Application of SOUTHERN CALIFORNIA GAS)
COMPANY for authority to update its gas)
requirement and base rates)
effective January 1, 2019 (U 904-G))

Application No. 17-10-___

Exhibit No.: (SCG-11-CWP)

WORKPAPERS TO

PREPARED DIRECT TESTIMONY

OF DAVID BUCZKOWSKI

ON BEHALF OF SOUTHERN CALIFORNIA GAS COMPANY

BEFORE THE PUBLIC UTILITIES

COMMISSION OF THE STATE OF

CALIFORNIA

OCTOBER
2017

SoCalGas
A Sempra Energy utility®

DIRECT COST, INDIRECT COST, and SCHEDULE WORKPAPERS
Witness: D. Buczkowski

Aliso Canyon Turbine Replacement Project

Workpapers	Corresponding Tables	Workpaper Page
Capital Direct Costs		
Project Summary		SCG-11-CWP-01
Central Compressor Station		SCG-11-CWP-02
Substation & Electrical Infrastructure		SCG-11-CWP-03
Environmental		SCG-11-CWP-04
Buildings		SCG-11-CWP-05
Other Costs		SCG-11-CWP-06
Company Labor		SCG-11-CWP-07
Schedule		SCG-11-CWP-08
Capital Indirect Costs		
Overheads		SCG-11-CWP-09
AFUDC		SCG-11-CWP-10
Property Taxes		SCG-11-CWP-11
Other Workpapers		
Cost Savings		SCG-11-CWP-12

Southern California Gas Company
2019 GRC-- APP
Workpapers

WORKPAPER TITLE	**IN SERVICE DATE**
Summary of ACTR - Total Cost by Year	11/30/2017

PROJECT COST ($ in Millions)	**Project Actuals 2006 through July 2017**												**Forecast August 2017 through 2018**		**EAC**
	2006	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2017 Forecast**	**2018 Forecast**	
Total Direct Capital	$0.8	$0.4	$0.1	$0.9	$0.5	$2.5	$1.8	$4.7	$77.1	$53.2	$51.8	$12.1	$6.1	$0.7	**$212.6**
Total Indirect Capital	$0.1	$0.2	$0.2	$0.4	$0.5	$0.9	$1.0	$2.0	$6.8	$12.6	$18.9	$10.1	$8.8	$0.5	**$62.9**
Total Capital Cost	**$0.9**	**$0.6**	**$0.3**	**$1.3**	**$1.0**	**$3.4**	**$2.8**	**$6.7**	**$83.9**	**$65.7**	**$70.7**	**$22.1**	**$14.9**	**$1.2**	**$275.4**

Project Description

The main objectives of the Project are to reduce the potential for interruptions in the ability to store gas in the Aliso Canyon Storage Field by: (1) replacing the obsolete TDC compressor station; (2) replacing the TDCs and expanding the overall injection capacity at the field in a timely manner; (3) converting the TDC compression units within the Storage Field from natural gas to electric power; (4) designing and constructing a new electric compressor station and all necessary related electrical infrastructure; (5) providing improved vehicle access and security to the Storage Field to facilitate project construction and operation of the new compressor station by building a new guard house; (6) relocating and replacing offices in close proximity to the current TDC station and Storage Field facilities; (6) perserving other on-site facilities and minimizing changes to Storage Field facilities where feasible and practicable; and (7) utilizing recent engineering and technological advances.

WORKPAPER TITLE	IN SERVICE DATE
ACTR - Central Compressor Station	11/30/2017

PROJECT COST ($ in Thousands)	Project Actuals 2006 through July 2017												Forecast August 2017 through 2018		EAC
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2017 ETC	2018 ETC	
DIRECT LABOR															
DIRECT NON-LABOR	$702	$341	$90	$229	$66	$440	$265	$649	$58,116	$37,147	$37,573	$7,162	$3,619	$200	$146,600
TOTAL DIRECT CAPITAL	**$702**	**$341**	**$90**	**$229**	**$66**	**$440**	**$265**	**$649**	**$58,116**	**$37,147**	**$37,573**	**$7,162**	**$3,619**	**$200**	**$146,600**

Project Description

The Central Compressor Station included three gas compressors, three 22,000HP gas compressor motors, three 600HP mechanical clutches - pony motors, seal gas system, compressor discharge cooler system, surge control system, TDC inlet filter separators, compressor suction scrubbers, fluid coupling/gear, instrument/utility air compressor package, overhead crane, and building to house the equipment.
Construction activities for the Central Compressor Station involved clearing and grading; construction of building and equipment foundations; ground surface preparation at access points within the equipment area; erection of structures to house the compressors and associated control equipment; installation of equipment and piping; and cleanup and restoration of the site. Tie-in activities were performed by SoCalGas.

Cost Element	Actual Costs ($ in Thousands)			Forecasted Spend ($ in Thousands)	
	Labor	Non-Labor	Total	ETC	EAC
Preliminary Engineering	$ -	$1,700	$1,700	$0	$1,700
EPC Contract	$ -	$132,247	$132,247	$1,990	$134,237
Owner's Engineer and Other Engineering Services	$ -	$4,924	$4,924	$1,450	$6,374
Other Costs	$ -	$3,910	$3,910	$379	$4,289
Subtotal Central Compressor Station Direct Cost	**$ -**	**$142,781**	**$142,781**	**$3,819**	**$146,600**

Schedule

Project execution is ongoing, including construction punchlist items, testing, commissioning, and closeout operations. Schedule basis assumes central compressor station in-service in November 2017.

ETC Forecast Cost

The 2017 and 2018 ETC costs include estimated and known future costs associated with the EPC vendor and the owner's engineer. EPC scope includes remaining milestone payments such as performance testing and demobilization. Owner's engineer remaining scope includes assisting SoCalGas with close-out operations. Remaining items in Other Costs include inspection services.

WORKPAPER TITLE	IN SERVICE DATE
ACTR - Electrical Substation	11/30/2017

PROJECT COST ($ in Thousands)	Project Actuals 2006 through July 2017												Forecast August 2017 through 2018		EAC
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2017 ETC	2018 ETC	
DIRECT LABOR															
DIRECT NON-LABOR	$0	$50	$0	$35	$130	$1,232	$201	$2,721	$9,213	$4,885	$4,570	$547	$300	$0	$23,883
TOTAL DIRECT CAPITAL	**$0**	**$50**	**$0**	**$35**	**$130**	**$1,232**	**$201**	**$2,721**	**$9,213**	**$4,885**	**$4,570**	**$547**	**$300**	**$0**	**$23,883**

Project Description

Design and construction of a 56 MVA substation on approximately 300ft x 155ft lot. The substation consists of two 38.8 MVA 66/12 KV transformers, a six position 66KV switch rack with two incoming 66 KV lines, two 14.4 MVAR 66 KV capacitor bank, an 8 position 12KV distribution service rack with 4-12 KV circuits and 12 KV compensated revenue metering.

Cost Element	Actual Cost ($ in Thousands)			Forecasted Spend ($ in Thousands)	
	Labor	Non-Labor	Total	ETC	EAC
Substation*	$ -	$13,320	$13,320	$0	$13,320
Site Preparation	$ -	$5,224	$5,224	$0	$5,224
Plant Powerline	$ -	$5,039	$5,039	$300	$5,339
Total Electrical Substation Direct Costs	**$ -**	**$23,583**	**$23,583**	**$300**	**$23,883**

Schedule

Project construction is ongoing. Schedule is directly related to the central compressor station schedule.

ETC Forecast Cost

The 2017 ETC costs include estimated and known future costs associated with the plant powerline vendor.

Notes

The 2017 ETC costs include estimated and known future costs associated with the plant powerline vendor.

WORKPAPER TITLE	IN SERVICE DATE
ACTR - Environmental Costs	11/30/2017

PROJECT COST ($ in Thousands)	Project Actuals 2006 through July 2017												Forecast August 2017 through 2018		EAC
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2017 ETC	2018 ETC	
DIRECT LABOR															
DIRECT NON-LABOR	$0	$0	$0	$471	$124	$466	$598	$494	$2,880	$2,557	$2,793	$1,243	$1,389	$0	$13,016
TOTAL DIRECT CAPITAL	**$0**	**$0**	**$0**	**$471**	**$124**	**$466**	**$598**	**$494**	**$2,880**	**$2,557**	**$2,793**	**$1,243**	**$1,389**	**$0**	**$13,016**

Project Description

The environmental costs cover CPUC and SCG consultant costs to comply with the California Environmental Quality Act (CEQA) including development of Proponents Environmental Assessment (PEA) and Environmental Impact Report (EIR), as well as surveying, monitoring and reporting during project execution for the compressor station site, substation site and access road, office building and guard station, multiple fill sites, parking areas, temporary office sites and staging areas. In addition, environmental costs also include mitigation fees for Santa Paula Creek Coastal Sage Scrub Habitat, oak trees and air emissions.

Cost Element	Actual Cost ($ in Thousands)			Forecasted Spend ($ in Thousands)	
	Labor	Non-Labor	Total	ETC	EAC
CPUC Monitoring	$ -	$2,328	$2,328	$0	$2,328
SCG Monitoring	$ -	$8,615	$8,615	$1,315	$9,930
Mitigation Fees	$ -	$684	$684	$74	$758
Total Environmental Direct Costs	**$ -**	**$11,627**	**$11,627**	**$1,389**	**$13,016**

Schedule

Project construction is ongoing. Schedule is directly related to any project construction activity requiring environmental monitoring and mitigation.

ETC Forecast

The ETC forecast includes additional SoCalGas environmental monitoring required for the remaining construction activities. The amount of environmental monitoring is expected to reduce as remaining activities become less environmentally impactful.

WORKPAPER TITLE	**IN SERVICE DATES**
ACTR - Buildings	6/3/2015 & 12/30/2016

PROJECT COST ($ in Thousands)	**Project Actuals 2006 through July 2017**												**Forecast August 2017 through 2018**		**EAC**
	2006	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2017 ETC**	**2018 ETC**	
DIRECT LABOR															
DIRECT NON-LABOR	$0	$0	$0	$0	$0	$111	$207	$327	$3,668	$2,521	$5,142	$1,435	$60	$0	$13,471
TOTAL DIRECT CAPITAL	**$0**	**$0**	**$0**	**$0**	**$0**	**$111**	**$207**	**$327**	**$3,668**	**$2,521**	**$5,142**	**$1,435**	**$60**	**$0**	**$13,471**

Project Description

The Buildings cost component includes relocation of the guard house and replacement of the office trailers with new office buildings. The scope included relocation of existing office trailers, relocating the existing guard house, widening of the existing road from one lane to two lanes in and one lane out.

Cost Element	**Actual Cost ($ in Thousands)**			**Forecasted Spend ($ in Thousands)**	
	Labor	**Non-Labor**	**Total**	**ETC**	**EAC**
New Office Buildings	$ -	$11,514	$11,514	$60	$11,574
Guard House Relocation	$ -	$1,897	$1,897	$0	$1,897
Total Buildings Direct Costs	**$0**	**$13,411**	**$13,411**	**$60**	**$13,471**

Schedule

Project construction was completed for this scope of work in June 2015 and December 2016.

ETC Forecast

The ETC forecast is based on 2017 actuals through July of actual spend and anticipated effort known at the time of the forecast. This includes the temporary trailer rentals used by the company labor project management team.

WORKPAPER TITLE	IN SERVICE DATE
ACTR - Other Costs	11/30/2017

PROJECT COST ($ in Thousands)	Project Actuals 2006 through July 2017												Forecast August 2017 through 2018		EAC
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2017 ETC	2018 ETC	
DIRECT LABOR															
DIRECT NON-LABOR	$14	$0	$0	$12	$61	$11	$193	$70	$2,204	$4,417	$238	$920	$250	$0	$8,390
TOTAL DIRECT CAPITAL	**$14**	**$0**	**$0**	**$12**	**$61**	**$11**	**$193**	**$70**	**$2,204**	**$4,417**	**$238**	**$920**	**$250**	**$0**	**$8,390**

Project Description

The Fill Sites work included the costs with preparing, filling, compacting, maintaining, and restoring the soil fill sites used on the project. Other costs include the work scopes associated project controls support, other consultants, minor electrical work, office furniture, and other costs that did not fit in to the main project elements.

Cost Element	Actual Cost ($ in Thousands)			Forecasted Spend ($ in Thousands)	
	Labor	Non Labor	Total	ETC	EAC
Fill Sites	$ -	$5,413	$5,413	$0	$5,413
Other Construction	$ -	$2,727	$2,727	$250	$2,977
Total	**$ -**	**$8,140**	**$8,140**	**$250**	**$8,390**

Schedule

The fill site work was completed once excavation and grading of soil was completed. The remaining other costs include project support such as project controls and assistance with reasonbleness review

ETC Forecast

The ETC forecast includes ongoing project support calculated based on recent project actuals incurred by the project during 2017

WORKPAPER TITLE

ACTR - Company Labor

PROJECT COST ($ in Thousands)	Project Actuals 2006 through July 2017												Forecast August 2017 through 2018		EAC
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2017 ETC	2018 ETC	
DIRECT LABOR	$37	$18	$15	$158	$146	$263	$325	$421	$1,053	$1,627	$1,439	$783	$462	$462	$7,210
DIRECT NON-LABOR															
TOTAL DIRECT CAPITAL	**$37**	**$18**	**$15**	**$158**	**$146**	**$263**	**$325**	**$421**	**$1,053**	**$1,627**	**$1,439**	**$783**	**$462**	**$462**	**$7,210**

Project Description

Company labor for ACTR include technical and management personnel at the construction site as well as support from the home office working on the design, procurement for services and material, contract management, project controls and closeout activities.

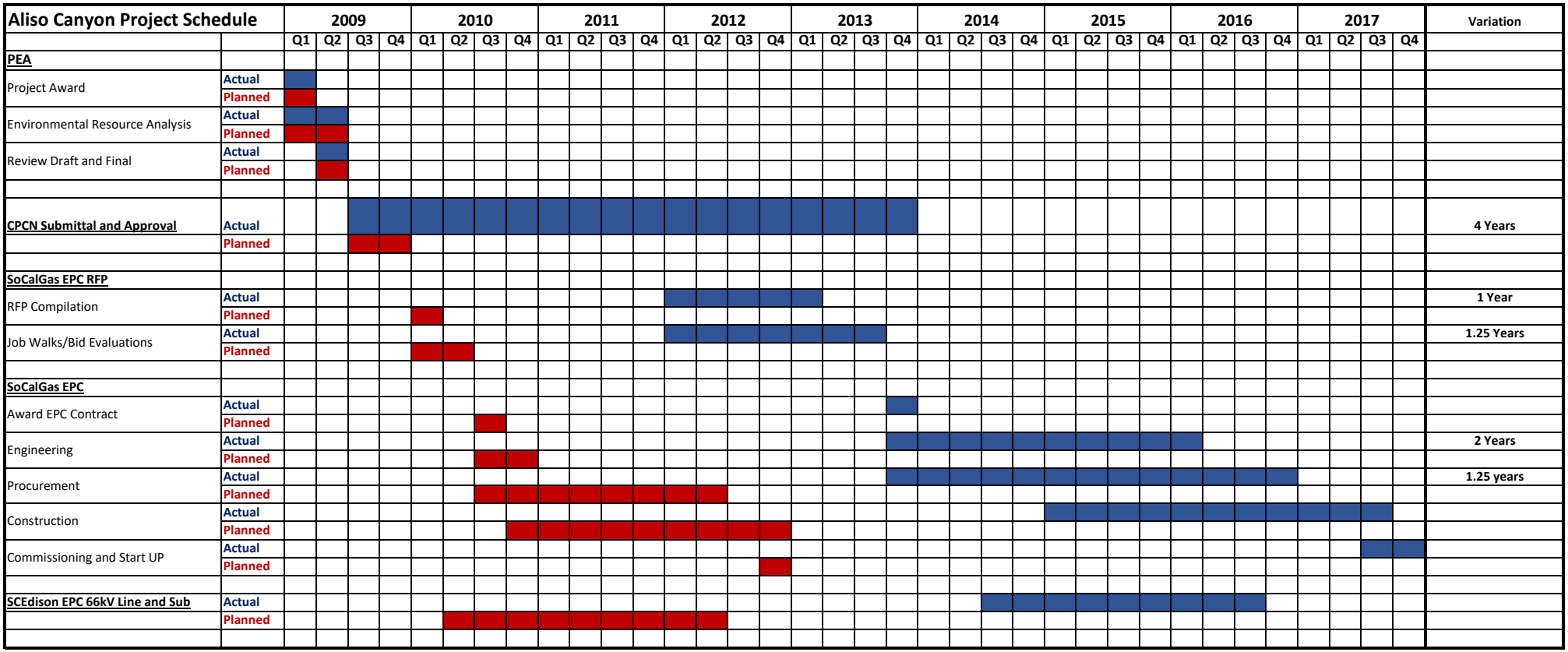
Cost Center	Labor (Actuals $ in Thousands)	Forecasted ETC	Forecasted EAC
Core Project Management Team	**$3,406**	**$805**	**$4,210**
Project Controls	**$238**	**$119**	**$357**
Document Control	**$298**	**$0**	**$298**
Engineering	**$761**	**$0**	**$761**
Storage	**$830**	**$0**	**$830**
Environmental	**$550**	**$0**	**$550**
Other	**$204**	**$0**	**$204**
ACTR Company Labor	**$6,286**	**$924**	**$7,210**

Schedule

The remaining schedule for company labor includes project management throughout construction and associated project closeout.

ETC Forecast

The ETC forecast includes ongoing project support calculated based on recent project actuals incurred by the project during 2017.


Aliso Canyon Project Schedule
2009
2010
2011
2012
2013
2014
2015
2016
2017
Variation
Q1 Q2 Q3 Q4
PEA
Project Award
Actual
Planned
Environmental Resource Analysis
Actual
Planned
Review Draft and Final
Actual
Planned
CPCN Submittal and Approval
Actual
4 Years
Planned
SoCalGas EPC RFP
RFP Compilation
Actual
1 Year
Planned
Job Walks/Bid Evaluations
Actual
1.25 Years
Planned
SoCalGas EPC
Award EPC Contract
Actual
Planned
Engineering
Actual
2 Years
Planned
Procurement
Actual
1.25 years
Planned
Construction
Actual
Planned
Commissioning and Start UP
Actual
Planned
SCEdison EPC 66kV Line and Sub
Actual
Planned

WORKPAPER TITLE

ACTR - Overheads

PROJECT COST ($ in Thousands)	Project Actuals 2006 through July 2017												Forecast August 2017 through 2018		EAC
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2017 ETC	2018 ETC	
INDIRECT CAPITAL COST	$89	$44	$29	$233	$205	$413	$439	$557	$1,865	$2,151	$3,179	$927	$581	$514	$11,225
TOTAL INDIRECT CAPITAL	**$89**	**$44**	**$29**	**$233**	**$205**	**$413**	**$439**	**$557**	**$1,865**	**$2,151**	**$3,179**	**$927**	**$581**	**$514**	**$11,225**

Project Description

The ACTR total project costs include overhead allocations based on direct capital costs, consistent with their classification as company labor, contract labor, or purchased services and materials. Overhead allocations are those activities and services that are associated with direct costs and benefits, such as payroll taxes and pension and benefits, or costs that cannot be economically direct-charged, such as administrative and general overheads. The overhead allocations adhere to the methodology proposed by the Federal Energy Regulatory Commission and were derived using the same methodology approved in SoCalGas' most recent GRC filing.

Schedule

Overheads will continue to affect project costs until the project is closed out, estimated during 2018.

ETC Forecast

The forecasted amount of overheads during 2017 and 2018 is estimated from the estimated capital cost estimated in the direct cost ETC forecasts.

WORKPAPER TITLE

ACTR - AFUDC

PROJECT COST ($ in Thousands)	Project Actuals 2006 through July 2017												Forecast August 2017 through 2018		EAC
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2017 ETC	2018 ETC	
INDIRECT CAPITAL COST	$15	$108	$128	$183	$293	$451	$564	$1,269	$4,456	$9,282	$13,915	$8,052	$7,228	$0	$45,943
TOTAL INDIRECT CAPITAL	**$15**	**$108**	**$128**	**$183**	**$293**	**$451**	**$564**	**$1,269**	**$4,456**	**$9,282**	**$13,915**	**$8,052**	**$7,228**	**$0**	**$45,943**

Project Description

The total project costs authorized by the Commission include an estimate of AFUDC and was based on the estimated direct capital cost, estimated overhead costs and proposed project schedule. The AFUDC allocations adhere to the methodology derived using the same methodology approved in SoCalGas' most recent GRC filing.

Schedule

AFUDC will continue to affect project costs until the project is put in to service, estimated 11/30/2017.

ETC Forecast

The forecasted amount of AFUDC during 2017 is estimated from the estimated capital cost estimated in the direct cost ETC forecasts.

WORKPAPER TITLE

ACTR - Property Taxes

PROJECT COST ($ in Thousands)	Project Actuals 2006 through July 2017												Forecast August 2017 through 2018		EAC
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2017 ETC	2018 ETC	
INDIRECT CAPITAL COST	$0	$0	$0	$0	$0	$0	$0	$197	$488	$1,146	$1,834	$1,074	$967	$0	$5,706
TOTAL INDIRECT CAPITAL	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$197**	**$488**	**$1,146**	**$1,834**	**$1,074**	**$967**	**$0**	**$5,706**

Project Description

The Code of Federal Regulations specifies that ad valorem taxes on physical property during a period of construction shall be included in the capital construction costs.

Schedule

Property Tax will continue to affect project costs until the project is put in to service, estimated 11/30/2017.

ETC Forecast

The forecasted amount of property tax during 2017 is estimated from the estimated property tax for the facility.

WORKPAPER TITLE
Cost Savings

ACTR

Facility Savings ($ in Thousands)	CPCN Application	2011	2012	2013	2014	Projected Savings	Variance
3rd Party O&M	$375	$300	$387	$289	$292	$317	-$58
Direct Labor O&M	$220					$155	-$65
Air Emission Fees	$114	$236	$249	$176	$175	$209	$95
O&M Avoided Costs	**$709**					**$681**	**-$28**
SoCalGas AFA Cost Increase	$266					$347	$81
Total Net O&M Savings	**$443**					**$334**	**-$109**

Air Emissions Savings ($ in Thousands)	CPCN Application	Projected Savings	Variance
Reclaim NOx RTC*	$650	$656	$6
Greenhouse Gas Savings	$ -	$861	$861
Air Emissions Total Cost/(Savings)	**$650**	**$1,517**	**$867**

Capital Savings ($ in Thousands)	CPCN Application	2011	2012	2013	2014	Projected Cost Savings	Variance
Capital Maintenance	$512	$2,948	$1,608	$1,100	$1,623	$1,820	$1,308
Total Capital Cost Savings	**$512**					**$1,820**	**$1,308**

Project Description

The cost savings associated with eliminating maintenance related to the old gas compressors, operations and maintenance costs and benefits associated with decreased charges from third parties, reduction in internal labor costs, and other associated fees. The additional cost is due to the SCE added facilities agreement due to the electrical infrastructure upgrades required by the project.

Schedule

Savings will be ongoing.

Savings Forecast

The facility costs table above is calculated using 4-year averages from 2011-2014 where shown, the direct labor O&M was calculated using annual salary. The air emissions table is an updated estimate for savings in 2019. The SCE AFA cost is calculated using an invoice from January 1, 2017 to February 1, 2017 from SCE.