

## DIRECT COST and SCHEDULE WORKPAPERS

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### PIPELINE SAFETY & RELIABILITY PROJECT

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Capital		
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<b>WORKPAPER TITLE</b>	<b>IN SERVICE DATE</b>
Summary of The Proposed Project (PSRP) - Total Direct Cost by Year	12/31/2020

PROJECT COST (\$000,000 IN 2015\$)	2014 Actuals	2015	2016	2017	2018	2019	2020	2021	2022	Total
Proposed L-3602	3.3	6.8	5.9	14.7	95.4	108.3	187.6	4.8	0.0	426.8
L-1600 Derate	0.0	0.0	0.0	0.8	2.9	0.4	8.6	2.2	0.1	15.1
<b>TOTAL DIRECT CAPITAL</b>	<b>3.3</b>	<b>6.8</b>	<b>5.9</b>	<b>15.6</b>	<b>98.3</b>	<b>108.8</b>	<b>196.2</b>	<b>7.0</b>	<b>0.1</b>	<b>441.9</b>

#### **Project Description**

The Pipeline Safety & Reliability Project (PSRP) scope includes the design and construction of approximately 47 miles of new natural gas pipeline from Rainbow Pressure Limiting Station to Marine Corp Air Station (MCAS) Miramar. SDG&E and SoCalGas utilized the assistance of third party firms, including SPEC Services, ARB Construction, Clark Land Services and Insignia Environmental, specializing in engineering services, pipeline construction, land services, and environmental to support development of the project scope and cost estimates.

The Pipeline Safety & Reliability Project (PSRP) scope includes the design and construction of approximately 47 miles of new natural gas pipeline from Rainbow Pressure Limiting Station to Marine Corp Air Station (MCAS) Miramar and the lowering of the Maximum Operating Pressure (MAOP) of existing Line 1600 (Line 1600 De-rating). The Line 1600 De-rating will require the modification of the distribution system by installing/replacing new 6-inch and 8-inch pipelines. SDG&E and SoCalGas utilized the assistance of third party firms, including SPEC Services, ARB Construction, Clark Land Services and Insignia Environmental, specializing in engineering services, pipeline construction, land services, and environmental to support development of the project scope and cost estimates.

The scope includes abandonment of 10 Regulator Station on L-1600

WORKPAPER TITLE	IN SERVICE DATE
Summary of Proposed L-3602 Construction Project - Total Direct Cost by Year	12/31/2020

Proposed L-3602									FERC ACCT 367
PROJECT COST (\$000,000 IN 2015\$)	2014 Actuals	2015	2016	2017	2018	2019	2020	2021	Total
DIRECT LABOR	0.8	1.0	0.7	2.7	3.2	4.0	3.9	1.9	18.2
DIRECT NON-LABOR	2.5	5.8	5.1	12.0	92.3	104.3	183.7	2.9	408.6
<b>TOTAL DIRECT CAPITAL</b>	<b>3.3</b>	<b>6.8</b>	<b>5.9</b>	<b>14.7</b>	<b>95.4</b>	<b>108.3</b>	<b>187.6</b>	<b>4.8</b>	<b>426.8</b>

### **Project Description**

The Pipeline Safety & Reliability Project (PSRP) scope includes the design and construction of approximately 47 miles of new natural gas pipeline from Rainbow Pressure Limiting Station to Marine Corp Air Station (MCAS) Miramar. SDG&E and SoCalGas utilized the assistance of third party firms, including SPEC Services, ARB Construction, Clark Land Services and Insignia Environmental, specializing in engineering services, pipeline construction, land services, and environmental to support development of the project scope and cost estimates.

### **Forecast Methodology**

SDG&E and SoCalGas, with the support of SPEC Services, 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 PSR Project costs were contemplated when determining a reasonable contingency to include in the cost estimate. The total contingency is 11.6% and was determined by subject matter experts.

The Capital Direct Cost excludes Escalators, Loaders, Capitalized Property Taxes, and Allowance for Funds Used During Construction

### **Schedule**

SDG&E and SoCalGas estimates that it will take approximately seven years for regulatory approval and to permit, engineer, design, procure, construct and place the new asset in service. In order to develop this project as quickly as possible, SDG&E and SoCalGas has initiated planning, engineering, designing, and permitting work in advance of CPUC authorization. The environmental review process has commenced.

Since the environmental review process has the potential to impact the overall project scope, it is assumed that material procurement such as valves and pipe, land and right-of-way acquisition, and awarding of major construction contracts will occur after SDG&E and SoCalGas receive the final environmental clearance and received CPUC approval for the project. It is estimated that procurement, land acquisition, and construction for the project will be completed within roughly three years of CPUC approval.

Labor and non-labor costs in 2021 (year eight) are for project reconciliation and close out and Post-construction Mitigation and Monitoring. Actual post-construction environmental monitoring effort may extend beyond year 2021 (Cost estimates post 2021 are not included).

<b>WORKPAPER TITLE</b> Summary of Proposed L-3602 - Total Direct Cost	<b>FERC ACCT.</b> 367
	<b>IN SERVICE DATE</b> 12/31/2020

Testimony - Table 2: Estimated Proposed L-3602 Construction Costs  
(Direct Costs)\*<sup>1</sup>

<b>Component</b>	<b>Estimated Cost</b>
<b>MATERIALS</b>	\$90.3
<b>CONSTRUCTION</b>	\$256.0
<b>ENGINEERING/DESIGN/PROJECT MGMT</b>	\$10.1
<b>ENVIRONMENTAL REVIEW &amp; PERMITS</b>	\$26.5
<b>OTHER PROJECT EXECUTION ACTIVITIES</b>	\$25.8
<b>COMPANY LABOR</b>	\$18.2
<b>TOTAL</b>	<b>\$426.8</b>

<sup>1</sup> Direct Costs excludes, Loaders, Escalators, Capitalized Property Tax, & Allowance for Funds During Construction Costs

#### **Forecast Methodology**

The costs for each area are summarized above.

#### **Schedule**

SDG&E and SoCalGas estimate that it will take approximately seven years to permit, engineer, design, procure, construct and place the new assets in service. In order to develop this project as quickly as possible, SDG&E and SoCalGas have 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, land and right-of-way acquisition, and awarding of major construction contracts will occur after SDG&E and SoCalGas 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 certification.

Costs in the year 2021 are for post-construction environmental monitoring that will occur after the assets are placed in service.

WORKPAPER TITLE	IN SERVICE DATE
Proposed L-3602 - Material	12/31/2020

Proposed L-3602								FERC ACCT 367	
PROJECT COST (\$000,000 IN 2015\$)	2014	2015	2016	2017	2018	2019	2020	2021	Total
DIRECT LABOR	-	-	-	-	-	-	-	-	-
DIRECT NON-LABOR	-	-	-	7.5	82.7	-	-	-	90.3
<b>TOTAL DIRECT CAPITAL</b>	-	-	-	<b>7.5</b>	<b>82.7</b>	-	-	-	<b>90.3</b>

### Project Description

PSRP is a new 36" diameter natural gas transmission pipeline project that originates at Rainbow Pressure Limiting Station and extends approximately 47 miles in a southerly direction, terminating at Marine Corp Air Station (MCAS) Miramar in San Diego.

Pipeline cost estimates are based on a 36" pipe diameter, 0.625" wall thickness, and API 5L X65 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

SDG&E and SoCalGas, supported by SPEC Services, consulted with pipe vendors and suppliers to determine current material costs for pipe and valves. Input received represents budgetary pricing estimates.

Cost Element	Cost Estimate			
	Labor	Non Labor	Contingency Applied	Total
Pipe & Coating	-	51,489,717	5,164,009	56,653,726
Elbows	-	12,654,574	636,137	13,290,711
Valves	-	3,390,500	436,835	3,827,335
Other Materials	-	5,046,889	805,543	5,852,432
Freight & Tax	-	10,161,435	508,072	10,669,507
<b>Total Material</b>	-	<b>82,743,116</b>	<b>7,550,595</b>	<b>90,293,711</b>
<b>Total Contingency %</b>			<b>9.13%</b>	

### Schedule

The basis of the timing of expenditures is that material purchases will occur after receiving the final CPUC project approval.

WORKPAPER TITLE Proposed L-3602 - Construction	IN SERVICE DATE 12/31/2020
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Proposed L-3602								FERC ACCT 367	
PROJECT COST (\$000,000 IN 2015\$)	2014	2015	2016	2017	2018	2019	2020	2021	Total
DIRECT LABOR	-	-	-	-	-	-	-	-	-
DIRECT NON-LABOR	-	-	-	-	-	89.1	166.9	-	256.0
<b>TOTAL DIRECT CAPITAL</b>	-	-	-	-	-	<b>89.1</b>	<b>166.9</b>	-	<b>256.0</b>

### Project Description

PSRP is a new 36" diameter natural gas transmission pipeline project that originates at Rainbow Pressure Limiting Station and extends approximately 47 miles in a southerly direction, terminating at Marine Corp Air Station (MCAS) Miramar in San Diego

### Forecast Methodology

Construction cost estimates were received from 3rd party contractors and consultants. SDG&E and SoCalGas utilized these 3rd party estimates (unit pricing, productivity factors, etc.) along with information from recently completed SDG&E/SoCalGas projects to develop the estimates. 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, rate of construction progress, and anticipated permit conditions.

Cost Element	Cost Estimate			
	Labor	Non Labor	Contingency Applied	Total
Pipeline Installation	-	195,643,733	20,983,247	216,626,980
Horizontal Directional Drill & Bores	-	12,856,340	1,285,634	14,141,974
Hydrotesting & Drying	-	2,986,390	298,639	3,285,029
Mainline Valves & Others Installation	-	5,523,551	667,094	6,190,645
Cross Tie & Station	-	6,110,050	1,612,010	7,722,060
<b>SUBTOTAL CONSTRUCTION</b>	-	<b>223,120,064</b>	<b>24,846,624</b>	<b>247,966,687</b>
<b>Construction Contingency %</b>			<b>11.14%</b>	
Construction oversight	-	7,292,089	729,209	8,021,298
Construction oversight Contingency			10.00%	
<b>Total</b>	-	<b>230,412,153</b>	<b>25,575,833</b>	<b>255,987,985</b>
<b>Total Contingency %</b>			<b>11.10%</b>	

### Schedule

The basis of the timing of expenditures is that all major construction contracts will be awarded after receiving the final CPUC project approval.

WORKPAPER TITLE	IN SERVICE DATE
Proposed L-3602 - Engineering & Design	12/31/2020

Proposed L-3602									FERC ACCT 367
PROJECT COST (\$000,000 IN 2015\$)	2014	2015	2016	2017	2018	2019	2020	2021	Total
DIRECT LABOR	-	-	-	-	-	-	-	-	-
DIRECT NON-LABOR	1.5	1.8	2.7	0.6	0.2	0.8	1.8	0.7	10.1
<b>TOTAL DIRECT CAPITAL</b>	<b>1.5</b>	<b>1.8</b>	<b>2.7</b>	<b>0.6</b>	<b>0.2</b>	<b>0.8</b>	<b>1.8</b>	<b>0.7</b>	<b>10.1</b>

### Project Description

PSRP is a new 36" diameter natural gas transmission pipeline project that originates at Rainbow Pressure Limiting Station and extends approximately 47 miles in a southerly direction, terminating at Marine Corp Air Station (MCAS) Miramar in San Diego.

### Forecast Methodology

All estimates in this section were developed by company subject matter experts in conjunction with 3rd party experts.

Cost Element	Cost Estimate			
	Labor	Non Labor	Contingency Applied	Total
Engineering	-	6,693,416	799,262	7,492,678
Survey	-	2,455,934	122,797	2,578,731
<b>Total Other Capital Costs</b>	-	<b>9,149,350</b>	<b>922,059</b>	<b>10,071,409</b>
<b>Total Contingency %</b>			<b>9.16%</b>	

Engineering & Survey activities include the following but not limited to, Preliminary Engineering, Engineering Design, Engineering Project Management, Survey, and Base Mapping

### Schedule

SDG&E and SoCalGas estimate that it will take approximately seven years to permit, engineer, design, procure, construct and place the new assets in service. In order to develop this project as quickly as possible, SDG&E and SoCalGas has initiated planning, engineering, design, and permitting work in advance of CPUC authorization. The timing of expenditures was based on a high level schedule of activities with input from subject matter experts.

WORKPAPER TITLE	IN SERVICE DATE
Proposed L-3602 - 3rd Party Environmental Survey/Permitting/ Monitoring	12/31/2020

Proposed L-3602								FERC ACCT 367	
PROJECT COST (\$000,000 IN 2015\$)	2014	2015	2016	2017	2018	2019	2020	2021	Total
DIRECT LABOR	-	-	-	-	-	-	-	-	-
DIRECT NON-LABOR	0.6	2.2	1.2	1.1	2.3	8.4	8.4	2.3	26.5
<b>TOTAL DIRECT CAPITAL</b>	<b>0.6</b>	<b>2.2</b>	<b>1.2</b>	<b>1.1</b>	<b>2.3</b>	<b>8.4</b>	<b>8.4</b>	<b>2.3</b>	<b>26.5</b>

### Project Description

PSRP is a new 36" diameter natural gas transmission pipeline project that originates at Rainbow Pressure Limiting Station and extends approximately 47 miles in a southerly direction, terminating at Marine Corp Air Station (MCAS) Miramar in San Diego

### Forecast Methodology

This project is 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. Cost estimates were developed by SDG&E and SoCalGas in conjunction with 3rd party.

Cost Element	Cost Estimate			
	Labor	Non Labor	Contingency Applied	Total
Data Collection/Permitting Support	-	377,662	113,299	490,961
Envir. Data Collection and Impact Analysis	-	1,702,784	510,835	2,213,619
Environmental Clearance/Permit Process	-	3,847,560	1,154,268	5,001,828
Preconstruction Surveys	-	4,573,109	1,371,933	5,945,042
Construction Monitoring	-	8,046,494	2,413,948	10,460,442
Post-construction Mitigation and Monitoring	-	1,822,132	546,640	2,368,772
<b>Total Environmental</b>	-	<b>20,369,741</b>	<b>6,110,922</b>	<b>26,480,663</b>
<b>Total Contingency %</b>			<b>30.0%</b>	

### Schedule

Non-labor costs in 2021 are primarily for project reconciliation and close out. An allowance has also been included for post-construction environmental monitoring that will occur after the asset is placed in service. Actual post-construction environmental monitoring effort may extend beyond year 2021 (Cost estimates post 2021 are not included).



WORKPAPER TITLE	IN SERVICE DATE
Proposed L-3602 - Other Project Execution Activities	12/31/2020

Proposed L-3602	FERC ACCT 367								
PROJECT COST (\$000,000 IN 2015\$)	2014	2015	2016	2017	2018	2019	2020	2021	Total
DIRECT LABOR	-	-	-	-	-	-	-	-	-
DIRECT NON-LABOR	0.5	1.8	1.2	2.8	7.0	6.0	6.5	0.0	25.8
<b>TOTAL DIRECT CAPITAL</b>	<b>0.5</b>	<b>1.8</b>	<b>1.2</b>	<b>2.8</b>	<b>7.0</b>	<b>6.0</b>	<b>6.5</b>	<b>0.0</b>	<b>25.8</b>

### Project Description

PSRP is a new 36" diameter natural gas transmission pipeline project that originates at Rainbow Pressure Limiting Station and extends approximately 47 miles in a southerly direction, terminating at Marine Corp Air Station (MCAS) Miramar in San Diego.

### Forecast Methodology

All estimates in this section were developed by company subject matter experts in conjunction with 3rd party experts.

Cost Element	Cost Estimate			
	Labor	Non Labor	Contingency Applied	Total
Insurance	-	10,725,000	536,250	11,261,250
Public Outreach and Education	-	2,900,000	580,000	3,480,000
ROW Acquisition	-	5,284,251	743,388	6,027,638
Outside Legal Counsel	-	4,000,000	1,000,000	5,000,000
<b>Total Other Capital Costs</b>	-	<b>22,909,251</b>	<b>2,859,638</b>	<b>25,768,888</b>
<b>Total Contingency %</b>			<b>11.10%</b>	

### Schedule

SDG&E and SoCalGas estimate that it will take approximately seven years to permit, engineer, design, procure, construct and place the new assets in service. In order to develop this project as quickly as possible, SDG&E and SoCalGas has initiated planning, engineering, design, and permitting work in advance of CPUC authorization. The timing of expenditures was based on a high level schedule of activities with input from subject matter experts.

WORKPAPER TITLE	IN SERVICE DATE
Proposed L-3602 - Company Labor	12/31/2020

Proposed L-3602								FERC ACCT 367	
PROJECT COST (\$000,000 IN 2015\$)	2014	2015	2016	2017	2018	2019	2020	2021	Total
DIRECT LABOR	0.8	1.0	0.7	2.7	3.2	4.0	3.9	1.9	18.2
DIRECT NON-LABOR	-	-	-	-	-	-	-	-	-
<b>TOTAL DIRECT CAPITAL</b>	<b>0.8</b>	<b>1.0</b>	<b>0.7</b>	<b>2.7</b>	<b>3.2</b>	<b>4.0</b>	<b>3.9</b>	<b>1.9</b>	<b>18.2</b>

### **Project Description**

PSRP is a new 36" diameter natural gas transmission pipeline project that originates at Rainbow Pressure Limiting Station and extends approximately 47 miles in a southerly direction, terminating at Marine Corp Air Station (MCAS) Miramar in San Diego.

### **Forecast Methodology**

SDG&E and SoCalGas will require company personnel to perform various functions over the course of the project. In particular, jointly, the two companies will be responsible for overall project and construction management, environmental management, project controls, and other project specific needs. Company personnel will oversee all 3rd party contractors and consultants activities.

Cost Element	Cost Estimate			
	Labor	Non Labor	Contingency Applied	Total
Project Management	8,845,773	-	707,662	9,553,435
Accounting / Bus. Analyst	488,123	-	39,050	527,173
Operations	1,438,123	-	115,050	1,553,173
Public Outreach and Education	1,901,123	-	152,090	2,053,213
Environmental	688,123	-	55,050	743,173
Right-of-Way	813,123	-	65,050	878,173
Engineering	1,504,923	-	120,394	1,625,317
Procurement	508,123	-	40,650	548,773
Expenses	628,599	-	50,288	678,887
<b>Total PSRP Company Labor</b>	<b>16,816,033</b>	<b>-</b>	<b>1,345,283</b>	<b>18,161,316</b>
<b>Total Contingency %</b>			<b>8.0%</b>	

### **Schedule**

The basis of the timing of expenditures for labor were done in conjunction with departmental experts.

WORKPAPER TITLE	IN SERVICE DATE
Summary of L-1600 Derate - Total Direct Cost by Year	3/31/2021

PROJECT COST (\$000,000 IN 2015\$)	2014 Actuals	2015	2016	2017	2018	2019	2020	2021	2022	Total
<b>L-1600 DERATE</b>										<b>FERC ACCT 376</b>
DIRECT LABOR	0.0	0.0	0.0	0.03	0.03	0.1	0.7	0.1	0.1	1.0
DIRECT NON-LABOR	0.0	0.0	0.0	0.8	2.7	0.3	7.6	0.3	0.0	11.7
<b>SUBTOTAL DE-RATE</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.8</b>	<b>2.7</b>	<b>0.4</b>	<b>8.4</b>	<b>0.4</b>	<b>0.1</b>	<b>12.8</b>
<b>L-1600 ABANDONMENT</b>										<b>FERC ACCT 108.4</b>
DIRECT LABOR	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.0	0.3
DIRECT NON-LABOR	0.0	0.0	0.0	0.0	0.2	0.0	0.1	1.7	0.0	2.0
<b>SUBTOTAL ABANDONMENT</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.2</b>	<b>0.0</b>	<b>0.3</b>	<b>1.8</b>	<b>0.0</b>	<b>2.3</b>
<b>TOTAL DIRECT COST</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.8</b>	<b>2.9</b>	<b>0.4</b>	<b>8.6</b>	<b>2.2</b>	<b>0.1</b>	<b>15.1</b>

### Project Description

The Pipeline Safety & Reliability Project (PSRP) scope includes the design and construction of approximately 47 miles of new natural gas pipeline from Rainbow Pressure Limiting Station to Marine Corp Air Station (MCAS) Miramar and the lowering of the Maximum Operating Pressure (MAOP) of existing Line 1600 (Line 1600 De-rating). The Line 1600 De-rating will require the modification of the distribution system by installing/replacing new 6-inch and 8-inch pipelines. SDG&E and SoCalGas utilized the assistance of third party firms, including SPEC Services, ARB Construction, Clark Land Services and Insignia Environmental, specializing in engineering services, pipeline construction, land services, and environmental to support development of the project scope and cost estimates.

The scope includes abandonment of 10 Regulator Station on L-1600

### Forecast Methodology

SDG&E and SoCalGas, with the support of SPEC Services, 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 PSR Project costs were contemplated when determining a reasonable contingency to include in the cost estimate. The total contingency is 19.3% and was determined by subject matter experts.

The Capital Direct Cost excludes Escalators, Loaders, Capitalized Property Taxes, and Allowance for Funds Used During Construction

### Schedule

SDG&E and SoCalGas estimates that it will take approximately seven years for regulatory approval and to permit, engineer, design, procure, construct and place the new asset in service. In order to develop this project as quickly as possible, SDG&E and SoCalGas has initiated planning, engineering, designing, and permitting work in advance of CPUC authorization. Construction of new pipelines stations may occur concurrently with the Proposed Project. The operating pressure of L-1600 will be lowered following the completion of the Proposed L-3602.

<b>WORKPAPER TITLE</b> Summary of L-1600 Derate - Total Direct Cost	<b>FERC ACCT.</b> 376 / 108.4
	<b>IN SERVICE DATE</b> 3/31/2021

Testimony - Table 5: Estimated L-1600 De-Rate Costs  
(Direct Costs)\*<sup>1</sup>

<b>Component</b>	<b>Estimated Cost</b>
<b>MATERIALS</b>	\$2.45
<b>CONSTRUCTION</b>	\$8.00
<b>ENGINEERING &amp; DESIGN</b>	\$1.13
<b>ENVIRONMENTAL</b>	\$0.91
<b>OTHER PROJECT EXECUTION ACTIVITIES</b>	\$1.22
<b>COMPANY LABOR</b>	\$1.39
<b>TOTAL</b>	<b>\$15.1</b>

<sup>1</sup> Direct Costs excludes, Loaders, Escalators, Capitalized Property Tax, & Allowance for Funds During Construction Costs

#### **Forecast Methodology**

The costs for each area are summarized above.

#### **Schedule**

SDG&E and SoCalGas estimate that it will take approximately seven years to permit, engineer, design, procure, construct and place the new assets in service. In order to develop this project as quickly as possible, SDG&E and SoCalGas have 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, land and right-of-way acquisition, and awarding of major construction contracts will occur after SDG&E and SoCalGas 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 certification.

WORKPAPER TITLE L-1600 Derate - Material	IN SERVICE DATE 3/31/2021
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PROJECT COST (\$000,000 IN 2015\$)	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total
<b>L-1600 DERATE</b>										<b>FERC ACCT 376</b>
DIRECT LABOR	-	-	-	-	-	-	-	-	-	-
DIRECT NON-LABOR	-	-	-	-	2.3	-	-	-	-	2.3
<b>SUBTOTAL DE-RATE</b>	-	-	-	-	<b>2.3</b>	-	-	-	-	<b>2.3</b>
<b>L-1600 ABANDONMENT</b>										<b>FERC ACCT 108.4</b>
DIRECT LABOR	-	-	-	-	-	-	-	-	-	-
DIRECT NON-LABOR	-	-	-	-	0.1	-	-	-	-	0.1
<b>SUBTOTAL ABANDONMENT</b>	-	-	-	-	<b>0.1</b>	-	-	-	-	<b>0.1</b>
<b>TOTAL DIRECT COST</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>2.4</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>2.4</b>

### Project Description

The Line 1600 De-rating will require the modification of the distribution system, which includes the installation/replacement of 6-inch and 8-inch pipelines.

### Forecast Methodology

SDG&E and SoCalGas, supported by SPEC Services, consulted with pipe vendors and suppliers to determine current material costs for pipe and valves. Input received represents budgetary pricing estimates.

Cost Element	Cost Estimate			
	Labor	Non Labor	Contingency Applied	Total
<b>L-1600 DE-RATING</b>				
Pipe	-	1,632,674	321,462	1,954,136
Elbows, Valves, & Vaults	-	189,737	37,358	227,095
Abandonment Reg Station	-	122,024	24,026	146,050
Other Materials	-	99,327	19,557	118,883
<b>Total Material</b>	-	<b>1,822,411</b>	<b>402,402</b>	<b>2,446,164</b>
<b>Total Contingency %</b>			<b>19.69%</b>	

### Schedule

The basis of the timing of expenditures is that material purchases will occur after receiving the final CPUC project approval.

WORKPAPER TITLE L-1600 Derate - Construction	IN SERVICE DATE 3/31/2021
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PROJECT COST (\$000,000 IN 2015\$)	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total
<b>L-1600 DERATE</b>										<b>FERC ACCT 376</b>
DIRECT LABOR	-	-	-	-	-	-	-	-	-	0.0
DIRECT NON-LABOR	-	-	-	-	-	-	6.5	0.01	-	6.5
<b>SUBTOTAL DE-RATE</b>	-	-	-	-	-	-	<b>6.5</b>	<b>0.01</b>	-	<b>6.5</b>
<b>L-1600 ABANDONMENT</b>										<b>FERC ACCT 108.4</b>
DIRECT LABOR	-	-	-	-	-	-	-	-	-	0.0
DIRECT NON-LABOR	-	-	-	-	-	-	-	1.5	-	1.5
<b>SUBTOTAL ABANDONMENT</b>	-	-	-	-	-	-	-	<b>1.5</b>	-	<b>1.5</b>
<b>TOTAL DIRECT COST</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>6.5</b>	<b>1.5</b>	<b>0.0</b>	<b>8.0</b>

### Project Description

The Line 1600 De-rating will require the modification of the distribution system, which includes the installation/replacement of 6-inch and 8-inch pipelines.

### Forecast Methodology

Construction cost estimates were received from 3rd party contractors and consultants. SDG&E and SoCalGas utilized these 3rd party estimates (unit pricing, productivity factors, etc.) along with information from recently completed SDG&E/SoCalGas projects to develop the estimates. 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, rate of construction progress, and anticipated permit conditions.

Cost Element	Cost Estimate			
	Labor	Non Labor	Contingency Applied	Total
<b>L-1600 DE-RATING</b>				
Pipe Install	-	4,851,523	970,305	5,821,828
Hydrotest	-	357,162	71,432	428,595
Valves & Vaults	-	148,000	29,600	177,600
Abandonment Regulator Station	-	853,610	128,042	981,652
Other Activities	-	434,218	65,133	499,351
Construction Oversight	-	72,735	14,547	87,282
<b>Total Construction</b>	-	<b>6,717,248</b>	<b>1,279,058</b>	<b>7,996,307</b>
<b>Total Contingency %</b>			<b>19.04%</b>	

### Schedule

The basis of the timing of expenditures is that all major construction contracts will be awarded after receiving the final CPUC project approval.

WORKPAPER TITLE L-1600 Derate - Land	IN SERVICE DATE 3/31/2021
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PROJECT COST (\$000,000 IN 2015\$)	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total
<b>L-1600 DERATE</b>										<b>FERC ACCT 376</b>
DIRECT LABOR	-	-	-	-	-	-	-	-	-	0.0
DIRECT NON-LABOR	-	-	-	0.7	-	0.1	0.1	0.1	-	1.0
<b>SUBTOTAL DE-RATE</b>	-	-	-	<b>0.7</b>	-	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	-	<b>1.0</b>
<b>L-1600 ABANDONMENT</b>										<b>FERC ACCT 108.4</b>
DIRECT LABOR	-	-	-	-	-	-	-	-	-	0.0
DIRECT NON-LABOR	-	-	-	-	-	-	-	0.13	-	0.1
<b>SUBTOTAL ABANDONMENT</b>	-	-	-	-	-	-	-	<b>0.13</b>	-	<b>0.13</b>
<b>TOTAL DIRECT COST</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.7</b>	<b>0.0</b>	<b>0.1</b>	<b>0.1</b>	<b>0.26</b>	<b>0.0</b>	<b>1.1</b>

#### Project Description

The Line 1600 De-rating will require the modification of the distribution system, which includes the installation/replacement of 6-inch and 8-inch pipelines.

#### 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. SDG&E anticipates acquiring 11 permanent easements.

Cost basis for temporary work space (laydown yards and parking) – temporary work space estimates use the same range of estimated land

Cost Element	Cost Estimate			
	Labor	Non Labor	Contingency Applied	Total
<b>L-1600 DE-RATING</b>				
Engineering/Design/Proj. Mgmt	-	727,345	145,469	872,814
Survey	-	221,000	38,450	259,450
<b>Total ROW Acquisition</b>	-	<b>948,345</b>	<b>183,919</b>	<b>1,132,264</b>
<b>Total Contingency %</b>			<b>19.39%</b>	

#### Schedule

The basis of the timing of expenditures is that the procurement of land and right-of-way will occur after receiving the final CPUC project

WORKPAPER TITLE	IN SERVICE DATE
L-1600 Derate - 3rd Party Environmental Monitoring	3/31/2021

PROJECT COST (\$000,000 IN 2015\$)	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total
<b>L-1600 DERATE</b>										<b>FERC ACCT 376</b>
DIRECT LABOR	-	-	-	-	-	-	-	-	-	0.0
DIRECT NON-LABOR	-	-	-	0.1	0.2	0.1	0.5	-	-	0.8
<b>SUBTOTAL DE-RATE</b>	-	-	-	<b>0.1</b>	<b>0.2</b>	<b>0.1</b>	<b>0.5</b>	-	-	<b>0.8</b>
<b>L-1600 ABANDONMENT</b>										<b>FERC ACCT 108.4</b>
DIRECT LABOR	-	-	-	-	-	-	-	-	-	0.0
DIRECT NON-LABOR	-	-	-	0.01	0.03	-	-	0.02	-	0.06
<b>SUBTOTAL ABANDONEMENT</b>	-	-	-	<b>0.01</b>	<b>0.03</b>	-	-	<b>0.02</b>	-	<b>0.06</b>
<b>TOTAL DIRECT COST</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.1</b>	<b>0.2</b>	<b>0.1</b>	<b>0.5</b>	<b>0.02</b>	<b>0.0</b>	<b>0.9</b>

### Project Description

The Line 1600 De-rating will require the modification of the distribution system, which includes the installation/replacement of 6-inch and 8-inch pipelines.

### Forecast Methodology

This project is 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. Cost estimates were developed by SDG&E and SoCalGas in conjunction with 3rd party.

Cost Element	Cost Estimate			
	Labor	Non Labor	Contingency Applied	Total
<b>L-1600 DE-RATING</b>				
Environmental Monitors	-	267,112	52,795	319,907
Cultural Monitoring	-	254,572	50,914	305,486
Data Collection & Survey	-	234,672	46,934	281,606
Permitting	-	2,500	375	2,875
<b>Total Environmental</b>	-	<b>758,855</b>	<b>151,019</b>	<b>909,874</b>
<b>Total Contingency %</b>			<b>19.90%</b>	

### Schedule

Non-labor costs in 2021 are primarily for project reconciliation and close out. An allowance has also been included for post-construction environmental monitoring that will occur after the asset is placed in service.



WORKPAPER TITLE	IN SERVICE DATE
L-1600 Derate - Other Project Execution Costs	3/31/2021

PROJECT COST (\$000,000 IN 2015\$)	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total
<b>L-1600 DERATE</b>										<b>FERC ACCT 376</b>
DIRECT LABOR	-	-	-	-	-	-	-	-	-	0.0
DIRECT NON-LABOR	-	-	-	-	0.2	0.1	0.6	0.2	-	1.0
<b>SUBTOTAL DE-RATE</b>	-	-	-	-	<b>0.2</b>	<b>0.1</b>	<b>0.6</b>	<b>0.2</b>	<b>0.0</b>	<b>1.0</b>
<b>L-1600 ABANDONMENT</b>										<b>FERC ACCT 108.4</b>
DIRECT LABOR	-	-	-	-	-	-	-	-	-	0.0
DIRECT NON-LABOR	-	-	-	-	-	0.01	0.1	0.03	-	0.1
<b>SUBTOTAL ABANDONMENT</b>	-	-	-	-	-	<b>0.01</b>	<b>0.1</b>	<b>0.03</b>	-	<b>0.1</b>
<b>TOTAL DIRECT COST</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.2</b>	<b>0.1</b>	<b>0.7</b>	<b>0.2</b>	<b>0.0</b>	<b>1.2</b>

#### Project Description

The Line 1600 De-rating will require the modification of the distribution system, which includes the installation/replacement of 6-inch and 8-inch pipelines.

#### Forecast Methodology

All estimates in this section were developed by company subject matter experts in conjunction with 3rd party experts.

Cost Element	Cost Estimate			
	Labor	Non Labor	Contingency Applied	Total
<b>L-1600 DE-RATING</b>				
ROW Acquisition	-	255,721	49,669	305,390
Other Proj. Execution Activities	-	765,328	153,066	918,394
<b>Total Other Capital Costs</b>	-	<b>1,021,049</b>	<b>202,735</b>	<b>1,223,784</b>
<b>Total Contingency %</b>			19.86%	

#### Schedule

SDG&E and SoCalGas estimate that it will take approximately seven years to permit, engineer, design, procure, construct and place the new assets in service. In order to develop this project as quickly as possible, SDG&E and SoCalGas has initiated planning, engineering, design, and permitting work in advance of CPUC authorization. The timing of expenditures was based on a high level schedule of activities with input from subject matter experts.

WORKPAPER TITLE	IN SERVICE DATE
L-1600 Derate - Company Labor	3/31/2021

PROJECT COST (\$000,000 IN 2015\$)	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total
<b>L-1600 DERATE</b>										<b>FERC ACCT 376</b>
DIRECT LABOR	-	-	-	0.03	0.03	0.1	0.7	0.1	0.1	1.0
DIRECT NON-LABOR	-	-	-	-	-	-	-	-	-	0.0
<b>SUBTOTAL DE-RATE</b>	-	-	-	<b>0.03</b>	<b>0.03</b>	<b>0.1</b>	<b>0.7</b>	<b>0.1</b>	<b>0.1</b>	<b>1.0</b>
<b>L-1600 ABANDONMENT</b>										<b>FERC ACCT 108.4</b>
DIRECT LABOR	-	-	-	-	-	-	0.2	0.2	0.03	0.3
DIRECT NON-LABOR	-	-	-	-	-	-	-	-	-	0.0
<b>SUBTOTAL ABANDONMENT</b>	-	-	-	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.2</b>	<b>0.2</b>	<b>0.03</b>	<b>0.3</b>
<b>TOTAL DIRECT COST</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.03</b>	<b>0.03</b>	<b>0.1</b>	<b>0.9</b>	<b>0.3</b>	<b>0.1</b>	<b>1.4</b>

### Project Description

The Line 1600 De-rating will require the modification of the distribution system, which includes the installation/replacement of 6-inch and 8-inch pipelines.

### Forecast Methodology

SDG&E and SoCalGas will require company personnel to perform various functions over the course of the project. Company personnel will be responsible for overall project and construction management, environmental management, project controls, and other project specific needs. Company personnel will oversee all 3rd party contractors and consultants activities.

Cost Element	Cost Estimate			
	Labor	Non Labor	Contingency Applied	Total
<b>L-1600 DE-RATING</b>				
Project Management	246,329	-	46,104	292,433
Operations	446,954	-	83,654	530,608
Environmental	237,167	-	44,389	281,556
Engineering	243,829	-	45,636	289,465
<b>Total Company Labor</b>	<b>1,174,279</b>	-	<b>219,783</b>	<b>1,394,061</b>
<b>Total Contingency %</b>			<b>18.72%</b>	

### Schedule

The basis of the timing of expenditures for labor were done in conjunction with departmental experts.