

**DIRECT COST and SCHEDULE WORKPAPERS**  
**Witness: D. Buczkowski**

**North-South Project**

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## CAPITAL WORKPAPER

<b>WORKPAPER TITLE</b> Summary of North - South Project	<b>FERC ACCT.</b> 367
<b>WITNESS</b> David Buczkowski	<b>IN SERVICE DATE</b> 12/31/2019

PROJECT COST (\$000,000 IN 2013\$)	2014	2015	2016	2017	2018	2019	2020 - 2039	Total
DIRECT LABOR	1.8	2.0	2.3	2.7	3.1	3.0	0.1	15.1
DIRECT NON-LABOR	5.6	8.2	15.6	185.3	226.7	171.2	0.9	613.5
TOTAL DIRECT CAPITAL	7.4	10.2	17.9	188.0	229.8	174.2	1.1	628.6

### **Project Description**

The North - South Project scope includes installation of approximately 60 miles of new pipeline from Adelanto to Moreno, 30,000 horsepower of compression at Adelanto Compressor Station, and 31 miles of new pipeline from Moreno to Whitewater. SoCalGas and SDG&E utilized the assistance of a third party firm, TRC Companies, Inc. (TRC), specializing in engineering services and construction management to support development of the project scope and cost estimates.

### **Forecast Methodology**

SoCalGas and SDG&E developed direct cost estimates to implement the above scope of work, including costs associated with project management, engineering and design, environmental permitting, land acquisition, material and equipment procurement, and construction.

The estimated project costs in this application include contingencies to account for uncertainty and variability associated with the cost estimate and un-foreseeable elements of cost within the defined project scope. To calculate contingency, we analyzed each cost component, considered the risks related to the component that fall within the defined project scope, and established a contingency percentage.

The costs for each area are summarized below, shown in millions of 2013 dollars.

### **Adelanto-Moreno Pipeline**

PROJECT COST (\$000,000 IN 2013\$)	2014	2015	2016	2017	2018	2019	2020 - 2039	Total
DIRECT LABOR	0.8	0.8	0.9	1.0	1.2	1.2	0.1	5.9
DIRECT NON-LABOR	3.2	3.8	7.1	103.2	92.4	115.6	0.5	325.8
TOTAL DIRECT CAPITAL	4.0	4.7	8.0	104.2	93.6	116.8	0.5	331.8

## CAPITAL WORKPAPER

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### Adelanto Compressor Station

PROJECT COST (\$000,000 IN 2013\$)	2014	2015	2016	2017	2018	2019	2020 - 2039	Total
DIRECT LABOR	0.4	0.4	0.6	0.8	0.8	0.7	-	3.7
DIRECT NON-LABOR	0.6	0.7	6.2	68.0	3.2	28.3	-	107.0
<b>TOTAL DIRECT CAPITAL</b>	<b>1.0</b>	<b>1.1</b>	<b>6.7</b>	<b>68.8</b>	<b>4.1</b>	<b>29.1</b>	<b>-</b>	<b>110.7</b>

### Moreno-Whitewater Pipeline

PROJECT COST (\$000,000 IN 2013\$)	2014	2015	2016	2017	2018	2019	2020 - 2039	Total
DIRECT LABOR	0.6	0.7	0.9	1.0	1.1	1.0	0.1	5.4
DIRECT NON-LABOR	1.7	3.7	2.3	14.1	131.0	27.3	0.5	180.6
<b>TOTAL DIRECT CAPITAL</b>	<b>2.4</b>	<b>4.4</b>	<b>3.2</b>	<b>15.1</b>	<b>132.2</b>	<b>28.3</b>	<b>0.5</b>	<b>186.1</b>

### Schedule

SoCalGas and SDG&E estimate that it will take approximately six years to permit, engineer, design, procure, construct and place the new assets in service. In order to develop this project as quickly as possible, SoCalGas and SDG&E plan on initiating planning, engineering, design, and permitting work in advance of CPUC authorization. The environmental clearance process is assumed to commence in the planning and permitting phase of the project.

Since the environmental clearance process has the potential to impact the overall project scope, it is assumed that material procurement (including long lead time valves and compression equipment), land and right-of-way acquisition, and awarding of major construction contracts will occur after SoCalGas and SDG&E receive the final environmental clearance for the project. It is estimated that detailed engineering and design, procurement, and construction for the project will be completed within roughly three years of receiving the final environmental clearances.

Costs in the years 2020 through 2039 are for post-construction environmental monitoring that will occur after the assets are placed in service.

## CAPITAL WORKPAPER

<b>WORKPAPER TITLE</b> Summary of Adelanto-Moreno Pipeline	<b>FERC ACCT.</b> 367
<b>WITNESS</b> David Buczkowski	<b>IN SERVICE DATE</b> 12/31/2019

PROJECT COST (\$000,000 IN 2013\$)	2014	2015	2016	2017	2018	2019	2020 - 2039	Total
DIRECT LABOR	0.8	0.8	0.9	1.0	1.2	1.2	0.1	5.9
DIRECT NON-LABOR	3.2	3.8	7.1	103.2	92.4	115.6	0.5	325.8
TOTAL DIRECT CAPITAL	4.0	4.7	8.0	104.2	93.6	116.8	0.5	331.8

### **Project Description**

The Adelanto-Moreno Pipeline is a new 36" diameter pipeline that originates at SoCalGas' Adelanto Compressor Station and stretches approximately 60 miles in a southeasterly direction, terminating at the Moreno Valley Pressure Limiting Station (PLS).

### **Forecast Methodology**

SoCalGas and SDG&E developed direct cost estimates to implement the above scope of work, including costs associated with project management, engineering and design, environmental permitting, land acquisition, material and equipment procurement, and construction.

The estimated project costs in this application include contingencies to account for uncertainty and variability associated with a cost estimate and un-foreseeable elements of cost within the defined project scope. To calculate contingency, we analyzed each cost component, considered the risks related to the component that fall within the defined project scope, the impact the risk would have on the project if it occurs, and established a contingency percentage.

The costs for each area are summarized below, shown in millions of 2013 dollars.

### **Adelanto-Moreno Pipeline - Material**

PROJECT COST (\$000,000 IN 2013\$)	2014	2015	2016	2017	2018	2019	2020 - 2039	Total
DIRECT LABOR	-	-	-	-	-	-	-	-
DIRECT NON-LABOR	-	-	-	79.2	5.5	-	-	84.7
TOTAL DIRECT CAPITAL	-	-	-	79.2	5.5	-	-	84.7

### **Adelanto-Moreno Pipeline - Construction**

PROJECT COST (\$000,000 IN 2013\$)	2014	2015	2016	2017	2018	2019	2020 - 2039	Total
DIRECT LABOR	-	-	-	-	-	-	-	-
DIRECT NON-LABOR	-	-	-	-	78.8	101.4	-	180.1
TOTAL DIRECT CAPITAL	-	-	-	-	78.8	101.4	-	180.1

## CAPITAL WORKPAPER

<b>WORKPAPER TITLE</b> Summary of Adelanto-Moreno Pipeline	<b>FERC ACCT.</b> 367
<b>WITNESS</b> David Buczkowski	<b>IN SERVICE DATE</b> 12/31/2019

### Adelanto-Moreno Pipeline - 3rd Party Environmental Survey/Permitting/ Monitoring

PROJECT COST (\$000,000 IN 2013\$)	2014	2015	2016	2017	2018	2019	2020 - 2039	Total
DIRECT LABOR	-	-	-	-	-	-	-	-
DIRECT NON-LABOR	0.8	2.4	1.1	6.3	2.1	2.7	0.5	15.8
TOTAL DIRECT CAPITAL	0.8	2.4	1.1	6.3	2.1	2.7	0.5	15.8

### Adelanto-Moreno Pipeline - Land & ROW Acquisition

PROJECT COST (\$000,000 IN 2013\$)	2014	2015	2016	2017	2018	2019	2020 - 2039	Total
DIRECT LABOR	-	-	-	-	-	-	-	-
DIRECT NON-LABOR	-	-	4.3	8.9	2.0	0.9	-	16.0
TOTAL DIRECT CAPITAL	-	-	4.3	8.9	2.0	0.9	-	16.0

### Adelanto-Moreno Pipeline - Moreno Pressure Limiting Station

PROJECT COST (\$000,000 IN 2013\$)	2014	2015	2016	2017	2018	2019	2020 - 2039	Total
DIRECT LABOR	-	-	-	-	-	-	-	-
DIRECT NON-LABOR	-	0.0	0.0	1.4	0.1	0.9	-	2.4
TOTAL DIRECT CAPITAL	-	0.0	0.0	1.4	0.1	0.9	-	2.4

### Adelanto-Moreno Pipeline - Company Labor

PROJECT COST (\$000,000 IN 2013\$)	2014	2015	2016	2017	2018	2019	2020 - 2039	Total
DIRECT LABOR	0.8	0.8	0.9	1.0	1.2	1.2	0.1	5.9
DIRECT NON-LABOR	-	-	-	-	-	-	-	-
TOTAL DIRECT CAPITAL	0.8	0.8	0.9	1.0	1.2	1.2	0.1	5.9

### Adelanto-Moreno Pipeline - Other Capital Costs

PROJECT COST (\$000,000 IN 2013\$)	2014	2015	2016	2017	2018	2019	2020 - 2039	Total
DIRECT LABOR	-	-	-	-	-	-	-	-
DIRECT NON-LABOR	2.4	1.4	1.8	7.5	4.0	9.7	-	26.7
TOTAL DIRECT CAPITAL	2.4	1.4	1.8	7.5	4.0	9.7	-	26.7

# CAPITAL WORKPAPER

<b>WORKPAPER TITLE</b> Summary of Adelanto-Moreno Pipeline	<b>FERC ACCT.</b> 367
<b>WITNESS</b> David Buczkowski	<b>IN SERVICE DATE</b> 12/31/2019

## Schedule

SoCalGas and SDG&E estimate that it will take approximately six years to permit, engineer, design, procure, construct and place the new assets in service. In order to develop this project as quickly as possible, SoCalGas and SDG&E plan on initiating planning, engineering, design, and permitting work in advance of CPUC authorization. The environmental clearance process is assumed to commence in the planning and permitting phase of the project.

Since the environmental clearance process has the potential to impact the overall project scope, it is assumed that material procurement (including long lead time pipe and valves), land and right-of-way acquisition, and awarding of major construction contracts will occur after SoCalGas and SDG&E receive the final environmental clearance for the project. It is estimated that detailed engineering and design, procurement, and construction for the project will be completed within roughly three years of receiving the final environmental clearances.

Costs in the years 2020 through 2039 are for post-construction environmental monitoring that will occur after the assets are placed in service.

## CAPITAL WORKPAPER

<b>WORKPAPER TITLE</b> Adelanto-Moreno Pipeline - Material	<b>FERC ACCT.</b> 367
<b>WITNESS</b> David Buczkowski	<b>IN SERVICE DATE</b> 12/31/2019

<b>PROJECT COST</b> (\$000,000 IN 2013\$)	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>Total</b>
DIRECT LABOR	-	-	-	-	-	-	-
DIRECT NON-LABOR	-	-	-	79.2	5.5	-	84.7
<b>TOTAL DIRECT CAPITAL</b>	-	-	-	79.2	5.5	-	84.7

### Project Description

The Adelanto-Moreno pipeline is a new 36" diameter pipeline that originates at SoCalGas' Adelanto Compressor Station and stretches approximately 60 miles in a southeasterly direction, terminating at the Moreno Valley PLS.

Pipeline cost estimates are based on a 36" pipe diameter, 0.625" wall thickness, and API 5L X70 pipe grade. All pipeline bends and fittings are sized such that they will allow passage of commonly available in-line inspection (ILI) tools. Main line valves installed as part of this project will be capable of operating in automatic shut-off and remote control modes.

### Forecast Methodology

SoCalGas and SDG&E, supported by TRC, consulted with vendors to determine current material costs for pipe and valves. Input received represents budgetary pricing estimates. No firm quotations for materials were obtained.

<b>Cost Element</b>	<b>Cost Estimate</b>			
	<b>Labor</b>	<b>Non Labor</b>	<b>Contingency % Applied</b>	<b>Total</b>
Pipe & Coating	-	57,035,722	5%	59,887,508
Pipe Delivery	-	8,893,210	5%	9,337,870
Ells	-	4,916,550	5%	5,162,378
Valves	-	879,110	10%	967,021
Other Materials	-	2,048,200	5%	2,150,610
Odorization	-	200,000	10%	220,000
Filter / Separator	-	500,000	0%	500,000
Freight (other than Pipe)	-	595,349	5%	625,116
Tax	-	5,839,162	1%	5,897,554
<b>Total</b>	-	<b>80,907,303</b>		<b>84,748,057</b>

### Schedule

The basis of this estimate is that material purchases will occur after receiving the final environmental clearances for the project.

## CAPITAL WORKPAPER

<b>WORKPAPER TITLE</b> Adelanto-Moreno Pipeline - Construction	<b>FERC ACCT.</b> 367
<b>WITNESS</b> David Buczkowski	<b>IN SERVICE DATE</b> 12/31/2019

PROJECT COST (\$000,000 IN 2013\$)	2014	2015	2016	2017	2018	2019	Total
DIRECT LABOR	-	-	-	-	-	-	-
DIRECT NON-LABOR	-	-	-	-	78.8	101.4	180.1
TOTAL DIRECT CAPITAL	-	-	-	-	78.8	101.4	180.1

### **Project Description**

The Adelanto-Moreno pipeline is a new 36" diameter pipeline that originates at SoCalGas' Adelanto Compressor Station and stretches approximately 60 miles in a southeasterly direction, terminating at the Moreno Valley PLS.

### **Forecast Methodology**

Estimates for the construction costs were received from two pipeline construction contractors. The estimates account for type of terrain traversed during construction and the effect of the terrain on such factors as type of construction methods employed and rate of construction progress. The superior of the two estimates in terms of overall cost and proposed execution, particularly in the more populated city areas, is incorporated into the construction direct costs. TRC provided anticipated construction management man hours and used a labor rate provided by knowledgeable and experienced SoCalGas personnel to develop the cost estimate for this activity.

## CAPITAL WORKPAPER

<b>WORKPAPER TITLE</b> Adelanto-Moreno Pipeline - Construction	<b>FERC ACCT.</b> 367
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Cost Element	Cost Estimate			
	Labor	Non Labor	Contingency % Applied	Total
Mobilization	-	500,000	10%	550,000
Unload –Stockpile Pipe	-	805,000	5%	845,250
Load Pipe – Haul to ROW	-	805,000	5%	845,250
County Paved Roads	-	14,652,640	5%	15,385,272
County Dirt Roads	-	30,121,470	5%	31,627,544
Light Residential - Paved	-	15,954,150	10%	17,549,565
City Street Paved	-	47,486,045	10%	52,234,650
SB National Forest	-	6,003,870	40%	8,405,418
Cajon Pass-Cross Country	-	12,413,760	30%	16,137,888
HDD Bores	-	1,757,700	20%	2,109,240
Cross Country	-	13,596,000	5%	14,275,800
Short bores	-	1,565,600	10%	1,722,160
Conventional Bores	-	4,095,300	10%	4,504,830
Mainline Valves	-	2,025,000	5%	2,126,250
Launcher/receiver	-	120,000	0%	120,000
Caliper Survey	-	200,000	0%	200,000
X-Ray Services	-	1,381,300	10%	1,519,430
Hydro Testing and Drying	-	1,278,400	10%	1,406,240
Demobilization	-	300,000	0%	300,000
Construction Management	-	7,525,000	10%	8,277,500
<b>Total</b>	-	<b>162,586,235</b>		<b>180,142,286</b>

### Schedule

The basis of this estimate is that all major construction contracts will be awarded after receiving the final environmental clearances for the project.

## CAPITAL WORKPAPER

<b>WORKPAPER TITLE</b> Adelanto-Moreno Pipeline - 3rd Party Environmental Survey/Permitting/ Monitoring	<b>FERC ACCT.</b> 367
<b>WITNESS</b> David Buczkowski	<b>IN SERVICE DATE</b> 12/31/2019

<b>PROJECT COST</b> <b>(\$000,000 IN 2013\$)</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020 -</b> <b>2039</b>	<b>Total</b>
DIRECT LABOR	-	-	-	-	-	-	-	-
DIRECT NON-LABOR	0.8	2.4	1.1	6.3	2.1	2.7	0.5	15.8
TOTAL DIRECT CAPITAL	0.8	2.4	1.1	6.3	2.1	2.7	0.5	15.8

### **Project Description**

The Adelanto-Moreno pipeline is a new 36" diameter pipeline that originates at SoCalGas' Adelanto Compressor Station and stretches approximately 60 miles in a southeasterly direction, terminating at the Moreno Valley PLS.

### **Forecast Methodology**

It is assumed this project will be subject to the requirements of the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA) as well as discretionary permits from various federal, state and local agencies. The schedule, level of effort, and estimated costs focus on environmental permitting and related construction monitoring and compliance along with agency mitigation requirements. Staffing requirements and costs for each item were developed by SoCalGas.

<b>Cost Element</b>	<b>Cost Estimate</b>			
	<b>Labor</b>	<b>Non Labor</b>	<b>Contingency</b> <b>% Applied</b>	<b>Total</b>
Geotechnical Permitting Support	-	150,000	5%	157,500
Cultural and Paleontological Surveys	-	400,000	10%	440,000
Wetland and Stream Delineation	-	300,000	10%	330,000
Special-Status Species	-	250,000	10%	275,000
Rare Plant Surveys	-	200,000	10%	220,000
Water Resources	-	100,000	5%	105,000
Soils, Geology and Hazardous Materials	-	130,000	20%	156,000
Environmental Clearance/Permit Process	-	2,500,000	5%	2,625,000
Preconstruction Surveys	-	250,000	5%	262,500
Mitigation Compliance	-	6,000,000	5%	6,300,000
Construction Monitoring	-	3,580,000	25%	4,475,000
Post-construction Mitigation and Monitoring	-	440,000	5%	462,000
<b>Total</b>	-	14,300,000		15,808,000

## CAPITAL WORKPAPER

<b>WORKPAPER TITLE</b> Adelanto-Moreno Pipeline - 3rd Party Environmental Survey/Permitting/ Monitoring	<b>FERC ACCT.</b> 367
<b>WITNESS</b> David Buczkowski	<b>IN SERVICE DATE</b> 12/31/2019

### Schedule

Costs in the years 2020 through 2039 are for post-construction environmental monitoring that will occur after the assets are placed in service.

## CAPITAL WORKPAPER

<b>WORKPAPER TITLE</b> Adelanto-Moreno Pipeline - Land & ROW Acquisition	<b>FERC ACCT.</b> 367
<b>WITNESS</b> David Buczkowski	<b>IN SERVICE DATE</b> 12/31/2019

PROJECT COST (\$000,000 IN 2013\$)	2014	2015	2016	2017	2018	2019	Total
DIRECT LABOR	-	-	-	-	-	-	-
DIRECT NON-LABOR	-	-	4.3	8.9	2.0	0.9	16.0
TOTAL DIRECT CAPITAL	-	-	4.3	8.9	2.0	0.9	16.0

### Project Description

The Adelanto-Moreno pipeline is a new 36" diameter pipeline that originates at SoCalGas' Adelanto Compressor Station and stretches approximately 60 miles in a southeasterly direction, terminating at the Moreno Valley PLS.

### Forecast Methodology

SoCalGas and TRC obtained cost information to estimate land values throughout the route from various publicly available sources. Land values ranged from about \$30,000 per acre in certain remote areas to \$120,000 per acre in the vicinity of residential developments. The easement was valued using 50% of the land surface value. These are one-time payments made during the acquisition process. It is estimated this new pipeline will require approximately 189 acres of permanent easements, including area in the San Bernardino National Forest. Temporary work space was valued using 20% of the land surface value. These are also one-time payments made during the acquisition process. It is estimated that approximately 293 acres of temporary work space will be needed, including an area in the San Bernardino National Forest and two storage yards with rail access.

Cost Element	Cost Estimate			
	Labor	Non Labor	Contingency % Applied	Total
3rd Party Labor - Property Acquisition	-	852,900	30%	1,108,770
3rd Party Labor - Construction Support	-	1,074,000	10%	1,181,400
3rd Party Labor - Project Close-out	-	192,100	0%	192,100
Property Acquisition - Permanent Easements	-	5,793,732	30%	7,531,852
Property Acquisition - Temporary Easements	-	4,996,383	20%	5,995,660
Total	-	12,909,115		16,009,781

### Schedule

The basis of this estimate is that procurement of land and right-of-way will occur after receiving the final environmental clearances for the project.

## CAPITAL WORKPAPER

<b>WORKPAPER TITLE</b> Adelanto-Moreno Pipeline - Moreno Pressure Limiting Station	<b>FERC ACCT.</b> 367
<b>WITNESS</b> David Buczkowski	<b>IN SERVICE DATE</b> 12/31/2019

PROJECT COST (\$000,000 IN 2013\$)	2014	2015	2016	2017	2018	2019	Total
DIRECT LABOR	-	-	-	-	-	-	-
DIRECT NON-LABOR	-	0.0	0.0	1.4	0.1	0.9	2.4
TOTAL DIRECT CAPITAL	-	0.0	0.0	1.4	0.1	0.9	2.4

### Project Description

The Moreno Valley PLS upgrades will allow gas from the new Adelanto-Moreno Pipeline and from the new Moreno-Whitewater Pipeline to flow into any of the existing lines at the station.

### Forecast Methodology

SoCalGas and SDG&E developed direct cost estimates to upgrade the Moreno Valley PLS, including costs associated with surveys, material and equipment procurement, and construction.

Cost Element	Cost Estimate			
	Labor	Non Labor	Contingency % Applied	Total
Survey	-	14,800	10%	16,280
Permanent Easements	-	120,000	30%	156,000
Material Costs	-	928,900	15%	1,068,235
SCADA	-	20,000	5%	21,000
Engineering	-	70,000	5%	73,500
Construction Management	-	55,000	5%	57,750
As-built	-	30,000	5%	31,500
Construction Labor	-	800,000	10%	880,000
Freight	-	20,000	15%	23,000
Tax	-	83,600	1%	84,436
<b>Total</b>	-	2,142,300		2,411,701

### Schedule

The basis of this estimate is that all material procurement and major construction activities will occur after receiving the final environmental clearances for the project.

## CAPITAL WORKPAPER

<b>WORKPAPER TITLE</b> Adelanto-Moreno Pipeline - Company Labor	<b>FERC ACCT.</b> 367
<b>WITNESS</b> David Buczkowski	<b>IN SERVICE DATE</b> 12/31/2019

PROJECT COST (\$000,000 IN 2013\$)	2014	2015	2016	2017	2018	2019	2020 - 2039	Total
DIRECT LABOR	0.8	0.8	0.9	1.0	1.2	1.2	0.1	5.9
DIRECT NON-LABOR	-	-	-	-	-	-	-	-
TOTAL DIRECT CAPITAL	0.8	0.8	0.9	1.0	1.2	1.2	0.1	5.9

### **Project Description**

The Adelanto-Moreno pipeline is a new 36" diameter pipeline that originates at SoCalGas' Adelanto Compressor Station and stretches approximately 60 miles in a southeasterly direction, terminating at the Moreno Valley PLS.

### **Forecast Methodology**

SoCalGas and SDG&E will use company resources to perform various functions over the course of the project. In particular, SoCalGas and SDG&E will be responsible for overall project and construction management, environmental management, project controls, and various other support functions. All 3rd party contractor and consultant activity will be overseen by company resources.

## CAPITAL WORKPAPER

<b>WORKPAPER TITLE</b> Adelanto-Moreno Pipeline - Company Labor	<b>FERC ACCT.</b> 367
<b>WITNESS</b> David Buczkowski	<b>IN SERVICE DATE</b> 12/31/2019

Cost Element	Cost Estimate			
	Labor	Non Labor	Contingency % Applied	Total
Construction Management	738,140	-	8%	797,191
Operations Support	446,667	-	8%	482,400
Environmental Services	810,000	-	8%	874,800
Land and ROW	312,500	-	8%	337,500
Public Affairs	260,417	-	8%	281,250
Engineering	696,473	-	8%	752,191
Project Management	1,679,167	-	8%	1,813,500
Supply Management	229,167	-	8%	247,500
Project Controls	333,333	-	8%	360,000
<b>Total</b>	<b>5,505,863</b>	<b>-</b>		<b>5,946,332</b>

### Schedule

SoCalGas developed a preliminary staffing plan for the functions that will be supporting the project.

## CAPITAL WORKPAPER

<b>WORKPAPER TITLE</b> Adelanto-Moreno Pipeline - Other Capital Costs	<b>FERC ACCT.</b> 367
<b>WITNESS</b> David Buczkowski	<b>IN SERVICE DATE</b> 12/31/2019

PROJECT COST (\$000,000 IN 2013\$)	2014	2015	2016	2017	2018	2019	Total
DIRECT LABOR	-	-	-	-	-	-	-
DIRECT NON-LABOR	2.4	1.4	1.8	7.5	4.0	9.7	26.7
TOTAL DIRECT CAPITAL	2.4	1.4	1.8	7.5	4.0	9.7	26.7

### Project Description

The Adelanto-Moreno pipeline is a new 36" diameter pipeline that originates at SoCalGas' Adelanto Compressor Station and stretches approximately 60 miles in a southeasterly direction, terminating at the Moreno Valley PLS.

### Forecast Methodology

SoCalGas and SDG&E developed direct cost estimates for these other elements of the project scope.

Cost Element	Cost Estimate			
	Labor	Non Labor	Contingency % Applied	Total
Legal Services	-	5,379,000	5%	5,647,950
Public Relations	-	1,100,000	0%	1,100,000
Geotechnical Investigation	-	327,800	20%	393,360
Survey	-	3,235,000	10%	3,558,500
Ministerial Permits	-	1,200,000	0%	1,200,000
Engineering	-	7,018,000	5%	7,368,900
As-built	-	800,000	0%	800,000
SCADA	-	900,000	5%	945,000
ROW Intrusion Monitoring	-	5,598,000	0%	5,598,000
Methane Detection	-	88,000	0%	88,000
Total	-	25,645,800		26,699,710

### Schedule

SoCalGas and SDG&E estimate that it will take approximately six years to permit, engineer, design, procure, construct and place the new assets in service. In order to develop this project as quickly as possible, SoCalGas and SDG&E plan on initiating planning, engineering, design, and permitting work in advance of CPUC authorization. The environmental clearance process is also assumed to commence in the planning and permitting phase of the project.

## CAPITAL WORKPAPER

WORKPAPER TITLE Summary of Adelanto Compressor Station	FERC ACCT. 368
WITNESS David Buczkowski	IN SERVICE DATE 12/31/2019

PROJECT COST (\$000,000 IN 2013\$)	2014	2015	2016	2017	2018	2019	2020 - 2039	Total
DIRECT LABOR	0.4	0.4	0.6	0.8	0.8	0.7	-	3.7
DIRECT NON-LABOR	0.6	0.7	6.2	68.0	3.2	28.3	-	107.0
TOTAL DIRECT CAPITAL	1.0	1.1	6.7	68.8	4.1	29.1	-	110.7

### **Project Description**

The Adelanto Compressor Station will be upgraded with 30,000 horsepower of compression. This estimate assumes the 30,000 horsepower of compression is provided by three natural gas turbine-driven compressors.

### **Forecast Methodology**

SoCalGas and SDG&E developed direct cost estimates to implement the above scope of work, including costs associated with project management, engineering and design, environmental permitting, material and equipment procurement, and construction.

The estimated project costs in this application include contingencies to account for uncertainty and variability associated with a cost estimate and un-foreseeable elements of cost within the defined project scope. To calculate contingency, we analyzed each cost component, considered the risks related to the component that fall within the defined project scope, the impact the risk would have on the project if it occurs, and established a contingency percentage.

The costs for each area are summarized below, shown in millions of 2013 dollars.

### **Adelanto Compressor Station - Material**

PROJECT COST (\$000,000 IN 2013\$)	2014	2015	2016	2017	2018	2019	2020 - 2039	Total
DIRECT LABOR	-	-	-	-	-	-	-	-
DIRECT NON-LABOR	-	-	-	67.3	0.2	-	-	67.5
TOTAL DIRECT CAPITAL	-	-	-	67.3	0.2	-	-	67.5

### **Adelanto Compressor Station - Construction**

PROJECT COST (\$000,000 IN 2013\$)	2014	2015	2016	2017	2018	2019	2020 - 2039	Total
DIRECT LABOR	-	-	-	-	-	-	-	-
DIRECT NON-LABOR	-	-	-	0.1	2.5	28.2	-	30.8
TOTAL DIRECT CAPITAL	-	-	-	0.1	2.5	28.2	-	30.8

## CAPITAL WORKPAPER

<b>WORKPAPER TITLE</b> Summary of Adelanto Compressor Station	<b>FERC ACCT.</b> 368
<b>WITNESS</b> David Buczkowski	<b>IN SERVICE DATE</b> 12/31/2019

### Adelanto Compressor Station - Environmental Permitting / Emissions Offsets

PROJECT COST (\$000,000 IN 2013\$)	2014	2015	2016	2017	2018	2019	2020 - 2039	Total
DIRECT LABOR	-	-	-	-	-	-	-	-
DIRECT NON-LABOR	0.0	0.1	5.8	-	-	-	-	5.8
TOTAL DIRECT CAPITAL	0.0	0.1	5.8	-	-	-	-	5.8

### Adelanto Compressor Station - Company Labor

PROJECT COST (\$000,000 IN 2013\$)	2014	2015	2016	2017	2018	2019	2020 - 2039	Total
DIRECT LABOR	0.4	0.4	0.6	0.8	0.8	0.7	-	3.7
DIRECT NON-LABOR	-	-	-	-	-	-	-	-
TOTAL DIRECT CAPITAL	0.4	0.4	0.6	0.8	0.8	0.7	-	3.7

### Adelanto Compressor Station - Other Capital Costs

PROJECT COST (\$000,000 IN 2013\$)	2014	2015	2016	2017	2018	2019	2020 - 2039	Total
DIRECT LABOR	-	-	-	-	-	-	-	-
DIRECT NON-LABOR	0.6	0.6	0.4	0.6	0.6	0.1	-	2.9
TOTAL DIRECT CAPITAL	0.6	0.6	0.4	0.6	0.6	0.1	-	2.9

### Schedule

SoCalGas and SDG&E estimate that it will take approximately six years to permit, engineer, design, procure, construct and place the new assets in service. In order to develop this project as quickly as possible, SoCalGas and SDG&E plan on initiating planning, engineering, design, and permitting work in advance of CPUC authorization. The environmental clearance process is also assumed to commence in the planning and permitting phase of the project.

Since the environmental clearance process has the potential to impact the overall project scope, it is assumed that material procurement (including long lead time valves and compression equipment), land and right-of-way acquisition, and awarding of major construction contracts will occur after SoCalGas and SDG&E receive the final environmental clearance for the project. It is estimated that detailed engineering and design, procurement, and construction for the project will be completed within roughly three years of receiving the final environmental clearances.

## CAPITAL WORKPAPER

<b>WORKPAPER TITLE</b> Adelanto Compressor Station - Material	<b>FERC ACCT.</b> 368
<b>WITNESS</b> David Buczkowski	<b>IN SERVICE DATE</b> 12/31/2019

PROJECT COST (\$000,000 IN 2013\$)	2014	2015	2016	2017	2018	2019	Total
DIRECT LABOR	-	-	-	-	-	-	-
DIRECT NON-LABOR	-	-	-	67.3	0.2	-	67.5
TOTAL DIRECT CAPITAL	-	-	-	67.3	0.2	-	67.5

### Project Description

The Adelanto Compressor Station will be upgraded with 30,000 horsepower of compression. This estimate assumes the 30,000 horsepower of compression is provided by three natural gas turbine-driven compressors.

### Forecast Methodology

SoCalGas and TRC consulted with turbine manufacturers and other vendors to determine current material costs for the compressor station equipment.

Cost Element	Cost Estimate			
	Labor	Non Labor	Contingency % Applied	Total
Turbine-driven Compressors	-	27,600,000	15%	31,740,000
Buildings	-	2,180,000	15%	2,507,000
Gas Cooling	-	3,300,000	15%	3,795,000
Major Piping and Fittings	-	930,000	15%	1,069,500
Valves	-	1,810,000	15%	2,081,500
Major Electrical Equipment	-	975,000	15%	1,121,250
Concrete and Foundations	-	210,000	15%	241,500
Misc. Materials	-	3,612,500	15%	4,154,375
Auxiliary Generator	-	6,280,000	5%	6,594,000
Selective Catalytic Reduction System/Oxidation Catalyst	-	3,600,000	10%	3,960,000
Continuous Emissions Monitoring Systems	-	750,000	10%	825,000
Aqueous Unit (Ammonia)	-	3,500,000	10%	3,850,000
Maintenance Parts	-	150,000	0%	150,000
Freight	-	1,500,000	15%	1,725,000
Tax	-	3,639,000	1%	3,675,390
Total	-	60,036,500		67,489,515

### Schedule

The basis of this estimate is that material purchases will occur after receiving the final environmental clearances for the project.

## CAPITAL WORKPAPER

<b>WORKPAPER TITLE</b> Adelanto Compressor Station - Construction	<b>FERC ACCT.</b> 368
<b>WITNESS</b> David Buczkowski	<b>IN SERVICE DATE</b> 12/31/2019

PROJECT COST (\$000,000 IN 2013\$)	2014	2015	2016	2017	2018	2019	Total
DIRECT LABOR	-	-	-	-	-	-	-
DIRECT NON-LABOR	-	-	-	0.1	2.5	28.2	30.8
TOTAL DIRECT CAPITAL	-	-	-	0.1	2.5	28.2	30.8

### Project Description

The Adelanto Compressor Station will be upgraded with 30,000 horsepower of compression. This estimate assumes the 30,000 horsepower of compression is provided by three natural gas turbine-driven compressors.

### Forecast Methodology

SoCalGas and TRC consulted with turbine manufacturers and other vendors to determine the construction costs for the compressor station. The entire turbine/compressor package will be housed in an insulated pre-engineered metal building that will provide weather protection for both the turbine and compressor. A perimeter block wall will also be constructed around the station, providing both additional security and noise abatement.

Cost Element	Cost Estimate			
	Labor	Non Labor	Contingency % Applied	Total
Construction Labor - Piping	-	7,340,500	10%	8,074,550
Construction Labor - Electrical	-	7,340,500	10%	8,074,550
Construction Labor - Civil	-	8,320,000	10%	9,152,000
Equipment Rental	-	715,000	10%	786,500
Station Baseload Power Generation	-	400,000	10%	440,000
Block Wall	-	1,306,142	10%	1,436,756
Electrical Upgrade	-	250,000	0%	250,000
Construction Management	-	2,311,000	10%	2,542,100
<b>Total</b>	-	<b>27,983,142</b>		<b>30,756,456</b>

### Schedule

The basis of this estimate is that all major construction contracts will be awarded after receiving the final environmental clearances for the project.

## CAPITAL WORKPAPER

<b>WORKPAPER TITLE</b> Adelanto Compressor Station - Environmental Permitting / Emissions Offsets	<b>FERC ACCT.</b> 368
<b>WITNESS</b> David Buczkowski	<b>IN SERVICE DATE</b> 12/31/2019

<b>PROJECT COST</b> <b>(\$000,000 IN 2013\$)</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020 -</b> <b>2039</b>	<b>Total</b>
DIRECT LABOR	-	-	-	-	-	-	-	-
DIRECT NON-LABOR	0.0	0.1	5.8	-	-	-	-	5.8
TOTAL DIRECT CAPITAL	0.0	0.1	5.8	-	-	-	-	5.8

### **Project Description**

The Adelanto Compressor Station will be upgraded with 30,000 horsepower of compression. This estimate assumes the 30,000 horsepower of compression is provided by three natural gas turbine-driven compressors.

### **Forecast Methodology**

The compressor station will be subject to Federal Operating Permit (Title V) requirements due to its potential to emit emissions in excess of federal major source thresholds. Emissions offset costs and other air permit related fees necessary to construct the station upgrades were estimated by company subject matter experts and are included towards the total cost of the compressor station.

<b>Cost Element</b>	<b>Cost Estimate</b>			
	<b>Labor</b>	<b>Non Labor</b>	<b>Contingency</b> <b>% Applied</b>	<b>Total</b>
ERC's	-	5,250,000	10%	5,775,000
MDAQMD Permit Application Fees	-	38,100	0%	38,100
Title V Federal Operating Permit fees	-	25,000	0%	25,000
CEMS evaluation fee	-	3,300	0%	3,300
Total	-	5,316,400		5,841,400

### **Schedule**

The costs for the environmental clearance process will be incurred during the planning and permitting phase of the project.

## CAPITAL WORKPAPER

<b>WORKPAPER TITLE</b> Adelanto Compressor Station - Company Labor	<b>FERC ACCT.</b> 367
<b>WITNESS</b> David Buczkowski	<b>IN SERVICE DATE</b> 12/31/2019

<b>PROJECT COST</b> <b>(\$000,000 IN 2013\$)</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>Total</b>
DIRECT LABOR	0.4	0.4	0.6	0.8	0.8	0.7	3.7
DIRECT NON-LABOR	-	-	-	-	-	-	-
TOTAL DIRECT CAPITAL	0.4	0.4	0.6	0.8	0.8	0.7	3.7

### Project Description

The Adelanto Compressor Station will be upgraded with 30,000 horsepower of compression. This estimate assumes the 30,000 horsepower of compression is provided by three natural gas turbine-driven compressors.

### Forecast Methodology

SoCalGas will use company resources to perform various functions over the course of the project. In particular, SoCalGas will be responsible for overall project and construction management, environmental management, project controls, and various other support functions. All 3rd party contractor and consultant activity will be overseen by company resources.

<b>Cost Element</b>	<b>Cost Estimate</b>			
	<b>Labor</b>	<b>Non Labor</b>	<b>Contingency % Applied</b>	<b>Total</b>
Construction Management	625,000	-	8%	675,000
Operations Support	386,667	-	8%	417,600
Environmental Services	60,000	-	8%	64,800
Public Affairs	260,417	-	8%	281,250
Engineering	583,333	-	8%	630,000
Project Management	954,167	-	8%	1,030,500
Supply Management	229,167	-	8%	247,500
Project Controls	333,333	-	8%	360,000
<b>Total</b>	<b>3,432,083</b>	<b>-</b>		<b>3,706,650</b>

### Schedule

SoCalGas developed a preliminary staffing plan for the functions that will be supporting the project.

## CAPITAL WORKPAPER

<b>WORKPAPER TITLE</b> Adelanto Compressor Station - Other Capital Costs	<b>FERC ACCT.</b> 368
<b>WITNESS</b> David Buczkowski	<b>IN SERVICE DATE</b> 12/31/2019

PROJECT COST (\$000,000 IN 2013\$)	2014	2015	2016	2017	2018	2019	Total
DIRECT LABOR	-	-	-	-	-	-	-
DIRECT NON-LABOR	0.6	0.6	0.4	0.6	0.6	0.1	2.9
TOTAL DIRECT CAPITAL	0.6	0.6	0.4	0.6	0.6	0.1	2.9

### Project Description

The Adelanto Compressor Station will be upgraded with 30,000 horsepower of compression. This estimate assumes the 30,000 horsepower of compression is provided by three natural gas turbine-driven compressors.

### Forecast Methodology

SoCalGas and SDG&E developed direct cost estimates for these other elements of the project scope.

Cost Element	Cost Estimate			
	Labor	Non Labor	Contingency % Applied	Total
Public Relations	-	200,000	0%	200,000
Survey	-	355,000	10%	390,500
Ministerial Permits	-	100,000	0%	100,000
SCADA	-	350,000	5%	367,500
Engineering	-	1,690,000	5%	1,774,500
As-built	-	115,000	0%	115,000
Total	-	2,810,000		2,947,500

### Schedule

SoCalGas and SDG&E estimate that it will take approximately six years to permit, engineer, design, procure, construct and place the new assets in service. In order to develop this project as quickly as possible, SoCalGas and SDG&E plan on initiating planning, engineering, design, and permitting work in advance of CPUC authorization. The environmental clearance process is also assumed to commence in the planning and permitting phase of the project.

## CAPITAL WORKPAPER

WORKPAPER TITLE Summary of Moreno-Whitewater Pipeline	FERC ACCT. 367
WITNESS David Buczkowski	IN SERVICE DATE 12/31/2019

PROJECT COST (\$000,000 IN 2013\$)	2014	2015	2016	2017	2018	2019	2020 - 2039	Total
DIRECT LABOR	0.6	0.7	0.9	1.0	1.1	1.0	0.1	5.4
DIRECT NON-LABOR	1.7	3.7	2.3	14.1	131.0	27.3	0.5	180.6
TOTAL DIRECT CAPITAL	2.4	4.4	3.2	15.1	132.2	28.3	0.5	186.1

### Project Description

The Moreno-Whitewater pipeline is a new 36" diameter pipeline that originates at SoCalGas' Moreno Valley PLS and traverses approximately 31 miles eastward, terminating at SoCalGas' Whitewater PLS.

### Forecast Methodology

SoCalGas and SDG&E developed direct cost estimates to implement the above scope of work, including costs associated with project management, engineering and design, environmental permitting, land acquisition, material and equipment procurement, and construction.

The estimated project costs in this application include contingencies to account for uncertainty and variability associated with a cost estimate and un-foreseeable elements of cost within the defined project scope. To calculate contingency, we analyzed each cost component, considered the risks related to the component that fall within the defined project scope, the impact the risk would have on the project if it occurs, and established a contingency percentage.

The costs for each area are summarized below, shown in millions of 2013 dollars.

### **Moreno-Whitewater Pipeline - Material**

PROJECT COST (\$000,000 IN 2013\$)	2014	2015	2016	2017	2018	2019	2020 - 2039	Total
DIRECT LABOR	-	-	-	-	-	-	-	-
DIRECT NON-LABOR	-	-	-	-	43.1	-	-	43.1
TOTAL DIRECT CAPITAL	-	-	-	-	43.1	-	-	43.1

### **Moreno-Whitewater Pipeline - Construction**

PROJECT COST (\$000,000 IN 2013\$)	2014	2015	2016	2017	2018	2019	2020 - 2039	Total
DIRECT LABOR	-	-	-	-	-	-	-	-
DIRECT NON-LABOR	-	-	-	-	76.9	18.4	-	95.2
TOTAL DIRECT CAPITAL	-	-	-	-	76.9	18.4	-	95.2

## CAPITAL WORKPAPER

<b>WORKPAPER TITLE</b> Summary of Moreno-Whitewater Pipeline	<b>FERC ACCT.</b> 367
<b>WITNESS</b> David Buczkowski	<b>IN SERVICE DATE</b> 12/31/2019

### Moreno-Whitewater Pipeline - 3rd Party Environmental Survey/Permitting/ Monitoring

PROJECT COST (\$000,000 IN 2013\$)	2014	2015	2016	2017	2018	2019	2020 - 2039	Total
DIRECT LABOR	-	-	-	-	-	-	-	-
DIRECT NON-LABOR	0.5	1.5	0.1	1.0	1.5	1.4	0.5	6.4
TOTAL DIRECT CAPITAL	0.5	1.5	0.1	1.0	1.5	1.4	0.5	6.4

### Moreno-Whitewater - Land & ROW Acquisition

PROJECT COST (\$000,000 IN 2013\$)	2014	2015	2016	2017	2018	2019	2020 - 2039	Total
DIRECT LABOR	-	-	-	-	-	-	-	-
DIRECT NON-LABOR	-	-	0.5	11.1	4.1	0.6	-	16.3
TOTAL DIRECT CAPITAL	-	-	0.5	11.1	4.1	0.6	-	16.3

### Moreno-Whitewater Pipeline - Pressure Limiting Stations

PROJECT COST (\$000,000 IN 2013\$)	2014	2015	2016	2017	2018	2019	2020 - 2039	Total
DIRECT LABOR	-	-	-	-	-	-	-	-
DIRECT NON-LABOR	-	-	-	0.1	3.2	2.5	-	5.8
TOTAL DIRECT CAPITAL	-	-	-	0.1	3.2	2.5	-	5.8

### Moreno-Whitewater Pipeline - Company Labor

PROJECT COST (\$000,000 IN 2013\$)	2014	2015	2016	2017	2018	2019	2020 - 2039	Total
DIRECT LABOR	0.6	0.7	0.9	1.0	1.1	1.0	0.1	5.4
DIRECT NON-LABOR	-	-	-	-	-	-	-	-
TOTAL DIRECT CAPITAL	0.6	0.7	0.9	1.0	1.1	1.0	0.1	5.4

### Moreno-Whitewater Pipeline - Other Capital Costs

PROJECT COST (\$000,000 IN 2013\$)	2014	2015	2016	2017	2018	2019	2020 - 2039	Total
DIRECT LABOR	-	-	-	-	-	-	-	-
DIRECT NON-LABOR	1.2	2.2	1.8	1.9	2.3	4.4	-	13.7
TOTAL DIRECT CAPITAL	1.2	2.2	1.8	1.9	2.3	4.4	-	13.7

# CAPITAL WORKPAPER

<b>WORKPAPER TITLE</b> Summary of Moreno-Whitewater Pipeline	<b>FERC ACCT.</b> 367
<b>WITNESS</b> David Buczkowski	<b>IN SERVICE DATE</b> 12/31/2019

## Schedule

SoCalGas and SDG&E estimate that it will take approximately six years to permit, engineer, design, procure, construct and place the new assets in service. In order to develop this project as quickly as possible, SoCalGas and SDG&E plan on initiating planning, engineering, design, and permitting work in advance of CPUC authorization. The environmental clearance process is also assumed to commence in the planning and permitting phase of the project.

Since the environmental clearance process has the potential to impact the overall project scope, it is assumed that material procurement (including long lead time pipe and valves), land and right-of-way acquisition, and awarding of major construction contracts will occur after SoCalGas and SDG&E receive the final environmental clearance for the project. It is estimated that detailed engineering and design, procurement, and construction for the project will be completed within roughly three years of receiving the final environmental clearances.

Costs in the years 2020 through 2039 are for post-construction environmental monitoring that will occur after the assets are placed in service.

## CAPITAL WORKPAPER

<b>WORKPAPER TITLE</b> Moreno-Whitewater Pipeline - Material	<b>FERC ACCT.</b> 367
<b>WITNESS</b> David Buczkowski	<b>IN SERVICE DATE</b> 12/31/2019

PROJECT COST (\$000,000 IN 2013\$)	2014	2015	2016	2017	2018	2019	Total
DIRECT LABOR	-	-	-	-	-	-	-
DIRECT NON-LABOR	-	-	-	-	43.1	-	43.1
TOTAL DIRECT CAPITAL	-	-	-	-	43.1	-	43.1

### Project Description

The Moreno-Whitewater pipeline is a new 36" diameter pipeline that originates at SoCalGas' Moreno Valley PLS and traverses approximately 31 miles eastward, terminating at SoCalGas' Whitewater PLS.

Pipeline cost estimates are based on a 36" pipe diameter, 0.625" wall thickness, and API 5L X70 pipe grade. All pipeline bends and fittings are sized such that they will allow passage of commonly available in-line inspection (ILI) tools. Main line valves installed as part of this project will be capable of operating in automatic shut-off and remote control modes.

### Forecast Methodology

SoCalGas and SDG&E, supported by TRC, consulted with vendors to determine current material costs for pipe and valves. Input received represents budgetary pricing estimates. No firm quotations for materials were obtained.

Cost Element	Cost Estimate			
	Labor	Non Labor	Contingency % Applied	Total
Pipe & Coating	-	29,869,963	5%	31,363,461
Pipe Delivery	-	4,594,825	5%	4,824,566
Ells	-	600,000	5%	630,000
Valves	-	708,330	10%	779,163
Other Materials	-	1,765,000	5%	1,853,250
Freight (other than Pipe)	-	549,220	5%	576,681
Odorization	-	100,000	10%	110,000
Tax	-	2,964,896	1%	2,994,545
Total	-	41,152,235		43,131,667

### Schedule

The basis of this estimate is that material purchases will occur after final approval of environmental permits.

## CAPITAL WORKPAPER

<b>WORKPAPER TITLE</b> Moreno-Whitewater Pipeline - Construction	<b>FERC ACCT.</b> 367
<b>WITNESS</b> David Buczkowski	<b>IN SERVICE DATE</b> 12/31/2019

<b>PROJECT COST</b> <b>(\$000,000 IN 2013\$)</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>Total</b>
DIRECT LABOR	-	-	-	-	-	-	-
DIRECT NON-LABOR	-	-	-	-	76.9	18.4	95.2
TOTAL DIRECT CAPITAL	-	-	-	-	76.9	18.4	95.2

### Project Description

The Moreno-Whitewater pipeline is a new 36" diameter pipeline that originates at SoCalGas' Moreno Valley PLS and traverses approximately 31 miles eastward, terminating at SoCalGas' Whitewater PLS.

### Forecast Methodology

Estimates for the construction costs were received from two pipeline construction contractors. The estimates account for type of terrain traversed during construction and the effect of the terrain on such factors as type of construction methods employed and rate of construction progress. The superior of the two estimates in terms of overall cost and proposed execution, particularly in the more populated city areas, is incorporated into the construction direct costs. TRC provided anticipated construction management man hours and used a labor rate provided by knowledgeable and experienced SoCalGas personnel to develop the cost estimate for this activity.

<b>Cost Element</b>	<b>Cost Estimate</b>			
	<b>Labor</b>	<b>Non Labor</b>	<b>Contingency % Applied</b>	<b>Total</b>
Mobilization	-	250,000	10%	275,000
Unload –Stockpile Pipe	-	390,750	5%	410,288
Load Pipe – Haul to right-of-way	-	390,750	5%	410,288
County Paved Roads	-	23,750,000	5%	24,937,500
Narrow Right-of-Way	-	19,296,000	10%	21,225,600
Mountain Terrain	-	28,700,000	10%	31,570,000
Cross Country	-	2,250,000	5%	2,362,500
Conventional Bores	-	3,000,000	10%	3,300,000
HDD Bores	-	2,340,000	20%	2,808,000
Mainline Valves	-	1,350,000	5%	1,417,500
Launcher/receiver	-	120,000	0%	120,000
Caliper Survey	-	150,000	0%	150,000
X-Ray Services	-	756,000	10%	831,600
Hydro Testing and Drying	-	665,280	10%	731,808
Demobilization	-	150,000	0%	150,000
Construction Management	-	4,112,775	10%	4,524,053
<b>Total</b>	-	<b>87,671,555</b>		<b>95,224,136</b>

**CAPITAL WORKPAPER**

<b>WORKPAPER TITLE</b> Moreno-Whitewater Pipeline - Construction	<b>FERC ACCT.</b> 367
<b>WITNESS</b> David Buczkowski	<b>IN SERVICE DATE</b> 12/31/2019

**Schedule**

The basis of this estimate is that all major construction contracts will be awarded after receiving the final environmental clearances for the project.

## CAPITAL WORKPAPER

<b>WORKPAPER TITLE</b> Moreno-Whitewater Pipeline - 3rd Party Environmental Survey/Permitting/ Monitoring	<b>FERC ACCT.</b> 367
<b>WITNESS</b> David Buczkowski	<b>IN SERVICE DATE</b> 12/31/2019

PROJECT COST (\$000,000 IN 2013\$)	2014	2015	2016	2017	2018	2019	2020 - 2039	Total
DIRECT LABOR	-	-	-	-	-	-	-	-
DIRECT NON-LABOR	0.5	1.5	0.1	1.0	1.5	1.4	0.5	6.4
TOTAL DIRECT CAPITAL	0.5	1.5	0.1	1.0	1.5	1.4	0.5	6.4

### Project Description

The Moreno-Whitewater pipeline is a new 36" diameter pipeline that originates at SoCalGas' Moreno Valley PLS and traverses approximately 31 miles eastward, terminating at SoCalGas' Whitewater PLS.

### Forecast Methodology

It is assumed this project will be subject to the requirements of the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA) as well as discretionary permits from various federal, state and local agencies. The schedule, level of effort, and estimated costs focus on environmental permitting and related construction monitoring and compliance along with agency mitigation requirements. Staffing requirements and costs for each item were developed by SoCalGas.

Cost Element	Cost Estimate			
	Labor	Non Labor	Contingency % Applied	Total
Geotechnical Permitting Support	-	130,000	5%	136,500
Cultural and Paleontological Surveys	-	200,000	10%	220,000
Wetland and Stream Delineation	-	100,000	10%	110,000
Special-Status Species	-	100,000	10%	110,000
Rare Plant Surveys	-	100,000	10%	110,000
Water Resources	-	100,000	5%	105,000
Air Quality	-	75,000	10%	82,500
Soils, Geology and Hazardous Materials	-	25,000	20%	30,000
Environmental Clearance/Permit Process	-	1,100,000	5%	1,155,000
Preconstruction Surveys	-	500,000	5%	525,000
Mitigation Compliance	-	950,000	5%	997,500
Construction Monitoring	-	1,920,000	25%	2,400,000
Post-construction Mitigation and Monitoring	-	440,000	5%	462,000
<b>Total</b>	-	5,740,000		6,443,500

**CAPITAL WORKPAPER**

<b>WORKPAPER TITLE</b> Moreno-Whitewater Pipeline - 3rd Party Environmental Survey/Permitting/ Monitoring	<b>FERC ACCT.</b> 367
<b>WITNESS</b> David Buczkowski	<b>IN SERVICE DATE</b> 12/31/2019

**Schedule**

Costs in the years 2020 through 2039 are for post-construction environmental monitoring that will occur after the assets are placed in service.

## CAPITAL WORKPAPER

WORKPAPER TITLE Moreno-Whitewater - Land & ROW Acquisition	FERC ACCT. 367
WITNESS David Buczkowski	IN SERVICE DATE 12/31/2019

PROJECT COST (\$000,000 IN 2013\$)	2014	2015	2016	2017	2018	2019	Total
DIRECT LABOR	-	-	-	-	-	-	-
DIRECT NON-LABOR	-	-	0.5	11.1	4.1	0.6	16.3
TOTAL DIRECT CAPITAL	-	-	0.5	11.1	4.1	0.6	16.3

### Project Description

The Moreno-Whitewater pipeline is a new 36" diameter pipeline that originates at SoCalGas' Moreno Valley PLS and traverses approximately 31 miles eastward, terminating at SoCalGas' Whitewater PLS.

### Forecast Methodology

SoCalGas and TRC obtained cost information to estimate land values throughout the route from various publicly available sources. Land values ranged from about \$30,000 per acre in certain remote areas to \$120,000 per acre in the vicinity of residential developments. The easement was valued using 50% of the land surface value. These are one-time payments made during the acquisition process. It is estimated this new pipeline will require approximately 41 acres of permanent easements. Temporary work space was valued using 20% of the land surface value. These are also one-time payments made during the acquisition process. It is estimated that approximately 194 acres of temporary work space will be needed.

Cost Element	Cost Estimate			
	Labor	Non Labor	Contingency % Applied	Total
3rd Party Labor - Property Acquisition	-	726,150	30%	943,995
3rd Party Labor - Construction Support	-	951,125	10%	1,046,238
3rd Party Labor - Project Close-out	-	124,000	0%	124,000
Property Acquisition - Permanent Easements	-	9,502,000	30%	12,352,600
Property Acquisition - Temporary Easements	-	1,543,000	20%	1,851,600
Total	-	12,846,275		16,318,433

### Schedule

The basis of this estimate is that procurement of land and right-of-way will occur after receiving the final environmental clearances for the project.

## CAPITAL WORKPAPER

<b>WORKPAPER TITLE</b> Moreno-Whitewater - Pressure Limiting Stations	<b>FERC ACCT.</b> 367
<b>WITNESS</b> David Buczkowski	<b>IN SERVICE DATE</b> 12/31/2019

PROJECT COST (\$000,000 IN 2013\$)	2014	2015	2016	2017	2018	2019	Total
DIRECT LABOR	-	-	-	-	-	-	-
DIRECT NON-LABOR	-	-	-	0.1	3.2	2.5	5.8
TOTAL DIRECT CAPITAL	-	-	-	0.1	3.2	2.5	5.8

### Project Description

Three new pressure limiting installations are located at existing pressure limiting stations at Whitewater, Shaver Summit, and Desert Center Compressor Station. The additional installations will be used to provide pressure control to flowing gas volumes from the Moreno-Whitewater Pipeline into the other lines in the stations.

### Forecast Methodology

SoCalGas and SDG&E developed direct cost estimates for the stations, including costs associated with surveys, material and equipment procurement, and construction.

Cost Element	Cost Estimate			
	Labor	Non Labor	Contingency % Applied	Total
Survey	-	38,400	10%	42,240
Material Costs	-	2,081,000	15%	2,393,150
SCADA	-	60,000	5%	63,000
Construction Labor	-	2,310,000	10%	2,541,000
Engineering	-	235,800	5%	247,590
Construction Management	-	135,300	10%	148,830
As-built	-	90,000	0%	90,000
Tax	-	187,300	1%	189,173
Freight	-	45,000	15%	51,750
Total	-	5,182,800		5,766,733

### Schedule

The basis of this estimate is that all material procurement and major construction activities will occur after receiving the final environmental clearances for the project.

## CAPITAL WORKPAPER

<b>WORKPAPER TITLE</b> Moreno-Whitewater Pipeline - Company Labor	<b>FERC ACCT.</b> 367
<b>WITNESS</b> David Buczkowski	<b>IN SERVICE DATE</b> 12/31/2019

PROJECT COST (\$000,000 IN 2013\$)	2014	2015	2016	2017	2018	2019	2020 - 2039	Total
DIRECT LABOR	0.6	0.7	0.9	1.0	1.1	1.0	0.1	5.4
DIRECT NON-LABOR	-	-	-	-	-	-	-	-
TOTAL DIRECT CAPITAL	0.6	0.7	0.9	1.0	1.1	1.0	0.1	5.4

### Project Description

The Moreno-Whitewater pipeline is a new 36" diameter pipeline that originates at SoCalGas' Moreno Valley PLS and traverses approximately 31 miles eastward, terminating at SoCalGas' Whitewater PLS.

### Forecast Methodology

SoCalGas will use company resources to perform various functions over the course of the project. In particular, SoCalGas will be responsible for overall project and construction management, environmental management, project controls, and various other support functions. All 3rd party contractor and consultant activity will be overseen by company resources.

Cost Element	Cost Estimate			
	Labor	Non Labor	Contingency % Applied	Total
Construction Management	681,570	-	8%	736,096
Operations Support	416,667	-	8%	450,000
Environmental Services	477,000	-	8%	515,160
Land and ROW	312,500	-	8%	337,500
Public Affairs	260,417	-	8%	281,250
Engineering	639,903	-	8%	691,096
Project Management	1,679,167	-	8%	1,813,500
Supply Management	229,167	-	8%	247,500
Project Controls	333,333	-	8%	360,000
<b>Total</b>	<b>5,029,723</b>	<b>-</b>		<b>5,432,101</b>

### Schedule

SoCalGas developed a preliminary staffing plan for the functions that will be supporting the project.

## CAPITAL WORKPAPER

<b>WORKPAPER TITLE</b> Moreno to Whitewater - Other Capital Costs	<b>FERC ACCT.</b> 367
<b>WITNESS</b> David Buczkowski	<b>IN SERVICE DATE</b> 12/31/2019

PROJECT COST (\$000,000 IN 2013\$)	2014	2015	2016	2017	2018	2019	Total
DIRECT LABOR	-	-	-	-	-	-	-
DIRECT NON-LABOR	1.2	2.2	1.8	1.9	2.3	4.4	13.7
TOTAL DIRECT CAPITAL	1.2	2.2	1.8	1.9	2.3	4.4	13.7

### Project Description

The Moreno-Whitewater pipeline is a new 36" diameter pipeline that originates at SoCalGas' Moreno Valley PLS and traverses approximately 31 miles eastward, terminating at SoCalGas' Whitewater PLS.

### Forecast Methodology

SoCalGas and SDG&E developed direct cost estimates for these other elements of the project scope.

Cost Element	Cost Estimate			
	Labor	Non Labor	Contingency % Applied	Total
Legal Services	-	2,850,000	5%	2,992,500
Public Relations	-	750,000	0%	750,000
Geotechnical Investigation	-	172,635	20%	207,162
Survey	-	1,617,500	10%	1,779,250
Ministerial Permits	-	450,000	0%	450,000
Engineering	-	3,509,000	5%	3,684,450
SCADA	-	600,000	5%	630,000
As-built	-	400,000	0%	400,000
ROW Intrusion Monitoring	-	2,799,000	0%	2,799,000
Methane Detection	-	44,150	0%	44,150
Total	-	13,192,285		13,736,512

### Schedule

SoCalGas and SDG&E estimate that it will take approximately six years to permit, engineer, design, procure, construct and place the new assets in service. In order to develop this project as quickly as possible, SoCalGas and SDG&E plan on initiating planning, engineering, design, and permitting work in advance of CPUC authorization. The environmental clearance process is assumed to commence in the planning and permitting phase of the project.

## OPERATIONS AND MAINTENANCE WORKPAPER

<b>WORKPAPER TITLE</b> Project O&M Costs	<b>FERC ACCT.</b> 850
<b>WITNESS</b> David Buczkowski	

PROJECT COST (\$000,000 IN 2013\$)	2014	2015	2016	2017	2018	2019	Total
DIRECT LABOR	-	-	-	-	-	-	-
DIRECT NON-LABOR	0.5	0.3	0.3	0.3	0.0	0.0	1.5
TOTAL DIRECT O&M	0.5	0.3	0.3	0.3	0.0	0.0	1.5

### Project Description

Expenses are anticipated to be incurred during the project years, primarily for office space and other office related costs. The O&M cost estimate includes office space for the project team, including company personnel and key consultants.

### Forecast Methodology

Annual rental and other office related costs are based on 25% of floor in a Los Angeles high rise office building.

Cost Element	Cost Estimate		
	Labor	Non Labor	Total
Rent	-	147,000	147,000
Operating Expense	-	87,000	87,000
Parking	-	32,600	32,600
Janitorial	-	6,800	6,800
Extra HVAC	-	11,600	11,600
Total	-	285,000	285,000

Additional costs for office supplies are calculated at \$5,000 per company and contract employee occupying the floor in year one and \$2,000 per company employee each subsequent year.

Cost Element	2014	2015	2016	2017	2018	2019
# Company FTE's	14	15	17	21	24	20
# Contract Employees	25	25	25	25	25	25
Cost/FTE	5,000	2,000	2,000	2,000	2,000	2,000
Office	193,750	30,500	34,500	42,000	47,000	39,000

## OPERATIONS AND MAINTENANCE WORKPAPER

<b>WORKPAPER TITLE</b> Project O&M Costs	<b>FERC ACCT.</b> 850
<b>WITNESS</b> David Buczkowski	

PROJECT COST (\$000,000 IN 2013\$)	2014	2015	2016	2017	2018	2019	Total
Percentage of Total Costs	31%	21%	21%	21%	3%	3%	
Labor	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Non-Labor	\$ 0.5	\$ 0.3	\$ 0.3	\$ 0.3	\$ 0.0	\$ 0.0	\$ 1.5
Total	\$ 0.5	\$ 0.3	\$ 0.3	\$ 0.3	\$ 0.0	\$ 0.0	\$ 1.5

### Schedule

O&M costs for rental of office space are only assumed to be incurred in the years preceding construction.