CHAPTER 3
PROJECT DESCRIPTION

This chapter of the document describes the objectives and characteristics of the new service proposed by SCG/SDG&E to allow them to install conduit within active gas lines.

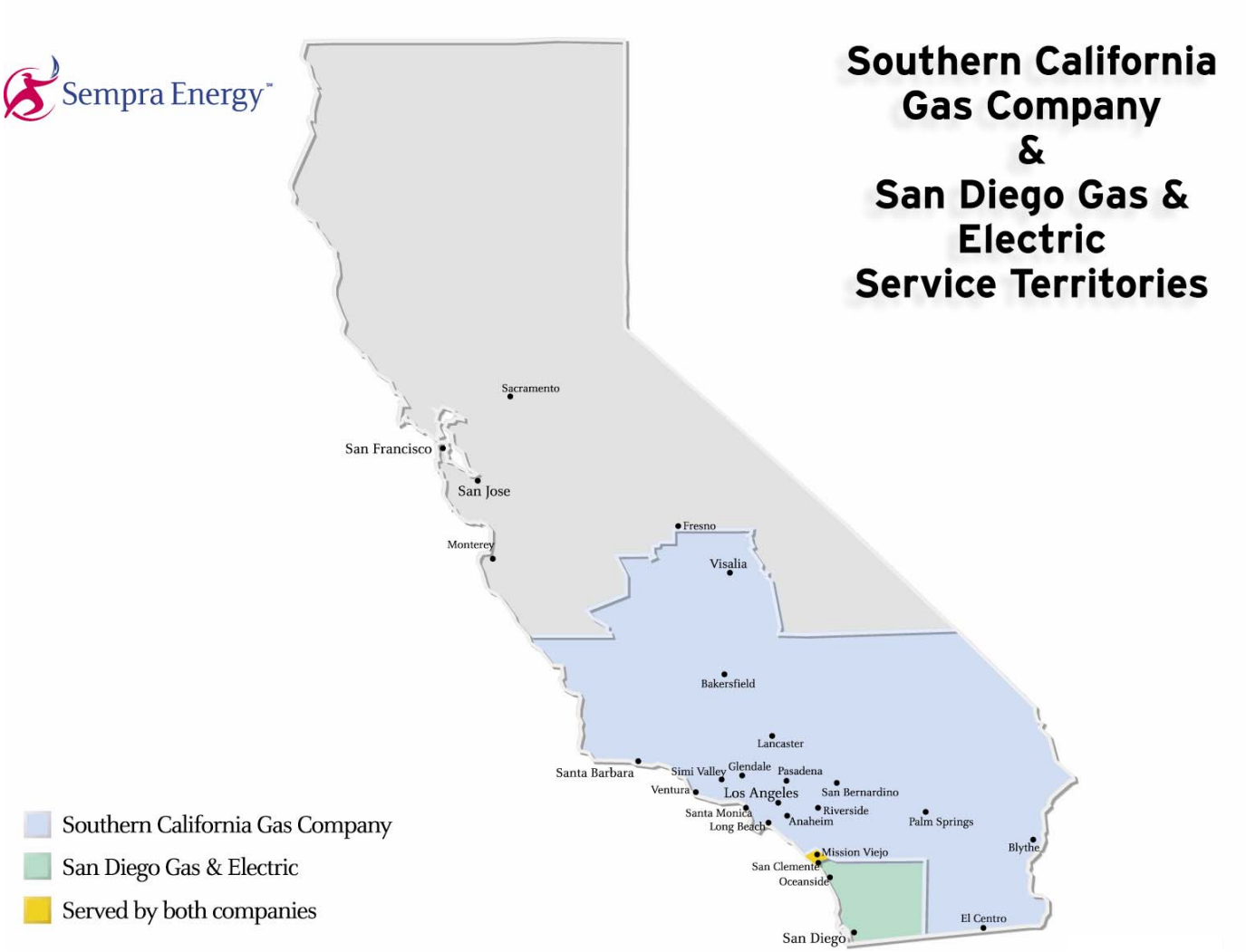
3.1 PROJECT LOCATION

The new service would be applicable to the existing pipeline distribution systems owned by SCG/SDG&E in their service territories in 13 southern California counties including Fresno, Imperial, Kern, Kings, Los Angeles, Orange, Riverside, San Bernardino, San Diego, San Luis Obispo, Santa Barbara, Tulare, and Ventura, which therefore defines the project area (**Figure 3-1** and **Figure 3-2)**.

"Fiber in Gas" or "FIG" technologies are particularly well-suited to highly developed, urbanized areas where existing infrastructure can be utilized to provide telecommunications carriers and cable television companies ("Carriers") connections to end users with minimal disruption to the surrounding environment. FIG technologies can minimize the potential for environmental impacts, whether in an urban, suburban, or rural settings, by eliminating the need to disrupt large areas with trenches and trenching equipment. The need to use FIG technologies generally decreases as an area becomes less developed. This decrease typically occurs because the economic feasibility installing a communications network via more standard construction techniques increases for a Carrier in more rural and suburban areas where greater availability of public rights-of-way exists. Therefore, the demand for the use of FIG technology is anticipated to decrease in less developed areas. For this reason, the study area setting described throughout this EIR assumes that the program would be implemented only in developed areas. "Developed areas" defined in this document implies a location where infrastructure (i.e., roads, utility rights-of-way) is existing and construction activities would occur exclusively within or adjacent to roadways (including road shoulders, landscaped road buffers, and sidewalks) that often serve as utility rights-of-way. To further explain the definition assumed for the environmental assessment, an area may be considered "developed" in suburban or rural areas as well as urban, as long as the proposed activity is located within or adjacent to existing roadways.

3.2 PROGRAM OBJECTIVE

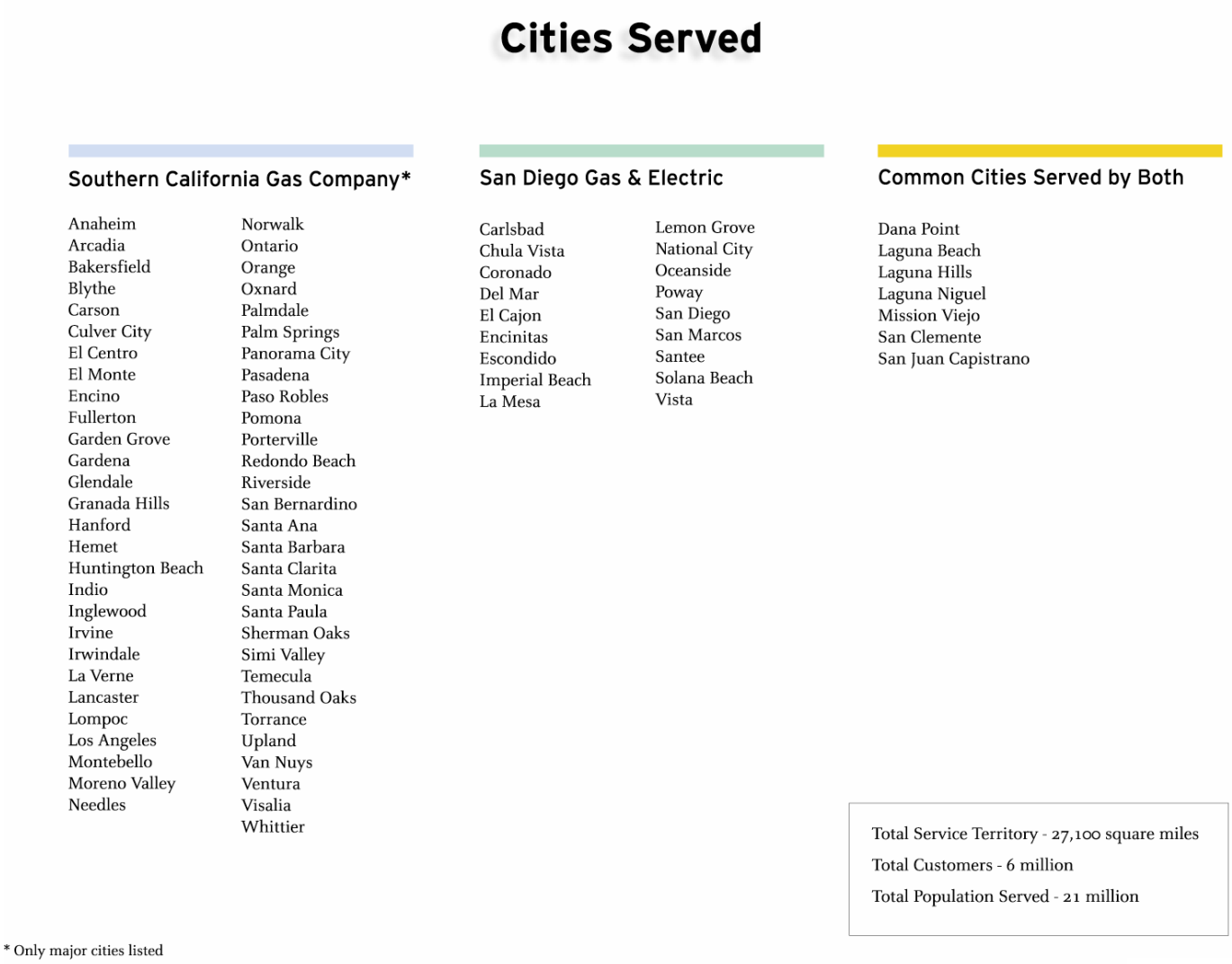
The purpose of the application is to request Commission authorization to implement a new service allowing any Carriers to place fiber optic cable in conduit installed in SCG/SDG&E's active gas pipelines in compliance with the tariffed rates, terms and conditions under new Schedule No. G-FIG. Under Schedule G-FIG, SCG/SDG&E will recover all out-of-pocket costs for making its



SCG/SDG&E Schedule No. G-FIG "Fiber Optic Cable in Gas Pipelines" / 202131-004 ▪

SOURCE: Sempra Energy

Figure 3-1
Southern California Gas Company and San Diego Gas & Electric's Service Territories



SCG/SDG&E Schedule No. G-FIG "Fiber Optic Cable in Gas Pipelines" / 202131-004 ▪

SOURCE: Sempra Energy

Figure 3-2
Cities Served by Southern California Gas Company and San Diego Gas & Electric

pipelines ready for the installation of empty conduit to accommodate fiber optic cable, and for on-going operating and maintenance costs. A variety of terms and conditions, largely based on the Commission's rules for access to poles and conduits of local exchange carriers and major electric utilities, are also incorporated into Schedule G-FIG.

3.3 PROPOSED PROGRAM

The proposed program is the request for authorization of a new tariff service allowing Carriers to place fiber optic cable in conduit placed in SCG/SDG&E's active gas pipelines under new Schedule No. G-FIG. The new service would establish tariff rates, terms and conditions providing Carriers the option to request SCG/SDG&E to install conduit within its active gas pipelines using a proposed "fiber-in-gas" or "FIG" technology.

If requested to do so by a Carrier, SCG/SDG&E would place conduit into its pipeline using a FIG technology. The proposed new service would apply to any FIG technology. Although there are several FIG technologies currently available (e.g., from Nortel Network, Alcatel, and GasTec), SCG/SDG&E has been asked by only one company to test and approve its technology for potential use in SCG/SDG&E's gas distribution pipelines (the "FIG Technology"). The Carrier requesting the conduit would then be responsible for installing the fiber optic cable within the conduit and constructing the handholes[1]. Since there is no definitive project that would apply a FIG technology being proposed at this time, the document addresses potential effects a FIG technology may have on a developed environment during FIG installation and operation.

With the passing of the Telecommunications Act of 1996, deregulation allowed new companies entry into the long distance and data transmission (broadband) markets, which initiated the demand for more capacity, particularly from fiber optic cable. Although long distance networks have been established, the "last mile" connection or that part of the network that completes the final distance from the main communications line to the premises of the end user, is largely nonexistent.

The more traditional approach to install a "last mile" connection often requires trenching through paved streets, which may result in subsequent environmental impacts such as traffic delays, air pollution from idling traffic and construction equipment, and interference with customer access to local businesses. Municipal and State authorities may also experience an increase in work load due to the continuing permit and restoration issues associated with paving removal and replacement.

The new service SCG/SDG&E is seeking to provide, by using a FIG technology, proposes a method that can mitigate the potential impacts associated with Carriers constructing new infrastructure in public streets. By avoiding standard trenching methods and utilizing existing utility infrastructure, FIG technology may ease concerns local governments have regarding the increasing number of utility trenches often required to facilitate the installation of traditional

[1] Handholes are approximately four feet long and wide; the depth of the handhole will be approximately three feet. The excavation required to install the handhole may be three to four feet deep.

telecommunication infrastructure. By using existing natural gas infrastructure, the demand for limited available space in the public rights-of-way may also be reduced.

3.3.1 DESCRIPTIONS OF THE NEW SERVICE

SCG/SDG&E would make available natural gas distribution mains of two inches in diameter and larger, and service lines one inch in diameter and larger, that operate at medium or low pressure (60 pounds per square inch [psi] or lower) upon request by a Carrier for this service for placement of conduit utilizing a FIG technology. Only conduit of a maximum diameter of 1.2 inches would be placed in any pipeline to accommodate fiber optic cable. Under this proposed service, SCG/SDG&E would install and own all facilities necessary to place fiber optic cable in their pipelines except for the handhole structure, including conduit and required fittings. SCG/SDG&E would not install the fiber optic cable itself, but would install only the conduit in the active gas lines to house (or accommodate) the fiber optic cable.

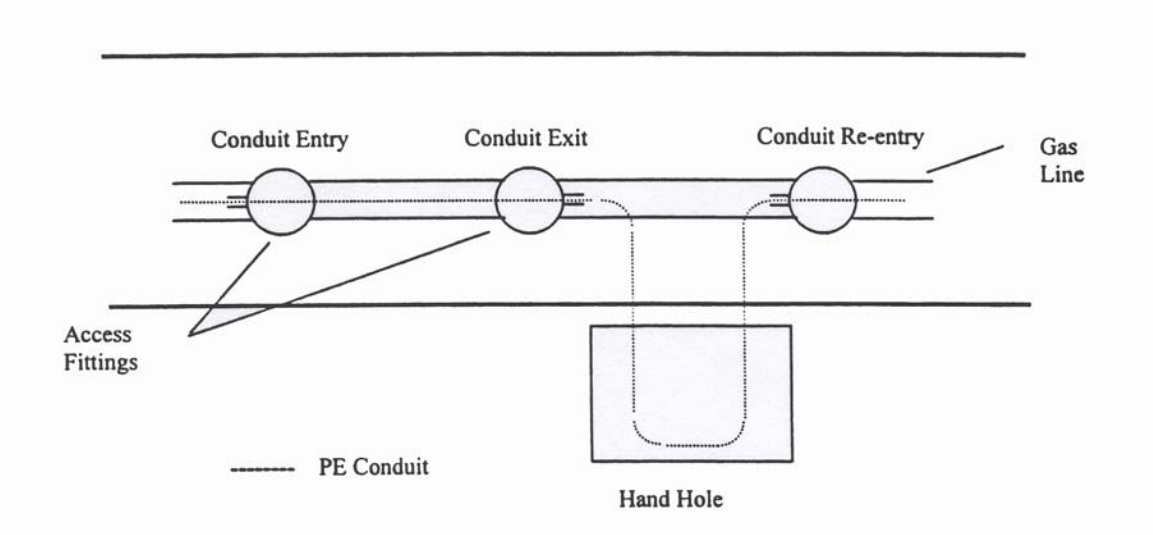
SCG/SDG&E is not requesting to provide telecommunications services or to become a licensed telecommunications provider, therefore, the fiber optic cable would be owned by the Carrier for whom the conduit is installed. The Carrier would be responsible for installing the fiber optic cable within the conduit and constructing the handholes for installation and future access to its fiber optic network or cable system. SCG/SDG&E would, however, have trained pipeline inspectors present during the installation of the Carrier's fiber optic cable once the conduit has been fully installed within the gas pipeline.

By offering this proposed new service, SCG/SDG&E would make available an additional option for routing fiber optic cable that could potentially reduce impacts on the environment, especially in densely populated metropolitan areas from standard trenching methods. In addition, consumers of services delivered through the use of fiber optic cable could also benefit by the reduced costs associated with providing those services. Cost reduction could also contribute to increases in the availability of services to the public, thus promoting the access of greater numbers of the public and institutions serving the public to the internet and other services delivered over fiber optic cable.

3.3.2 FIBER IN GAS TECHNOLOGY

As previously discussed, although there are several FIG technologies available, to date, SCG/SDG&E have received a request from only Sempra Fiber Links (SFL) to assess the compatibility of a FIG technology with their gas pipelines. Therefore, the assessment in this document of the potential environmental impacts is from only this technology. With the SFL FIG technology, installers insert a polyethylene (PE) inner conduit into the gas pipelines through gas-tight packing seals, without the depressurization of the pipe at any time. Installers use well-proven procedures (used for many years by the gas utilities industry) for entering and tapping live gas lines. The conduit, which carries the fiber-optic cable, is extracted with specialized, patent-pending tools at a pre-determined exit point, and entering and exiting ends of the conduit are sealed with standard, certified fittings. The SFL FIG Technology tested by SCG/SDG&E uses procedures and equipment already in use in the gas distribution industry to install conduit; the

fittings are approved modifications of standard fittings already used in the industry. The conduit installation process developed by SFL and analyzed in this document is further explained below. The process is schematically depicted in **Figure 3-3**.



SOURCE: Sempra Fiber Links

Figure 3-3
Sempra Fiber Link FIG Technology Schematic Drawing

TESTING

SCG/SDG&E performed an evaluation of the components of a FIG procedure developed by SFL (currently the only domestic technology of its type available in the U.S.) to determine its safety and durability as permanent attachments to gas carrying pipelines. Testing performed by SCG/SDG&E was conducted to ensure the FIG procedure conforms to all applicable regulations including those mandated by federal, State, and SCG/SDG&E Company pipeline safety standards and procedures.

The Office of Pipeline Safety (OPS) of the Department of Transportation (DOT) works with the oil and natural gas pipeline industries to further improve safety and environmental protection in cost-effective ways. The primary regulatory basis for achieving these safety goals in the pipeline industry is the set of regulations embodied in Title 49 of the Code of Federal Regulations (CFR) Parts 190-199.

Part 192 of 49 CFR prescribes safety standards for transportation of natural gas by pipeline. The regulations are written as minimum performance standards, setting the level of safety to be attained and allowing the pipeline operators discretion in achieving that level. In addition, pipeline companies, including SCG/SDG&E, perform discretionary activities over and above the regulations to achieve these goals. Some of the discretionary activities SCG/SDG&E has been performing or will perform in relation to the approval and use of the FIG technology and processes include:

1) **Extent to which new fittings and materials are tested to ensure safety and durability.** In addition to the testing performed by the manufacturer to comply with existing regulations SCG/SDG&E would perform testing to verify manufacturer's test results. Testing is performed either at SCG's Engineering Analysis Center or in field installations throughout the service territories

2) **Follow up leak survey to ensure system integrity.** SCG/SDG&E would conduct semi-annual leak surveys over the pipeline where FIG is installed for at least one year after installation. Thereafter, SCG/SDG&E would follow standard company procedures. The most stringent requirement found in CFR 49 Part 192 is the requirement for annual survey cycle for business districts.

3) **SCG/SDG&E would have an inspector present during the installation of the fiber optic cable.** This activity would be conducted at a minimum during the first years of the program to ensure Carriers do not damage the gas pipeline. CFR 49 Part 192 only requires that follow up inspections be conducted as frequently as necessary during and after excavation activity to verify the integrity of the pipeline.

The Federal Pipeline Safety Regulations are further enforced in the State of California by the Utilities Safety Branch (USB) of the CPUC who is also responsible for enforcement of CPUC General Order No. 112-E (Rules Governing Design, Construction, Testing, Maintenance and Operation of Utility Gas Gathering, Transmission and Distribution Piping Systems) through its natural gas safety program. The USB administers its natural gas safety program by auditing the facilities of investor-owned natural gas utilities and municipalities in California for compliance with the applicable codes. The audit consists of reviewing operation and maintenance records, evaluating emergency procedures, and performing random field inspections of the natural gas facilities.

Since Fiber-In-Gas is a relatively new technology, national standards specifically designed to test the SFL access fittings do not exist. In the evaluation of this technology, SCG/SDG&E is relying on other standards and practices developed for the gas industry. The overriding principle in evaluating SFL products is to ensure that the existing pipeline system is not compromised with the installation of access fittings. As such, the two basic criteria being used are 1) that the fittings do not provide a pathway for the unintended escape of gas into surrounding environments and 2) that the installation of the SFL system would not compromise the integrity of the pipeline.

The results of the tests and studies conducted on the SFL FIG procedure assisted SCG/SDG&E to develop a criteria to accept a FIG technology for insertion of conduit inside live natural gas pipelines. The tests developed to evaluate and qualify the individual fittings are detailed below.

Steel Main Access Fittings

Synopsis: The steel main access fitting (MAF) is comprised of components made from modified pipeline products widely used by gas companies. Because products were previously approved for use by SCG/SDG&E, qualification testing of the MAF focuses on the design and seal

performance of the modifications to the MAF to create the sidearm assembly, and a technical review of the weld joint design and the welding procedures used in manufacturing the fitting.

***Testing Method and Qualification Criteria*:** The integrity of the sidearm assembly is tested while under pressure per the requirements specified in the standard test method, ASTM F1948, "Standard Specification for Metallic Mechanical Fitting for Use on Outside Diameter Controlled Thermoplastic Gas Distribution Pipe and Tubing," Sec 7.3. Six samples of steel sidearm assemblies are tested at 1.5 times the Maximum Allowable Operating Pressure (MAOP) of the Pipeline (60 pounds per square inch of gravity (psig) for gas Distribution system). The samples are temperature cycled between -20 and 140 degrees Fahrenheit for 10 cycles and re-pressurized to 1.5 times MAOP to identify leaks. Leakage detection is conducted in accordance with ASTM E-515, "Standard Test for Leaks Using Bubble Emission Techniques." Leakage fluid is applied around the threads, which must be effervescent free for 1 minute.

Additionally, the joint design and welding procedures used in manufacturing the MAF must meet SCG/SDG&E and API 1104 requirements[2]. The welder qualification records shall be reviewed by the SCG/SDG&E metallurgist and approved. These are the same procedures SCG/SDG&E would use in qualifying pipeline contractors to work on both Transmission and Distribution pipelines in their existing pipeline systems.

Polyethylene Main Access Fitting

***Synopsis*:** The Polyethylene (PE) MAF is also comprised of pipeline products that are currently used in the gas industry. However, not all of the components have previously been approved by the SCG/SDG&E. Thus more stringent test criteria are needed to ensure the integrity of these MAFs. Recognizing the potential for PE components to experience slow crack growth under certain stress loads, testing at elevated temperatures and other non-standardized tests have been developed to evaluate durability against in-service mechanical loading.

***Testing Method and Qualification Criteria*:** As in the case of steel MAFs, ASTM F1948 is used to evaluate the sidearm's integrity against temperature cycles. A similar temperature cycle test is used to test the integrity of the o-ring found between the steel-to-plastic transition, per the requirements of ASTM F1973, "Standard Specification for Factory Assembled Anodeless Risers and Transition Fittings in PE Fuel Gas Distribution System," Sec 7.4. The MAF is subjected to 1.5 MAOP at ambient temperature first to check for leakage. Then it is temperature cycled between -20 and 140 degrees Fahrenheit for 10 cycles. Lastly, at each temperature extreme, the MAF is leaked tested at 1.5 times MAOP. The samples must be leak-free.

Per ASTM D1598, the MAF is subjected to hydrostatic pressureand immersed in a constant 80 degrees Centigrade water bath for at least 1,000 hours. The fitting must hold pressure for the

[2] SCG/SDG&E requirements are based on a review of the following documents: AAE-1104-FC-2G, "FCAW of Groove Weld with Backing, Steel with SYMS not greater than 42 ksi"; AAE-1104-FC-2F, "FCAW of Fillet Weld, Steel with SYMS not greater than 42 ksi"; and AAE-1104-GT-2F "GTAW of Fillet Weld, Steel with SYMS not greater than 42 ksi."

duration of test. This accelerated life cycle test method has been recognized by the pipeline industry to provide an indication of 50-year service life under typical operating conditions.

A series of other mechanical tests have been developed to address the in-service loading the MAFs are expected to experience during and post- installation. They include compression and bending to account for the weight and orientation of installation equipment[3]. In all, there are eight cases SCG/SDG&E evaluates. In each case, the configuration is tested to failure to establish ultimate strength of the MAF. These values are compared to the anticipated loads to ensure adequate safety factors exist for both short-term and long-term loadings.

Steel Service Access Fitting

***Synopsis*:** As in the case of steel MAFs, ASTM F1948 and ASTM F1973 are used to evaluate the integrity of the transition joint in the sidearm of the steel service access fitting (SAF). The same temperature cycle test and accelerated life cycle test methods are applied. The fittings must hold pressure for the duration of tests. Qualification is also based on the manufacturer's submitting the necessary test reports to support acceptance by SCG/SDG&E. The qualification is still contingent upon successful field trial. The one area of concern is the rotation of the "Y" arm extension post-installation.

***Testing Method and Qualification Criteria*:** ASTM F1948 is used to design a tensile test to ensure the PE conduit coming out of the "Y" extension would elongate at least 25% before the conduit would pull out from the fitting.

A Temperature Cycling test is performed per ASTM F1948 for 10 cycles to ensure the transition joint in the "Y" arm can withstand temperature extremes between -20 and 140 degrees F without leakage. With 1.5 times MAOP internal pressure applied, the SAF must hold pressure without any indication of leaks.

Testing is performed to determine the design factor of the transition joint against extreme pressure. Pressure inside the fitting is continuously increased until the transition fails. This failure pressure is then compared to the 100 psig design pressure to ensure an adequate design factor is met.

PE Service Access Fitting

***Synopsis*:** The PE SAFs requires only one test, the elevated temperature test per ASTM D2513, to assess the design of the fabricated assembly and the quality of the fusions to long-term service duty. The manufacturer of the electrofusion coupling is also required to submit the necessary test reports demonstrating compliance to ASTM F1055 to support acceptance by SCG/SDG&E.

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[3] E.g., air lock housing, torsion to account for threading of sidearm onto the MAF, tensile on the sidearm to make certain the conduit will not pull out before the PE yields, impact to ensure the MAF will not be damaged by equipment accidentally falling onto the MAF during installation, and earthen loading on the sidearm can be supported by the MAF.

***Testing Method and Qualification Criteria*:** Samples of the SAF and the electrofusion coupling are tested with 650 psi equivalent hoop stress for 1,000 hours in a 80 degrees Centigrade water bath. All samples must hold pressure without leaks.

PE Conduit

***Synopsis*:** Conduits with a copper tubing size of 1/2" or larger are standard medium density PE pipe used throughout SCG/SDG&E. No additional testing is required for qualification purposes, however the conduit is tested within the context of the assembly in the intended application configuration to validate long-term performance.

***Testing Method and Qualification Criteria*:** The HDPE conduit is tested per ASTM D2513 to evaluate the long-term life expectancy of the high-density material.

CONDUIT INSTALLATION

The conduit installed in the gas pipeline would be used to house an optical cable later installed by a Carrier. Conduit assists in shielding the optical cable from hydrocarbons commonly found in natural gas pipelines eliminating the issue of cable material compatibility in a natural gas environment. Isolation of optical cable from direct gas exposure also facilitates future maintenance of the fiber without requiring the gas utility's direct involvement. Furthermore, housing the optical cable in conduit simplifies the installation of that cable by allowing the use of existing air jetting technologies.

Once the conduit exits the pipeline, it would be fed into a nearby handhole provided by the Carrier. The Carrier would not notice any physical differences between installation of fiber optic cable in conduit installed in active gas lines or conduit installed independently underground.

To install the conduit within the live gas lines, a standard hot tap procedure is used. The hot tap procedure used for FIG installation is the same procedure performed routinely throughout the gas industry as a means of tapping into a live gas line to establish a service line, etc. Specific instructions for hot tap procedures have been developed internally at SCG/SDGE, and approved by personnel with expertise in this specific technical area for implementation. One of the important features of the technology is that the system is simply a modification of various fittings already approved for use by SCG/SDG&E and others throughout the gas pipeline industry. One slight modification to the hot tap fitting used for FIG is a transparent flange with embedded specialty tools to allow observations inside the pipe for conduit navigation to exit the pipeline. The modified fittings and seals are designed to meet all gas pipeline safety requirements of the U.S. DOT, CFR 49, Section 192 and any local regulations such as California PUC General Order 112-E.

For FIG installation, hot tap fittings with modified side arms (similar to 4" hot-tap fittings) are attached to a live gas line at the desired insertion location to tap a hole into the pipe. Once the pipeline has been tapped allowing access inside the pipe, the conduit is prepared for insertion. The installation of the various fittings is a standard procedure, commonly performed by SCG/SDG&E employees and contractors for service line installations.

After the modified hot tap fittings are attached to create an entry and exit point, conduit is inserted at one end (entry) of the pipeline segment with a mechanical tractor-feeder and extracted at the other end (exit) with the specially designed retrieval tools. The specialty tools are used to grab hold of the threaded conduit. Using the specialty tools through the transparent flange, the fitting on the end of the tool is connected to the conduit end fitting, whereby the conduit can be push/pulled through the exit fitting on the main pipeline.

Once the conduit is installed and sealed to the pipeline, a bridging section of conduit (also referred to as "bridging conduit") is attached where the conduit is sealed to the pipe and routed to a handhole location. A sealing mechanism composed primarily of Teflon® packing, industry standard nuts to secure the fittings (including a gland nut, shield nut and compression nut), and specially designed service adapters are used to ensure pressure tightness between the pipeline and conduit at the entry and exit points. Once the seal is installed, the fitting would be permanent.

VERIFICATION / TESTING FOR CONDUIT CONTINUITY

Following installation of the conduit in the pipeline and the bridging conduit to the handhole, the conduit would be pressurized to 100 psi, and monitored for pressure degradation in order to check for leaks on the conduit system. These tests are designed to ensure that the access fitting can maintain a permanent gas seal at critical contact areas. The pressure tests would ensure that the conduit system is leak free after its installation and prior to fiber optic cable installation. A similar pressure test may also be conducted after the fiber optic cable is inserted into the conduit.

No specific regulations are developed for this pressure testing. SCG/SDG&E would perform testing at 100 psi to ensure the integrity of the conduit itself, and to ensure no leaks in the conduit segment exist. The minimum test pressure required is 100 psi. The maximum test pressure for conduit is not to exceed 140 psi. See **Table 3-1** for the minimum required test duration.

TABLE 3-1
MINIMUM REQUIRED TEST DURATION

Conduit Size (inches)	**Installed Length** (feet)	**Minimum Test Duration** (minutes)
1/2 to 1	500 ft. or less	5 minutes
	over 500 ft.	0.01 min./ft. x total footage

While air, natural gas, and nitrogen each provide safe and reliable mediums for pressure testing of conduits, after further review SCG/SDG&E have elected to use air as the test medium for the pressure testing of the conduit. The test is a three step process using air only. The stand up test per gas company standards using air is performed on the pipe prior to installation. A second test is used to monitor the conduit after installation and again after fiber installation.

FIG-RELATED CONSTRUCTION

Entry or exit of the gas pipeline is required for two basic reasons: (1) to provide a customer connection access point, and (2) to circumvent a pipeline obstruction, e.g., a valve. In order to enter or exit the pipeline, a hole approximately 12 feet by 4 feet is excavated at each end of the pipeline segment. Normal construction equipment consists of two pickup trucks, a backhoe, one material hauling truck (five-ton), and one cement truck. Approximately, two entries and two exits can be typically accomplished in 8 hours. Lengths in excess of 950 feet have been installed in pilot programs using FIG procedures in a single insertion, with two insertions each day.

Excavations will typically be spaced from 500 to 1,500 feet apart, which unlike trench installation, allows use of all but small portions of the street. There are no specific requirements for valve spacing on the 60 psig distribution system where the use of FIG technology is anticipated. Valves are installed as necessary to reduce the shutdown time in an emergency and for proper operation and maintenance of the system. The maximum spacing between conduit re-entry and exit locations is provided to effectively establish the maximum distance between location where it would be possible to squeeze the pipeline without potentially damaging the fiber optic cable or conduit whether there are valves or not.

The underground construction activities could typically occur in selected city streets and would generally avoid heavily traveled streets or roads. If necessary, a Traffic Control Plan would be developed, consistent with the requirements of the affected jurisdiction, to avoid unnecessary traffic congestion for conduit entry and exit points within public street rights-of-way. Due to pressure control requirements during any FIG installation process, only SCG/SDG&E employees and trained and certified SCG/SDG&E contractors qualified to work on natural gas pipelines would be permitted to perform installations of fittings and conduit.

After the conduit is routed to a handhole located on the road shoulder/parkway or sidewalk, it is capped until a fiber optic cable is installed by the Carrier using traditional air-blowing or “jetting” techniques. This jetting technique uses special equipment to blow air through the conduit while a mechanical tractor-feeder pushes the cable into the same conduit. After the cable is installed, a gas-tight seal is installed between the bridging conduit and cable. This seal is a “secondary” safety precaution to prevent gas from entering the handhole if the pipeline and conduit is cut in the street.

The same precautions required while working around natural gas pipelines would be taken during the jetting process. The highest safety risk for the Carrier during fiber jetting activities would be the creation of static electricity. Precautions would be taken to avoid or reduce this risk by grounding all equipment used at the excavation and/or soaking the pipe and cable with soapy water to create a ground. The other risks associated with the jetting process would occur only if the conduit was damaged and a gas leak occurs. In this case, SCG/SDG&E would be called out to control the leak. This is the same SCG/SDG&E procedure currently followed when third party damage incidents occur on its pipelines.

Once the conduit is installed in the pipeline and the conduit to pipe seals are tightened, release of gas through or around the conduit is unlikely to occur. A SCG/SDG&E inspector would be present during all Carrier installation activities to ensure all appropriate gas handling procedures would be followed. Crews would be required to take all the normal safety precautions that are used during leak repairs to ensure that the work area is safe. For example, all equipment should be grounded to prevent a build up and discharge of static electricity, fire extinguishers should be present, etc. In the unlikely event of a malfunction and release of gas, the Carrier crews would immediately leave the area and notify the SCG/SDG&E Inspector, who would then notify a SCG/SDG&E leakage crew to facilitate the necessary repairs.

If, during the installation, the conduit or the conduit to pipe seal is damaged, there could be a release of gas. This could be a leak in the conduit which would travel along the conduit and leak from the ends, or, it could be a leak at the conduit to pipe seal and the leak would be around the conduit at the entry/exit from the pipe. These situations would constitute the "other risks." However, the safety procedures to ensure public safety would be the same as those used in any leak on a natural gas pipeline. Furthermore, in the event of a gas leak, the on site SCG/SDG&E inspector would assess the problem and take the necessary steps to solve the problem. At this time, no additional "other risks" have been identified.

3.4 FACILITY OPERATION AND MAINTENANCE

From an operations and maintenance perspective, the results of the demonstrations and tests conducted to date show that the FIG procedure presents risk levels comparable to those associated with current natural gas operations. SCG/SDG&E procedures would be updated to address the maintenance of distribution pipelines serving as fiber optic cable carriers.

SCG/SDG&E's primary responsibility during an emergency is to minimize the hazard resulting from a damaged pipeline. Therefore, SCG/SDG&E employees may have to perform tasks during emergency situations that may result in damage of the conduit and or cable. However, existing procedures would be modified to minimize the damage to FIG conduit and cable. An estimated seventeen current procedures would need to be modified to accommodate this new technology.

Furthermore, as detailed planning for implementation moved forward it was determined that it would be more effective to develop a set of new Gas Standards that dealt specifically with the installation, maintenance and emergency response of FIG pipelines. The 17 Standards referenced were modified to point to this new set of Procedures or to include minor changes. It was also determined that 2 additional standards - Responding to Emergency Incidents and Control of Static Electricity – not included in the original list of 17 standards required extensive revisions and were added to the list. The revisions to these Standards have been completed.[4]

[4] Reviews of the Standards occur annually with field employees and as major revision become effective. Records of annual review are documented and retained in SCG/SDG&E's files for 3 years.

NEW STANDARDS FOR FIG PIPELINES

Fig 1 Responding To Emergency Incidents (183.03)

This standard provides guidelines for Field Operation's activities related to emergency incidents. Emergency incidents are defined as unsafe conditions involving, or expected to involve, natural gas and customer or SCG/SDG&E facilities, *Fiber in Gas Pipelines* or personnel. The incident may be a fire, damage to underground facilities, explosion, gas leak, injury, death, gas outage, district pressure problem, hazardous or toxic material spills or response requested by fire, police or other agencies.

Fig 2 Control of Static Electricity (184.0160)

This standard provides precautions and standards to control static electricity while working on PE pipe, to provide safety for employees and maintain the integrity of the pipeline.

Fig 3 Fiber In Gas Planning Guidelines

This standard addresses the criteria for determining the suitability and subsequent planning for the conduit placement related to Fiber In Gas Cable Systems in distribution gas pipelines.

Fig 4 Steel Access Fitting Installations

This standard describes the procedure for installation, testing, tapping and completion of the Steel Fiber In Gas access assembly fitting.

Fig 5 PE Access Fitting Installations

This standard describes the policy and procedure for the installation of a PE conduit in a live gas main.

Fig 6 Conduit Installations

This standard describes the policy and procedure for leak testing al new, relocated, or reinstated Fiber In Gas conduit.

Fig 7 Conduit Testing

This standard specifies that only qualified SCG/SDG&E and contract personnel join PE gas pipe using SCG/SDG&E approved methods and approved tools.

EXISTING GAS STANDARDS MODIFIED FOR FIG PIPELINES

184.0001 Distribution Piping Systems-Planning

Standard now includes a reference to FIG #3 for proposed Fiber In Gas installation.

184.0010 Field Planning of Main Construction Projects

Standard now includes precautions for doing work on or near mains with Fiber In Gas installations.

184.0015 Construction Planning for Mains & Supply Lines

Standards now includes Fiber In Gas installation criteria to be used by the Planning group when evaluating replacements.

184.0030 Pressure Control Planning for Main Extensions and Replacement

Information on requirements dealing with Fiber In Gas installations was added to this standard.

184.0050 Field Planning for Distribution Services

Standard now includes notification when a Fiber In Gas installation is encountered.

184.0060 General Construction Requirements for Distribution Services

An additional section was added to this standards to include notification for mains with Fiber In Gas installations.

184.0200 Underground Service Alert-Process and Enforcement

This standard now includes a statement under requirements providing instruction on marking gas facilities when a Fiber In Gas installation is encountered.

184.0225 Leak Repairs-Distribution Piping

Standard now includes a reference to FIG #9 *Leakage repair on Fiber In Gas Facilities.*

184.0245 Locate and Center Leaks

Standard now includes a reference to FIG #9 *Leakage repair on Fiber In Gas Facilities.*

184.0300 Pinching and Reopening Mains and Services

Standard now includes the requirements for a verification of Fiber In Gas prior to pinching and notification to Technical Services.

184.0305 Hot Pinching and Reopening Steel Mains and Services-Pipe Preparation

Standard now includes notification information for mains with Fiber In Gas installations.

184.0330 Pinch Steel Pipe 3" or 4"-Regent Model 5230T

Standard now includes the requirements for a verification of Fiber In Gas prior to pinching and notification to Technical Services.

184.0335 Cold Pinch Steel Pipe-6" Through 12"

Standard now includes the requirements for a verification of Fiber In Gas prior to pinching and notification to Technical Services.

184.0565 Standard Service Tee-Weld Repair

Standard now includes the requirements for a notification of Fiber In Gas prior to welding and notification to Technical Services.

184.0600 Gas Handling and Pressure Control

Standard now includes the requirements for a verification of Fiber In Gas prior to performing any Pressure Control operations.

184.1300 Leak Investigation-Distribution Piping.

Standard is now revised to include reporting of leaks in Fiber In Gas pipeline to Region Technical Services Department immediately.

187.2100 Service-to-Main Connections

Standard now includes verification of Fiber In Gas installation and notification of Regional Technical Services.

3.5 REGULATORY ENVIRONMENT

FIG installation may be subject to local city, county, and special district permits, such as encroachment permits, grading permits and air district permits. In addition, several state and federal regulatory permits would potentially be required. The permits of broadest possible application to the proposed program and the requirements are briefly described below.

- The California Department of Transportation (Caltrans) requires a Department of Transportation encroachment permit whenever an encroachment into, on or over Caltrans right of way is likely.

- County or city codes typically require a local land use or encroachment permit prior to ground-disturbance within, or interruption of, public rights-of-way. This permit is primarily issued through the local planning department.

- County or city codes typically require a grading permit prior to the commencement of grading activities within the local jurisdiction. This permit is primarily issued through the

local public works department. Best management practices (BMPs) for sediment and erosion controls are often required.

- Air quality management districts are responsible for the development and enforcement of regulations for the control of air pollution within their jurisdiction. Air quality permits are issued for facilities and construction activities that are regulated by the applicable air district.

- Section 404 of the CWA requires the issuance of an individual or nationwide permit from the U.S. Army Corps of Engineers before discharging backfill into the waters of the United States, including wetlands. For the proposed program, Nationwide Permit No. 12 for discharges associated with excavation, backfilling, or bedding of utility lines is applicable.

- Section 401 of the Clean Water Act (CWA) requires a water quality certification to be obtained from the applicable regional water quality control board (RWQCB) for discharge activities that may affect water quality. The permit establishes measures to ensure water quality protection and is a required prerequisite for issuance of a Nationwide Permit No. 12.

- Section 402 of the CWA requires that a National Pollution Discharge Elimination System (NPDES) certification be obtained from the applicable regional water quality control board (RWQCB) before FIG installation that may result in five acres or more of soil disturbance. A storm water pollution prevention plan (SWPPP) containing erosion control measures is required. EPA will issue a new general permit in December 2002 for activities that disturb between one and five acres. The appropriate RWQCB enforces the general permit.

- Section 7 of the Federal Endangered Species Act (ESA) requires consultation with the U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) regarding measures to avoid harm to plant, fish, and wildlife species that are federally listed as threatened or endangered species for all federal projects. In addition, Section 7 prohibits federal agencies from implementing an action that would result in the "take" of a species listed as threatened (if not subject to a special rule) or endangered, or adversely affect critical habitat unless a biological opinion (BO), issued upon completion of formal consultation, authorizes the action. "Take" includes the action of, or attempt to, harm, harass, and kill an individual of a species. Section 7 requires and establishes protocols for preconstruction wildlife surveys and mitigation measures.

- Section 10 of the ESA authorizes the conditions for USFWS or NMFS to issue an incidental take permit when a nonfederal project may result in take that is incidental to, and not the purpose of, the implementation of an otherwise lawful activity. The permit requires preparation and implementation of a habitat conservation plan that would offset the take of individuals which may occur as an incidental effect of FIG installation by providing for the overall preservation of their species through specific mitigation measures.

- Section 106 of the National Historic Preservation Act (NHPA) requires examination of cultural resources before various federal agencies can provide permits under their

jurisdiction. Section 106 establishes requirements and protocols for pre-construction cultural resource surveys and mitigation of impacts on cultural resources.

- Section 1603 of California Fish and Game Code requires a streambed alteration agreement from the California Department of Fish and Game (DFG) before any action is taken that would obstruct or divert the flow or alter the channel of designated drainages, rivers, streams, and lakes. Potential impacts must be mitigated.

- Section 2081(b) of the DFG Code requires the issuance of an incidental-take permit before any public or private action may be performed that would potentially hunt, pursue, catch, capture, or kill (take) a state-listed endangered or threatened species. The permit requires that the impacts of the take are minimized and fully mitigated, that the take is consistent with DFG recovery programs, that funding for mitigation and monitoring programs is adequately assured, and that the action would not jeopardize continued existence of the species.

3.6 REPORTING REQUIREMENTS

SCG/SDG&E will file a notification report 21 days prior to FIG installation activities for CPUC review. The CPUC (Environmental Unit) will review the proposal, make field visits if necessary, and consult with SCG/SDG&E and other relevant agencies as deemed necessary. During the 21 day review period the CPUC staff may issue a Hold Notice on the proposed build if necessary. If the CPUC does not issue a Hold Notice or otherwise stay the proposal, SCG/SDG&E may commence construction on the 22nd day.

In order to ensure that the Mitigation Measures are fulfilled, the CPUC will make periodic reviews of proposed FIG installation detailed in the notification. The CPUC may review any FIG installation activities at its discretion including follow-up with the local jurisdictions to determine that all applicable Mitigation Measures are addressed.

The notification shall include the following contents:

- Identification Number for the proposed FIG installation activity

- Location / Miles of conduit installation

- Construction start and completion dates

- Compliance demonstration including:
  - a list of permits acquired for each project, where applicable
  - coordination or letters to responsible agencies for each project, where applicable

- Statement by SCG/SDG&E verifying that the specific project activities conform with the program parameters evaluated in the program EIR and a certification that SCG/SDG&E will comply with all requirements and mitigation measures in the Program EIR.

- Identification of all relevant mitigation measures

- Identification of any proposed additional measures to enhance environmental compliance.