

UPDATED
DIRECT COST and SCHEDULE WORKPAPERS
Witness: D. Buczkowski
12-Nov-14
North-South Project

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**CAPITAL WORKPAPER
UPDATED**

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

PROJECT COST (\$000,000 IN 2014\$)	2014	2015	2016	2017	2018	2019	2020 - 2039	Total
DIRECT LABOR	0.9	2.3	3.0	3.9	5.2	5.1	1.2	21.6
DIRECT NON-LABOR	2.3	8.8	18.9	166.2	130.8	270.5	2.2	599.7
TOTAL DIRECT CAPITAL	3.2	11.1	21.9	170.1	136.0	275.6	3.4	621.3

Project Description

The North - South Project scope includes installation of approximately 63 miles of new pipeline from Adelanto to Moreno and 30,000 horsepower of compression at Adelanto Compressor Station. SoCalGas utilized the assistance of two third party firms, URS and ARB Construction, specializing in engineering services and construction management to support development of the project scope and cost estimates.

Forecast Methodology

SoCalGas 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.

Contingencies were assigned to account for uncertainty and variability associated with the cost estimate and un-foreseeable elements of cost within the defined project scope. Risks specific to the North-South Project costs were contemplated when determining a reasonable contingency to include in the cost estimate.

A contingency as a percentage of base costs at the project level was assigned for the compressor station estimate. The contingency amount of 15% is based on the project team and other subject matter expert judgment.

The costs for each area are summarized below, shown in millions of 2014 dollars.

Adelanto-Moreno Pipeline

PROJECT COST (\$000,000 IN 2014\$)	2014	2015	2016	2017	2018	2019	2020 - 2039	Total
DIRECT LABOR	0.7	2.0	2.4	3.0	3.6	4.1	1.2	17.0
DIRECT NON-LABOR	1.9	7.9	8.6	108.7	94.7	243.5	2.2	467.5
TOTAL DIRECT CAPITAL	2.6	9.9	11.0	111.7	98.3	247.6	3.4	484.5

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

Adelanto Compressor Station

PROJECT COST (\$000,000 IN 2014\$)	2014	2015	2016	2017	2018	2019	2020 - 2039	Total
DIRECT LABOR	0.2	0.3	0.6	0.9	1.6	1.0	-	4.6
DIRECT NON-LABOR	0.4	0.9	10.3	57.5	36.1	27.0	-	132.2
TOTAL DIRECT CAPITAL	0.6	1.2	10.9	58.4	37.7	28.0	-	136.8

Schedule

SoCalGas estimates 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 has initiated planning, engineering, design, and permitting work in advance of CPUC authorization. The environmental review process will commence as part of the permitting phase of the project.

Since the environmental review 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 receives 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 certification.

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
UPDATED**

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

PROJECT COST (\$000,000 IN 2014\$)	2014	2015	2016	2017	2018	2019	2020 - 2039	Total
DIRECT LABOR	0.7	2.0	2.4	3.0	3.6	4.1	1.2	17.0
DIRECT NON-LABOR	1.9	7.9	8.6	108.7	94.7	243.5	2.2	467.5
TOTAL DIRECT CAPITAL	2.6	9.9	11.0	111.7	98.3	247.6	3.4	484.5

Project Description

The Adelanto-Moreno Pipeline is a new 36" diameter pipeline that originates at SoCalGas' Adelanto Compressor Station and stretches approximately 63 miles in a southeasterly direction, terminating at the Moreno Valley Pressure Limiting Station (PLS).

Forecast Methodology

SoCalGas 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.

Contingencies were assigned to account for uncertainty and variability associated with the cost estimate and un-foreseeable elements of cost within the defined project scope. Risks specific to the North-South Project costs were contemplated when determining a reasonable contingency to include in the cost estimate.

The Adelanto to Moreno Pipeline contingency was calculated by analyzing 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 2014 dollars.

Adelanto-Moreno Pipeline - Material

PROJECT COST (\$000,000 IN 2014\$)	2014	2015	2016	2017	2018	2019	Total
DIRECT LABOR	-	-	-	-	-	-	-
DIRECT NON-LABOR	-	-	-	79.5	13.3	-	92.8
TOTAL DIRECT CAPITAL	-	-	-	79.5	13.3	-	92.8

Adelanto-Moreno Pipeline - Construction

PROJECT COST (\$000,000 IN 2014\$)	2014	2015	2016	2017	2018	2019	Total
DIRECT LABOR	-	-	-	-	-	-	-
DIRECT NON-LABOR	-	-	-	-	62.7	207.7	270.4
TOTAL DIRECT CAPITAL	-	-	-	-	62.7	207.7	270.4

**CAPITAL WORKPAPER
UPDATED**

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

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

PROJECT COST (\$000,000 IN 2014\$)	2014	2015	2016	2017	2018	2019	2020 - 2039	Total
DIRECT LABOR	-	-	-	-	-	-	-	-
DIRECT NON-LABOR	0.9	4.1	5.0	1.4	7.3	17.5	1.9	38.1
TOTAL DIRECT CAPITAL	0.9	4.1	5.0	1.4	7.3	17.5	1.9	38.1

Adelanto-Moreno Pipeline - Land & ROW Acquisition

PROJECT COST (\$000,000 IN 2014\$)	2014	2015	2016	2017	2018	2019	2020 - 2039	Total
DIRECT LABOR	-	-	-	-	-	-	-	-
DIRECT NON-LABOR	-	1.0	0.4	10.3	5.2	0.6	0.3	17.8
TOTAL DIRECT CAPITAL	-	1.0	0.4	10.3	5.2	0.6	0.3	17.8

Adelanto-Moreno Pipeline - Pressure Limiting Stations

PROJECT COST (\$000,000 IN 2014\$)	2014	2015	2016	2017	2018	2019	2020 - 2039	Total
DIRECT LABOR	-	-	-	-	-	-	-	-
DIRECT NON-LABOR	-	0.1	0.1	8.4	0.4	3.7	-	12.7
TOTAL DIRECT CAPITAL	-	0.1	0.1	8.4	0.4	3.7	-	12.7

Adelanto-Moreno Pipeline - Company Labor

PROJECT COST (\$000,000 IN 2014\$)	2014	2015	2016	2017	2018	2019	2020 - 2039	Total
DIRECT LABOR	0.7	2.0	2.4	3.0	3.6	4.1	1.2	17.0
DIRECT NON-LABOR	-	-	-	-	-	-	-	-
TOTAL DIRECT CAPITAL	0.7	2.0	2.4	3.0	3.6	4.1	1.2	17.0

Adelanto-Moreno Pipeline - Other Capital Costs

PROJECT COST (\$000,000 IN 2014\$)	2014	2015	2016	2017	2018	2019	2020 - 2039	Total
DIRECT LABOR	-	-	-	-	-	-	-	-
DIRECT NON-LABOR	1.0	2.7	3.1	9.1	5.8	14.0	-	35.7
TOTAL DIRECT CAPITAL	1.0	2.7	3.1	9.1	5.8	14.0	-	35.7

**CAPITAL WORKPAPER
UPDATED**

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

Schedule

SoCalGas estimates 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 has initiated planning, engineering, design, and permitting work in advance of CPUC authorization. The environmental review process will commence as part of the permitting phase of the project.

Since the environmental review 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 receives 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 certification.

Labor costs in 2020 are for project reconciliation and close out. Post-construction environmental monitoring will occur after the assets are placed in service and costs are planned in the years 2020 through 2039.

**CAPITAL WORKPAPER
UPDATED**

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

PROJECT COST (\$000,000 IN 2014\$)	2014	2015	2016	2017	2018	2019	Total
DIRECT LABOR	-	-	-	-	-	-	-
DIRECT NON-LABOR	-	-	-	79.5	13.3	-	92.8
TOTAL DIRECT CAPITAL	-	-	-	79.5	13.3	-	92.8

Project Description

The Adelanto-Moreno pipeline is a new 36" diameter pipeline that originates at SoCalGas' Adelanto Compressor Station and stretches approximately 63 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, supported by ARB Construction, 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	-	56,031,087	5%	58,832,642
Pipe Delivery	-	10,288,855	5%	10,803,297
Ells	-	4,592,100	5%	4,821,705
Valves	-	3,448,810	10%	3,793,691
Other Materials	-	4,822,623	5%	5,063,754
Freight (other than Pipe)	-	1,144,256	5%	1,201,469
Odorization	-	200,000	10%	220,000
Filter / Separator For Pipeline	-	1,350,000	5%	1,417,500
Tax	-	6,538,043	1%	6,603,423
Total Materials	-	88,415,774		92,757,481

Schedule

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

**CAPITAL WORKPAPER
UPDATED**

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

PROJECT COST (\$000,000 IN 2014\$)	2014	2015	2016	2017	2018	2019	Total
DIRECT LABOR	-	-	-	-	-	-	-
DIRECT NON-LABOR	-	-	-	-	62.7	207.7	270.4
TOTAL DIRECT CAPITAL	-	-	-	-	62.7	207.7	270.4

Project Description

The Adelanto-Moreno pipeline is a new 36" diameter pipeline that originates at SoCalGas' Adelanto Compressor Station and stretches approximately 63 miles in a southeasterly direction, terminating at the Moreno Valley PLS.

Forecast Methodology

Estimates for the construction costs were received from ARB Construction. The estimate 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. This estimate is incorporated into the construction direct costs. SoCalGas with input from ARB developed anticipated construction management / inspection hours and the rates were provided by knowledgeable and experienced SoCalGas personnel in order to develop the cost estimate for these activities.

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

Cost Element	Cost Estimate			
	Labor	Non Labor	Contingency % Applied	Total
Mobilization	-	500,000	5%	525,000
Unload –Stockpile Pipe	-	350,000	10%	385,000
Load Pipe – Haul to right-of-way	-	1,413,720	5%	1,484,406
Unpaved Rural Road	-	13,548,020	10%	14,902,822
Two lane Paved	-	32,683,600	20%	39,220,320
Low Roll	-	10,204,901	10%	11,225,391
Steep terrain	-	4,809,024	10%	5,289,926
Roll Chop Sidecut	-	13,551,504	10%	14,906,654
US 66 Paved	-	17,195,904	15%	19,775,290
Primary Paved Road	-	95,744,880	20%	114,893,856
Additional footage, elevation gains -5%	-	5,089,392	5%	5,343,862
HDD Bores	-	1,495,000	30%	1,943,500
Silt Fence	-	1,346,400	5%	1,413,720
Tier 4 emissions equipment	-	8,000,000	5%	8,400,000
Restore ROW/Seed, Stabilize	-	807,840	25%	1,009,800
Temporary By=Pass Road on two lane	-	468,000	20%	561,600
Security Fencing	-	360,000	5%	378,000
Conventional Bores	-	5,335,000	25%	6,668,750
Mainline Valves	-	4,130,000	5%	4,336,500
Launcher/receiver	-	400,000	5%	420,000
Caliper Survey	-	50,000	5%	52,500
X-Ray Services		2,177,400	15%	2,504,010
Hydro Testing and Drying		2,085,000	20%	2,502,000
Casing Wax		1,050,000	10%	1,155,000
Demobilization		300,000	5%	315,000
Construction Management		9,799,276	10%	10,779,203
Total Construction		232,894,861		270,392,110

Schedule

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

**CAPITAL WORKPAPER
UPDATED**

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

PROJECT COST (\$000,000 IN 2014\$)	2014	2015	2016	2017	2018	2019	2020 - 2039	Total
DIRECT LABOR	-	-	-	-	-	-	-	-
DIRECT NON-LABOR	0.9	4.1	5.0	1.4	7.3	17.5	1.9	38.1
TOTAL DIRECT CAPITAL	0.9	4.1	5.0	1.4	7.3	17.5	1.9	38.1

Project Description

The Adelanto-Moreno pipeline is a new 36" diameter pipeline that originates at SoCalGas' Adelanto Compressor Station and stretches approximately 63 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 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 in conjunction with environmental consultants.

Cost Element	Cost Estimate			
	Labor	Non Labor	Contingency % Applied	Total
Data Collection/Permitting Support	-	10,000	5%	10,500
Envir. Data Collection and Impact Analysis	-	1,154,773	10%	1,270,250
Environmental Clearance/Permit Process	-	7,287,718	20%	8,745,262
Preconstruction Surveys	-	1,300,000	5%	1,365,000
Mitigation Compliance	-	13,000,000	25%	16,250,000
Construction Monitoring	-	8,332,650	10%	9,165,915
Post-construction Mitigation and Monitoring	-	1,180,000	10%	1,298,000
Total Environmental	-	32,265,141		38,104,927

**CAPITAL WORKPAPER
UPDATED**

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

Schedule

Labor costs in 2020 are for project reconciliation and close out. Post-construction environmental monitoring will occur after the assets are placed in service and costs are planned in the years 2020 through 2039.

**CAPITAL WORKPAPER
UPDATED**

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

PROJECT COST (\$000,000 IN 2014\$)	2014	2015	2016	2017	2018	2019	2020- 2039	Total
DIRECT LABOR	-	-	-	-	-	-	-	-
DIRECT NON-LABOR	-	1.0	0.4	10.3	5.2	0.6	0.3	17.8
TOTAL DIRECT CAPITAL	-	1.0	0.4	10.3	5.2	0.6	0.3	17.8

Project Description

The Adelanto-Moreno pipeline is a new 36" diameter pipeline that originates at SoCalGas' Adelanto Compressor Station and stretches approximately 63 miles in a southeasterly direction, terminating at the Moreno Valley PLS.

Forecast Methodology

Cost basis for private easements – Comparable sales data to estimate land costs of property being acquired along the route was obtained from available market and public records. Land values ranged from \$125,000 per acre in remote areas where the predominant land use is undeveloped vacant land to \$385,000 per acre in areas where the predominant land use consists of residential developments. This is a one-time cost during the acquisition process.

Cost basis for temporary working space – temporary work space estimates use the same range of estimated land values based on predominant land use along the route for private easements. Temporary work strip during construction was assumed to be an additional 50 feet adjacent to the pipeline right of way in dirt areas where available and 50 feet along public right of way where vacant land is available. It was estimated the project will require approximately 213 acres of temporary work space. This is also a one-time cost during the acquisition process.

Cost Element	Cost Estimate			
	Labor	Non Labor	Contingency % Applied	Total
3rd Party Labor - Property Acquisition	-	2,775,354	25%	3,469,193
3rd Party Labor - Construction Support	-	836,208	10%	919,829
3rd Party Labor - Project Close-out	-	195,401	10%	214,941
Property Acquisition - Permanent Easements	-	7,979,065	30%	10,372,785
Property Acquisition - Temporary Easements	-	2,201,943	30%	2,862,526
Total Land & ROW Acquisition	-	13,987,972		17,839,274

Schedule

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

**CAPITAL WORKPAPER
UPDATED**

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

PROJECT COST (\$000,000 IN 2014\$)	2014	2015	2016	2017	2018	2019	Total
DIRECT LABOR	-	-	-	-	-	-	-
DIRECT NON-LABOR	-	0.1	0.1	8.4	0.4	3.7	12.7
TOTAL DIRECT CAPITAL	-	0.1	0.1	8.4	0.4	3.7	12.7

Project Description

The Moreno Valley PLS will allow gas from the new Adelanto to Moreno Pipeline to flow into any of the existing lines at the Moreno Valley PLS (Lines 1027, 1028, 2000, 2005, 5000, and 6900).

PLS at Whitewater, Shaver Summit and Desert Center are required to flow gas east from Moreno:

The PLS at Whitewater will provide pressure control from existing Line 2051/5000 into Lines 2000 and 2001.

The PLS at Desert Center Station will provide pressure control from existing Line 5000 (L-5000) into Lines 1030 and 2000.

The PLS at Shaver Summit Station will provide pressure control from existing L-5000 into Lines 2000 and 2001.

Forecast Methodology

SoCalGas developed direct cost estimates to upgrade the PLS's, including costs associated with surveys, material and equipment procurement, and construction.

Cost Element	Cost Estimate			
	Labor	Non Labor	Contingency % Applied	Total
Survey	-	63,280	10%	69,608
ROW Acquisition Land	-	16,790	10%	18,469
Material Costs	-	6,587,858	15%	7,576,037
SCADA	-	80,000	5%	84,000
Engineering	-	381,200	5%	400,260
Construction Management	-	213,300	5%	223,965
As-built	-	120,000	5%	126,000
Construction Labor	-	3,162,000	10%	3,478,200
Freight	-	65,000	15%	74,750
Tax	-	592,907	1%	598,836
Total PLS's		11,282,335		12,650,125

Schedule

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

**CAPITAL WORKPAPER
UPDATED**

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

PROJECT COST (\$000,000 IN 2014\$)	2014	2015	2016	2017	2018	2019	2020 - 2039	Total
DIRECT LABOR	0.7	2.0	2.4	3.0	3.6	4.1	1.2	17.0
DIRECT NON-LABOR	-	-	-	-	-	-	-	-
TOTAL DIRECT CAPITAL	0.7	2.0	2.4	3.0	3.6	4.1	1.2	17.0

Project Description

The Adelanto-Moreno pipeline is a new 36" diameter pipeline that originates at SoCalGas' Adelanto Compressor Station and stretches approximately 63 miles in a southeasterly direction, terminating at the Moreno Valley 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.

**CAPITAL WORKPAPER
UPDATED**

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

Cost Element	Cost Estimate			
	Labor	Non Labor	Contingency % Applied	Total
Project Management - Pipeline	3,437,500	-	8%	3,712,500
Procurement - Pipeline	750,000	-	8%	810,000
Public Relations	1,078,125	-	8%	1,164,375
Project Controls	1,367,188	-	8%	1,476,563
Right-of-Way	1,062,500	-	8%	1,147,500
Project Specialist	375,000	-	8%	405,000
Administrative Asst.	562,500	-	8%	607,500
Engineering - Pipeline	937,500	-	8%	1,012,500
Operations - Pipeline	1,375,000	-	8%	1,485,000
Construction Management - Pipeline	1,375,000	-	8%	1,485,000
ROW Intrusion Monitoring	229,240		8%	247,579
Methane Detection	24,998		8%	26,998
Geotechnical Permitting Support	225,000		8%	243,000
Cultural and Paleontological Surveys	260,000		8%	280,800
Wetland and Stream Delineation	260,000		8%	280,800
Special-Status Species	260,000		8%	280,800
Rare Plant Surveys	260,000		8%	280,800
Water Resources	260,000		8%	280,800
Air Quality	260,000		8%	280,800
Soils, Geology and Hazardous Materials	260,000		8%	280,800
Environmental Clearance/Permit Process	440,000		8%	475,200
Preconstruction Surveys	200,000		8%	216,000
Construction Monitoring	300,000		8%	324,000
Post-const Mitigation and Monitoring	125,000		8%	135,000
Total Adelanto - Moreno Company Labor	15,684,550			16,939,314

Schedule

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

**CAPITAL WORKPAPER
UPDATED**

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

PROJECT COST (\$000,000 IN 2014\$)	2014	2015	2016	2017	2018	2019	Total
DIRECT LABOR	-	-	-	-	-	-	-
DIRECT NON-LABOR	1.0	2.7	3.1	9.1	5.8	14.0	35.7
TOTAL DIRECT CAPITAL	1.0	2.7	3.1	9.1	5.8	14.0	35.7

Project Description

The Adelanto-Moreno pipeline is a new 36” diameter pipeline that originates at SoCalGas’ Adelanto Compressor Station and stretches approximately 63 miles in a southeasterly direction, terminating at the Moreno Valley PLS.

Forecast Methodology

SoCalGas developed direct cost estimates for these other elements of the project scope.

Cost Element	Cost Estimate			
	Labor	Non Labor	Contingency % Applied	Total
Legal Services	-	7,620,150	5%	8,001,158
Public Relations	-	2,425,000	10%	2,667,500
Geotechnical Investigation	-	362,609	10%	398,870
Ministerial Permits	-	1,200,000	0%	1,200,000
Engineering	-	11,400,000	25%	14,250,000
SCADA	-	2,660,000	5%	2,793,000
ROW Intrusion Monitoring	-	5,800,000	0%	5,800,000
Methane Detection	-	104,000	0%	104,000
Company Expenses	-	514,600	8%	555,768
Total Other Capital Costs	-	32,086,359		35,770,296

Schedule

SoCalGas estimates 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 has initiated planning, engineering, design, and permitting work in advance of CPUC authorization. The environmental review process will commence as part of the permitting phase of the project.

**CAPITAL WORKPAPER
UPDATED**

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

PROJECT COST (\$000,000 IN 2014\$)	2014	2015	2016	2017	2018	2019	Total
DIRECT LABOR	0.2	0.3	0.6	0.9	1.6	1.0	4.6
DIRECT NON-LABOR	0.4	0.9	10.3	57.5	36.1	27.0	132.2
TOTAL DIRECT CAPITAL	0.6	1.2	10.9	58.4	37.7	28.0	136.8

Project Description

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

Forecast Methodology

SoCalGas contracted URS who 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. URS prepared cost estimates using several estimating tools including Aspen Capital Cost Estimator (ACCE), current published union labor rates, and URS added allowances for scope items not included in the ACCE.

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. A contingency as a percentage of base costs at the project level was assigned for the compressor station estimate. The contingency amount of 15% is based on the project team and other subject matter expert judgment.

The costs for each area are summarized below, shown in millions of 2014 dollars.

Adelanto Compressor Station - Material

PROJECT COST (\$000,000 IN 2014\$)	2014	2015	2016	2017	2018	2019	Total
DIRECT LABOR	-	-	-	-	-	-	-
DIRECT NON-LABOR	-	-	-	50.4	30.0	0.1	80.5
TOTAL DIRECT CAPITAL	-	-	-	50.4	30.0	0.1	80.5

Adelanto Compressor Station - Construction

PROJECT COST (\$000,000 IN 2014\$)	2014	2015	2016	2017	2018	2019	Total
DIRECT LABOR	-	-	-	-	-	-	-
DIRECT NON-LABOR	-	-	-	0.1	3.0	26.9	30.0
TOTAL DIRECT CAPITAL	-	-	-	0.1	3.0	26.9	30.0

**CAPITAL WORKPAPER
UPDATED**

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

Adelanto Compressor Station - Environmental Permitting / Emissions Offsets

PROJECT COST (\$000,000 IN 2014\$)	2014	2015	2016	2017	2018	2019	Total
DIRECT LABOR	-	-	-	-	-	-	-
DIRECT NON-LABOR	0.0	0.3	9.7	-	0.3	-	10.3
TOTAL DIRECT CAPITAL	0.0	0.3	9.7	-	0.3	-	10.3

Adelanto Compressor Station - Company Labor

PROJECT COST (\$000,000 IN 2014\$)	2014	2015	2016	2017	2018	2019	Total
DIRECT LABOR	0.2	0.3	0.6	0.9	1.6	1.0	4.6
DIRECT NON-LABOR	-	-	-	-	-	-	-
TOTAL DIRECT CAPITAL	0.2	0.3	0.6	0.9	1.6	1.0	4.6

Adelanto Compressor Station - Other Capital Costs

PROJECT COST (\$000,000 IN 2014\$)	2014	2015	2016	2017	2018	2019	Total
DIRECT LABOR	-	-	-	-	-	-	-
DIRECT NON-LABOR	0.4	0.6	0.6	7.0	2.8	-	11.4
TOTAL DIRECT CAPITAL	0.4	0.6	0.6	7.0	2.8	-	11.4

Schedule

SoCalGas estimates 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 has initiated planning, engineering, design, and permitting work in advance of CPUC authorization. The environmental review process will commence as part of the permitting phase of the project.

Since the environmental review 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 receives 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 certification.

**CAPITAL WORKPAPER
UPDATED**

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

PROJECT COST (\$000,000 IN 2014\$)	2014	2015	2016	2017	2018	2019	Total
DIRECT LABOR	-	-	-	-	-	-	-
DIRECT NON-LABOR	-	-	-	50.4	30.0	0.1	80.5
TOTAL DIRECT CAPITAL	-	-	-	50.4	30.0	0.1	80.5

Project Description

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

Forecast Methodology

SoCalGas and URS 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	-	31,596,634	15%	36,336,129
Buildings	-	3,932,000	15%	4,521,800
Gas Cooling	-	989,000	15%	1,137,350
Selective Catalytic Reduction System/Oxidation Catalyst	-	4,791,332	15%	5,510,032
Continuous Emissions Monitoring Systems	-	750,000	15%	862,500
Aqueous Unit (Ammonia)	-	3,500,000	15%	4,025,000
Major Piping, Fittings, and Valves	-	10,944,089	15%	12,585,702
Valves	-	-	15%	-
Major Electrical Equipment	-	2,904,219	15%	3,339,852
Concrete and Foundations	-	606,015	15%	696,917
Other Process Equipment	-	1,601,020	15%	1,841,173
Miscellaneous Equipment	-	415,800	15%	478,170
Vendor Reps	-	151,000	15%	173,650
Auxiliary Generator	-	2,000,000	15%	2,300,000
Tax	-	5,776,300	15%	6,642,745
Total	-	69,957,409		80,451,020

Schedule

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

**CAPITAL WORKPAPER
UPDATED**

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

PROJECT COST (\$000,000 IN 2014\$)	2014	2015	2016	2017	2018	2019	Total
DIRECT LABOR	-	-	-	-	-	-	-
DIRECT NON-LABOR	-	-	-	0.1	3.0	26.9	30.0
TOTAL DIRECT CAPITAL	-	-	-	0.1	3.0	26.9	30.0

Project Description

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

Forecast Methodology

SoCalGas and URS consulted with turbine manufacturers and other vendors to determine the construction costs for the compressor station. URS prepared cost estimates using several estimating tools including Aspen Capital Cost Estimator (ACCE), current published union labor rates, and URS added allowances for scope items not included in the ACCE. 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	-	23,792,000	15%	27,360,800
Construction Management	-	2,311,000	15%	2,657,650
Total	-	26,103,000		30,018,450

Schedule

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

**CAPITAL WORKPAPER
UPDATED**

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

PROJECT COST (\$000,000 IN 2014\$)	2014	2015	2016	2017	2018	2019	Total
DIRECT LABOR	-	-	-	-	-	-	-
DIRECT NON-LABOR	0.0	0.3	9.7	-	0.3	-	10.3
TOTAL DIRECT CAPITAL	0.0	0.3	9.7	-	0.3	-	10.3

Project Description

The Adelanto Compressor Station will be upgraded with approximately 30,000 horsepower of compression. This estimate assumes the 30,000 horsepower of compression is provided by four 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.

Cost Element	Cost Estimate			
	Labor	Non Labor	Contingency % Applied	Total
ERC's	-	6,993,700	15%	8,042,755
Data Collection/Permitting Support	-	-	15%	-
Envir. Data Collection, Screening & Analysis	-	149,428	15%	171,842
Envir. Clearance/Permit Process	-	1,477,409	15%	1,699,020
Preconstruction Surveys		52,500	15%	60,375
Mitigation Compliance		30,000	15%	34,500
Construction Monitoring		249,337	15%	286,737
Total	-	8,952,374		10,295,230

Schedule

The costs for the environmental review process will be incurred during the permitting phase of the project.

**CAPITAL WORKPAPER
UPDATED**

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

PROJECT COST (\$000,000 IN 2014\$)	2014	2015	2016	2017	2018	2019	Total
DIRECT LABOR	0.2	0.3	0.6	0.9	1.6	1.0	4.6
DIRECT NON-LABOR	-	-	-	-	-	-	-
TOTAL DIRECT CAPITAL	0.2	0.3	0.6	0.9	1.6	1.0	4.6

Project Description

The Adelanto Compressor Station will be upgraded with approximately 30,000 horsepower of compression. This estimate assumes the 30,000 horsepower of compression is provided by four 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.

Cost Element	Cost Estimate			
	Labor	Non Labor	Contingency % Applied	Total
Construction Management	656,250	-	8%	708,750
Operations Support	312,500	-	8%	337,500
Environmental Services	60,000	-	8%	64,800
Public Affairs	359,375	-	8%	388,125
Project Management	1,062,500	-	8%	1,147,500
Procurement	250,000	-	8%	270,000
Project Specialist	125,000		8%	135,000
Administrative Associate	187,500		8%	202,500
Engineering	781,250		8%	843,750
Project Controls	414,063	-	8%	447,188
Company Expenses	63,000	-	8%	68,040
Total	4,271,438	-		4,613,153

Schedule

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

**CAPITAL WORKPAPER
UPDATED**

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

PROJECT COST (\$000,000 IN 2014\$)	2014	2015	2016	2017	2018	2019	Total
DIRECT LABOR	-	-	-	-	-	-	0.0
DIRECT NON-LABOR	0.4	0.6	0.6	7.0	2.8	-	11.4
TOTAL DIRECT CAPITAL	0.4	0.6	0.6	7.0	2.8	-	11.4

Project Description

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

Forecast Methodology

SoCalGas 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	15%	230,000
Survey	-	355,000	15%	408,250
Ministerial Permits	-	100,000	15%	115,000
SCADA	-	350,000	15%	402,500
ROW Acquisition	-	100,000	15%	115,000
Maintenance Parts	-	321,000	15%	369,150
Legal		35,000	15%	40,250
Electrical Upgrades		250,000	15%	287,500
Engineering	-	2,908,000	15%	3,344,200
Freight	-	5,155,000	15%	5,928,250
As-built	-	150,000	15%	172,500
Total	-	9,924,000		11,412,600

Schedule

SoCalGas estimates 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 has initiated planning, engineering, design, and permitting work in advance of CPUC authorization. The environmental review process will commence as part of the permitting phase of the project.

**OPERATIONS AND MAINTENANCE WORKPAPER
UPDATED**

WORKPAPER TITLE Project O&M Costs	FERC ACCT. 850
WITNESS David Buczkowski	

PROJECT COST (\$000,000 IN 2014\$)	2014	2015	2016	2017	2018	2019	Total
DIRECT LABOR	-	-	-	-	-	-	-
DIRECT NON-LABOR	0.2	0.1	0.1	0.1	0.2	0.2	0.9
TOTAL DIRECT O&M	0.2	0.1	0.1	0.1	0.2	0.2	0.9

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
UPDATED**

WORKPAPER TITLE Project O&M Costs	FERC ACCT. 850
WITNESS David Buczkowski	

PROJECT COST (\$000,000 IN 2014\$)	2014	2015	2016	2017	2018	2019	Total
Percentage of Total Costs	22%	11%	11%	11%	22%	22%	
Labor	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Non-Labor	\$ 0.2	\$ 0.1	\$ 0.1	\$ 0.1	\$ 0.2	\$ 0.2	\$ 0.9
Total	\$ 0.2	\$ 0.1	\$ 0.1	\$ 0.1	\$ 0.2	\$ 0.2	\$ 0.9

Schedule

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