

Application of SOUTHERN CALIFORNIA GAS)
COMPANY for authority to update its gas revenue)
requirement and base rates)
effective January 2008 (U 904 G).)

Application No. 06-12-_____
Exhibit No.: (SCG-9-CWP)_____

WORKPAPERS TO
PREPARED DIRECT TESTIMONY
OF JAMES J. BOLAND
ON BEHALF OF SOUTHERN CALIFORNIA GAS COMPANY

CAPITAL SPENDING

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

DECEMBER, 2006

CAPITAL PROJECT WORKPAPER

BUDGET TITLE SCG Emergency Material Equip Gas Distribution							BUDGET NO. 283	
WITNESS Jim Boland								
PROJECT COST (\$000 in 2005\$)	PRIOR YEARS	2005	2006	2007	2008	REMAINING YEARS	TOTAL	
DIRECT LABOR	0	0	0	0	0	0	0	
DIRECT NONLABOR	0	0	0	0	\$409	0	\$409	
TOTAL CAPITAL	0	0	0	0	\$409	0	\$409	
FTE	0	0	0	0	0	0	0	

PROJECT NARRATIVE

Business Purpose

Emergency Material - Provide the ability to make necessary repairs to the Distribution pipeline system without major interruptions with the purchase of the following items which have long lead times, e.g., various pipe diameters of pre-tested pipe, Pressure Control Fittings for our high pressure pipelines. Some of these fittings would be used in cases where repairs can be made by installing temporary by-pass and avoid complete line shut-in. Purchase material will also include pre-fabricated canopies for various pipe diameters for field repairs that can be made in-place with minimal system interruption. Additional materials include associated pipe repair fittings such as wedding bands and mechanical pressure control fittings to minimize repair time during emergencies.

Emergency Equipment – Provide portable lighting and light tower trailers to allow night work to continue safely and productively. Provide additional pressure control tapping and stopping equipment for emergency incidents or system outages. The purchase of incremental Top Half Pressure Control Units will minimize the time to install pressure fittings and subsequently reduce the time to control blowing gas during emergencies. The purchase of additional large steel and plastic pinchers would minimize deployment time to emergencies and reduce time to control blowing gas leaks. Additional items include pop up tents and canopies for emergency staging areas.

Physical Description

Item
10" on 8" X 4" B.O. fittings
Weld Canopies
Capitol Tools
Light Tower Trailer
500 Kit
4" Steel Pinchers

For Electric Distribution Projects Only							
SUB BUDGETS (\$000 in 2005\$)	PRIOR YEARS	2005	2006	2007	2008	REMAINING YEARS	TOTAL
ELECTRIC UNDERGROUND	0	0	0	0	0	0	0
ELECTRIC OVERHEAD	0	0	0	0	0	0	0
ELECTRIC SUBSATION	0	0	0	0	0	0	0
Trans. FERC	0	0	0	0	0	0	0
Distr. FERC	0	0	0	0	0	0	0
ELECTRIC TRANSMISSION	0	0	0	0	0	0	0
Trans. FERC	0	0	0	0	0	0	0
Distr. FERC	0	0	0	0	0	0	0
LAND	0	0	0	0	0	0	0
TOTAL CAPITAL	0	0	0	0	0	0	0

Project Justification

A number of factors were considered in determining the incremental emergency material and equipment requirements of the Distribution Operating Regions. Some of the factors considered were, proximity of earthquake faults to Distribution facilities, distance from the Pico Rivera Storeroom, extensive lead times of some items, susceptibilities (by area) to conditions such as flooding, fire, landslides, earthquakes, etc., and possible impacts to the highway and road infrastructure as a result of the aforementioned conditions. The purchase and deliberate staging of lengths of both steel and plastic pipe in vulnerable areas will expedite the repair of damaged Distribution facilities. The additional tapping and stopping units staged at the outlying Districts would reduce the time to move equipment to damages and subsequently reduce the time to takes to control broken and blowing Distribution facilities. The purchase of night lighting will provide for a safer and more productive work environment. The purchase of the pre-tested pipe will eliminate the long lead times and eliminate the (on site) testing of the pipe reducing the overall repair time during emergencies. Additionally, the purchase of the various fittings, particularly for the odd sized pipe, e.g., wedding bands, canopies, etc., will eliminate the long lead time for those items. The mechanical Pressure Control Fittings and Top Half fittings will greatly reduce the time to control gas leaks during emergencies. The purchase of these materials and equipment will help our ability to make pipeline repairs more expeditiously, and minimize interruption to the Gas Distribution system and our customers.

Costs estimates for material and equipment were derived from the Procurement Group and the Construction Management System (CMS). CMS is the cost estimating tool used by the Field Planning Associates to plan main and service installations, alterations, etc.

Schedule

In-Service Date: April 01, 2008

MILESTONE	PROJECTED DATE
Complete review of detailed regional requirements.	3 rd Quarter 2007
Begin purchase of required material	4 th Quarter 2007
Complete purchase	1 st Quarter 2008

CAPITAL PROJECT WORKPAPER

BUDGET TITLE Emergency Equipment/Material for Gas Transmission							BUDGET NO. 340	
WITNESS Jim Boland								
PROJECT COST (\$000 in 2005\$)	PRIOR YEARS	2005	2006	2007	2008	REMAINING YEARS	TOTAL	
DIRECT LABOR	0	0	0	0	0	0	0	
DIRECT NONLABOR	0	0	0	0	\$487	0	\$487	
TOTAL CAPITAL	0	0	0	0	\$487	0	\$487	
FTE	0	0	0	0	0	0	0	

PROJECT NARRATIVE

Business Purpose

Emergency Material - Provide the ability to maintain Gas Transmission Service without major interruptions with the purchase of long lead Pressure Control Fittings for our larger diameter (36", 24" and 30") pipelines. Fittings would be used in cases where repairs can be made by installing temporary by-pass and avoid complete line shut-in. Purchase material will also include pre-fabricated canopies for various pipe diameter for field repairs that can be made in-place with minimal system interruption.

Emergency Equipment – Provide the ability to have trailer ready equipment to respond to emergency incidents or system outages. The purchase of an emergency generator that will be trailer mounted available to use at any compressor station to support complete or partial electrical demand during any extended power outages. Additionally, four (4) trailers will be purchased for emergency response readiness. These trailers will be located at various Gas Transmission Operating Districts Bases to provide better coverage of the wide geographic operating area. These trailer will be equipped and stocked with pipeline repair equipment ready to roll for emergency response activities.

Physical Description

- A set of 30 inch, 34 inch and 36 inch Pressure Control Fittings.
- Fabrication of canopies for various pipeline diameters in the Gas Transmission System.
- 350kw trailer mounted generator
- Four (4) enclosed – single axle trailers stocked with pipeline repair material and equipment.

CAPITAL PROJECT SUMMARY

For Electric Distribution Projects Only							
SUB BUDGETS (\$000 in 2005\$)	PRIOR YEARS	2005	2006	2007	2008	REMAINING YEARS	TOTAL
ELECTRIC UNDERGROUND	0	0	0	0	0	0	0
ELECTRIC OVERHEAD	0	0	0	0	0	0	0
ELECTRIC SUBSATION	0	0	0	0	0	0	0
Trans. FERC	0	0	0	0	0	0	0
Distr. FERC	0	0	0	0	0	0	0
ELECTRIC TRANSMISSION	0	0	0	0	0	0	0
Trans. FERC	0	0	0	0	0	0	0
Distr. FERC	0	0	0	0	0	0	0
LAND	0	0	0	0	0	0	0
TOTAL CAPITAL	0	0	0	0	0	0	0

Project Justification

The purchase of the additional material will allow in some cases the ability to make pipeline repairs without major interruption to Gas Transmission system and its customers. Emergency response trailers will provide ability to dispatch repair crews expeditiously and directly without requiring additional loading of material activity with crane and flatbed truck.

The purchase of the emergency Generator will provide back-up power for Gas Compressor Stations that experience extended power outages and have limited or no onsite power generation.

Gas Transmission has responded to several local operating emergency incidents in the past 10 years, the items suggested as emergency material have been used on occasion in response to these emergency to minimize customer impact and expedite repair process. Current inventory levels for this material is appropriate for addressing local incident where material could be shared among all districts, but would be limited in major emergency event.

In many cases, welded canopies have been used to repair cracked bands without requiring complete blowdown of impacted pipeline. Pressure Control fittings are utilized in the same fashion to address repairs on a pipeline that is localized and short section can be taking out of service with minimal impact to customer. Having this specialized fittings on-hand in an emergency would provide the operating districts more flexibility to addressing system repairs. Implementing Emergency Response Trailers would add flexibility and expedite district personnel response, by allowing any company truck to quickly attach trailer and dispatch to problem site without requiring traditional loading of material on flatbed trucks that will require Class A driver and lifting equipment.

Emergency Generators have been rented in the past to support compressor stations that experience local electrical generation problems. As discovered in the 1994 Northridge Earthquake, rental units are extremely scarce after major catastrophic event and may not be available. Many of compressor station do have on-site Generation available that operates on natural gas, but impact to gas system would eliminate on-site generation. A back-up emergency diesel generator would allow the impacted compressor station the ability to have electrical services back on line while repairs are made to gas systems.

Costs estimates for material and equipment were derived from historical projects or purchases as well as previous preliminary quotes from vendors.

CAPITAL PROJECT SUMMARY

Schedule

In-Service Date: April 01, 2008

MILESTONE	PROJECTED DATE
Complete review of detailed regional requirements.	3 rd Quarter 2007
Begin purchase of required material	4 th Quarter 2007
Complete purchase	1 st Quarter 2008

BUDGET TITLE Mainframe InHouse DR Facility / Equipment Upgrades							BUDGET NO. 694	
WITNESS Jim Boland								
PROJECT COST (\$000 in 2005\$)	PRIOR YEARS	2005	2006	2007	2008	REMAINING YEARS	TOTAL	
DIRECT LABOR	0	0	30	80	60	0	170	
DIRECT NONLABOR	0	0	1405	3100	2600	0	7105	
TOTAL CAPITAL	0	0	1435	3180	2660	0	7275	
FTE	0	0	0	0.8	.85	0	1.65	

Business Purpose

This project would ensure a long term sustainable Disaster Recovery environment for production systems located at Rancho Bernardo Data Center. It would provide the necessary infrastructure to support recovery of the SDGE and SCG mainframes at the in-house back up data center in Monterey Park should any event impact the Rancho Bernardo Center together with critical systems in the distributed server environment.

The project would provide the environment infrastructure and support systems for the in house mainframe systems required to meet the Tier 1 recovery timeframe of 2 – 24 hours for critical applications such as OMS (outage management), CISCO, CIS (customer information systems) and help guarantee the reliability and availability in the event of a disaster and ensure reliable services at the chosen DR site until such time as the primary site was either restored or rebuilt.

The project comprises a number of needed improvements to allow the site to perform the in house DR function. These include

- Expanding the capacity of the electrical systems to meet anticipated loads and provide the required levels of redundancy and fault tolerance
- Ensuring adequate backup generator capacity and fault tolerance for DR operations
- Provision of a stand-alone, dedicated, data center cooling system to meet expected loads and redundancy requirements for a DR facility
- Provision of an alternate command center environment at Monterey Park to ensure operational continuity
- Refurbishment of data center ceiling space to meet current standards for this type of facility
- Review security and access controls for the data center to comply with corporate and industry standards for this type of facility

For Electric Distribution Projects Only							
SUB BUDGETS (\$000 in 2005\$)	PRIOR YEARS	2005	2006	2007	2008	REMAINING YEARS	TOTAL
ELECTRIC UNDERGROUND	0	0	0	0	0	0	0
ELECTRIC OVERHEAD	0	0	0	0	0	0	0
ELECTRIC SUBSATION	0	0	0	0	0	0	0
Trans. FERC	0	0	0	0	0	0	0
Distr. FERC	0	0	0	0	0	0	0
ELECTRIC TRANSMISSION	0	0	0	0	0	0	0
Trans. FERC	0	0	0	0	0	0	0
Distr. FERC	0	0	0	0	0	0	0
LAND	0	0	0	0	0	0	0
TOTAL CAPITAL	0	0	0	0	0	0	0

Physical Description

The project scope assumes the installation of mainframe hardware at Monterey Park to provide in-house Disaster Recovery (DR) capabilities.

The following work is covered by this project

1. Replacement of an existing transformer and main switchgear with higher capacity equipment to provide fail over and the ability to adequately test back-up electrical systems without incurring system wide outages during testing. Provide additional, and expand existing, UPS capacity to meet standards for fault tolerance and maintainability. Provide additional Power Distribution Units (PDUs) to maintain adequate redundant service to each server rack.
2. Enhancement of the existing backup generator systems to meet future AQMD requirements and to ensure the facility can operate independent of utility power – replace one existing generator and provide a third - for failover maintenance purposes. Improve oil, and fuel to ensure ability to sustain operations if utility power is lost. Provide redundancy of electrical service from DR site to utility sub-station with automatic source switching capabilities.
3. Provide new dedicated, stand-alone, back-up cooling system to meet projected DR loads and provision of redundant chilled water supply.
4. Replacement of the ceiling in the data center to meet current environmental and seismic standards for essential facilities.
5. Improvements to the existing command center environment to ensure a habitable work environment for operations staff during DR testing and operations. Improve lighting ventilation and heating; new furniture and carpet; relocation of some existing walls and access points and provision of new raised ceiling.
6. Implementation of additional security measures including doorways, portals and access controls, camera systems and monitoring recording facilities to protect physical assets and data.

Project Justification

The applications on the SDGE and SCG mainframes (enterprise servers) have been considered critical to business continuation in the event of a disaster yet the recovery plan for these systems does not meet the classified critical Tier 1 recovery timeframe of 24 hours. A proposal has been made to bring the mainframe DR system in house and locate it at Monterey Park. This project covers essential upgrades to the facility infrastructure and support systems in order to provide for the requirements for DR for both mainframe and distributed server systems.

Should there be a serious event affecting the Rancho Bernardo site Monterey Park would be the only available site to recover key applications and systems. Depending on the nature of the event it may be necessary to use Monterey Park for a period of months or more as our sole production data center until an alternative site can be brought on line – the DR site must therefore be capable of stand alone operations for what may be a period of many months.

The key aspect of DR planning is that the backup facility should be ready to assume the production role as quickly as possible after the primary site has become untenable. Providing the necessary systems and infrastructure after the event is not a practicable proposition when faced with a requirement for 24 hour recovery so these systems must be in place and available for use when required

Considering each part of the project in turn: -

1. The electrical service, transformer and main switchgear, at this site are currently being replaced. This existing incoming utility equipment has been determined to be at the end of its life expectancy. In conjunction with this work additional UPS capacity will be provided to ensure that power supplies can be maintained in the event of a system fault or during maintenance, and we will provide additional Power Distribution Units (PDUs) to maintain adequate redundant service to each server rack.
2. The present back generator system meets present needs, but has insufficient capacity to meet medium to long term requirements for fault tolerance and maintainability regardless of whether mainframe DR is brought in-house. There are also some concerns regarding the longer term future of the existing systems in light of Air Quality Management District standards, which may require a complete review of the backup generators. Regardless of the AQMD requirements we presently have extremely limited abilities to adequately test and maintain the backup power systems especially with the generators running. With this project we will replace a small existing generator and provide a third larger generator to ensure adequate service should the utility falter.
3. The existing Computer Room Air Conditioners (CRAC) meets the present load in the data center but does not meet projected loads required under DR operations. Newer designs of servers run far hotter than older types and require additional cooling, either by use of higher capacity air systems or by directly feeding chilled water to specialized racks. At present the chilled water system lacks sufficient redundancy to ensure our ability to guarantee adequate and uninterrupted cooling and would need the cooling systems and hence the data center to be shutdown if we needed to repair or replace some parts of the chilled water systems. Installation of a new, dedicated, stand-alone cooling system will provide the assurance of reliable chilled water as well as the necessary maintenance capabilities.
4. The existing data center ceiling is in part more than 40 years old. The type of tile used in the server room is not suitable for a modern data center - it is prone to generate dust as it decays- and the ceiling structure does not meet the Uniform Building Code (UBC) seismic requirements for an essential facility
5. Some improvements to IT and display systems have recently been made to the existing command center at Monterey Park. However the room itself is not presently suitable for long term occupancy as would be necessary under DR operations as the basic environment dates back to the 1980s. The existing lighting, ventilation, heating and furniture are barely acceptable for occasional use, but would be unacceptable if the room were to be staffed long term as would be needed under DR operations. Access is difficult and the room is not conducive to a good working environment.
6. The site security systems have not been updated recently. At present access is controlled by badge access and by security guards at the gate. There are no anti-tailgating provisions and the loading dock is largely unmonitored other than through the badge readers – the existing controls could easily be defeated allowing unauthorized access to the data center floor and the systems inside the data center.

Estimated facility costs were derived from numerous discussions between Project Managers, Facility Managers, Portfolio Managers, Capital Program Manager, and the IT organization. The only record documents describing costs associated with hardening the MPK Data Center are associated with the Monterey Park Alternative Project. Those costs were

prepared by our Vendors, AVRP and Carlson. The costs estimated for the MPK rate case work is the result of on-going discussions between IT, Facility Manager and a few key vendors. There have been no hard cost studies developed for any of the proposed improvements.

Schedule

In-Service Date: September 30, 2008

The schedule assumes the in-house mainframe DR systems would be in place from 3Q 2007. Basic improvements would be complete in this timeframe, however due to matter such as equipment, engineering and permitting lead times much work will need to be completed after the mainframe has been installed, though the essential services would be available from day one.

3Q 2006 - 1Q 2007

- Upgrades to camera, monitoring, recording systems
- Upgrade access controls to internal and external doorways to server room and support areas

SUB BUDGETS (\$000 in 2005\$)	PRIOR YEARS	2005	2006	2007	2008	REMAINING YEARS	TOTAL
Electrical, UPS, and PDUs	0	0	1300	545	0	0	1845
Generators	0	0	75	75	2660	0	2810
Back-up Cooling System	0	0	0	1675	0	0	1675
Ceiling Replacement	0	0	0	235	0	0	235
Command Center	0	0	0	390	0	0	390
Security	0	0	60	260	0	0	320
TOTAL CAPITAL	0	0	1435	3180	2660	0	7275

3Q 2006 - 4Q 2007

- Ceiling Replacement
- Command Center Improvements

4Q 2005 - 1Q 2007

- Replace transformer and switch gear
- UPS and PDU installation

3Q 2006 - 4Q 2007

- Installation of additional cooling capacity and redundant chilled water supply

3Q 2006 - 3Q 2008

- Backup generator installations/enhancements

CAPITAL PROJECT WORKPAPER

BUDGET TITLE SCG EOC Back-up Site Fac/Equipment							BUDGET NO. 695	
WITNESS Jim Boland								
PROJECT COST (\$000 in 2005\$)	PRIOR YEARS	2005	2006	2007	2008	REMAINING YEARS	TOTAL	
DIRECT LABOR	0	0	0	0	0	0	0	
DIRECT NONLABOR	0	0	0	\$169	\$383	0	\$550	
TOTAL CAPITAL	0	0	0	\$169	\$383	0	\$550	
FTE	0	0	0	0	0	0	0	

PROJECT NARRATIVE

Business Purpose

In the event that the primary SCG Emergency Operations Center (EOC) located at the Gas Tower becomes non-functional during a regional crisis, a back-up EOC is needed to ensure emergency response by the utility can be effectively managed and coordinated to address public safety concerns, restore and maintain essential utility services to customers, protect employee safety & security, and company assets. The Chatsworth Northern Region Headquarters building has been assessed by the Emergency Services Department to be the best location to house this back-up EOC due to key criteria; location, critical building & communication systems redundancy & sustainability, seismic construction and distance from known major seismic fault lines.

The project would provide the environment infrastructure and support systems for operating a back-up EOC for an indefinite time period if necessary. The project comprises a number of needed improvements to allow the site to perform as an EOC that can be made operational within a short time frame if required. These include:

- Provision of adequate space to create a situation room for 40 business unit EOC responders with requisite voice/power/data requirements.
- Provision for a communications room to coordinate company & media communications, inquiries.
- Provision of an executive conference room for strategy and major decision-making meetings with multi-media conferencing capability.
- Cable/satellite TV, audio visual media to communicate information to all EOC members.

Physical Description

The project consists of making necessary improvements to the space formerly used by tenant for EOC purposes. This includes relocation of wall, provision of voice, data, power to workstations in situation room and communications area, video/telephone conferencing, and projection screens, and conference room used for executive steering committee.

Approximate size of space for situation room is 2,400 Sq. Ft.

- Saw cut floor and install walker duct to facilitate installation of cabling and electric/voice/data floor monuments to feed the workstations in the Situation Room area.
- Modifications to electrical distribution system, addition of sub-panel, conduits and termination points.
- Installation of flat panel monitors, screens, and projection equipment in the Situation Room and Executive Conference Room.
- Furniture i.e. portable tables and chairs for 40 workstations.

CAPITAL PROJECT WORKPAPER

PROJECT TITLE SCG EOC Back-up Site Fac/Equipment	BUDGET NO. 695
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For Electric Distribution Projects Only							
SUB BUDGETS (\$000 in 2005\$)	PRIOR YEARS	2005	2006	2007	2008	REMAINING YEARS	TOTAL
ELECTRIC UNDERGROUND	0	0	0	0	0	0	0
ELECTRIC OVERHEAD	0	0	0	0	0	0	0
ELECTRIC SUBSATION	0	0	0	0	0	0	0
Trans. FERC	0	0	0	0	0	0	0
Distr. FERC	0	0	0	0	0	0	0
ELECTRIC TRANSMISSION	0	0	0	0	0	0	0
Trans. FERC	0	0	0	0	0	0	0
Distr. FERC	0	0	0	0	0	0	0
LAND	0	0	0	0	0	0	0
TOTAL CAPITAL	0	0	0	0	0	0	0

Project Justification

If the EOC at Gas Tower become unusable due to a serious event, Chatsworth is the best location to act as a back-up EOC due to the factors described in the Business Purpose. In addition, it offers the lowest cost of any company site in the region to prepare for this operational purpose due the existing redundancy in building infrastructure as a essential facility, including electrical & communication capacity, and available space.

Cost estimates were developed by our capital project managers using site evaluation, industry cost measures, and estimating tools.

Schedule In-Service Date: March 31, 2008

The schedule assumes that all of the work will be completed by end of Q1 2008. All of the required work can be done without extended lead times and either none or only minimal permitting would be necessary.

CAPITAL PROJECT SUMMARY

Associated O&M Costs:

SCG Non-Shared Services Cost Center: 2200-0613				
SCG EOC Back-up Site Upgrades		2006	2007	2008
10	<ul style="list-style-type: none"> SCG EOC Back-up Site Upgrades. Establishing Chatsworth as SCG's EOC Back-up site will result in incremental costs for the acquisition and installation of equipment in addition to annual equipment maintenance and service costs. Equipment Costs (45 computers, flat panels, analog phones, 1 fax machine, 3 sat phones, DirecTV Installations). 			
	a .Equipment Costs (45 computers, flat panels, analog phones, 1 fax machine, 3 sat phones, DirecTV Installations, etc.)	\$ -	\$ -	\$ 147,450
	a Annual Costs - (Maintenance, DirecTV, Sat Phone Maintenance, Computer Maintenance, Phone costs,etc.)	\$ -	\$ -	\$ 82,008

CAPITAL PROJECT WORKPAPER

BUDGET TITLE SCG Communications						BUDGET NO. 787	
WITNESS Jim Boland							
PROJECT COST (\$000 in 2005\$)	PRIOR YEARS	2005	2006	2007	2008	REMAINING YEARS	TOTAL
DIRECT LABOR	0	0	0	0	0	0	0
DIRECT NONLABOR	0	\$265	\$285	0	0	0	\$550
TOTAL CAPITAL	0	\$265	\$285	0	0	0	\$550
FTE	0	0	0	0	0	0	0

PROJECT NARRATIVE

Business Purpose

This project provides for the acquisition and installation of communication technology at the four Southern California Gas Company Gas Emergency Centers (GEC). This technology will aid in emergency response and recovery efforts through the use of satellite TVs and supporting audio visual equipment. Each GEC will have immediate access to public service information made available by local and national new providers. Each GEC will also have the ability to display information relative to event-specific information such as gas and electric facilities, incident status and related response and recovery bulletin boards and internal information.

This project also provides for the acquisition and installation of satellite phones at all Southern California Gas Distribution and Transmission Control facilities. When all the public, cellular and private telecommunications systems are unavailable as a result of a major disaster, the SCG satellite phone equipment now in place will provide a critical communications back-up system to further enable response and recovery efforts.

Katrina lessons learned: Emergency personnel were often struggling to communicate as they dealt with desperate circumstances. In New Orleans, police officers crowded a single frequency on their patrol radios. Though government officials have never before had to contemplate a communications breakdown of this magnitude, it was not immediately clear -- with \$8.6 billion in federal money handed out to states since September 11 for emergency preparedness -- why more satellite communications systems were not in place. Without such handsets, the most drenched and devastated areas of the Gulf Coast were cut off from the outside world in more ways than one. Restoring phone service isn't merely a matter of waiting for the flood waters to recede and restoring power. While many cables may be salvageable, the electronics that pass the signals across those lines will need to be replaced. "It's essentially analogous to putting a PC in your bathtub. It's not going to work once it dries," said Jim Gerace, a spokesman for Verizon Wireless.

(Associated Press Writers Jennifer Kerr, Brian Skoloff and Brett Martel contributed to this report.)

PAID ADVERTISING

For Electric Distribution Projects Only							
SUB BUDGETS (\$000 in 2005\$)	PRIOR YEARS	2005	2006	2007	2008	REMAINING YEARS	TOTAL
ELECTRIC UNDERGROUND	0	0	0	0	0	0	0
ELECTRIC OVERHEAD	0	0	0	0	0	0	0
ELECTRIC SUBSTATION	0	0	0	0	0	0	0
Trans. FERC	0	0	0	0	0	0	0
Distr. FERC	0	0	0	0	0	0	0
ELECTRIC TRANSMISSION	0	0	0	0	0	0	0
Trans. FERC	0	0	0	0	0	0	0
Distr. FERC	0	0	0	0	0	0	0
LAND	0	0	0	0	0	0	0
TOTAL CAPITAL	0	0	0	0	0	0	0

Physical Description

The GEC technology upgrades will include the acquisition and installation of satellite equipment and TVs for monitoring local news. The large screens and large crystal display projectors and associated equipment can be used for displaying incident management application(s), gas and electric facility information and strategy and planning development.

The project includes the acquisition and installation of satellite phones, satellite phone docking stations and associated equipment. Satellite phones can be used indoors or as a portable device by emergency first responders.

Project Justification

One of the most significant lessons learned from recent disasters is the critical need for robust emergency communications. Traditional vehicles of communication, such as cellular phones and landlines are often rendered unusable or overloaded in a disaster. Satellite communications are generally immune from the terrestrial hazards of traditional communication vehicles and provide a reliable alternative in time of emergency. To ensure the ability to receive and disseminate critical information related to safety, system status, restoration strategy, etc, SCG has acquired and deployed satellite phones and satellite TV receivers at key operating locations.

- Through the use of new technology, SCG’s planning, communication, response and recovery efforts will significantly be enhanced through the use satellite TVs equipment and the large screen display equipment.
- First responders and planners will have access to local and national news and have the ability to monitor damage and/or repair of gas and/or electric facilities.
- First responders will have the ability to display incident related information within SCG.
- First responders will have the ability to continue communications in the event of major private and public telecommunications failures.

Costs are based on actual expenditures.

Schedule: In Service Date: December 31, 2006

Phase 1: December 2005:	Acquisition and installation of equipment
Phase 2: Jan 2006 – June 2006	Continued acquisition and installation of equipment

CAPITAL PROJECT WORKPAPER

BUDGET TITLE SCG Radio Communications - Governmental Interoperability							BUDGET NO. 791	
WITNESS Jim Boland								
PROJECT COST (\$000 in 2005\$)	PRIOR YEARS	2005	2006	2007	2008	REMAINING YEARS	TOTAL	
DIRECT LABOR	0	0	\$19.6	0	0	0	\$19.6	
DIRECT NONLABOR	0	0	\$126.5	0	0	0	\$126.5	
TOTAL CAPITAL	0	0	\$146.1	0	0	0	\$146.1	
FTE	0	0	.21	0	0	0	.21	

PROJECT NARRATIVE

Business Purpose
 This Project will provide for an interface to key governmental radio networks in the SCG territory. These communications are critical in the event of a major disaster or incident.

Physical Description
 This project provides for aspects of implementing the following solution for SCG:

- SCG
 - **Governmental Agency Interoperability:** Interfaces into key governmental radio networks in the SCG territory will be established into the existing SCG dispatch switching equipment. Radio units compatible with these systems will be provided to key areas within the SCG field operations.

CAPITAL PROJECT SUMMARY

For Electric Distribution Projects Only							
SUB BUDGETS (\$000 in 2005\$)	PRIOR YEARS	2005	2006	2007	2008	REMAINING YEARS	TOTAL
ELECTRIC UNDERGROUND	0	0	0	0	0	0	0
ELECTRIC OVERHEAD	0	0	0	0	0	0	0
ELECTRIC SUBSATION	0	0	0	0	0	0	0
Trans. FERC	0	0	0	0	0	0	0
Distr. FERC	0	0	0	0	0	0	0
ELECTRIC TRANSMISSION	0	0	0	0	0	0	0
Trans. FERC	0	0	0	0	0	0	0
Distr. FERC	0	0	0	0	0	0	0
LAND	0	0	0	0	0	0	0
TOTAL CAPITAL	0	0	0	0	0	0	0

Project Justification

A variety of different disaster scenarios have been developed that could include earthquakes, fires and floods. As has been shown in recent events in other areas of the United States, the first communications systems to fail were the commercial service providers such as cell phone, PCS and paging networks. Both utilities and public safety organizations relied upon their own two-way radio systems in order to coordinate an effective response to the situation. In every case studied, this has repeatedly been the only viable solution to maintaining communications. As such, it is vital that potential areas of susceptibility be analyzed and mitigated. This project will address key areas where communication diversity will provide alternative vehicles of communication to coordinate disasters and/or major events with governmental agencies.

Allocation to SCG is \$150K in capital with no O&M. Costs are based on preliminary high level analysis.

Schedule

Workorder/task _____ Completed or In-service

SCG

- Mutual Aid Communications 09/30/2006

Costs Breakdowns

- Mutual Aid Communications – SCG
 - Equipment 110K
 - Labor 20K
 - Site prep 10K
 - Contingency 10K
 - **Total** **150K**

CAPITAL PROJECT SUMMARY

BUDGET TITLE Mainframe In-House DR Project						BUDGET NO. 792.1	
WITNESS Jim Boland							
PROJECT COST (\$000 in 2005\$)	PRIOR YEARS	2005	2006	2007	2008	REMAINING YEARS	TOTAL
DIRECT LABOR	0	0	0	\$699	0	0	\$699
DIRECT NONLABOR	0	0	0	\$1,800	0	0	\$1,800
TOTAL CAPITAL	0	0	0	\$2,499	0	0	\$2,499
FTE	0	0	0	3.0	0	0	3.0

Business Purpose

The purpose of the Mainframe In-House Disaster Recovery Project is to assure that Sempra Energy (SEU) is acceptably protected from financial and legal risk due to a loss of access to IT applications and data. What will be addressed in this project are the necessary infrastructure enhancements/improvements in the areas of Disaster Recovery and Business Continuity that will enable Sempra Energy Utilities (SEU) to successfully provide improved Recovery Time Objectives (RTO) along with Recovery Point Objectives (RPO) that will allow the accomplishment of the stated purpose.

This project will establish the capability to recover the SDGE and SCG mainframes at the indicated in-house backup data center in Monterey Park should an event negatively impact the ability to access the Rancho Bernardo Data Center. This would provide a Tier 1 Recovery Time Objective (RTO) of < 24 hours for critical applications such as OMS (Outage Management), PACER, CISCO, CIS (Customer Information Systems) and help guarantee the reliability and availability in the event of a disaster.

Physical Description

This project requires purchasing Mainframe zSeries CBU (Capacity Back-up) five (5) year contract with IBM along with the appropriate Tape and Disk storage infrastructure hardware at MPK. The SDGE and SCG production mainframe(s) located in RB would then be recoverable to the Disaster Recovery Mainframe in MPK. The necessary data for recovery will be replicated daily from the Rancho Bernardo production data center to the MPK site.

The following tasks will be completed:

- Power, cooling, cabling and flooring at MPK
- Test the applicability of running both production utilities on one platform
- Move and install CBU Mainframe along with and application development environment at MPK
- Install HDS USP storage array at MPK and replication software on USP at both MPK and RB
- Implement the applicable data replication software and methods for the inter-site transfer
- FC/IP converter blades at both MPK and RB
- 3590 tape drives at MPK into the existing IBM 3494 ATL at MPK

For Electric Distribution Projects Only							
SUB BUDGETS (\$000 in 2005\$)	PRIOR YEARS	2005	2006	2007	2008	REMAINING YEARS	TOTAL
ELECTRIC UNDERGROUND	0	0	0	0	0	0	0
ELECTRIC OVERHEAD	0	0	0	0	0	0	0
ELECTRIC SUBSATION	0	0	0	0	0	0	0
Trans. FERC	0	0	0	0	0	0	0
Distr. FERC	0	0	0	0	0	0	0
ELECTRIC TRANSMISSION	0	0	0	0	0	0	0
Trans. FERC	0	0	0	0	0	0	0
Distr. FERC	0	0	0	0	0	0	0
LAND	0	0	0	0	0	0	0
TOTAL CAPITAL	0	0	0	0	0	0	0

Project Justification

The applications on the SDGE and SCG Mainframes (enterprise servers) have been considered critical to business continuation in the event of a disaster, yet the recovery plan for these systems does not meet the classified critical Tier 1 recovery timeframe of <=24 hours.

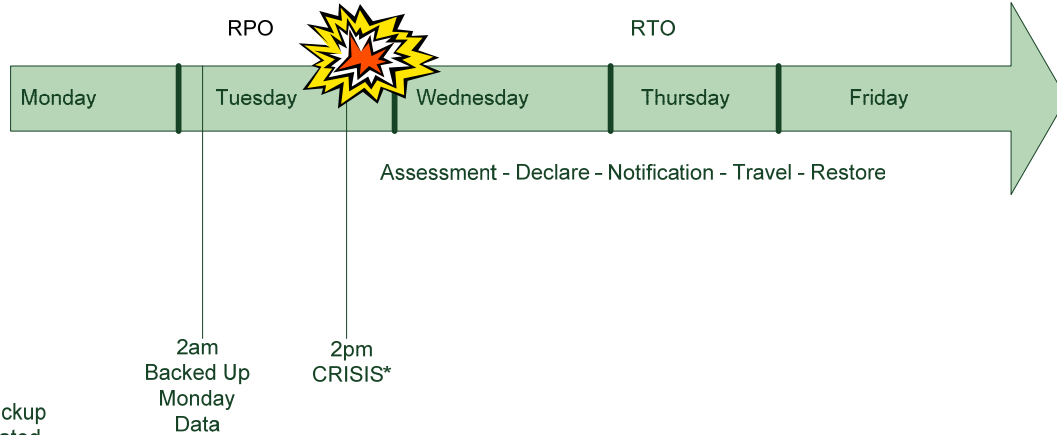
Current Recovery Strategy:

The current recovery plan for the mainframes, in the event of losing the RB Data Center, is to recover at the Sungard site in Philadelphia using tape restore. The backup tapes are sent off-site daily to a local vendor location with the intent to move them by plane to Philadelphia for recovery. The recovery timeframe for critical applications on the mainframe such as CISCO, CIS, PACER, and OMS based on the current strategy is minimum 3 – 5 days. The following factors make up the recover timeframe.

- Assessment of the situation
- Activate the DR hot-site and backup tape vendor.
- Notify and organize the IT recovery team.
- Travel time to the recovery site.
- Length of time to ship backup tapes to Philadelphia hot-site.
- Time to stage the backup tapes at the hot-site for mounting, and
- Actual recovery time of system and data from the backups.

Tape Backup

Relying on tape backup means accepting 1.5 days of lost data



*Iron Mountain tape pickup at 3pm - lose tape created at 2 am and Tuesday's data.

If Monday morning tape was not created or bad then lost data increases to 2.5 days.

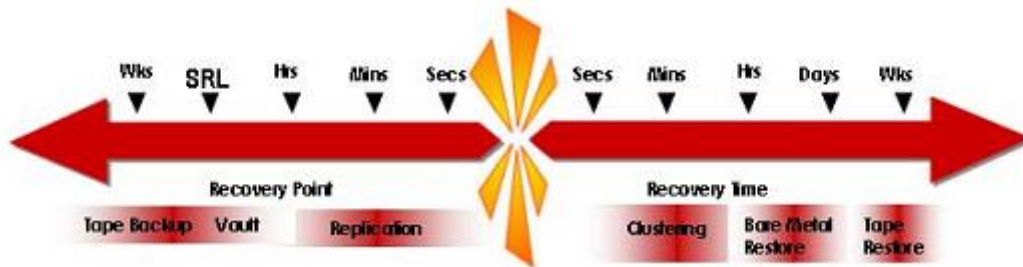
Several disasters that have occurred during the last few years have proven that recovery by tape at a location across country could be severely impacted, as relates to RTO and RPO, due to possible delays in either the local or national transportation infrastructure. Following the 911 and Katrina Hurricane events, flights were impacted and backup tapes, if available, had to be driven to the particular recovery centers, which in some cases took several days. In this type of dealing with a worst case event, it becomes obvious that the actual recovery time would be significant greater than that required for the Tier 1 applications. Critical SEU Tier 1 applications, such as CISCO, CIS, PACER, and OMS, would be out of service during this extended time, thus severely impacting the customer and field services groups. Other critical applications such as SORT, that requires the Mainframe, would also be impacted. Other serious risks, when depending on tape, are dependent on the fortuitous timing of the disastrous event and whether or not the tape backups were completed on time to make the daily off-site pickup. Also there are other problems that could occur due to unreadable tapes and the safety/security of the tapes during transport. Having the recovery in-house for these Tier 1 critical systems would not only reduce the RTO time to hours but the data would be more current, within minutes of the disaster, thereby also reducing the RPO.

Testing of the SEU recovery plan is crucial so as to ensure that the systems are recoverable at all times and that the recovery can be accomplished in compliance with the prescribed RTO and RPO service level agreements (SLA). Currently the offsite Sungard plan allows for one annual test limited to 72 hours. In order to meet this test timeframe, approximately 2 months of pre-planning has always been required in order to make the most of the testing event. It is quite apparent that this type of testing scenario does not come close to depicting an actual event and an acceptable state of readiness. An in-house plan can be tested throughout the year to ensure that SEU has a solid recovery methodology in place, that it can be successfully executed and that we can recover within directed SLAs.

The application systems referred to require the most demanding RPO and RTO and therefore need service level guarantees beyond the capabilities of tape-based DR solutions. For these strategic business applications, data replication and clustering are preferred.

Recommended Recovery Strategy:

Effective replication and clustering require considerable control over the DR environment. Maintaining connectivity between remote and local servers is essential for both the success of the recovery and day to day application performance. A successful replication or clustering strategy invariably requires investment in a second data center, significantly increasing the organization's commitment to strong and resilient DR.



Translating RPO and RTO to Technologies

Other benefits with an implementation of in-house recovery include a guaranteed recovery site and the ability to run for an unlimited time at this recovery site with less complex and easily executed options when returning to the primary site once ready.

Schedule Mainframe

Schedule:

- 2006 - Planning (project lifecycle) In service Date: December 31, 2007

- 1Q 2007 – Order the equipment, software and hardware

- 4Q 2007 – Complete the installation of the Development environment and CBU at MPK
 Complete the installation of the HDS USP storage array at MPK and replication software on USP at MPK and RB.
 Complete the installation of the FC/IP converter blades at both MPK and RB.
 Obtain and set up the tape drives into the existing 3494 at MPK

CAPITAL PROJECT SUMMARY

SUB BUDGETS (\$000 in 2005\$)	2006	2007	2008	TOTAL
\$650K Capital (NL) acquiring and building the Disk Storage Infrastructure at MPK - (April 2007)	0	\$650	0	\$650
\$200K Capital (NL) acquiring and building the Tape Storage Infrastructure at MPK - (April 2007)	0	\$200	0	\$200
\$100K (L) Planning Labor for installing the hardware in 2007	0	\$100	0	\$100
\$600K (L) Analysis and planning for new software and HW configure & testing of all configuration with all stakeholders	0	\$599	0	\$599
\$300K Capital (NL) for infrastructure cabling and acquiring of switches, directors and other gear - (April 2007)	0	\$300	0	\$300
\$400K (NL) Z890 MF reduced from a 450 to a 160/170 to accommodate the development environment & acquire a 5 year CBU contract with ability to expand to a 470 size machine for DR - (Nov 2007)	0	\$400	0	\$400
\$250K (NL) Vendor profession services for Movement of MF from RB to MPK with all contract and insurance transportation and installation protections. - (Nov 2007)	0	\$250	0	\$250
TOTAL CAPITAL - 2007 - \$2.5 million breakdown for IT Mainframe Disaster Recovery Cost Estimates prior to Business Case Completion	0	\$2,499	0	\$2,499

Source of Cost Estimates:

The cost for the above items were derived from various sources, i.e., vendors, group managers and supervisors, responses to SEU issued RFP's and conversation with various project leaders and managers that were involved with projects that were germane to processes, hardware and labor cost involved in this project. The capital cost for the data storage infrastructure were garnered from recent RFP's and approved project business cases for like equipment and services. The capital cost for various configuration hardware, e.g., switches and cabling, was derived from 2005 and 2006 similar projects and business cases. The non-labor costs were derived from conversations with the vendors along with cost estimate statements from OEM vendors or lifted from recent vendor statements of work (SOW) documents.

Glossary of Terms

Backup (Data): A process to copy electronic or paper based data in some form to be available if the original is lost, destroyed or corrupted.

CBU (Capacity Backup): Non-disruptive temporary addition of Computer Processors ONLY in an emergency situation. The additional Computer Processors must be currently unused and reside within an existing and installed processor platform.

Data Replication/Mirrored: The duplication of data in real time to ensure its continuous availability, currency and accuracy. True mirroring will enable a zero RPO.

FC/IP (Fiber Channel/Internet Protocol): Conversion for sending and receiving replicated data that allows for transporting block-level storage over an IP network. This conversion enables the use of existing storage applications (backup, disaster recovery, and mirroring) without modification.

HDS UPS (Hitachi Data Systems Universal Storage Platform): The current Mainframe Disk Storage platform that is installed at the RB Data Center. The MPK backup data center will utilize this platform as the data repository/replication target for the data that is necessary for successful DR recovery.

Iron Mountain: The vendor providing local off-site data storage for backup tapes.

MPK (Monterey Park): The designated recovery site for Mainframe applications.

RB (Rancho Bernardo): The primary data center location for SEU Mainframes.

RTO (Recovery Time Objective): Indicates the period of time within which systems, applications, or functions must be recovered after an outage. The RTO is used as the basis for the development of recovery strategies.

RPO (Recovery Point Objective): The point in time to which systems and data must be recovered after an outage. The RPO is used to determine the method of data storage/protection and the amount of data an application can lose before an organization begins to suffer.

SLA (Service Level Agreement): An SLA is a negotiated agreement designed to create a common understanding about services, quality of service, priorities and responsibilities.

Sungard: The vendor providing an alternate data center facility under contract which has the computer hardware, telecommunications and environmental infrastructure required to recover a business.

zOS: Mainframe Operating System

zSeries: The generation of IBM's Mainframe Hardware Platform

CAPITAL PROJECT WORKPAPER

BUDGET TITLE Data Center Back-up Infrastructure (Network) Monterey Park to Rancho Bernardo OC-48 Optical Services Installation Project.							BUDGET NO. 792.2	
WITNESS Jim Boland								
PROJECT COST (\$000 in 2005\$)	PRIOR YEARS	2005	2006	2007	2008	REMAINING YEARS	TOTAL	
DIRECT LABOR	0	0	\$38	\$2	0	0	\$40	
DIRECT NONLABOR	0	0	\$588	\$	0	0	\$588	
TOTAL CAPITAL	0	0	\$626	\$2	0	0	\$628	
FTE	0	0	1.0	1.0	0	0	1.0	

Business Purpose

With the ever-increasing requirement for additional capacity on the network for Disaster Recovery, data mirroring and back-ups, it has been determined there is a critical requirement to enhance the bandwidth between the Rancho Bernardo and Monterey Park Data Centers. Network Engineering and Operations strategy is the re-design of the network core sites, this is the first phase of the Company strategy, Utility of the Future, will dictate that we undertake a project to enhance bandwidth between core Gas Company sites to allow for "big pipe" applications and services.

Most importantly, this new link will provide support to critical Tier 1 Disaster Recovery applications such as Mainframe (CIS, SORT) and Exchange.

The project is in line with all the IT Guiding Principles and specially supports Principle #1: Reliability, Availability, and Supportability

Physical Description

This project would be to install new redundant Sonet or Gigabit Ethernet links between Monterey Park and Rancho Bernardo to allow for on-demand full back-ups of services and applications between the two locations. This service will be to secure subscribed Sonet or Gig-E services from a telecom services provider be it AT&T, Level 3 Communications, Sprint or other provider. Budgetary quotes for these services were secured from AT&T (formerly SBC Corp.) in late 2004, but a broader search for such services should be undertaken to assure availability of bandwidth and secure maximum value to Sempra.

The AT&T pricing is as follows:

Monterey Park to Rancho Bernardo	OC3C	\$9,000/Month
Monterey Park to Rancho Bernardo	Gigabit Ethernet (OC12)	\$25,000 to \$27,000/Month
Monterey Park to Rancho Bernardo	OC48	\$55,000 to \$60,000/Month

The installation of any of these services will require the purchase of new switching/multiplexing equipment with costs from \$50,000 to \$300,000 or more. Lead time to implement such a strategy will be 90 to 120 days for carrier provisioning and equipment delivery.

Once installed there would be on-going monthly costs for the bandwidth lease.

For Electric Distribution Projects Only							
SUB BUDGETS (\$000 in 2005\$)	PRIOR YEARS	2005	2006	2007	2008	REMAINING YEARS	TOTAL
Electric UNDERGROUND	0	0	38	0	0	0	0
Electric OVERHEAD	0	0	400	0	0	0	0
Electric (SUBSTATION)	0	0	100	0	0	0	0
Incremental Maintenance Costs. FERC	0	0	0	0	0	0	0
Distr. FERC	0	0	0	0	0	0	0
Electric TRANSMISSION	0	0	87.6	0	0	0	0
Trans. FERC	0	0	0	0	0	0	0
Distr. FERC	0	0	0	0	0	0	0
LAND	0	0	0	0	0	0	0
TOTAL CAPITAL	0	0	625.6	0	0	0	0

Project Justification

The current links between RB and MPK could not support the replication requirements for the mainframe and Outlook. In order to provide a quick recovery following a disaster situation the data would needed to be replicated between the two sites on a daily basis. Incremental backups of these applications and services will reduce the transport costs considerably. In fact if incremental back-ups are implemented, no changes to the transport network will be needed for the foreseeable future, and ONLY new services or requirements will drive us to look at such services from an outside service provider such as AT&T, Verizon, Sprint or Level3 Communications.

Hard Benefits

OC 48 Installation between Monterey Park and Rancho Bernardo – The single most tangible benefit is to provide adequate bandwidth for Tier 1 Disaster Recovery for Mainframe (CIS, SORT), Exchange, as well as providing an alternate for other Company communications services including ATM trunks and voice services.

Soft Benefits

This is the first phase regarding the Network Topology Redesign Initiative as outlined in Network Engineering and Operations strategy. This aligns with the Utility of the Future strategy, regarding the Operational Communication Network Initiative on the Core Fiber Build Out, to provide an Enterprise backbone of increased bandwidth in support of those applications and technologies.

Schedule Network In Service: February 28, 2007

The initial phase of this project is to install a 2.5 Gbps Optical Carrier (OC) circuit (OC48) or equivalent fiber optic service between Monterey Park and Rancho Bernardo. Follow-up phases of this project will be to extend the new fiber optic services to the other Gas Company core sites.

- 2Q06 - Evaluate fiber optic service offerings, evaluate equipment options, and collect requirements from client organizations within IT.
- 3Q06 - Chose a carrier provider and begin procurement process.
- 4Q06 - Order the OC48 circuit and fiber optic multiplexers.
- 1Q07 - Complete circuit installation, equipment commissioning, testing, provisioning, and interfacing to our mainframe and Exchange server.
- 4Q06 – Training on new photonic equipment for 12 employees.

CAPITAL PROJECT WORKPAPER

Associated O&M Costs:

1	MPK to RB OC48 Optical Services Installation Project	2006	2007	2008
a	<i>Monterey Park to Rancho Bernardo OC-48 Optical annual lease line costs to support the Mainframe In-House Project. Estimated on-going annual broadband lease costs to increase bandwidth between Rancho Bernardo and Monterey Park. Annual Cost: \$576 (\$48K monthly costs begin October 2006)</i>	\$ 144,000	\$ 576,000	\$ 576,000

o

CAPITAL PROJECT WORKPAPER

BUDGET TITLE E-Mail Infrastructure Redundancy Project						BUDGET NO. 793	
WITNESS Jim Boland							
PROJECT COST (\$000 in 2005\$)	PRIOR YEARS	2005	2006	2007	2008	REMAINING YEARS	TOTAL
DIRECT LABOR	0	0	\$197	\$99	0	0	\$296
DIRECT NONLABOR	0	0	\$1705	\$49	0	0	\$1754
TOTAL CAPITAL	0	0	\$1902	\$148	0	0	\$2050
FTE	0	0	2	1	0	0	3

PROJECT NARRATIVE

Business Purpose

Communications, the lifeline of modern business, often fail during disasters. Landline telephone service may be lost, wireless networks and data lines may be damaged, broadcast radio and television may be knocked off the air. Recent events show, however, that other technologies, such as e-mail, can enable individuals and enterprises to communicate under even the most difficult circumstances.

The E-Mail Infrastructure Redundancy Project will address Disaster Recovery of the Sempra Energy Utilities and Corporate Center Exchange/Outlook Messaging System as a primary purpose. Secondary goals of this project will be to refresh both Windows 2000 and Exchange 2000 to the Mainstream Support product versions offered by Microsoft, provide enhanced functionality and security via Outlook Web Access (OWA) for remote clients, and to further improve on the optimizations implemented with the original deployment of Exchange 2000.

Physical Description

The E-Mail Infrastructure Redundancy Project will plan, pilot, and implement the upgrade of the Sempra Energy Utilities and Corporate Center Exchange/Outlook Messaging Systems to the Windows 2003 and Exchange 2003 platforms

The E-Mail Infrastructure Redundancy project will improve reliability and supportability of the Sempra Energy Utilities and Corporate Center Exchange/Outlook Messaging System by centralizing the majority of servers to the Rancho Bernardo Data Center, realizing increased power reliability as well as staffing levels and schedules. Server consolidation was addressed as part of the Exchange 2000 Project and will be continued in this project. A fully redundant infrastructure will be constructed at Monterey Park to facilitate system recovery in a Site-Level Disaster scenario.

For Electric Distribution Projects Only							
SUB BUDGETS (\$000 in 2005\$)	PRIOR YEARS	2005	2006	2007	2008	REMAINING YEARS	TOTAL
ELECTRIC UNDERGROUND	0	0	0	0	0	0	0
ELECTRIC OVERHEAD	0	0	0	0	0	0	0
ELECTRIC SUBSATION	0	0	0	0	0	0	0
Trans. FERC	0	0	0	0	0	0	0
Distr. FERC	0	0	0	0	0	0	0
ELECTRIC TRANSMISSION	0	0	0	0	0	0	0
Trans. FERC	0	0	0	0	0	0	0
Distr. FERC	0	0	0	0	0	0	0
LAND	0	0	0	0	0	0	0
TOTAL CAPITAL	0	0	0	0	0	0	0

Project Justification

- The current Sempra Energy Utilities and Corporate Center Exchange/Outlook Messaging System Site-Level Disaster Recovery (DR) solution does not meet Tier-1 DR requirement, which could cause delays in resuming business activity that could adversely affect corporate earnings, safety, and image.
- Both Windows 2000 and Exchange 2000 have entered the [Extended Support](#) phase of Vendor's Product Lifecycle, increasing the likelihood of support expenditures to maintain aging systems.
- Remote e-mail user's experience and security are enhanced through Exchange 2003 OWA

Schedule

In Service: 5/31/07

12 months with capital funding commencing in May, 2006

MILESTONE	PROJECTED DATE
Concept Phase Complete	10/30/2005
Business Case Phase Complete	4/30/2006
Project Prep/Requirements Phase Complete	6/30/2006
Design Phase Complete	8/31/2006
Lab Test	11/30/2006
Implementation	12/31/2006
Pilot Test	2/28/2007
Production Migration (w/ contingency)	5/31/2007
Post Implementation Review	7/31/2007

CAPITAL PROJECT SUMMARY

Detailed Project Costs

Capital:

Project Costs	Estimating System	Capital Cost	O&M Cost	Subtotal
SAN Hardware	Budgetary Quotation	\$637,141		\$637,141
Server Hardware	Historical Data	\$472,500		\$472,500
Software	Budgetary Quote and Historical Data	\$381,543		\$381,543
Internal Labor	Salary Rate provided by IT Budget Planning	\$295,553		\$295,553
External Labor	Historical Data	\$258,090		\$258,090
Project Expenses; Training	Historical Data	\$5,000		\$5,000
Project Total (w/o Overhead)				\$2,049,827

Associated O&M:

ONGOING COSTS	Estimating System	O&M YR2	O&M YR3	O&M YR4	O&M YR5	Subtotal
Hardware Maintenance	Historical Data	\$15,000	\$15,000	\$15,000	\$15,000	\$60,000
Software Maintenance	Budgetary Quotation and Historical Data	\$30,888	\$30,888	\$30,888	\$30,888	\$123,552
Labor (Incremental FTE's)	Historical Data	\$0	\$0	\$0	\$0	\$0
NetApp Support Maintenance	Budgetary Quotation	\$75,000	\$75,000	\$75,000	\$75,000	\$300,000
Total O&M		\$120,888	\$120,888	\$120,888	\$120,888	\$483,552

***Note – No incremental FTE's are required for this effort**

Projected Monthly Cash Flow:

	May-06	Jun-06	Jul-06	Aug-06	Sep-06	Oct-06	Nov-06	Dec-06	Jan-07	Feb-07	Mar-07	Apr-07	Totals
Hardware					\$665,785	\$443,856							\$1,109,641
Software			\$127,181	\$127,181	\$31,795	\$31,795	\$31,795	\$31,795					\$381,543
Internal Labor	\$24,629	\$24,629	\$24,629	\$24,629	\$24,629	\$24,629	\$24,629	\$24,629	\$24,629	\$24,629	\$24,629	\$24,629	\$295,553
External Labor	\$11,830	\$11,830	\$11,830	\$33,880	\$47,950	\$31,150	\$50,470	\$11,830	\$11,830	\$11,830	\$11,830	\$11,830	\$258,090
Project Expenses	\$417	\$417	\$417	\$417	\$417	\$417	\$417	\$417	\$417	\$417	\$417	\$417	\$5,000
Sub-Total	\$36,876	\$36,876	\$164,057	\$186,107	\$770,576	\$531,848	\$107,311	\$68,671	\$36,876	\$36,876	\$36,876	\$36,876	\$2,049,827

CAPITAL PROJECT SUMMARY

BUDGET TITLE EOC Equipment Upgrades (SCG)							BUDGET NO. 794	
WITNESS Jim Boland								
PROJECT COST (\$000 in 2005\$)	PRIOR YEARS	2005	2006	2007	2008	REMAINING YEARS	TOTAL	
DIRECT LABOR	0	0	0	0	0	0	0	
DIRECT NONLABOR	0	0	0	271.6	0	0	271.6	
TOTAL CAPITAL	0	0	0	271.6	0	0	271.6	
FTE	0	0	0	0	0	0	0	

PROJECT NARRATIVE

Business Purpose

This project provides the network architecture required to implement the Emergency Operations Center (EOC) Software. This project provides for the replacement of obsolete servers with a tiered architecture to support an internet based or stand alone workstations. The new servers will be designed to support an integrated emergency operations incident management system and supporting GIS infrastructure. At a minimum, the new architecture will include a database server, web server and GIS back-up servers. Replication servers will be installed at the SDG&E EOC Back-up site.

Physical Description

The system will provide for a three tiered architecture: database server, web server and internet user interface. The system will include standard replication capabilities of production server(s). The system will be replicated at both the San Diego and Los Angeles Back-up EOC sites to ensure full redundancy.

Web servers:

- San Diego EOC
- LA EOC
- San Diego Back-up EOC
- LA Back-up EOC

Database servers:

- San Diego EOC
- LA EOC
- San Diego Back-up EOC
- LA Back-up EOC

GIS Server:

- San Diego EOC
- LA EOC
- San Diego Back-up EOC
- LA Back-up EOC

Plotter

CAPITAL PROJECT SUMMARY

- LA EOC

For Electric Distribution Projects Only

SUB BUDGETS (\$000 in 2005\$)	PRIOR YEARS	2005	2006	2007	2008	REMAINING YEARS	TOTAL
ELECTRIC UNDERGROUND	0	0	0	0	0	0	0
ELECTRIC OVERHEAD	0	0	0	0	0	0	0
ELECTRIC SUBSATION	0	0	0	0	0	0	0
Trans. FERC	0	0	0	0	0	0	0
Distr. FERC	0	0	0	0	0	0	0
ELECTRIC TRANSMISSION	0	0	0	0	0	0	0
Trans. FERC	0	0	0	0	0	0	0
Distr. FERC	0	0	0	0	0	0	0
LAND	0	0	0	0	0	0	0
TOTAL CAPITAL	0	0	0	0	0	0	0

Project Justification

- Create an architecture to support the new emergency operations center response and recovery management system.
- Create reliability and replication of emergency operations center applications.
- Create a GIS back-up server in support of real time graphical analysis data (earthquake data, gas / electric infrastructure, employee information and repository of business continuity and resumption plans.
- Hardware costs are based on current hardware prices provided by the SDG&E server group.

Schedule In Service: December 31, 2007

No	Task	Timeline	Month
6	Construct/Build	June 1st - Sep 28th 2007	June July August

CAPITAL PROJECT SUMMARY

BUDGET TITLE EOC Software (SCG)							BUDGET NO. 795	
WITNESS Jim Boland								
PROJECT COST (\$000 in 2005\$)	PRIOR YEARS	2005	2006	2007	2008	REMAINING YEARS	TOTAL	
DIRECT LABOR	0	0	0	436	0	0	436	
DIRECT NONLABOR	0	0	0	787	0	0	787	
TOTAL CAPITAL	0	0	0	1,223	0	0	1,223	
FTE	0	0	0	5.1	0	0	5.1	

PROJECT NARRATIVE

Business Purpose

Effective emergency response requires readily accessible information, collaboration among key stakeholders, rapid processing and tracking of requests, and efficient communication. Many, if not all, of these issues are addressed in the current generation of emergency response technologies. The current Emergency Operations Center (EOC) software in use at SCG was developed internally in 1998 / 1999 when commercially viable emergency response technologies were limited and SCG's disaster response was oriented around a single emergency location. It is technologically outdated, is not web enabled and provides neither the functionality nor the flexibility of commercially available post 9/11 technologies.

This project provides for the replacement of obsolete stand-alone Emergency Services applications with a more streamlined and manageable architecture applications to maximize business and system agility. The application(s) replacement will deliver needed functionality with newer, modular off-the-shelf integrated solutions. This project will also create an environment to enable integration of multiple applications and interfaces to existing legacy systems. This project will enhance SDG&E and SCG Utilities' ability to manage response and recovery processes and supporting activities from local or remote sites.

Physical Description

The Emergency Operations Center application will provide near real time information in order to manage gas and/or electric incidents. Emergency responders will have the ability to access the system remotely via the internet. First responders will have the ability to utilize various new tools and technology to conduct analysis through the use of real time graphical information, online incident management tools (forms and reports), and emergency response and recovery workforce management information. The system will be user friendly, easy to maintain, easy to tailor, allow for remote access by authorized users, integrate with other systems, operate within a variety of network configurations and have a wide range of features. The application shall operate via the internet or local workstation and link to various websites integrating technology. The system will provide for a three tiered architecture: database server, web server and internet user interface. The system will include standard replication capabilities of production server(s). The system will be replicated at both the San Diego and Los Angeles Back-up EOC sites to ensure full redundancy.

For Electric Distribution Projects Only							
SUB BUDGETS (\$000 in 2005\$)	PRIOR YEARS	2005	2006	2007	2008	REMAINING YEARS	TOTAL
ELECTRIC UNDERGROUND	0	0	0	0	0	0	0
ELECTRIC OVERHEAD	0	0	0	0	0	0	0
ELECTRIC SUBSTATION	0	0	0	0	0	0	0
Trans. FERC	0	0	0	0	0	0	0
Distr. FERC	0	0	0	0	0	0	0
ELECTRIC TRANSMISSION	0	0	0	0	0	0	0
Trans. FERC	0	0	0	0	0	0	0
Distr. FERC	0	0	0	0	0	0	0
LAND	0	0	0	0	0	0	0
TOTAL CAPITAL	0	0	0	0	0	0	0

Project Justification

- In order for an organized response and recovery plan to be truly actionable, an Emergency Operations software solution must be in place to enable members of a team to work together and respond effectively throughout an emergency. With frequent advances in computing technology, the focus on renewal, modification and updating of computer systems is increasing. The current in use applications were developed some years ago because no off-the-shelf applications were available, which is not the case in the current environment. There are several ready made solutions available. Replacing the existing Emergency Operations application with a ready-made one is by far the quickest way to embrace new technologies and benefit from the new features and functions that Emergency Response and Recovery efforts demand. The emergency Operations application will provide for:
 - Real time information
 - GIS interfaces enabling real time impact and response analysis
 - Communication channels across organizations
 - Integrated Emergency Preparedness and Response employee and material information tracking
 - Enhanced website functionality and communications
 - Notification Software
- This project also includes a redesign of the Emergency Services Website once again utilizing more current technologies to supplement training, education and emergency communication efforts.
- Software costs were developed based on vendor quotes. Labor costs were based on high level requirements obtained from different departments such as Human Resources, Customer Care, Real Estate and Facilities and Shared Software Development services. Hardware costs are based on current hardware prices provided by the SDG&E server group.

Schedule In Service: December 31, 2007

No	Task	Timeline	Month
1	Concept	Complete	
2	Business Case	Complete Jan 1st - Jan 31st 2007	
3	Project Prep	Feb 1st - Apr 30th 2007	Jan
4	Requirements		Feb Mar Apr
5	Design	May 1st - May 31st 2007	May
6	Construct/Build	June 1st - Sep 28th 2007	June July August September
7	Test	Oct 1st - Nov 30th 2007	October November
8	Implementation	Dec 3rd - Dec 28th 2007	December

Associated O&M:

Annual reoccurring costs of \$120K for software and hardware maintenance / license and support.

CAPITAL PROJECT WORKPAPER

BUDGET TITLE SCG Global Positioning Satellite System							BUDGET NO. 796	
WITNESS Jim Boland								
PROJECT COST (\$000 in 2005\$)	PRIOR YEARS	2005	2006	2007	2008	REMAINING YEARS	TOTAL	
DIRECT LABOR	0	0	0	0	\$360	0	\$360	
DIRECT NONLABOR	0	0	0	0	\$1,140	0	\$1,140	
TOTAL CAPITAL	0	0	0	0	\$1,500	0	\$1,500	
FTE	0	0	0	0	8.0	0	8.0	

PROJECT NARRATIVE

Business Purpose

This project provides for the acquisition and installation of global positioning satellite communication equipment and software for both SDG&E and SCG. An automated vehicle location system and equipment will allow for two – way communication. This project will enhance the utilities response and recovery efforts though real time work force location needed for the management of operations. Each utility has invested in mapping out digital representation of the exact locations of gas and electric fixed assets (poles, substations, etc.) But the exact real time location of utility vehicles is generally missing from the overall asset management picture. This project will provide for immediate / real time information to aid in major disaster or major event response and recovery activities. Global Positioning Satellite is an enabling technology that can be used to facilitate the emergency response and recovery efforts to oversee the safety of field personnel and work assignment management during a major disaster or significant event.

Physical Description

The three basic components needed for the SDG&E and SCG global positioning satellite project, will be a device to calculate position, a method of communicating position data to the user, and a method of displaying the data in a usable form. An automated vehicle location system and equipment will allow for two – way communication. This project will enhance the utilities response and recovery efforts though automatic real time work force location and will further enhance the safe and efficient management of restoration operations.

For Electric Distribution Projects Only							
SUB BUDGETS (\$000 in 2005\$)	PRIOR YEARS	2005	2006	2007	2008	REMAINING YEARS	TOTAL
ELECTRIC UNDERGROUND	0	0	0	0	0	0	0
ELECTRIC OVERHEAD	0	0	0	0	0	0	0
ELECTRIC SUBSATION	0	0	0	0	0	0	0
Trans. FERC	0	0	0	0	0	0	0
Distr. FERC	0	0	0	0	0	0	0
ELECTRIC TRANSMISSION	0	0	0	0	0	0	0
Trans. FERC	0	0	0	0	0	0	0
Distr. FERC	0	0	0	0	0	0	0
LAND	0	0	0	0	0	0	0
TOTAL CAPITAL	0	0	0	0	0	0	0

Project Justification

Based on research of utility technology initiatives, a global positioning satellite system significantly enhanced the management of major response and recovery events as well as day to day operations. Many of these benefits evolved around the following:

- Through the use of global positioning satellite technology installed in vehicles, the utilities planning, communication, response and recovery efforts will significantly be enhanced with the ability to identify and locate vehicles and manage workforce to incident areas of priority.
- Employee Safety: Ability for an employee to send an emergency alert real time reduces response and assistance timeframe.
- Better Emergency Response and Recovery: Emergency Operations can see the entire service area and where the crews are which allows for timely assessment and improved overall incident management response and recovery efforts.
- Streamlined Communications: Eliminates manual communication which may result in radio congestion. Provides for real time updates.
- First responders will have the ability to continue communications in the event of major private and public telecommunications failures.

Costs are based on preliminary research of utility implementations.

Schedule: In Service Date: June 30, 2008

Jan - June Acquisition and installation of global positioning equipment and software

Associated O&M:

Annual \$175K ongoing software and hardware maintenance / license and support.