

**2016 Risk Assessment Mitigation Phase  
Investigation 16-10-016  
Workpapers to  
Catastrophic Event Related to Storage  
Well Integrity  
(Chapter SCG-11-WP)**

January 2017



2016 Risk Assessment Mitigation Phase  
SCG-11-WP  
Risk: Catastrophic Event Related to Storage Well Integrity (O&M)

Line No.	Mitigation	Project/Program	Project/Program Description	Status	Recorded (Directs, 2015 \$000)					Forecast Range (Directs, 2015 \$000)						Forecast Methodology
					2011	2012	2013	2014	2015	2017 Low	2017 High	2018 Low	2018 High	2019 Low	2019 High	
1	Maintenance work performed on gas storage wells and Storage Integrity Management Program (SIMP) Pilot	Routine Well Work	Addresses failed components such as tubing, casing, valves, pumps and other equipment on existing wells	B	\$ 2,711	\$ 2,950	\$ 2,559	\$ 2,874	\$ 3,476	\$ 3,306	\$ 3,654	\$ 3,306	\$ 3,654	\$ 3,306	\$ 3,654	2-Year Average
2	Maintenance work performed on gas storage wells and SIMP Pilot Subtotal				2,711	2,950	2,559	2,874	3,476	3,306	3,654	3,306	3,654	3,306	3,654	
3	Well abandonments, replacement materials and labor associated with each activity	Routine Well Work	Addresses the abandonments, design, drilling and completion of replacement wells for the injection and withdrawal of natural gas and reservoir operations	B	-	-	-	-	-	-	-	-	-	-	-	
4	Well abandonments, replacement materials and labor associated with each activity Subtotal				-	-	-	-	-	-	-	-	-	-	-	
5	SIMP - Well Assessments	Initial SIMP to inspect/modernize all wells will be accelerated from 6 years to 4 years. The inspection cycle and associated costs would then repeat beginning in what would have been year 5	The SIMP is intended to proactively identify, diagnose, and mitigate potential safety an/or integrity problems associated with gas storage wells. This work will include inspection, data collection, analysis, management and reporting. In addition the replacement or repair work may include: wellhead valve replacements, well tubing replacements, wellhead leak repairs, and well inner-string replacements	P						8,100	11,700	8,100	11,700	8,100	11,700	Zero-Based
6	SIMP - Well Assessments Subtotal				-	-	-	-	-	8,100	11,700	8,100	11,700	8,100	11,700	
7	SIMP - New Integrity and Risk Management Regulations	* FLIR Monitoring * Fenceline Monitoring *CP evaluations / installation * Other requirements for new DOGGR and PHMSA regulations * New Risk Management Group Labor	The new PHMSA and DOGGR regulations have new capital and O&M requirements	P						13,500	19,500	13,500	19,500	13,500	19,500	Zero-Based
8	SIMP - New Integrity and Risk Mangement Regulations Subtotal				-	-	-	-	-	13,500	19,500	13,500	19,500	13,500	19,500	
9	TOTAL				\$ 2,711	\$ 2,950	\$ 2,559	\$ 2,874	\$ 3,476	\$ 24,906	\$ 34,854	\$ 24,906	\$ 34,854	\$ 24,906	\$ 34,854	

Notes:

- Baseline (B) and Proposed (P).
- Numbers in risk chapter tables may differ due to rounding.
- The purpose of Risk Assessment Mitigation Phase (RAMP) is not to request funding. Any funding requests will be made in the General Rate Case (GRC). The forecasts for mitigations are not for funding purposes, but are rather to provide a range for the future GRC filing. This range will be refined with supporting testimony in the GRC.

2016 Risk Assessment Mitigation Phase  
SCG-11-WP  
Risk: Catastrophic Event Related to Storage Well Integrity (Capital)

Line No.	Mitigation	Project/Program	Project/Program Description	Status	Recorded (Directs, 2015 \$000)					Forecast Range (Directs, 2015 \$000)								
					2011	2012	2013	2014	2015	2017 Low	2017 High	2018 Low	2018 High	2019 Low	2019 High	2017-2019 Low (Sum)	2017-2019 High (Sum)	Forecast Methodology
1	Maintenance work performed on gas storage wells and Storage Integrity Management Program (SIMP) Pilot	Routine Well Work	Addresses failed components such as tubing, casing, valves, pumps and other equipment on existing wells	B	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
2	Maintenance work performed on gas storage wells and SIMP Pilot Subtotal				-	-	-	-	-	-	-	-	-	-	-	-	-	
3	Well abandonments, replacement materials and labor associated with each activity	Routine Well Work	Addresses the abandonments, design, drilling and completion of replacement wells for the injection and withdrawal of natural gas and reservoir operations	B	41,446	15,215	18,323	35,906	43,584	39,045	43,155	39,045	43,155	39,045	43,155	117,135	129,465	2-Year Average
4	Well abandonments, replacement materials and labor associated with each activity Subtotal				41,446	15,215	18,323	35,906	43,584	39,045	43,155	39,045	43,155	39,045	43,155	117,135	129,465	
5	SIMP - Well Assessments	Initial SIMP to inspect/modernize all wells will be accelerated from 6 years to 4 years. The inspection cycle and associated costs would then repeat beginning in what would have been year 5	The SIMP is intended to proactively identify, diagnose, and mitigate potential safety an/or integrity problems associated with gas storage wells. This work will include inspection, data collection, analysis, management and reporting. In addition the replacement or repair work may include: wellhead valve replacements, well tubing replacements, wellhead leak repairs, and well inner-string replacements	P						57,600	83,200	52,200	75,400	49,500	71,500	159,300	230,100	Zero-Based
6	SIMP - Well Assessments Subtotal				-	-	-	-	-	57,600	83,200	52,200	75,400	49,500	71,500	159,300	230,100	
7	SIMP - New Integrity and Risk Management Regulations	* FLIR Monitoring * Fenceline Monitoring * CP evaluations / installation * Other requirements for new DOGGR and PHMSA regulations * New Risk Management Group Labor	The new PHMSA and DOGGR regulations have new capital and O&M requirements	P						4,950	7,150	1,350	1,950	1,350	1,950	7,650	11,050	Zero-Based
8	SIMP - New Integrity and Risk Management Regulations Subtotal				-	-	-	-	-	4,950	7,150	1,350	1,950	1,350	1,950	7,650	11,050	
9	TOTAL				\$ 41,446	\$ 15,215	\$ 18,323	\$ 35,906	\$ 43,584	\$ 101,595	\$ 133,505	\$ 92,595	\$ 120,505	\$ 89,895	\$ 116,605	\$ 284,085	\$ 370,615	

Notes:

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