

Risk Assessment and Mitigation Phase (Chapter SDG&E-Risk-7-WP) Excavation Damage (Dig-In) on the Gas System Workpapers

May 17, 2021

2021 RAMP
SDG&E-Risk-7-WP
Risks Recorded and Forecast Costs Incurred Allocations Workpaper
Tab: Incurred\$
(2020 Direct S000)

				RECORDED DOLLARS								FORECAST DOLLARS O&M Capital														
				O&M Capital							O&M 2022 2023 2024										Charact Alleranders					
		Control / Mitigation		2016 2017	201	8 2019	2020	201	16 2017	7	2018	2019	2020	2022	*					20:			023	2024		Shared Allocations
RAMP Chapter ID	RAMP Chapter Name	ID	Control / Mitigation Name		-		-		_					\$ Low						\$ Low	\$ High	\$ Low	\$ High	\$ Low		(Yes/No)
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C29		\$ - \$ -	Ş -	ş -	\$ -	\$	- \$ -	. \$	- \$	-	ş -	\$ - \$	-	\$ -	\$ -	\$ -	\$ -	\$ -	ş -	\$ -	\$ -	\$ -	\$ -	Yes
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C30		s - s -	\$ -	\$ -	\$ -	\$	- \$ -	. \$	- \$	-	\$ -	\$ - \$		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	Yes
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C19		\$ - \$ -	\$ -	\$ -	\$ -	\$	- \$ -	. \$	- \$	-	\$ -	\$ - 5	-	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	Yes
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C20		\$ - \$ -	\$ -	\$ -	\$ -	\$	- \$ -	\$	- \$	-	\$ -	\$ - \$	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	Yes
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C31		\$ - \$ -	\$ -	\$ -	\$ -	\$	- \$ -	\$	- \$	-	\$ -	\$ - \$	-	\$ -	\$ -	7	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	Yes
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C32		\$ - \$ -	\$ -	\$ -	\$ -	\$	- \$ -	. \$	- \$	-	\$ -	\$ - \$	5 -	\$ -	\$ -		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	Yes
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C01					99 \$ 10		- \$ -	\$	- \$	-	\$ -		117			\$ 103		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	No
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C03	Locate and Mark Activities - (MP)	\$ 1,966 \$ 2,74	3 \$ 3,5	62 \$ 3,3	35 \$ 4,94	16 \$	- \$ -	\$	- \$	-	\$ -	\$ 4,840 \$	5,859	\$ 4,985	\$ 6,034	\$ 5,135	\$ 6,215	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	No
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C05	Locate and Mark Annual Refresher Training and Competency Program - (MP)	\$ 2 \$	3 \$	3 \$	4 \$	8 \$	- \$ -	\$	- \$	-	\$ -	\$ 4 5	5 5	\$ 4	\$ 5	\$ 4	\$ 5	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	No
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C07	Locate and Mark Operator Qualification - (MP)	\$ 6 \$	6 \$	11 \$	0 \$ -	\$	- \$ -	\$	- \$	-	\$ -	\$ 11 5	13	\$ 11	\$ 13	\$ 11	\$ 14	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	No
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C09	Locate and Mark Quality Assurance - (MP)	\$ - \$ 2	28 \$ 1	37 \$ 39	97 \$ 38	37 \$	- \$ -	\$	- \$	-	\$ -	\$ 560 \$	716	\$ 577	\$ 737	\$ 594	\$ 759	\$ -	\$ -	\$ -	\$ -	\$ -	s -	No
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C11	Damage Prevention Analysts - (MP)	\$ - \$ -	\$	0 \$	76 \$ 9	97 \$	- \$ -	\$	- \$	-	\$ -	\$ 222 5	284	\$ 229	\$ 292	\$ 235	\$ 301	\$ -	\$ -	\$ -	\$ -	\$ -	s -	No
			Locating Equipment and supporting computer Hardware/Software (Purchase,																							
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C13	Replace, Upgrades and Updates) - (MP)	\$ - \$ -	\$ -	\$ -	\$ -	\$	- \$ -	\$	- \$	189	\$ 411	\$ - 5	5 -	\$ -	ş -	\$ -	\$ -	\$ 195	\$ 249	\$ 200	\$ 256	\$ 207	\$ 264	No
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C15-T1	Public Awareness - Affected Public - (MP)	\$ 85 \$ 11	15 \$	39 \$ 24	41 \$ 19	91 \$	- \$ -	\$	- \$	-	\$ -	\$ 236 \$	285	\$ 243	\$ 294	\$ 250	\$ 303	\$ -	\$ -	\$ -	\$ -	\$ -	s -	No
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C15-T2	Public Awareness - Emergency Officials - (MP)	\$ 7 \$	0 \$	3 \$ -	\$	0 \$	- \$ -	. \$	- \$	-	\$ -	\$ 3 5	3	\$ 3	\$ 3	\$ 3	\$ 3	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	No
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C15-T3		\$ 0 \$	0 \$	16 \$ -	\$	0 \$	- \$ -	S	- S	-	ş -	\$ 15 5	19	\$ 16	\$ 20	\$ 16	\$ 20	\$ -	\$ -	\$ -	\$ -	s -	s -	No
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C15-T4	Public Awareness - Excavators - (MP)	\$ 28 \$ 5	6 \$	20 \$ 3	23 \$ 7	72 \$	- \$ -	S	- S	-	s -	\$ 19 5			\$ 24	\$ 20			\$ -	\$ -	\$ -	\$ -	\$ -	No
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C17		s - s -	s -	s -	s -	s	- S -	5	- S	-	s -	s - 0	5 -	s -	s -	\$ -	s -	s -	s -	s -	s -	s -	s -	Yes
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C21		\$ 2 5	2 5	2 5	2 5	2 5	. 5 .	. 5	- 5	-	ς .	\$ 2 5	. 2	\$ 2	S 2	\$ 2	\$ 3	\$ -	ς .	ς .	ς .	ς -	ς -	No
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	M1		5 - 5 -	٠.		¢ .	ç				-	c .	c		· -	· ·	· ·		· .	¢ .	¢ .	¢ .	· ·	· .	Yes
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	M3		\$ - \$ -	\$ -		5 4	14 5				-	š .	\$ 69 5	5 88	\$ 69	S 88	\$ 69	\$ 88	ć .	š .	¢ .	٠.	\$.	ć .	No
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	M5		\$ - \$ -	3 -	, ,	2 4	44 3	. 3 .	. 3	- 3		3 -	3 05 3	. 00	\$ 03	\$ 00 C	2 03	3 00	\$ -	, .	3 -	,		, .	No
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	M7		s - s -	\$ -	5 -	\$ -	\$. 3 .	. 3	- 5	-	\$.	5 - 3		\$ -	\$ -	5 -	5 -	\$ -	> -	ş ·	\$ -	5 -	3 -	No.
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	M11		\$ - \$ -	\$ -	. 5 -	5 -	\$. 5 .	. >	- 5	-	\$.	\$ - 0		\$.	\$ -	5 -	\$ -	\$.	\$ -	5 -	\$ -	5 -	3 -	No
SDG&E-RISK-7 SDG&E-RISK-7	Excavation Damage (Dig-In) on the Gas System Excavation Damage (Dig-In) on the Gas System	C27	Warning Mesh - (MP)		0 5	. 3 -	3 -		78 \$	77 \$	- 5	75	\$ 76	S 0 5	-	\$ 0	\$ -	\$ 0		\$ 73	3 -	\$ 75	S 91	\$ 78	\$ 94	No No
						0 \$	0 \$				75 \$															
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C22			0 \$	0 \$	0 \$	0 \$:	102 \$	99 \$	97 \$	102	\$ 104	\$ 0 \$, ,			\$ 121	\$ 98	\$ 125	\$ 100	\$ 128	No
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	M9	and the same of th	\$ - \$ -	\$ -	· \$ -	\$ -	\$	- \$ -	. \$	- \$	-	ş -	\$ 3 5		\$ 3					ş -	\$ -	\$ -	ş - :	š -	No
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C25						11 \$	- \$ -	\$	- \$	-	\$ -		5 161						\$ -	\$ -	\$ -	\$ -	\$ -	No
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C02	Locate and Mark Training - (HP)					14 \$	- \$ -	\$	- \$	-	\$ -	\$ 14 5						\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	No
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C04	Locate and Mark Activities - (HP)		91 \$ 1,5		34 \$ 1,43	35 \$	- \$ -	\$	- \$	-	\$ -			\$ 1,415				\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	No
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C06		\$ 1 \$	1 \$	1 \$	1 \$	1 \$	- \$ -	\$	- \$	-	\$ -	\$ 1 5		\$ 1	\$ 1	\$ 1	\$ 1	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	No
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C08	Locate and Mark Operator Qualification - (HP)		1 \$		0 \$ -	\$	- \$ -	. \$	- \$	-	\$ -	\$ 1 5			\$ 1		\$ 1		\$ -	\$ -	\$ -	\$ -	\$ -	No
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C10			3 \$			12 \$	- \$ -	\$	- \$	-	\$ -	\$ 73 \$							\$ -	\$ -	\$ -	\$ -	\$ -	No
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C12		\$ - \$ -	\$	0 \$:	17 \$ 2	22 \$	- \$ -	. \$	- \$	-	\$ -	\$ 42 \$	5 54	\$ 44	\$ 56	\$ 45	\$ 57	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	No
			Locating Equipment and supporting computer Hardware/Software (Purchase,																							
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C14	Replace, Upgrades and Updates) - (HP)	\$ - \$ -	\$ -	\$ -	\$ -	\$	- \$ -	\$	- \$	43	\$ 94	\$ - \$	5 -	\$ -	\$ -	\$ -	\$ -	\$ 43	\$ 55	\$ 45	\$ 57	\$ 46	\$ 59	No
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C16-T1		\$ 19 \$ 2	26 \$	9 \$!	55 \$ 4	14 \$	- \$ -	. \$	- \$	-	\$ -	\$ 54 \$	65	\$ 55	\$ 67	\$ 57	\$ 69	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	No
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C16-T2	Public Awareness - Emergency Officials - (HP)	\$ 2 \$	0 \$	1 \$ -	\$	0 \$	- \$ -	\$	- \$	-	\$ -	\$ 1 5	5 1	\$ 1	\$ 1	\$ 1	\$ 1	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	No
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C16-T3	Public Awareness - Local Public Officials - (HP)	\$ 0 \$	0 \$	4 \$ -	\$	0 \$	- \$ -	\$	- \$	-	\$ -	\$ 3 \$	5 4	\$ 4	\$ 5	\$ 4	\$ 5	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	No
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C16-T4	Public Awareness - Excavators - (HP)	\$ 6 \$ 1	13 \$	5 \$	5 \$ 1	16 \$	- \$ -	\$	- \$	-	\$ -	\$ 4 5	5 5	\$ 5	\$ 5	\$ 5	\$ 6	\$ -	\$ -	\$ -	\$ -	\$ -	s -	No
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C18	Increase Reporting of Unsafe Excavation - (HP)	\$ - \$ -	\$ -	\$ -	\$ -	\$	- \$ -	\$	- \$	-	\$ -	s - s		\$ -	ş -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	Yes
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C22	Gold Shovel Standard Program - (HP)	\$ 0 \$	0 \$	0 \$	0 \$	0 \$	- \$ -	\$	- \$	-	ş -	\$ 0 5	5 1	\$ 0	\$ 1	\$ 0	\$ 1	\$ -	\$ -	\$ -	\$ -	\$ -	s -	No
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	M2	Automate Third Party Excavation Incident Reporting - (HP)	\$ - \$ -	\$ -	\$ -	\$ -	\$	- \$ -	\$	- \$	-	ş -	s - s	3 -	\$ -	ş -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	s -	Yes
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	M4		s - s -	s -	s -	S	5 S	- s -	۲,	- <	- 1	s -	S 11 5	5 14	S 11	S 14	S 11	S 14	s -	s -	s -	\$ -	s -	s -	No
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	M6		s - s -	s -	· s -	\$ -	S	- S -	5	- 4	-	s -	s - 0	5 -	s -	s -	s -	s -	s -	s -	s -	s -	s -	s -	No
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	M8		5 - 5 -	\$ -	· ·	ς -	Š	. \$.			_	ς .	ς		s -	ς -	\$ -	\$ -	s .	s -	s -	s -	\$ -	\$ -	No
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	M12	()	\$ - \$ -	\$ -	5 -	\$ -	Š	. 5 .			_	ς .	ς		Š -	ς .	\$ -	\$ -	\$.	\$ -	\$ -	\$ -	\$ -	\$.	No
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C28			0 S	0 5	0 5	n s	18 \$	17 S	17 S	17	S 17	\$ 0 5	5 0	\$ 0	s o	\$ 0	\$ 0	\$ 17	\$ 20	\$ 17	\$ 21	\$ 18	S 21	No
SDG&E-RISK-7 SDG&E-RISK-7	Excavation Damage (Dig-In) on the Gas System Excavation Damage (Dig-In) on the Gas System	C23	Pipeline Patrol and Pipeline Markers - (HP)				55 \$ 68		2U 3	-/ >	1/ 3	1/	· 1/		805						\$ 20	e 1/	, 21 ¢	c 10	, LI	No No
SDG&E-RISK-7 SDG&E-RISK-7		M10		\$ 549 \$ 41 \$ - \$ -	· + > 4	4: 3 4:	22 2 68	o >	- 5 -		- 5		ş -	\$ 630 \$							÷ -	÷ -	, .	e -	2 -	
SDG&E-RISK-7 SDG&E-RISK-7	Excavation Damage (Dig-In) on the Gas System Excavation Damage (Dig-In) on the Gas System	M10 C26	Outreach for Latent 3rd Party Damages - (HP)		S -	10 5	19 5 1	>	- 5 -	. 5	- 5		, .	\$ 17 9							, .	ş -	, .	2 - 1	3 -	No No
					10 5	TA 2	19 5 1	18 5	- 5 -		- \$	- 1	\$ -								\$ -	\$ -	\$ -	\$ - :	5 -	
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	M13		\$ - \$ -	\$ -	\$ -	\$ -	\$	- 5 -	. \$	- \$	-	> -	\$ 1 5									\$ 1,251	\$ 585	\$ 845	No
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	A5		\$ - \$ -	\$ -	\$ -	\$ -	\$	- \$ -	\$	- \$	-	ş -		120								\$ 120	\$ 94		No
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	A6		\$ - \$ -	\$ -	\$ -	\$ -	\$	- \$ -	\$	- \$	-	ş -	\$ 306 \$						\$ 306	\$ 391		\$ 391	\$ 306		No
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	A7		\$ - \$ -	\$ -	\$ -	\$ -	\$	- \$ -	\$	- \$	-	\$ -		120		\$ 120							\$ 94		No
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	A8	GPS Tracking of Excavation Equipment - (HP)	\$ - \$ -	\$ -	\$ -	\$ -	\$	- \$ -	\$	- \$	-	\$ -	\$ 306 \$	391	\$ 306	\$ 391	\$ 306	\$ 391	\$ 306	\$ 391	\$ 306	\$ 391	\$ 306	\$ 391	No
1					_	_	_	_	_	-				-											\longrightarrow	
		1		 		-	+	-		+				l .											\longrightarrow	
NOTES:																										
			tion of vacation and sick. The costs are also in 2020 dollars and have not been escal	lated to 2021 amoun	ts.																					
[2] Costs are provid	ed, where available, for all activities regardless of wheth	er a RSE analysis wa	as performed.																			1				

2021 RAMP SDG&E-Risk-7-WP Risks Shared Allocations Workpaper Tab: Shared Allocations

(2020 Direct \$000)

					16% 84% 0% 16% 84% 0% 16% 84% 0% 16% 84% 0% 166% 84% 0% 166% 84% 0% 166% 84% 0% 100% 0% 0%				
		Control / Mitigation		Retained	2021	Sempra	Othor		
RAMP Chapter ID	RAMP Chapter Name	ID	Control / Mitigation Name	Retained	Socaldas	Energy	Other		
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C29	Ticket Risk Assessment and Evaluating City Permit Data - (MP)	16%	84%	0%	0%		
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C30	Ticket Risk Assessment and Evaluating City Permit Data - (HP)	16%	84%	0%	0%		
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C19	Damage Prevention Policy Activities - (MP)	16%	84%	0%	0%		
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C20	Damage Prevention Policy Activities - (HP)	16%	84%	0%	0%		
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C31	Enhance Ticket Management Software - (MP)	16%	84%	0%	0%		
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C32	Enhance Ticket Management Software - (HP)	16%	84%	0%	0%		
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C01	Locate and Mark Training - (MP)	100%	0%	0%	0%		
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C03	Locate and Mark Activities - (MP)	100%	0%	0%	0%		
			Locate and Mark Annual Refresher Training and Competency Program						
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C05	- (MP)	100%	0%	0%	0%		
	Excavation Damage (Dig-In) on the Gas System	C07	Locate and Mark Operator Qualification - (MP)	100%	0%	0%	0%		
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C09	Locate and Mark Quality Assurance - (MP)	100%	0%	0%	0%		
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C11	Damage Prevention Analysts - (MP)	100%	0%	0%	0%		
			Locating Equipment and supporting computer Hardware/Software						
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C13	(Purchase, Replace, Upgrades and Updates) - (MP)	100%	0%	0%	0%		
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C15-T1	Public Awareness - Affected Public - (MP)	100%	0%	0%	0%		
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C15-T2	Public Awareness - Emergency Officials - (MP)	100%	0%	0%	0%		
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C15-T3	Public Awareness - Local Public Officials - (MP)	100%	0%	0%	0%		
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C15-T4	Public Awareness - Excavators - (MP)	100%	0%	0%	0%		
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C17	Increase Reporting of Unsafe Excavation - (MP)	16%	84%	0%	0%		
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C21	Gold Shovel Standard Program - (MP)	100%	0%	0%	0%		
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	M1	Automate Third Party Excavation Incident Reporting - (MP)	16%	84%	0%	0%		
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	M3	Locate and Mark Photographs - (MP)	100%	0%	0%	0%		
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	M5	Electronic Positive Response - (MP)	100%	0%	0%	0%		
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	M7	Leverage Technology for Difficult Locates - (MP)	100%	0%	0%	0%		
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	M11	Leverage Data Gathered by Locating Equipment - (MP)	100%	0%	0%	0%		
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C27	Warning Mesh - (MP)	100%	0%	0%	0%		
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C22	Excess Flow Valve or Curb Valve Installation - (MP)	100%	0%	0%	0%		
	Excavation Damage (Dig-In) on the Gas System	M9	Outreach for Latent 3rd Party Damages - (MP)	100%	0%	0%	0%		
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C25	Company Excavator Training - (MP)	100%	0%	0%	0%		
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C02	Locate and Mark Training - (HP)	100%	0%	0%	0%		
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C04	Locate and Mark Activities - (HP)	100%	0%	0%	0%		
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C06	Locate and Mark Annual Refresher Training and Competency Program -	100%	0%	0%	0%		
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C08	Locate and Mark Operator Qualification - (HP)	100%	0%	0%	0%		
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C10	Locate and Mark Quality Assurance - (HP)	100%	0%	0%	0%		
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C12	Damage Prevention Analysts - (HP)	100%	0%	0%	0%		
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C14	Locating Equipment and supporting computer Hardware/Software	100%	0%	0%	0%		
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C16-T1	Public Awareness - Affected Public - (HP)	100%	0%	0%	0%		
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C16-T2	Public Awareness - Emergency Officials - (HP)	100%	0%	0%	0%		

					Shared A	llocations	
RAMP Chapter ID	RAMP Chapter Name	Control / Mitigation ID	Control / Mitigation Name	Retained	SoCalGas	Sempra Energy	Other
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C16-T3	Public Awareness - Local Public Officials - (HP)	100%	0%	0%	0%
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C16-T4	Public Awareness - Excavators - (HP)	100%	0%	0%	0%
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C18	Increase Reporting of Unsafe Excavation - (HP)	16%	84%	0%	0%
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C22	Gold Shovel Standard Program - (HP)	100%	0%	0%	0%
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	M2	Automate Third Party Excavation Incident Reporting - (HP)	16%	84%	0%	0%
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	M4	Locate and Mark Photographs - (HP)	100%	0%	0%	0%
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	M6	Electronic Positive Response - (HP)	100%	0%	0%	0%
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	M8	Leverage Technology for Difficult Locates - (HP)	100%	0%	0%	0%
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	M12	Leverage Data Gathered by Locating Equipment - (HP)	100%	0%	0%	0%
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C28	Warning Mesh - (HP)	100%	0%	0%	0%
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C23	Pipeline Patrol and Pipeline Markers - (HP)	100%	0%	0%	0%
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	M10	Outreach for Latent 3rd Party Damages - (HP)	100%	0%	0%	0%
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C26	Company Excavator Training - (HP)	100%	0%	0%	0%
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	M13	Pipeline Monitoring Technologies - (HP)	100%	0%	0%	0%
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	A5	Virtual Reality Training - (HP)	100%	0%	0%	0%
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	A6	GPS Tracking of Excavation Equipment - (HP)	100%	0%	0%	0%
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	A7	Virtual Reality Training - (HP)	100%	0%	0%	0%
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	A8	GPS Tracking of Excavation Equipment - (HP)	100%	0%	0%	0%

2021 RAMP
SDG&E-Risk-7-WP
Risks Recorded and Forecast Costs After Allocations Workpaper
Tab: After Allocations\$

(2020 Direct \$000)

				RECORDED DOLLARS								FORECAST DOLLARS													
				O&M Capital										0&M						C	Capital				
		Control /		2016	2017	2018	2019	2020	2016	2017	2018	2019	2020	202	2	202	3	2024		202	22	202	23	2024	.4
RAMP Chapter ID	RAMP Chapter Name	Mitigation ID	Control / Mitigation Name	2010	2017	2010	2013	2020	2010	2017	2016	2019	2020	\$ Low	\$ High	\$ Low	\$ High	\$ Low \$	High \$	\$ Low	\$ High	\$ Low	\$ High	\$ Low	\$ High
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C29	Ticket Risk Assessment and Evaluating City Permit Data - (MP)	\$ -	\$ 6	\$ 36	\$ 36	\$ 60	\$ - !	· -	\$ -	\$ -	\$ -	\$ 33	\$ 42	\$ 34	ŝ 43	\$ 35 \$	45 \$	-	\$ -	\$ - 5	ŝ -	\$ -	\$ -
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C30	Ticket Risk Assessment and Evaluating City Permit Data - (HP)	\$ -	\$ 1	\$ 8			\$ - !	` -	\$ -	\$ -	\$ -	\$ 8	\$ 10	\$ 8	\$ 10	\$ 8 \$	10 \$	-	\$ -	\$ - 5	à -	\$ -	\$ -
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C19	Damage Prevention Policy Activities - (MP)	\$ 0				\$ 0	\$ - !	` -	\$ -	\$ -	\$ -	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0 \$	0 \$	-	\$ -	s - s	٠ - ١	\$ -	\$ -
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C20	Damage Prevention Policy Activities - (HP)	\$ 0				\$ 0			\$ -	\$ -	\$ -	\$ 0	\$ 0	\$ 0	\$ 0	2 0 2	0 \$	-	\$ -	s - \$	<u></u> .	\$ -	\$ -
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C31	Enhance Ticket Management Software - (MP)	\$ -		\$ 2		\$ 1	\$ - \$	11			35		\$ 2	\$ 1			2 \$	29	\$ 37	\$ 30 \$	\$ 38 5	\$ 31	\$ 39
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C32	Enhance Ticket Management Software - (HP)	\$ -	\$ 0				S - !	2	\$ 4	\$ 7	8 2			\$ 0			0 \$	7	\$ 8	\$ 7 \$	\$ 9 !	\$ 7	\$ 9
SDG&E-Risk-7 SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C01	Locate and Mark Training - (MP) Locate and Mark Activities - (MP)	\$ 77					\$ - !		\$ -	\$ -	5 -	\$ 97	\$ 117	\$ 100	\$ 121	\$ 103 \$	124 \$	-	\$ -	\$ - 5	<u> '</u>	5 -	\$ -
SDG&E-RISK-7	Excavation Damage (Dig-In) on the Gas System	C03	Locate and Mark Activities - (MP) Locate and Mark Annual Refresher Training and Competency	\$ 1,966		\$ 3,562		\$ 4,946	5 - :		\$ -	> -	\$ - ^	\$ 4,840	\$ 5,859	\$ 4,985		\$ 5,135 \$ \$ 4 \$	5 \$		\$ -	5 - 5		5 -	5 -
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C05	Program - (MP)	> 2	2 3	2 3	> 4	> 0	, -	, -	ş -	ş -	, -	\$ 4	2 2	> 4	, ,	\$ 4 \$	2 3	-	ş -	> - >	, -		, -
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C07	Locate and Mark Operator Qualification - (MP)	\$ 6	e c	\$ 11	\$ 0	c	e .		c	c	ė	\$ 11	\$ 13	\$ 11	\$ 13	\$ 11 \$	14 \$		ć	e /		c	e
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C09	Locate and Mark Quality Assurance - (MP)	\$ -	\$ 28				\$		٥.	\$.		\$ 560	\$ 716	\$ 577	\$ 737	\$ 594 \$			\$.	3 7	<u>; </u>	\$.	\$.
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C11	Damage Prevention Analysts - (MP)	\$ -	\$ -	\$ 0			\$ - !		Š -	\$ -	s -	\$ 222				\$ 235 \$		-	s -	5 - 5	š -	s -	\$ -
			Locating Equipment and supporting computer Hardware/Software	\$ -					S - !			\$ 189		\$ -	\$ -	\$ -	5 -	S - S	- S	195		\$ 200 \$	\$ 256 !	\$ 207	\$ 264
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C13	(Purchase, Replace, Upgrades and Updates) - (MP)	*	-	7	*	*	, ,		*	,		*	*	,	· .		1		,			,	
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C15-T1	Public Awareness - Affected Public - (MP)	\$ 85	\$ 115	\$ 39	\$ 241	\$ 191	ŝ - !	` -	Š -	Ś -	ŝ -	\$ 236	\$ 285	\$ 243	\$ 294	\$ 250 \$	303 \$	-	ŝ -	s - !	ŝ -	s -	S -
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C15-T2	Public Awareness - Emergency Officials - (MP)	\$ 7	\$ 0			\$ 0	\$ - !	· ·	\$ -	\$ -	\$ -	\$ 3	\$ 3				3 \$	-	\$ -	s - !	ŝ -	\$ -	\$ -
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C15-T3	Public Awareness - Local Public Officials - (MP)	\$ 0	\$ 0	\$ 16	\$ -	\$ 0	\$ - !	- 6	\$ -	\$ -	\$ -	\$ 15	\$ 19	\$ 16	\$ 20	\$ 16 \$	20 \$	-	\$ -	S - S	ŝ -	\$ -	\$ -
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C15-T4	Public Awareness - Excavators - (MP)	\$ 28	\$ 56			\$ 72		` -	\$ -	\$ -	s -	\$ 19	\$ 23	\$ 20	\$ 24	\$ 20 \$	25 \$	-	\$ -	\$ - 5	à -	\$ -	\$ -
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C17		\$ -	\$ -		\$ -	\$ -	\$ - !	` - `	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	ŝ -	\$ - \$	- \$	-]	\$ -	\$ - 5	ٔ - ز	\$ -	\$ -
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C21	Gold Shovel Standard Program - (MP)	\$ 2	\$ 2	\$ 2	\$ 2	\$ 2	\$ - !	` - `	\$ -	\$ -	s -	\$ 2	\$ 2	\$ 2	\$ 2	\$ 2 \$	3 \$	-]	\$ -	\$ - 5	j -	s -	\$ -
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	M1	Automate Third Party Excavation Incident Reporting - (MP)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ - !	` -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 12	ŝ 16		16 \$	-	\$ -	\$ - 5	<u>.</u>	\$ -	\$ -
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	M3	Locate and Mark Photographs - (MP)	\$ -	\$ -	\$ -	\$ -	\$ 44	\$ - !	· -	\$ -	\$ -	\$ -	\$ 69	\$ 88	\$ 69	88	\$ 69 \$	88 \$	-	\$ -	\$ - \$	' - ذ	\$ -	\$ -
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	M5	Electronic Positive Response - (MP)	\$ -	\$ -	\$ -	\$ -	S -	\$ - !		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	ŝ -	\$ - S	- \$	-	\$ -	s - \$	<u></u> .	\$ -	\$ -
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	M7	Leverage Technology for Difficult Locates - (MP)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ - !		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	ŝ -	\$ - \$	- \$	-	\$ -	\$ - \$! - ذ	\$ -	\$ -
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	M11	Leverage Data Gathered by Locating Equipment - (MP)	\$ -	ş -	\$ -	ş -	S -	S - !	· -	\$ -	ş -	S -	S -	S -	S -	S -	s - s	- S	-	ş -	S - S	- '	s - '	S -
SDG&E-Risk-7 SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C27	Warning Mesh - (MP)			\$ 0		\$ 0							\$ 0	\$ 0			0 \$	73		\$ 75 \$	\$ 91 !	\$ 78	
SDG&E-RISK-7	Excavation Damage (Dig-In) on the Gas System	C22 M9	Excess Flow Valve or Curb Valve Installation - (MP) Outreach for Latent 3rd Party Damages - (MP)	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 102 \$	99	\$ 97	\$ 102	\$ 104	\$ 0					0 \$	- 95	\$ 121	\$ 98 \$	\$ 125	\$ 100	\$ 128
SDG&E-RISK-7	Excavation Damage (Dig-In) on the Gas System Excavation Damage (Dig-In) on the Gas System	C25	Company Excavator Training - (MP)	\$ 118	\$ 113	\$ -	\$ -	5 -	\$ - :		\$ -	\$ -	> -			, ,					\$ -	3 - 3		3 -	5 -
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C02	Locate and Mark Training - (HP)	S 118					5 - 3	, -	\$ -	\$ -	<u> </u>	\$ 126 \$ 14					171 \$ 18 \$	-	\$ -	2 - 3		3 -	5 -
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C04						\$ 1,435			ć ·	ė ·	<u> </u>					\$ 1,458 \$		-	c c	3 - 3	, - ·	3 -	
SDOGE HISK 7	Excuration buriage (big in) on the day system	204	Locate and Mark Annual Refresher Training and Competency			\$ 1		\$ 1,433			٥.	\$ -	s -	\$ 1,374					1 \$		\$ -	\$. /	4 .	\$.	\$.
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C06	Program - (HP)	7 -	, ,	7 -	, .	, ,	· .	,	,	~	-	, .	7 1		, .	7 1 7	1 7		~	, ,			-
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C08	Locate and Mark Operator Qualification - (HP)	c 1	c 1	ć 1	ć o					,			٠ .				1 6		^				
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C10	Locate and Mark Operator Qualification - (IIP)	5 1	¢ 2	\$ 15	\$ 43	\$ 42	è :	,	¢ ·	ŷ -	, ,	\$ 73	\$ 94	\$ 75	\$ 96	\$ 78 S	99 \$	-	ŷ .	3 - 3		5 -	3 -
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C12	Damage Prevention Analysts - (HP)	ė -	ė s	\$ 0					ć ·	ė ·	<u> </u>	\$ 42		\$ 44			57 \$	-	c c	3 - 3	, - ·	3 -	
SDOGE HISK 7	Excuration buriage (big iii) on the our system	CIL	Locating Equipment and supporting computer Hardware/Software	s -	\$ -		\$ -		S - 1	,	s -	\$ 43	5 94		\$ 54 ¢	c 44	20 00	S - S	- S	43	\$ 55	\$ 45 \$	\$ 57 !	\$ 46 :	¢ 50
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C14	(Purchase, Replace, Upgrades and Updates) - (HP)	, -	, -	٠ -	, .	, -	, .	, -	, -	Ç 45	, 54	, -	, .	, -	, -	, ,	- -	43	2 33	, 45 7	, ,,	, 40	, ,,,
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C16-T1	Public Awareness - Affected Public - (HP)	\$ 19	\$ 26	\$ 9	\$ 55	S 44	٠. ٠		٠.	٠.	٠.	\$ 54	\$ 65	\$ 55	ŝ 67	\$ 57 \$	69 S	_	٠.	s . /	4 -	۹ .	۹ .
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C16-T2		\$ 2		\$ 1		\$ 0	\$ - !		Š -	\$ -	s .	\$ 1		S 1			1 5	-	s -	5 - (š -	Ś -	\$ -
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C16-T3	Public Awareness - Local Public Officials - (HP)	\$ 0	\$ 0	\$ 4	\$ -	\$ 0			Š -	\$ -	š -	\$ 3	\$ 4	S 4	ŝ 5	S 4 S	5 S	-	Š -	S - 5	ŝ -	s -	Š -
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C16-T4	Public Awareness - Excavators - (HP)	\$ 6	\$ 13	\$ 5	\$ 5	\$ 16	\$ - !	· ·	\$ -	\$ -	\$ -	\$ 4	\$ 5	\$ 5	\$ 5	\$ 5 \$	6 \$	-	\$ -	s - !	ŝ -	\$ -	\$ -
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C18	Increase Reporting of Unsafe Excavation - (HP)	\$ -	\$ -	\$ -	\$ -	s -	\$ - !	· ·	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	ŝ -	\$ - \$	- \$	-	\$ -	s - !	ŝ -	\$ -	\$ -
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C22	Gold Shovel Standard Program - (HP)	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ - !		\$ -	\$ -	\$ -	\$ 0	\$ 1	\$ 0	ŝ 1	\$ 0 \$	1 \$	-	\$ -	s - !	ŝ -	\$ -	\$ -
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	M2	Automate Third Party Excavation Incident Reporting - (HP)	\$ -	\$ -	\$ -	\$ -	s -	\$ - !		\$ -	\$ -	\$ -	\$ -	\$ -	\$ 2	ŝ 3	\$ 2 \$	3 \$	-	\$ -	s - !	ŝ -	\$ -	\$ -
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	M4	Locate and Mark Photographs - (HP)	\$ -	\$ -	\$ -	\$ -	\$ 5	\$ - !		\$ -	\$ -	\$ -	\$ 11	\$ 14	\$ 11	ŝ 14	\$ 11 \$	14 \$	-	\$ -	s - !	ŝ -	\$ -	\$ -
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	M6	Electronic Positive Response - (HP)	\$ -	\$ -	\$ -	\$ -	S -	\$ - !	· -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	ŝ -	\$ - \$	- \$	-	\$ -	s - :	à -	\$ -	\$ -
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	M8		\$ -	\$ -	\$ -	\$ -	\$ -	\$ - !	· -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	ŝ -	\$ - \$	- \$	-	\$ -	s - 9	٠ - ز	\$ -	\$ -
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	M12		\$ -	\$ -	\$ -	\$ -	S -	\$ - !	` -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -		S - S	- \$	-	\$ -	s - 9	ٔ - دُ	\$ -	\$ -
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C28	Warning Mesh - (HP)	\$ 0				\$ 0	\$ 18 5	17	\$ 17	\$ 17	17		\$ 0				0 \$	17		\$ 17 \$	\$ 21 !	\$ 18	\$ 21
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C23	Pipeline Patrol and Pipeline Markers - (HP)	\$ 549	\$ 414	\$ 414	\$ 455	\$ 680	Ş - !	j -	Ş -	5 -	5 -	\$ 630	\$ 805			\$ 669 \$		-	\$ -	ş - \$	<u> </u>	5 - '	5 -
SDG&E-Risk-7 SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	M10 C26	Outreach for Latent 3rd Party Damages - (HP)	5 -	\$ -	\$ -	5 -	\$ -	5 - !		\$ -	5 -	5 -	5 1	5 1	\$ 1		\$ 1 \$	1 \$	-	5 -	5 - 9	<u></u>	5 - '	5 -
SDG&E-RISK-7 SDG&E-RISK-7	Excavation Damage (Dig-In) on the Gas System Excavation Damage (Dig-In) on the Gas System	M13	Company Excavator Training - (HP) Pipeline Monitoring Technologies - (HP)	\$ 16	\$ 15	\$ 19	\$ 19	\$ 18	S - !	-	ş -	ş -	ş -	\$ 17	\$ 22	\$ 18			24 \$	-	\$ -	S - S	<u> </u>	\$ - '	S -
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System Excavation Damage (Dig-In) on the Gas System	A5	Virtual Reality Training - (MP)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ - !		\$ -	\$ -	Ş -	\$ 94	\$ 1	\$ 3 \$ 94			77 \$ 120 \$	73 94		\$ 866 \$ \$ 94 \$	\$ 1,251 5 \$ 120 5	\$ 585 S	
SDG&E-RISK-7	Excavation Damage (Dig-In) on the Gas System Excavation Damage (Dig-In) on the Gas System	A6	GPS Tracking of Excavation Equipment - (MP)	5 -	S -	\$ -	\$ -	5 -	5 - 3	, -	\$ -	\$ -	<u> </u>	\$ 306	\$ 120 \$ 391	\$ 306	\$ 120 \$ 391	\$ 94 \$ \$ 306 \$	391 S	306		\$ 94 S	\$ 120 : \$ 391 :	\$ 306	\$ 120 \$ 391
SDG&E-RISK-7	Excavation Damage (Dig-In) on the Gas System	A6 A7	Virtual Reality Training - (HP)	5 -	5 -	\$ -	\$ -	5 -	5 - :		\$ -	> -	\$ - ^	\$ 94	\$ 120	\$ 306 \$ 94				94		\$ 94 \$	\$ 391 : \$ 120 :	\$ 94	\$ 120
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	A8	GPS Tracking of Excavation Equipment - (HP)	ė -	ė -	ė ·	ė ·	s -	o - :		ė ·	o -	÷ -	\$ 306	\$ 391		\$ 391					\$ 306 \$	\$ 391 5	\$ 306	\$ 391
SDOGE HISK 7	Excuration buriage (big iii) on the our system	7.0	or 5 receiving or excession equipment. (111)	, .	, .	J -	, .	, -	, .	, -	, .	, -	, -	3 300	3 331	3 300	3 331	3 300 3	331 3	300	2 331	3 300 3	, 391	3 300	3 331
																						+	+	+	
			l .																						
															J										
															J										
NOTES:								<u> </u>																	
[1] The figures pro	ovided are direct charges and do not include compar	ny loaders, with the e	xception of vacation and sick. The costs are also in 2020 dollars and hav	ve not been	escalated to	2021 amou	ınts.																		
[2] Casta and	ided, where available, for all activities regardless of		.i												J										
[[∠] Costs are provi	idea, where available, for all activities regardless of	wnether a KSE analy	sis was performed.			\vdash								L											

						RECORDED UNITS								FORECAST UNITS														
							RECORDED UNITS						Capital					08	kM.			Capital						
		Control / Mitigation		Units D	Description	2016	2017	2018	2019	2020	2016	2017	2018	2019	2020	202	2	20	23	20	024	20	122	20	.23	2024		
RAMP Chapter ID	RAMP Chapter Name	ID ID	Control / Mitigation Name	Capital	0&M	2016	2017	2018	2019	2020	2016	2017	2018	2019	2020	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C29	Ticket Risk Assessment and Evaluating City Permit Data - (MP)	N/A	FTE Headcount		-	1	1	1			-			1	1	1	1	1	1	-			-		-	
SDG&E-Risk-7			Ticket Risk Assessment and Evaluating City Permit Data - (HP)	N/A	FTE Headcount			-	-	-			-		-	-									-	-	-	
SDG&E-Risk-7		C19	Damage Prevention Policy Activities - (MP)	N/A	N/A		-	-		-	-	-	-		-	-	-	-	-	-	-	-	-	-				
SDG&E-Risk-7 SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C20	Damage Prevention Policy Activities - (HP)	N/A	N/A	-	•	-		-		-		-			-		-	-		-						
SDG&E-RISK-7 SDG&F-Risk-7		C31	Enhance Ticket Management Software - (MP)	No Feasible Units	No Feasible Units N/Δ	-	-						-	-	-		-			-	-	-						
SDG&E-RISK-7	Excavation Damage (Dig-In) on the Gas System Excavation Damage (Dig-In) on the Gas System	C01	Enhance Ticket Management Software - (HP) Locate and Mark Training - (MP)	N/A	Training Hours	887	887	1.258	980	1.161				-	- :	959	1.160	987	1.195	1.017	1.231							
SDG&E-Risk-7		C03	Locate and Mark Activities - (MP)	N/A	Ticket Count	111,327	121,931		133,876		-	-				130,998		134,927			168,233	-	-	-				
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C05	Locate and Mark Annual Refresher Training and Competency Program	- N/A	Training Hours	17	21	20	30	55			-			29	35	30	36	31		-				-		
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C07	Locate and Mark Operator Qualification - (MP)	N/A	FTE Headcount			-	-				-			-	-				-						-	
SDG&E-Risk-7		C09	Locate and Mark Quality Assurance - (MP)	N/A	FTE Headcount			1	3	3			-		-	3	3	3	3	3	3				-	-	-	
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C11	Damage Prevention Analysts - (MP)	N/A	No Feasible Units	-		-		-	-	-	-	-	-	-	-		-	-		-	-	-			-	
			Locating Equipment and supporting computer Hardware/Software		Data Terminals						-																	
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C13	(Purchase, Replace, Upgrades and Updates) - (MP)	N/A	(MDTs) Number of		-	-					-	37	58	-	-	-		-	-	39	50	40	52	42	53	
					Communications																							
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C15-T1	Public Awareness - Affected Public - (MP)	N/A	Sent	1,955,328	3,130,006	962,328	1,455,305	1 455 305						1,424,016	1,723,809	1,466,737	1,775,524	1,510,739	1 828 789				-			
SDOUL HUSK /	Excuration burnings (big injoir the day system	C15 11	Tube Andrews Arteries above (mr)	1975	Number of	1,555,520	3,230,000	302,320	1,433,303	1,433,303						1,424,010	1,713,003	1,400,737	4,773,344	1,310,733	1,010,703						_	
					Communications						-																	
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C15-T2	Public Awareness - Emergency Officials - (MP)	N/A	Sent	313	316	402	305	305						394	477	405	491	418	506						-	
					Number of																					. —		
					Communications						-																	
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C15-T3	Public Awareness - Local Public Officials - (MP)	N/A	Sent	319	331	352	352	352			-	-	-	326	417	336	429	346	442	-	-	-	-	-		
1				1	Number of																1	l			.			
SDG&F-Risk-7					Communications						-																	
SDG&E-RISK-7	Excavation Damage (Dig-In) on the Gas System Excavation Damage (Dig-In) on the Gas System	C15-T4	Public Awareness - Excavators - (MP) Increase Reporting of Unsafe Excavation - (MP)	N/A	N/A	64,336	36,647	42,755	37,462	37,462			-	-	-	41,836	50,644	43,091	52,163	44,384	53,728	-	-					
SDG&F-Risk-7	Excavation Damage (Dig-In) on the Gas System	C21	Gold Shovel Standard Program - (MP)	N/A	Memberships	1	1	1	1	- 1	-	- :				1	1	- 1	1	1	1							
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	M1	Automate Third Party Excavation Incident Reporting - (MP)	N/A	No Feasible Units	- :					-			-		-						-		-				
SDG&E-Risk-7		M3	Locate and Mark Photographs - (MP)	N/A	FTE Headcount				-	55	-					-	-								-			
SDG&E-Risk-7		M5	Electronic Positive Response - (MP)	N/A	N/A		-	-	-	-		-	-		-	-	-	-	-		-	-		-	-	-	-	
SDG&E-Risk-7		M7	Leverage Technology for Difficult Locates - (MP)	N/A	N/A		-	-	-		-		-		,	-					-	-			-	-	-	
SDG&E-Risk-7		M11	Leverage Data Gathered by Locating Equipment - (MP)	N/A	N/A		-	-							-	-	-			-	-	-	-	-			-	
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C27	Warning Mesh - (MP)		N/A	-		-		-	867	893	921	950	979	-	-		-	-		929	1,125	957	1,159	986	1,193	
SDG&E-Risk-7	C	633	5 5 161 6 161	Number of Installations							3,815	3.934	4.056	4.181	2.155							4.091	4,952	4.214	5.101	4.340	5.254	
SDG&E-RISK-7 SDG&F-Risk-7	Excavation Damage (Dig-In) on the Gas System Excavation Damage (Dig-In) on the Gas System	MQ	Excess Flow Valve or Curb Valve Installation - (MP) Outreach for Latent 3rd Party Damages - (MP)	N/A	No Feasible Units	-		-				3,934	4,056	4,181	2,155	-	-			-	-	4,091	4,952	4,214	5,101	4,340	5,254	
SDG&F-Risk-7	Excavation Damage (Dig-In) on the Gas System	C25	Company Excavator Training - (MP)	N/A	Training Hours	1.284	1.284	1.655	1.377	1.415				-		- 1	- :	-		-	- :		- :	-				
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C02	Locate and Mark Training - (HP)	N/A	Training Hours	129	129	198	157	167	-	-		-		154	186	158	191	163	197	-		-				
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C04	Locate and Mark Activities - (HP)	N/A	Ticket Count	24,627	25,090		30,513	31,959	-					29,857	36,143	30,753		31,675					-		-	
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C06	Locate and Mark Annual Refresher Training and Competency Program -	N/A	Training Hours	6	6	6	7	10		-	-		-	7	9	7	9	7	9	-		-	-	-	-	
SDG&E-Risk-7		C08	Locate and Mark Operator Qualification - (HP)	N/A	FTE Headcount				-																-	-	-	
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C10	Locate and Mark Quality Assurance - (HP)	N/A	No Feasible Units			-	-	-			-		-	-									-	-	-	
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C12	Damage Prevention Analysts - (HP)	N/A	FTE Headcount	-		-		-	-	-	-	-	-	-	-		-	-		-	-	-			-	
			Locating Equipment and supporting computer Hardware/Software		Data Terminals						-																	
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C14	(Purchase, Replace, Upgrades and Updates) - (HP)	N/A	(MDTs) Number of	-	•	-		-		-		9	13		-		-	-		12	16	13	16	13	17	
					Communications																							
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C16-T1	Public Awareness - Affected Public - (HP)	N/A	Sent	445,660	713,394	219,335	331,695	331,695						324,563	392,892	334,300	404,679	344,329	416,819							
SDOUL TOSK 7	excuration burnings (big in) on the day system	C10 11	Tubic American Artected tubic (iii)	NA.	Number of	443,000	/13,334	217,333	331,093	331,033				-		324,303	332,032	334,300	404,075	344,323	410,019	-						
					Communications						-																	
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C16-T2	Public Awareness - Emergency Officials - (HP)	N/A	Sent	71	72	92	70	70			-	-	-	90	109	92	112	95	115	-	-	-	-		-	
					Number of																							
					Communications						-																	
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C16-T3	Public Awareness - Local Public Officials - (HP)	N/A	Sent	73	75	80	80	80			-		-	74	95	77	98	79	101	-	-	-			-	
					Number of																							
					Communications						-																	
SDG&E-Risk-7 SDG&E-Risk-7		C16-T4 C18	Public Awareness - Excavators - (HP) Increase Reporting of Unsafe Excavation - (HP)	N/A N/A	N/A	14,664	8,353	9,745	8,538	8,538			-	-	-	9,535	11,543	9,821	11,889	10,116	12,246	-						
3DG&E-RISK-7	Excavation balliage (big-in) on the Gas system	C10	increase Reporting or orisate Excavation - (HP)	IN/A	Number of	-		-					-	-	-	-	-			-		-	-				_	
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	C22	Gold Shovel Standard Program - (HP)	N/A	Memberships	-					-			-			-	-						-		1		
SDG&E-Risk-7		M2	Automate Third Party Excavation Incident Reporting - (HP)	N/A	No Feasible Units	-	-	-		-			-	-	-	-	-		-	-	-	-	-					
SDG&E-Risk-7		M4	Locate and Mark Photographs - (HP)	N/A	FTE Headcount		-	-	- 1				-			-	-					-				-		
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	M6	Electronic Positive Response - (HP)	N/A	N/A		_	-							-	-					_		-			-	_=	
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	M8	Leverage Technology for Difficult Locates - (HP)	N/A	N/A	-	-	-					-	-	-	-				-	-	-	-		-	-		
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System		Leverage Data Gathered by Locating Equipment - (HP)	N/A	N/A	-	-	-			-			-	- :	-	-		-	-	-							
SDG&E-Risk-7		C28	Warning Mesh - (HP)	Number of Rolls	N/A	-		-		-	197	204	210	216	223		-	-	-	-		212	256	218	264	225	272	
SDG&E-Risk-7 SDG&E-Risk-7		C23 M10	Pipeline Patrol and Pipeline Markers - (HP)	N/A N/A	Number of Items No Feasible Units	25	26	26	27	14			-	-		26	32	27	33	28	34	-						
SDG&E-RISK-7	Excavation Damage (Dig-In) on the Gas System Excavation Damage (Dig-In) on the Gas System	C26	Outreach for Latent 3rd Party Damages - (HP) Company Excavator Training - (HP)	N/A	Training Hours	172	172	2/11	199	193				-		195	226	201	243	207	251	-					-	
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	M13	Pipeline Monitoring Technologies - (HP)	N/A	Fiber	- 1/2	- 1/2	- 241	123	- 193	-			-		120	- 230	- 201	- 243	1	1			1	1		-	
SDG&E-Risk-7		A5	Virtual Reality Training - (MP)		No Feasible Units	-	- 1	-		-		-	-	-	-	-	-	-	-	- 1	- 1	-	-	- 1		1		
SDG&E-Risk-7		A6	GPS Tracking of Excavation Equipment - (MP)	No Feasible Units	No Feasible Units		-	-	1				-		-	-	-	-		-	-	-	-	-			-	
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	A7	Virtual Reality Training - (MP)		No Feasible Units	-	-	-		-			-	-	-	-	-	-		-			-					
SDG&E-Risk-7	Excavation Damage (Dig-In) on the Gas System	A8	GPS Tracking of Excavation Equipment - (MP)	No Feasible Units	No Feasible Units								-			-	-						-		-		-	