentation was located during Stage 1 as part of the scoping process that indicates three large sections of the line were strength tested at the time of Installation: approximately 9 miles in Santa Barbara, approximately 7 miles between Carpinteria and Ventura, and approximately 0.5 miles at the Ventura River crossing. Strength test documentation also indicated that there are 4 miles south of the Santa Barbara/Ventura County line and 2 miles between Highway 1 and the Ventura River that were not strength tested at the time of installation. These sections were, and still are, in a class 1 location.

In 1966, approximately 0.187 miles of pipe installed was tested. Documentation was also submitted to update strength test information for an 8' tie-in piece installed in 1976. The completion sketch indicated the tie-in was taken from pretested stock.

Strength test documentation could not be located for several sections. Specifically, WO MIRO 301 and WO 65322, both Installed 1951, do not have strength test documentation. A class location study from 1970 was located that indicated these two work orders did not have strength test documentation.

Strength test documentation was not located for the remaining Category 4 pipe. Approximately 1.82 miles of Category 4 Criteria remained on Line 1004.

Updated scope at the end of Stage 1 was:

Table 36

	Action	**Category 4 Criteria Miles**	**Accelerated Miles**	**Incidental Miles**	**Total Miles**
Line 1004	Hydrotest	1.817	0.112	0.598	2.572

Stage 2 – Selection

During Stage 2, the team evaluated the segments approved in Stage 1. Upon further investigation of the scope, many of the sections that were originally filed as hydrotest sections will be replaced as determined by the hydrotest versus replacement studies. A total of three sections have been identified along Line 1004 to capture all Category 4 Criteria pipe.

Section One of 1004 is located in the city of Summerland, CA. This section starts at Sta. 690+90 on Lillie Avenue and ends at Sta. 703+03.5, at the cross street with Greenwell Avenue. Lillie Ave. is a two-lane road and the primary roadway through Summerland. Any construction activities on or along Lillie Ave would have a significant impact on the community. The section is composed of three segments, two of which are Category 4 Criteria. The two segments of interest were installed in 1951 and have an unknown seam type. Strength test documentation exists for the segment from Sta. 696+53.25 to Sta. 702+67.5.Two options were presented to PSEP leadership:

- Hydrotest (Total Cost - $1,379,963 - direct costs)
- For Section One, the strength test alternative will consist of a Hydrotest from STA 239+26 to STA 254+23. Since the criteria segment exists entirely on a steep slope, extending the ends to accessible areas will be recommended for constructability. The uphill side of the potential test is adjacent to a ridge top and should require minimal extension; the downhill side can be moved to a graded area adjacent to the baseball fields of Arroyo Verde Park. The extension of the test ends will add approximately 0.15 miles of incidental pipe to the hydrotest option and will require the mitigation of the previously mentioned metal loss anomaly. An additional issue with this location is the class location change at the border of the Category 4 Criteria segment and the incidental pipe on the downhill end. Spike testing the segment while meeting the required x1.5 multiplier in a Class 3 location will expose the lower elevations of the test section to a hoop stress of 102% SMYS and increase the risk of a failure. Solutions to address this issue are as follows:
    - Seek Engineering approval to exceed 100% SMYS.
    - Request internal approval from Gas Engineering to exclude the spike test in order to not exceed 100% SMYS (The lower elevations will see 86% SMYS without the spike).
  - Test the criteria mileage commensurate with the class 1 location designation to a minimum pressure of 1.25. The Class 3 location would not experience a 1.5xMAOP test pressure and notification to the CPUC would be required. The Class 3 portion of this section was pressure tested to 1.5xMAOP in 1971.
- In addition to clearing the Category 4 Criteria segment with a Subpart J compliant strength test, this alternative will also mitigate the pipeline anomaly identified by the Pipeline Integrity group and ease constructability issues by including the incidental footage on Arroyo Verde Park side. This alternative also allows the existing pipeline to remain in place, minimizing land acquisition and construction work.
- Replacement (Total Cost - $1,318,024 - direct costs)
  - The Section One, replacement alternative consists of replacing only the Category 4 Criteria segment from STA 236+66 to STA 246+49. This would consist of an open trench, offset replacement with 22-inch diameter pipe and fittings. The existing 22-inch pipeline would be abandoned in place. This alternative will provide new modern pipe coating for the segment. The replacement option will provide a shortened clearance timeline of two days, as compared to the hydrotest clearance of two weeks.

Section Two of Line 1004 is located in the city of Carpinteria, CA. This parallels CA-1/US-101 from Sta. 815+44 to Sta.899+56. The section is composed of three segments, two of which are Category 4 Criteria. The two segments of interest were installed in 1944/1945. Strength test documentation exists for the segment from Sta. 885+41 to Sta. 887+15.06.

Approximately 4500' of this section is located in a narrow easement, within the Caltrans ROW, between CA-1and a railroad. Work in this area would likely impact southbound lanes of the highway. A temporary staging and laydown area has been identified at approximate Sta. 848+00.

Section 3 of 1004 is located in the city of Carpinteria, CA. This section runs along Highway 150 from Sta. 1086+41.5 to Sta. 1099+83.68. The section is composed of two segments; the first is Category 4 Criteria and the second is Category 4. This second segment will be accelerated into Phase 1A in order to make use of project efficiencies such as working in the same area and utilizing the same valves for the pipeline shutdown.

This section of line is located in the shoulder of CA-150. The downstream pipe was relocated in 1967, however had to cross Highway 150 in order to tie-in to the existing main. In order to improve access to the pipeline and for ease of constructability, any replacement would relocate the line out of the Caltrans ROW and into private property. This new alignment would eliminate two crossings of Highway 150.

The three sections of interest will be analyzed as interdependent units; the test vs replace options proposed are inclusive of all three, incorporating dependencies of overall shared costs, benefits, and risks. Although each section is bound by non-CAT 4 pipe, proposed test heads extend past each PSEP section due to the restricted work space and limited potential staging areas.

Three options will be evaluated.

Option One (Hydrostatic Test - $3,876,277 (direct costs)) is a hydrostatic test of all three sections, including incidental pipe located within the clearance points.

- Restricted work space and limited potential staging areas extend the hydrostatic tests from Valve 1004- 12.25-0 to Valve 1004-20.83-0, incorporating the three sections and approximately 6.5 miles of incidental pipe. This alternative proposes three hydrostatic tests. Restricted work spaces and limited staging areas require that the hydrostatic test for Section One be extended back to Valve 1004-12.25-0. The first hydrostatic test will be Sta. 648+60 - Sta. 847+94, which includes all of Section One and a portion of Section Two. The second test will be from Sta.847+94 to Sta. 987+00,directly upstream of the 12" branch to V-1004-18.72-0.The final hydrostatic test will run from Sta. 987+00 to Sta. 1099+83, testing through section 3, up to Valve 1004-20.83-0. These hydrostatic tests are split to make use of available work spaces. This alternative allows for the existing pipe assembly to remain in place, minimizing land acquisition and difficult construction work in narrow work strips.
- Assumptions used in the preparation of this estimate include:
  - A suitable staging area will be obtained such that water can be transferred between test heads to test all three sections and then discharged into Baker Tanks at a single site.
  - Cost of shutting in producers during pipeline shutdown is not included

- Option Two (Replacement - $14,013,500 (direct costs)) is a replacement of all three sections. This option excludes replacing the incidental pipe in section 1(614-ft), includes replacing the incidental pipe in Section Two (174-ft), and includes relocating Section Three out of the Caltrans ROW.
  - This alternative would require the installation of 10,364-ft of 16-inch pipe via direct bury. No specific design issues were identified at this stage that would require a different construction method. The Section One replacement will not include the incidental pipe. In the replacement alternative, doubling the scope of work to include the incidental pipe could not be justified. The Section Two replacement will include 174' of incidental pipe. Adding this footage has little impact to the overall scope and was included for project efficiencies. The Section Three replacement includes the criteria and accelerated pipe. This alternative minimizes the outage duration for the producers and provides for replacement of the 1944 vintage pipe, significantly reducing the risk of a failure during the hydrostatic test, and minimizes the incidental footage.
  - Assumptions used in the preparation of this estimate include:
    - The line at Section Three will be relocated out of the Caltrans ROW and installed via direct bury in the adjacent field.
    - Cost of shutting in producers during pipeline shutdown is not included.

- Option Three (Hybrid Hydrostatic Test and Replacement - $4,431,744 (direct costs)) is a hydrostatic test of Section One and Two, and the replacement of Section Three.
  - This alternative requires strength testing Sections One and Two from Sta. 646+80 to 988+30, and the installation of approximately 1,342-ft of 16-inch pipe via direct bury in the proposed Section 3 alignment. The strength test will be split at Station 848+00 due to a suitable staging area. This alternative will also minimize the outage duration for the producers. This option will minimize land acquisition and construction work on Sections One and Two. Relocating Section Three out of the Caltrans ROW will improve accessibility to the line for future maintenance work.
  - Assumptions used in the preparation of this estimate include:
    - A suitable staging area will be obtained such that water can be jumped between test heads to hydrotest two sections and then discharged into Baker Tanks at a single site.
    - Cost of shutting in producers during pipeline shutdown is not included.
    - The line at section 3 will be relocated out of the Caltrans ROW and installed via direct bury in the adjacent field.

Option Three, hydrotesting Sections One and Two and replacing Section Three, wasthe recommended alternative. A hydrotest on Sections One and Two will address the threat of construction defects and was the most cost-effective method considering continued In-Line Inspection (ILI). The increase in cost to replace Section Three was offset by the benefits of relocating the line outside of the Caltrans ROW, reducing the risk of hydrotest failure, and reducing impacts to the producers offset the increase in cost for replacement.

Once the options for whether to hydrotest or replace were investigated and the costs to manage customer impacts were weighed against the costs and benefits of having a new pipeline, which would lower future costs and risks by improving the quality of the pipeline asset the following decisions, were made.

- Section One – Hydrotest
- Section Two – Hydrotest
- Section Three – Replacement

Updated scope at the end of Stage 2 was:

Table 37

	Action	Category 4 Criteria Miles	Accelerated Miles	Incidental Miles	Total Miles
Line 1004	Hydrotest/ Replacement	1.817	0.112	0.598	2.572

Stage 3 – Definition

During stage 3, the project execution plan was finalized, baseline schedules developed, funding estimates developed, and project funding obtained. Based on there not being a constructability need to include this additional mileage there is no accelerated or incidental mileage currently involved in the scope for Line 1004.

Issues with a land owner arose when the land services team was trying to negotiate, the land owner refused to grant access to the property. Since the land owner would not grant access it was no longer feasible to replace Section Three. Additionally there is some non-piggable Phase 1B pipe which can be included if Section Three is switched to a hydrotest. There will be an incremental cost increase associated to having more water, but that is minimal.

The estimate established during Stage 3 was $ $5,923,373.80 in direct costs.

Updated scope at the end of Stage 3 was:

Table 38

	Action	Category 4 Criteria Miles	Accelerated Miles	Incidental Miles	Total Miles
Line 1004	Hydrotest	1.82	0.11	6.51	2.572

Stage 4 – Detail Design/ Procurement

During Stage 4, design and construction documents and necessary permits and authorizations are completed; pipeline materials are purchased, received, and prepared to turnover to contractor.

Scope as of 12 June 2014:

Table 39

	Action	**Category 4 Criteria Miles**	**Accelerated Miles**	**Incidental Miles**	**Total Miles**
Line 1004 – Section 1	Hydrotest	0.69	0.00	2.982	3.672
Line 1004 – Section 2	Hydrotest	0.99	0.00	2.675	3.660
Line 1004 – Section 3	Hydrotest	0.21	0.15	0.911	1.269

Changes since 12 June 2014

- Line 1004 is in stage 4.

8. Line 1015

In R.11-02-019, SoCalGas and SDG&E's workpapers identified Line 1015 as a replacement project. As filed in R.11-02-019, the scope of the lines was as follows:

Table 40

	Action	**Category 4 Criteria Miles**	**Accelerated Miles**	**Total Miles**
Line 1015	Replacement	7.821	0.024	7.845

The total as filed cost for Line 1015 was $43,251,300.

Phase 1 – Initiation

During Stage 1, a pipeline is evaluated to identify and confirm all required segments that need to be replaced or tested to comply with Commission directives. The PSEP team is tasked with defining the limits of the scope and identifying the Category 4 Criteria mileage that requires remediation. During the Stage 1 review of pipeline records to scope this line, it was found that Line 1015 has approximately 0.246 miles of Category 4 Criteria miles, of which 0.210 miles* (1,111 feet)[22] was installed in 1954, 0.229 miles (1213 feet) was installed in 1957, 0.014 miles (76 feet) was installed in 1960 and 0.001 (8 feet) was installed in 1966.

Updated scope at the end of Stage 1 was:

Table 41

	Action	**Category 4 Criteria Miles**	**Accelerated Miles**	**Incidental Miles**	**Total Miles**
Line 1015	Hydrotest/Replace	0.246	0.00	0.024	0.270

Stage 2 – Selection

During Stage 2, the team evaluated the segments approved in Stage 1. Further work was performed to refine the scope of work due to alterations performed in 2012 and 2013 on Line 1015 in preparation for In-Line Inspection (ILI) of the pipeline through the use of a smart pig tool. It was found that the 1,111 foot section of pipeline was in the process of being relocated and replaced along the E. Lincoln Ave Bridge in Orange, CA, along with the 8 foot section that was replaced at the intersection of Maple and Pixley in Orange, CA. The updated scope now left two

[22] Note: The 1,111 foot segment was included in the Stage 1 documentation but noted that Pipeline Integrity was in process of replacing this section of pipe- therefore this mileage was not reflected in overall scope.

distinct sections of Category 4 Criteria miles; Section One, a 0.014 mile (76 feet) section located in the intersection of Katella and Batavia, and Section Two, a 0.229 mile (1,213 feet) section of pipeline located in Santa Ana starting on the south end of 1st St and running down Grand Ave to the north side of the intersection of Chestnut Ave.

The initial decision in Stage 2 on October 24, 2013 was to hydrotest all Category 4 Criteria miles, along with accelerating an additional 6.71 miles that had the potential to be part of the Phase 2 scope of work for PSEP. The hydrotest would have been conducted starting on the east side of the Lincoln St Bridge in the City of Orange and running to the intersection of Chestnut and Grand in the City of Santa Ana. However, this decision was reversed on December 26, 2013 and documented. The new decision was to replace the 76 foot section in the intersection of Katella and Batavia and hydrotest the 1,213 foot section in Santa Ana from 1st St to Chestnut Ave on Grand Ave. This is the decision that was used proceeding forward.

Updated scope at the end of Stage 2 was:

Table 42

	Action	**Category 4 Criteria Miles**	**Accelerated Miles**	**Incidental Miles**	**Total Miles**
Line 1015	Hydrotest/Replace	0.246	0.00	0.024	0.270

Stage 3 – Definition

During Stage 3, the project execution plan was finalized, baseline schedules developed, funding estimates developed, and project funding obtained.

The initial design of Section One for replacement of the 76 foot section of pipe on Katalla and Batavia involved boring underneath a storm culvert, installing 170 feet of new 24 inch pipe and abandoning the 76 foot section underneath the storm culvert in the intersection. While proceeding with design, it was found that the original areas scouted for locations of bore pits were no longer available due to new construction taking place. I n addition, adjacent property owners would not grant a Temporary Right of Entry for our excavations. In order to keep the excavations located in city streets, the replacement would have involved boring diagonally underneath the storm culver and the replacement would have extended to 400 feet due to constructability. Based on added complexity along with additional cost for replacement, the decision was made to hydrotest this section of pipe. The hydrotest would be a total of 315 feet due to placing the test heads in a location that would minimize traffic impact. During the design of hydrotest segment, it was found that a 2 inch tap valve serving an adjacent regulator station would need to be excavated and separated from inlet piping to the regulator station. The decision was made to relocate this existing tap valve 109 feet north of its existing location in the intersection of Katella and Batavia to the north side of the intersection. The decision to relocate this tap valve was made based on the existing location being directly in the middle of the street and hazardous to access due to heavy traffic volumes, as well as the fact that the tap valve already required excavation to hydrotest and the new location for the tap valve would be in another excavation already required for hydrotest, thus requiring minimal effort to relocate.

The total cost to replace Section One was estimated to be $1,710,000 in direct costs, the hydrotest of the section was estimated to be at $1,640,000 in direct costs.

The design of Section Two, located between 1st and Chestnut Ave on Grand Ave in the City of Santa Ana proceeded according to plan. The work would involve hydrotesting 1,375 feet of pipeline from north of 1st St down to the north end of the intersection of Chestnut and Grand Ave. The additional 162 feet of incidental pipe being tested was due to location of test heads being placed north of 1st St to minimize traffic impact. The total cost estimated for hydrotest of this section was at $1,472,000 in direct costs.

The estimate established during Stage 3 was $3,112,000 in direct costs.

Updated scope at the end of Stage 3 was:

Table 43

	Action	Category 4 Criteria Miles	Accelerated Miles	Incidental Miles	Total Miles
Line 1015 – Section 1	Hydrotest	0.014	0.000	0.045	0.059
Line 1015 – Section 2	Hydrotest	0.229	0.000	0.031	0.260

Stage 4 – Engineering Design/ Procurement

During Stage 4, design and construction documents and necessary permits and authorizations are completed; pipeline materials are purchased, received, and prepared to turnover to contractor.

During construction readiness review before mobilization most materials were at Ancon, some was on route to Ancon and would be ready of the mobilization date.

Design of Section One on Katella and Batavia proceeded according to plan and will begin after Section two in Santa Ana is complete.

Section Two in Santa Ana also proceeded according to plan and would take place after Pipeline Integrity has finished their In-Line Inspection of Line 1016.

Scope as of 12 June 2014:

Table 44

	Action	Category 4 Criteria Miles	Accelerated Miles	Incidental Miles	Total Miles
Line 1015 – Section 1	Hydrotest	0.014	0.000	0.045	0.059
Line 1015 – Section 2	Hydrotest	0.229	0.000	0.031	0.260

Changes since 12 June 2014:

A slight design change was made to Section Two that increased the hydrotest footage to 1,784 feet, resulting in 0.108 miles of incidental mileage. This change was the result of coordination between SoCalGas and the City of Santa Ana. There was a street widening project taking place on Grand Ave in the same location as the hydrotest work. In order to expedite the hydrotest so the City could meet their project deadline, and to minimize traffic impact, the north test head on 1st St was moved to north of 2nd street newly acquired property by the city. This property was used as staging area for the hydrotest project and allowed all parties to complete their respected projects on schedule.

There were no material delays during construction, all permits were finalized before construction and no permit changes were made during construction.

Both Section One and Section Two have completed construction and are back in operation. A design change was made to Section One where a 30 inch long section of pipe was cut out in the intersection of Katella and Batavia, due to an abandoned syphon drip that was determined needed to be removed. SoCalGas Transmission Technical Service department will fund the cost for this removal, which is approximately $198,670.

9. Line 2000West

In R.11-02-019, SoCalGas and SDG&E's workpapers identified Line 2000 as a hydrotest project. Line 2000 is part of the SoCalGas transmission system transporting gas from the California/Arizona border at Blythe to the Los Angeles Basin. The Line 2000 PSEP activity was divided into four separate projects based on the disparate geographic locations. Due to its length, Line 2000 is being addressed as four separate projects: 2000-A, 2000 West, 2000-B, and 2000-C. Current and historical documents were reviewed to determine the project's scope which decreased from that identified in the filing. As filed in R.11-02-019, the scope of Line 2000 was as follows:

Table 45

	Action	Category 4 Criteria Miles	Accelerated Miles	Total Miles
Line 2000	Hydrotest	55.027	62.574	117.600

Through this initial process of reviewing current and historical documentation, SoCalGas and SDG&E successfully reduced the scope of the Line 2000 project by over 55 miles, as depicted in Table 46 below.

Table 46

	Action	Category 4 Criteria Miles	Accelerated Miles	Total Miles
Line 2000	Hydrotest	34.174	28.245	62.419

This reduction in scope was accomplished in three ways. First, through the Stage one detailed review of historical data and records, pressure test records were identified for approximately 17 miles of pipeline that were previously categorized as Category 4. Second, approximately 5 miles of Category 4 pipeline were removed from the scope because those miles no longer meet the definition of Criteria mileage.[23] Third, through thoughtful design of the project in four parts, SoCalGas and SDG&E were able to remove approximately 38 miles of pipeline previously categorized as Accelerated Miles from the scope of the project. These reductions and additions in scope, and the reasons for those reductions and additions, are summarized in Table 47 below.[24]

Table 47

Reason for Change	Category 4 Criteria Miles (decrease)	Accelerated Miles (decrease)
Test Information Found	(16.865)	-
No longer criteria mileage	(5.192)	-
Revised test limits, footage was filed as accelerated, not required in Phase 1A	-	(37.883)
Mileage added	1.204	3.554

[23] Mileage may no longer be considered Criteria mileage under one of the following conditions: 1) if the pressure on the line is reduced such that it no longer falls within the scope of PSEP; 2) the location of the pipeline is reclassified such that the pipeline no longer falls within the scope of Phase 1 of PSEP; or 3) through pipeline analysis, SoCalGas and SDG&E perform work to validate pipeline features to confirm that the pipeline does not fall within the scope of PSEP. In this case, the mileage reduction is primarily attributable to reclassification of pipe that was previously categorized as located in HCAs to non-HCA.
[24] Updates to database reflecting HCAs in the area.

As explained above, due to the long length of Line 2000, the disparate locations of Category 4 segments along that length, and for constructability reasons, Line 2000 was separated into four phases. The scope of the first phase Line 2000-West, is shown in Table 48:

Table 48

	Action	**Category 4 Criteria Miles**	**Accelerated Miles**	**Incidental Miles**	**Total Miles**
Line 2000 West	Hydrotest	20.008	18.201	0.00	38.209

The initial filing cost for Line 2000 was $77,980,300. Since the scope had reduced, a preliminary amount of $9,677,000 was given as the initial budget for Line 2000-West.

Phase 1 – Initiation

During Stage 1, a pipeline is evaluated to identify and confirm all required segments that need to be replaced or tested to comply with Commission directives. During the course of Stage 1 review to scope Line 2000 West, the available documentation was evaluated for Category 4 Criteria. Line 2000 West begins at Valve 184.33 in Corona and continues to the end of the line at Valve 222.71 at Spence St. Station in Los Angeles. The line is primarily located in a class 3 High Consequence Area (HCA). There is also a significant section of class 1 through Chino Hills State Park.

The 26 inch diameter of the portion of Line 2000 West between Santa Fe Springs Station and Spence St. Station was installed in 1945., There are second-hand references to strength testing being performed on the 26" section when it was installed, however no original documentation has been located.

Additionally, there are several other replacement sections that did not have job files.

The rest of Line 2000 is 30" and was installed in 1947, between the Colorado River and Santa Fe Springs Station. Test charts indicate that the line was tested from station 10625+45, approximately 450' upstream of Brea Station, to station 11265+36 at Santa Fe Springs Station. The rest of 30" Line 2000 West appears to have been installed as in a class 1 location in 1947 and strength test documentation was not located. The Feature Study Database also indicates that a segment was installed in 1947; however a job file could not be located.

In 1960, the Diemer Water Treatment Plant was built at the Carbon Canyon Dam and required the line to be replaced and rerouted. The section relocated in 1960 was strength tested to a minimum pressure of 760 psig and is at least 1.25x MAOP in this area. In 1971, additional strength testing was completed between Brea Station and the water treatment plant due to additional development. A test report documents the strength testing performed. Also in 1971, a 28 foot section of main approximately 1,650 feet upstream of the water treatment plant from station 10426+66 to station 10426+94 was installed and tested. The main between this point and the water treatment plant was not strength tested.

Several replacements have taken place since 1970. The feature study database records strength tests for these sections. Approximately 9 miles of Criteria Category 4 main remain on Line 2000 West.

Updated scope at the end of Stage 1 was:

Table 49

	Action	**Category 4 Criteria Miles**	**Accelerated Miles**	**Incidental Miles**	**Total Miles**
Line 2000-West	Hydrotest	9.037	5.447	0.00	14.484

Stage 2 – Selection

During Stage 2, the team evaluated the segments approved in Stage 1.

Line 2000 West runs from Highway 71 near Corona to SoCalGas Gas Control at Spence Street in Los Angeles. Line 2000 West, runs from the intersection of Scott Avenue and Lambert Road in Whittier to SoCalGas Gas Control at Spence Street in Los Angeles. The Test vs. Replace Study analyzes the segments between the intersection of Lambert Road and Scott Avenue and Santa Fe Springs Station Platform. Per the Pipeline Test vs Replacement Decision Tree guidelines, though the pipe is pre-1946, it is piggable; therefore abandonment/replacement is not required for the four proposed segments.

Further economic analysis was conducted on Whittier-1 Segment (as this segment had a higher Incidental to Category 4 Criteria Miles ratio), with results favoring hydrotesting the segment versus replacing. Other factors influencing the hydrotest recommendation include the pipeline running through a densely populated, urban area (Segments 2 and 3 run parallel to Colima Road in Whittier, Segment 4 runs behind a residential area and through a channel, Segment 5 runs through Santa Fe Springs Road, and Segment 6 is in rail ROW, and is coded red by EMP).

The recommendation was to hydrotest this segment of Line 2000-West.

The hydrotest cost estimate was $4,269,664 (direct costs) and the replacement cost estimate was $ 4,391,428 (direct costs).

PSEP Leadership decided to hydrotest all segments of the pipe.

Stage 3 – Definition

During Stage 3, the project execution plan was finalized, baseline schedules developed, funding estimates developed, and project funding obtained. Based on there not being a constructability need to include this additional mileage there is no accelerated or incidental mileage currently involved in the scope for Line 2000-West.

The estimate established during Stage 3 was $19,363,026.85 direct costs.

As of June 12, 2014 Line 2000 West was in Stage 3.

Scope as of 12 June 2014:

Table 50

	Action	Category 4 Criteria Miles	Accelerated Miles	Incidental Miles	Total Miles
Whittier 1	Test	0.079	0.000	4.117	4.196
Pico Rivera	Test	4.736	0.000	0.818	5.554
Commerce 3	Test	4.215	0.000	0.567	4.782

10. Line 2001West

In R.11-02-019, SoCalGas and SDG&E's workpapers identified Line 2001 West as a hydrotest project. Line 2001 West begins east of the City of Banning and runs westerly to the City of La Puente. As filed in R.11-02-019, the scope of the lines was as follows:

Table 51

	Action	Category 4 Criteria Miles	Accelerated Miles	Total Miles
Line 2001 West	Hydrotest	15.809	48.291	64.100

The initial filing cost for Line 2001 West was $47,941,100.

Phase 1 – Initiation

During the course of Stage 1 review to scope Line 2001 West, the available documentation was evaluated for Category 4 Criteria. Line 2001 West begins at the Cactus City Compressor Station and ends in El Monte at the intersegment of Fern Ave & Walnut Grove Ave. The line was first installed in a period between 1948 through 1953. The available documentation indicates that the certain segments of the line were hydrostatically tested at the time of installation. Starting in 1965', segments of the existing main were hydrostatically tested as it became an industry standard for populated areas and required by state and federal regulations. Segments of this line in Class 3 locations were hydrostatically tested between 1965 and 1972, or replaced for class location change. There are three segments of Class 3 HCA installed that do not have strength test documentation. These segments are summarized in the table below:

Table 52

Section	Length in feet	Year Installed	Class Location	Location
A	2,548	1953	1, 3	Palm Dr. and Interstate 10. Desert Hot Springs
B	11,760	1950	3	16th St. & Wilson St. to Morongo Rd., Banning
C	3,967	1950	3	Beaumont Ave. to Cherry Ave., Beaumont

There are also five segments of Class 1 and 2 HCA that do not have strength test documentation:

Table 53

Section	Length in feet	Year Installed	Class Location	Location
D	1,721	1953	1	Burrtec – Landfill Rd., Coachella
E	580 & 960	1953	1	HCA Tails Granite Construction Facility, Indio
F	2,068	1953	1	SA Recycling – Rio Del Sol Rd., Thousand Palms
G	1,356	1950		Whitewater Adobe Park, Palm Springs
H	360 & 410	1950		HCA Tails. Mesquite Rd. and Chaparral Rd. Whitewater

There are four additional segments missing strength test. The completion sketch labels the tie-in pieces as "pretested", however the strength test documentation is missing. The existing 1949 pipe near Don Julian Ave and 2nd Ave. was lowered in 1960. There is no indication that the 5' tie-in pieces at either end were strength tested. 157' of pipe in 1960 on Don Julian Rd. and 9th Ave. 61' near Don Julian Rd. and Workman Mill Rd. There is a prepared DDS that indicates a strength test was planned, but there is no documentation that a strength test was completed.

Based on this data, 4.9913 Category 4 Criteria miles remained on line 2001 West. Class location research was done on the line and HCA maps showing class location changes contributed to a further reduction in the number of miles to approximately 4.6 Category 4 Criteria miles.

The initial filing cost for Line 2000 was $47,941,100 direct costs. Since the scope had reduced the cost was reduced to $37,602,000 direct costs until an improved estimate could be determined based on the scope of work.

Updated scope at the end of Stage 1 was:

Table 54

	Action	**Category 4 Criteria Miles**	**Accelerated Miles**	**Incidental Miles**	**Total Miles**
Line 2001 West	Hydrotest/Replace	4.637	14.164	0.000	18.801

Stage 2 – Selection

During Stage 2, the team evaluated the segments approved in Stage 1. Upon further investigation of reasonable engineering scope, many of the segments that were originally filed as hydrotest segments will be replaced as determined by the test versus replacement studies. A total of seventeen (17) segments have been identified along Line 2001 West to capture all Category 4 Criteria pipe.

Segments one to nine are primarily Class 1, HCA segments and the PSEP team elected to prioritize Category 4 criterial miles in Class 3 areas.

Segment (10) of Line 2001 West is an 11,746 foot section considered for hydrotest. However due to the pipe grade and wall thickness between STA 762+12 to STA 772+22, it is not feasible to hydrotest this section to a required minimum test pressure. Based on this information the recommendation is to hydrotest 10,743 feet between STA 772+22 to STA 879+67 and replace 1,012 feet between STA 762+12 to STA 772+22. The cost estimate to hydrotest 10,743 feet is $2,618,530. The cost to replace 1,012 feet is $1,959,880. This replacement section is not funded by PSEP and is being managed by Transmission. The recommendation is to hydrotest the 10,743 feet between STA 772+22 to STA 879+67.

The Hydrotest costs: $3,481,319 the replacement costs: $8,053,960.

Segment eleven (11) of Line 2001 –West will be an approximately 4,000 foot hydrotest. Pipe Leak, Condition, and Maintenance Reports (PCMR's) for Line 2001 were reviewd and no reports show installation of mechanical couplings, sleeves, pressure control fitting, or any indications of leak repairs in the proposed hydrotest section. Also, PCMR's did not indicate corrosion along along this section of pipe. The cost estimate to hydrotest was $2,102,247. The cost estimate to replace was $8,053,960. Overall recommendation was to hydrotest.

Segment fourteen (14) of Line 2001 –West is approximately 2 feet. It is a short pup of untested pipe and it is less economical to hydrotest this segment versus replace it. There is currently no need to replace or test any other pipe within the planned shut-in points . The cost estimate to hydrotest was $1,406,954. The cost estimate to replace was $876,554. Overall recommendation was to replace.

Segment fifteen (15) and sixteen (16) of Line 2001 –West are two (2) eight (8) inch short segments. Replacement is recommended for segment fifteen (15) between station 4199+73.70 to 4199+81.59 and segments sixteen between station 4200+04.11 to 4200+12.88. The cost to replace these two short segments is more economical than to hydrotest. Further project efficiencies may be obtained by replacing these segments during the same clearance of exisiting Pipeline Integrity projects nearby, thus reducing impacts to customers. The cost estimate to hydrotest was $1,625,556. The cost estimate to replace was $897,098. Overall recommendation was to replace.

Segment seventeen (17) of Line 2001 –West is approximately 0.03 miles of pipe and the recommendation was made to replace. Segment eighteen (18) and nineteen (19) of Line 2001 –West are recommended for a replacement . Segment eighteen (18) lies between station 91+78.90 to 91+83.90 and segments nineteen 19 between station 93.73.90 to 93+83.90. The cost to replace these two short segments is more economical than to hydtrotest. The cost estimate to hydrotest was $1,762,801. The cost estimate to replace was $910,360. Overall recommendation was to replace.

Once the options for whether to hydrotest or replace were investigated and the costs to manage customer impacts were weighed against the costs and benefits of having a new pipeline, which would lower future costs and risks by improving the quality of the pipeline asset the following decisions, were made.

- 2001 West segment 10 –Replacement
- 2001 West segment 11 –Hydrotest
- 2001 West segment 14 –Replacement
- 2001 West segment 15/16 –Replacement
- 2001 West segment 17 – Replacement
- 2001 West segment 18/19 –Replacement

Updated scope at the end of Stage 2 was:

Table 55

	Action	**Category 4 Criteria Miles**	**Accelerated Miles**	**Incidental Miles**	**Total Miles**
Line 2001 West	Hydrotest/ Replace	4.637	0.00	0.030	4.667

The cost of the project was decreased since the scope had decreased the number of accelerated miles in the current scope at the end of Stage 2 was removed. This cost was $23,279,539 direct costs. During stage 3 a Total Install Cost estimate would provide a more solid cost estimate based on the scope of work.

Stage 3 – Definition

During stage 3, the project execution plan was finalized, baseline schedules developed, funding estimates developed, and project funding obtained.

- Line 2001 West was split into 3 sections: 2001-W-A: Segments 15 and 16 (City of Industries) 0.0031 miles – Cost apportioned to this was $700,000 direct costs
- 2001-W-B: Segments 10, 11, 14, 17, 18, and 19 (Banning to La Puente) 2.817 miles – Cost apportioned to this was $9,460,567 direct costs
- 2001-W-C: Segments 1-9 (Coachella to Cabazon) 1.817 – This portion of the project has not begun, so there is no cost associated with it at this time.

Since the project was sectioned and planned to be executed using different schedules due to the decision to focus on Class 3 Category 4 segments. Section 2001-W-A (segments 15 and

16) was the only section to have a Total Install Cost (TIC) estimate established by 12 June 2014 because it had passed stage 3. This was $9,460,567 direct costs.

As of June 12, 2014, 2001 West Section B (Segments 10, 11, 14, 17, 18, 19) were in Stage 3.

Scope as of 12 June 2014:

Table 56

	Action	**Category 4 Criteria Miles**	**Accelerated Miles**	**Incidental Miles**	**Total Miles**
Segment 1	Test	0.301	0.000	0.000	0.301
Segment 2	Test	0.172	0.000	0.000	0.172
Segment 3	Test	0.099	0.000	0.000	0.099
Segment 4	Test	0.392	0.000	0.000	0.392
Segment 5	Test	0.169	0.000	0.000	0.169
Segment 6	Test	0.155	0.000	0.000	0.155
Segment 7	Test	0.231	0.000	0.000	0.231
Segment 8	Test	0.132	0.000	0.000	0.132
Segment 9	Test	0.076	0.000	0.000	0.076
Segment 10	Test	2.033	0.000	0.000	2.033
Segment 11	Test	0.751	0.000	0.000	0.751
Segment 14	Replace	0.000	0.000	0.000	0.000
Segment 15	Replace	0.001	0.000	0.000	0.001
Segment 16	Replace	0.002	0.000	0.000	0.002
Segment 17	Replace	0.030	0.000	0.000	0.030
Segment 18	Replace	0.001	0.000	0.000	0.001
Segment 19	Replace	0.001	0.000	0.000	0.001

Stage 4 – Detail Design/ Procurement

During Stage 4, design and construction documents and necessary permits and authorizations are completed; pipeline materials are purchased, received, and prepared to turnover to contractor.

Stage 5 – Construction

There were no change orders for Segments 15 and 16. Construction was completed in conjunction with a Pipeline Integrity project.

Stage 6 – Commissioning

As of June 12, 2014 2001 West Section A (Segments 15, 16) were in Stage 6.

Changes since 12 June 2014

- Segments one to nine are being done under Line 2000-C in 2015..
- Segment 17 has changed from replacement to hydrotest for the following reasons:
  - The change to hydrotest is driven by SoCalGas' inability to acquire the TRE/Easement required to conduct a Jack and bore
  - There is no technical reason for switching to hydrotest. Given the overall cost and time, it will be lower to hydrotest given the problems associated with replacement.
  - The team also presented hydrotesting segments 18 and 19 instead of replacing them because of the cost savings and efficiencies of hydrotesting segments 17, 18 and 19. A comparison cost estimate was given. Option 1(hydrotest segment 17, replace segment 18 and 19) cost $2,475,199. Option 2 (hydrotest segments 17, 18 and 19) cost $1,858,667.
  - The PSEP Leadership was presented with this at a Stage Gate Meeting on January 30th where it was decided to hydrotest segment 17, 18 and 19.

11. Line 2003

In R.11-02-019, SoCalGas and SDG&E's workpapers identified Line 2003 as a hydrotest project. Line 2003 begins at the intersection of Rosemead Blvd. and Slauson Ave. in Pico Rivera, runs west through the greater Los Angeles area, and ends at Western Terminal Station. As filed in R.11-02-019, the scope of the lines was as follows:

Table 57

	Action	Category 4 Criteria Miles	Accelerated Miles	Total Miles
Line 2003	Hydrotest	26.225	0.275	26.500

The initial filing cost for Line 2003 was $18,825,600.

Phase 1 – Initiation

Line 2003 begins at the intersection of Rosemead Blvd. and Slauson Ave. in Pico Rivera, runs west through the greater Los Angeles area, and ends at Western Terminal Station. The line is located entirely in a class 3 HCA.

The first 15 miles of 30 inch was installed in 1949. Strength test documentation was recorded on several job reports at the time of installation and summarized later in 1962 in a summary report. A Form 2112 describing the strength test documentation was approved by Pipeline Integrity. The line was then expanded approximately another 15 miles in 1951. The as-built construction specifications and another 1962 summary report show that the line was hydrostatically tested at the time of installation and this strength test is recorded in the feature study.

There lengths of Line 2003 that do not have strength test documentation: These portions of Line 2003 were installed in 1956, 1957, 1959, and 1953. Most were are short sections for street improvements. Approximately 500 feet of main was relocated in preparation for a new flood control channel.

During the Stage 1 scoping process, the mileage on Line 2003 to be tested or replaced by PSEP in Phase 1A was reduced to 0.138 miles. Four sections along the line have been identified. Segment One which runs under the Rio Hondo River along Suza Ave in Downey which is 544 feet in length. Segment Two at the intersection of W 1041 St and S La Cienega Blvd. which is 57 feet in length. Segment Three is a 46ft section of pipe which is at the intersection of Aviation and Century Blvd in Los Angeles near LAX. Segment Four is a 79ft section located on residential Inglewood Blvd in Los Angeles.

For each segment the following options were evaluated: testing from Mainline Valve to Mainline Valve hydrotesting only the Category 4 Criteria or replacing only the Category 4 Criteria. After evaluating the risks and considering the costs of each option, pipe replacement is recommended for all four segments.

Updated scope at the end of Stage 1 was:

Table 58

	Action	**Category 4 Criteria Miles**	**Accelerated Miles**	**Total Miles**
Line 2003	Hydrotest	0.138	0	0.138

Stage 2 – Selection

During Stage 2, the team evaluated the segments approved in Stage 1. The entire scope for Line 2003 is less than 1,000 feet although it will be executed in four segments and pipeline segments that are less than 1,000 feet in length are set to be replaced unless further analysis indicates it would be more appropriate to hydrotest. SoCalGas and SDG&E anticipate replacing or abandoning these short segments because the logistical costs associated with hydrotesting (permitting, construction, water handling, and service disruptions for non-looped system) can approach or exceed the cost of replacement.

Segment Once

- Hydrotest cost estimate: $6,308,031
- Replacement cost estimate (Jack and Bore construction method): $2,389,727
- Replacement cost estimate (Horizontal Directional Drill method): $2,710,455

Segment Two

- Hydrotest cost estimate: $3,356,833
- Replacement cost estimate: $835,203

Segment Three

- Hydrotest cost estimate: $2,281,978
- Replacement cost estimate: $837,344

Segment Four

- Hydrotest cost estimate: $4,005,247
- Replacement cost estimate: $860,228

In addition to it being more cost effective, the research done did indicate that due to the age of the pipe (1950s) and the risks associated with testing underneath the Rio Hondo River as well as the high cost to provide Liquefied Natural Gas (LNG) for a hydrotest; replacement is an overall better solution. A failure under the Rio Hondo River could potentially rupture the concrete lined river and contaminate it. In case of a hydrotest failure it would be difficult to locate a leak under Rio Hondo River. The Normal safety precautions would need to be taken. Emergency response teams and trucks would need to be ready. Police and fire departments notified, and extra traffic control plans in place.

Once the options for whether to hydrotest or replace were investigated and the costs to manage customer impacts were weighed against the costs and benefits of having a new pipeline, which would lower future costs and risks by improving the quality of the pipeline asset the following decisions, were made.

- 2003 Segment 1 – Replacement
- 2003 Segment 2 – Replacement
- 2003 Segment 3 – Replacement
- 2003 Segment 4 – Replacement

Updated scope at the end of Stage 2 was:

Table 59

	Action	Category 4 Criteria Miles	Accelerated Miles		Total Miles
Line 2003	Hydrotest/ Replace	0.138	-		0.138

Stage 3 – Definition

During Stage 3, the project execution plan was finalized, baseline schedules developed, funding estimates developed, and project funding obtained. During the detailed design and planning of Segment 1 the decision was made to switch the scope from replacement to hydrotest due to long lead permitting requirements to access DPW property.

The estimate established during Stage 3 was $8,469,271.

As of June 12, 2014 Line 2003 was in Stage 3.

Scope as 12 June 2014:

Table 60

	Action	Category 4 Criteria Miles	Accelerated Miles	Incidental Miles	Total Miles
Segment 1	Test	0.103	0.000	0.115	0.218
Segment 2	Replace	0.011	0.000	0.031	0.042
Segment 3	Replace	0.009	0.000	0.001	0.010
Segment 4	Replace	0.015	0.000	0.001	0.016

Changes since 12 June 2014

- Segment One hydrotest was successfully completed October 27th 2014. This segment is currently being closed out (Stage 6 and Stage 7).
- Segment Two scope changed from replacement to hydrotest. Once potholing was completed the pipeline alignment was shifted closer to the roadway centerline. The proposed location for the bore pit on the east side of La Cienega Blvd. was too close to the turning radius of trucks coming in and out of an existing trucking business located on

104th St. The trucking company only had one driveway which was located directly across the street of the proposed bore pit. Overhead power lines along 104th St. would make it difficult to bring a crane in to install shoring for the bore pit. Due to work space limitations the project team proposed to leadership to hydrotest Segment 2 instead of replacement. The proposed hydrotest scope includes 57 feet of Category 4 Criteria and 467 feet of incidental footage. Currently in Stage 4.

- Segment Four replacement was successfully completed November 25th 2014. This segment is currently being closed out (Stage 6 and Stage 7).

12. Playa Del Rey (Phase 5)

Playa del Rey is a SoCalGas storage field located in the city of Playa Del Rey. Portions of high pressure pipe throughout the storage field fall within the scope of PSEP.

In our initial PSEP filing submitted in 2011, SoCalGas and SDG&E identified approximately two miles of high pressure Playa Del Rey piping to be hydrotested, as summarized in Table 61 below.

Table 61

	Action	Category 4 Criteria Miles	Accelerated Miles	Total Miles
Playa Del Rey Storage Field	Hydrotest	1.918	-	1.918

During the initial scoping phase in October 2012, Category 4 mileage for this project was reduced through the records review process.

To leverage economies of scale and efficiencies, SoCalGas and SDG&E planned the PSEP-related work to be included within the scope of a larger infrastructure project at the SoCalGas Playa Del Rey storage field, which, among other elements, included hydrotesting of 1,885 feet of pipe. Due to the complexity of the pipeline system at the storage field and multiple design pressures, the project was divided up into six separate hydrotests.

PSEP started the scoping and phases of 4, 5, 6 in May 2013. It was determined that phase 5 contains category 4 miles.

Playa Del Rey Phase 5 is being planned and will be executed by The Storage Team (Storage). Storage complies with usual company policy as this project had initiated prior to the implementation of the PSEP Seven Stage Review Process, however a similar decision methodology is employed that incorporates many of the same attributes that the PSEP Seven Stage process is based on.

The initial filing cost for Playa Del Rey was $600,000 (these are direct costs).

As mentioned, Storage determined they would execute the project in six phases. This is due to different operating pressures, i.e. injection and withdrawal. Additionally, there are several Category 4 injection and withdrawal pipelines depending on the storage wellhead parameters. The majority of these pipelines are concentrated within the "upstairs" portion of the station, the grouping of pipelines next to the residential and office areas. The "downstairs" portion is located in a more remote section and is not covered in PSEP. The plan was to hydrostatically test these pipelines (plus five percent (5%) spike).

Phase 5 Scope is shown below:

Table 62

	Action	Category 4 Criteria Feet	Accelerated Feet	Incidental Feet	Total Feet
Playa Del Rey Storage Field Phase 5	Hydrotest	636 feet	-	-	636 feet
	Hydrotest (Post-61 pipe)	293 feet	-	-	293 feet

Playa Del Rey Phase PDR Phase Five began on May 30, 2013; it consists of 929 ft. of Category 4 criteria pipe, of which 293 ft. is Post-1961 pipe, which is not included for recovery.

The hydrotest costs associated with Post-1961 pipe are not included in R.11-02-019. As of June 12, 2014, the Playa del Rey Storage Facility Phase 5 was in Stage 3-Project Definition.

Scope as 12 June 2014:

Table 63

	Action	**Category 4 Criteria Feet**	**Accelerated Feet**	**Incidental Feet**	**Total Feet**
Playa Del Rey Storage Field Phase 5	Hydrotest	636 feet	-	-	636 feet
	Hydrotest (Post-61 pipe)	293 feet	-	-	293 feet

Changes since 12 June 2014

Storage and PSEP completed Stage 3 and developed a cost estimate for the completion of phase 5 on July 17, 2014. The estimated cost, at end of Stage 3, to complete Phase 5 of Playa Del Rey was approximately $675,000 (direct costs). This cost estimate does not include the hydrotest costs of post-61 pipe. Including the $683,000 included for recovery for Phases 1 and 2 hydrostatic tests, the total cost to complete Playa Del Rey is estimated to be $1,358,000. This is significantly more than the filing cost of $600,000. It is important to note that the filing estimate assumed a straight pipeline and a cost per mileage to hydrotest was utilized for the computation. Playa Del Rey consists of multiple diameter pipelines connected to multiple compressors, cooling and filtration units, and other complex components. This level of complexity was not factored into the original filing cost.

Storage and PSEP completed Stage 4 on March 5, 2015. All materials have been procured. Since work is contained within Company property, no permits were required. Additionally, no customer impacts were identified. Construction for Playa Del Rey started on

March 9, 2015. The field was shutdown to prepare for the hydrostatic test on April 10, 2015. Construction is in progress and scheduled to be completed as soon as June 8, 2015.

- Stage 3 – finished 7/17/14
- CRR for 4/5/6 in March 5, 2015

This concludes my supplemental testimony.

Appendix A

APPENDIX A
PIPELINE SAFETY ENHANCEMENT PLAN (PSEP)
Specification and Standards

SCG ID Number	SDGE ID Number	Specification or Standard
103.0010		Special Specifications-Request for Proposal (RFP) Process
103.0025		Defective or Incomplete Work by Contractors
104.0001		Environmental Training
104.0003		Spill Prevention Control & Countermeasure (SPCC) Plans
104.0017		Pipeline Liquids - Field Handling
104.0030	G8729	Hazardous Waste Shipping
104.0040	G8731	Hazardous Material Shipping
104.0042		PCB Guidance for Pipeline Abandonment Removal
104.0043		Hazardous Materials Transportation Security Plan
104.0050	G8732	Packaging, Marking and Shipping Samples for laboratory
104.0055		Polychlorinated Biphenyls (PCB) Management
104.02	G8741	Notification Requirements for Release/Spill Events
104.085		Hazardous Materials / Waste Management
107.0280		Depth Probe - Operating Instructions
107.0284		MSA ORION Multigas Detector Unit
166.0012	G8231	Public Awareness Program
166.0015		Fire Prevention and Protection - Transmission and Storage
166.0020		Grounding and Bonding Flammable Liquid Containers
166.0025		Prevention of Accidental Ignition of Natural Gas
166.0032		Low Voltage Electrical Safety Program
166.0034		ARC FLASH Safety Program
166.0040		Employeee Safety Training
166.0055		Contractor Safety Observation Areas
166.0076		Working in Flammable Atmospheres
166.0077	G8315	Confined Space Operations
166.0080		Traffic Control and vehicle Placement
166.0082		Public Right-of-Way Construction Enforcement Program
187.0056	G7805	Welding Field Guide
167.0253	G8117	As-Built Surveys for Construction of High Pressure Pipelines
	G7361	Pipeline Testing Requirements
180.0015	---	Wedding bands, Reinforcing Sleeves and Canopies - Selection Guide
183.08		Pipeline Safety Reports to CPUC and DOT
183.0080		Field Procedure - Emergency Incidents - Underground Storage wells
183.0100		Shutdown Procedures and isolation Area Establishment for Distribution
223.0001	G8171	New and Uprated Pipelines - CPUC Notification
	G8205	Emergency Response Procedures for Gas Incidents - Transmission
	G8221	Gas Incident Notification
180.0020	G7665	Flanges - Selection, Torque and Installation requirements
167.0230	G8025	Internal Corrosion Design and Construction Considerations
182.0010	G8605	Request for Pipeline Design Assistance
182.0015		Lowering in Place-Existing Steel Pipelines
182.0020	G9109	Electrical facilities in Hazardous Areas
182.0032	G8146	Blowdown Time, Sizing and Volume Calculations
182.0040	G8115	Changing Maximum Allowable Operating Pressure and Maximum Operating Pressure
182.0050	G8023	MAOP Evaluation of Corroded Pipe
182.0055	G7316	Identification of Steel Pipe and Butt Weld Fittings
180.0050		Control Piping
182.0080	G7350	Casing Assemblies-Steel Carrier Pipe
182.0085	D7114	Pipe End Closures
180.0105		Tubing Selection Guide

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SCG ID Number	SDGE ID Number	Specification or Standard
182.0070	G7821	Angles and Bends in Steel Piping
182.0093	G7351	Wear pads and bands for Steel gas piping
182.0095	G7349	Piping Spans-Unsupported
182.0170		Strength Testing - Pipelines and facilities
182.0130		Steel service Design 61 - 1000 psig
182.0155		Gas loss Estimation - Pipeline
182.0165		Tap requirements
186.0100	G7375	Approved Protective Coatings for Below Ground Corrosion Control
182.0190	G8121	Location Class - Determination and Changes
182.02	G9121	System Engineering Analysis
186.0102	G7377	Field Application of FBE
182.0400	G8115	Changing MAOP and MOP
182.04	G9124	Customer Service Evaluations
184.0040		Regulatory Station Number Assignments
186.0104	G7382	Surface Preparation and Shop Applied Coating for General Steel
187.0055	G7803	General Welding Requirements
223.0180	---	Repair of Defects in Steel Pressure Piping
223.0183	G7372	Repair of Defects on an Operating Pipeline by Grinding
---	G7355	Holiday Detector Operation
192.0200		Operations Technology Procedure for HCA Segment Identification
192.0020		Preparation of Completion Sketches
41-06.1	---	Pipe - Steel, Grades A25 through X70
43-91		Tubing - Stainless Steel (Instrument)
44-50	---	Fusion Bonded Epoxy External Line Pipe Coating
44-50.1	---	Fusion Bonded Epoxy External Fitting Coating
44-50.4	---	Powder Coating for External Protection of Pre-fabricated Gas Components
52-83	---	Fittings - Forged Steel
52-96	---	Fittings - Butt Weld Steel
52-96.1	---	Specifications for Induction Bending of Steel Pipe
54-17	---	Flanges and Flanged Fittings
57-69		Band, Wedding
103.0030		Contracting Transmission Pipeline Construction
58-15.1	---	Valves - Ball, Small (High Pressure)
104.0220	G8719	Hydrostatic Test Water Management
58-15.2	---	Valves; Ball, Steel Floating
104.0226		Excavation Dewatering Management
58-20		Valves - Check
104.077	G8718	Dewatering Utility gas vaults and Underground Structures
58-82	---	Valves; Ball, Steel, Trunnion Mounted
76-82	---	Reinforcement, Branch Connections
167.0218	G8160	Pipeline Cleaning Standard
	T7375	Repair of Transmission Pipelines
	G7315	Standard Specification for Steel Line Pipe
182.0160		Purging Pipelines and Components
104.0008	G8755	Import Fill Materials
184.0015		Construction Planning for Mains and Supply Lines
184.0016		Construction Project Package Routing
184.0018		Permanent Paving Repairs - Permanent Cold patch Material
184.0050		General Construction Requirements for Distribution Mains
104.05	---	Asbestos Management

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PIPELINE SAFETY ENHANCEMENT PLAN (PSEP]
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SCG ID Number	SDGE ID Number	Specification or Standard
167.0210	G8180	In-Line Inspection Procedure
167.0211	G8184	Bellhole Inspection Requirements
184.0060		General Construction Requirements for Distributution Service Lines
184.0080	D7110	Abandonment of Gas Services and Gas Light tap Assemblies
167.0212	G8185	Casing Wax Fill
167.0252	---	Inspection of Cased pipe
184.0200	G8123	Underground Service Alert and Temporary Marking
167.04	G8308	Contractor Safety Program
167.15	G8345	Hot Work Permit Program
180.0005	G7314	Steel Pipe - Selection
180.0010	G7321	Steel Butt Weld Fittings - Selection guide
180.0085	G7603	Valve Usage and Selection Guide
180.0090		Valve Casing Assembly - Selection Guide
191.0060		Excavation Permits
191.0092		Notice of Operation
192.0025	G7507	Map Maintenance Requirements for High Pressure gas Lines
180.0100		Pre-Fabricated Vaults - Selection Guide
182.0080	G7350	Casing Assemblies - Steel Carrier Pipe
223.0130	T7381	Abandonment, Conversion and Reinstatement of Transmission Pipelines
223.0145		Planning Shutdowns for Transmission & Storage
223.0155		Planning Pipeline Blowdowns
182.0087	---	Inspection of Pipeline-cable Suspension Bridges
182.0090	G8603	Designs for Pipelines in bridges
223.0233		Identification Numbers for Pipeline taps/laterals - Transmission
180.0001		Material Usage Specification
	G7009	Material Specifications and Purchase Descriptions
182.0093	G7351	Wear Pads and Bands for Steel Gas Piping
182.0115	---	Company facility designs - Energy Source isolation
182.0185	---	Pressure Terminology and Establishment of Pressure levels for Piping
182.0200	G9105	Design Factors for Steel Piping Systems
184.0030		Pressure Control Planning for Main Extensions and Replacements
184.0055	G7408	Hand Backfill and Compaction Method
184.0100	---	Planning Applicant Provided Trench projects
180.0025	G7664	Bolting - Selection Guide
180.0030	G7353	Branch Connection, Steel - Selection Guide
180.0035		Leak Repair Clamps and Sleeves - Selection Guide
180.0040		Pressure Control Fittings - Selection Guide
180.005	G7313	Steel Pipe Yield, Design properties and design Pressure tables
180.0050		Control Piping
180.0085	G7603	Valve Usage and selection Guide
180.0090		Valve Casing Assembly - Selection Guide
	G7661	Valve Operator & Lubrication Extension
180.0100		Prefabricated Vaults - Selection Guide
180.0105		Tubing selection Guide
184.0170	D8305	Trenchless Construction Methods
184.0175	G7451	Prevention of damage to Subsurface Installation
184.0900	G8122	Prevention of Damage to Company Facilities
186.0002	G8003	Design and Application of Cathodic Protection
186.0075	G8009	Electrical Test Stations & Bond Assembly
186.0103	G7379	External Surface Prep and Field Applied Coatings for Buried Pipelines
186.0106	G7378	External Surface Prep and Field Applied Coating for Above Ground Pipe Spans

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SCG ID Number	SDGE ID Number	Specification or Standard
182.050	G7363	Nitrogen Requirements
186.0108	G7381	External Surface Prep and Shop Applied Coating for Steel tanks and Vessels
186.0110	G7376	Field Tape Wrapping Requirements
---		Hydrostatic Test Specification for PSEP
186.0190	G8037	Induced High Voltage Alternating Current (HVAC) on Pipelines
187.0175	G7815	Inspection & Testing of Welds on Company Steel Piping
186.06	G8027	Cathodic Protection - Electrical Isolation
187.0175	G7815	Inspection and Testing of Welds
187.0180	G7809	Qualification and Re-Qualification of Welders
677-1		Pipeline Condition and Maintenance Report
883		Application for a Tap
1603		Agreement for Collectible Work (D Ticket)
2111		Management of Change - Request and Approval
2974		Request for Ruling on Collectibility
3141		Company Property damage Report
187.0200	G7817	Radiographic Procedures and Radiographer Qualifications
223.0001	G8171	New and Uprated Pipelines - CPUC Notification
3466		Reporting of gas Blowdown to Atmosphere
6350		Report of Contractors's performance
918		EIR Revision
223.0002	T7413	Minimum Trench Requirements for Transmission Pipelines
223.0003	T7303	General Construction requirements - Steel Transmission System
31-98	---	Arc Welding Electrodes - Wire Type Filler Metal
223.0030	---	Investigation of Failures on Distribution and Transmission Pipeline Facilities
223.0140	G7453	SCG Excavating, Shoring and Sloping SDGE General Excavation Requirements
223.0410	T7320	Requirements for designing Pipelines to Accommodate Smart Pigs
---	G7410	Slurry Backfill
---	G7365	Pneumatic Test requirements for Pipelines Operating above 60 psig
53-53	---	Monolithic Isolation Couplings
---	G7369	Hydrostatic Test Requirements
26-10	---	Utility Trench Backfill - Base and Shading Material
31-53	---	Arc Welding Electrodes - SMAW ("Stick") Type
56-48	---	Pressure Control Fittings
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CFI-3222 Checklist	---	DDS Checklist
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58-20	---	Valves - Check
	G7409	Imported and Native Backfill
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186.0111	G7380	Field Application of Grease Coating
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