SED DATA REQUEST #1 (12/19/2016)
SDG&E RESPONSE (01/10/2017)
(Direct 2015 $000)

		Control			Mitigation											
Company Risk ID (Chapter)	**Control/ Mitigation**	**Capital**	**O&M**	**Control Total**	**2019 O&M**		**2017 Capital**		**2018 Capital**		**2019 Capital**		**Mitigation Total (2019 O&M + 2019 Capital)**		**Delta (Mitigation Total vs Control Total)[4]**	**Notes (Non-GRC amounts[5])**
					Low	**High**	**Low**	**High**	**Low**	**High**	**Low**	**High**	**Low**	**High**		
SDGE-01: C1/M1	Inspection, Repair, Maintenance & Replacement Programs[1,2]	$ 102,084	$ 637	102,721	$ 1,250	$ 1,626	$ 261,044	$ 339,359	$ 321,945	$ 418,528	$ 312,091	$ 405,719	$ 313,341	$ 407,345	$ 257,622	C: $33,064 M: $389,543-506,408
SDGE-01: C2/M2	Vegetation Management[1]	-	23,100	23,100	23,553	30,620	-	-	-	-	-	-	23,553	30,620	3,987	
SDGE-01: C3/M3	Design & Engineering Approaches[1,2]	3,838	-	3,838	-	-	12,048	15,663	12,048	15,663	12,048	15,663	12,048	15,663	10,018	C: 2,091 M: 4,119-5,355
SDGE-01: C4/M4	Legal & Regulatory[2]	602	743	1,345	575	748	424	551	424	551	424	551	999	1,299	(196)	C: 1,158 M: 1,772-2,303
SDGE-01: C5/M5	Rapid Response[1]	-	5,660	5,660	6,352	8,259	-	-	-	-	-	-	6,352	8,259	1,646	
SDGE-01: C6/M6	Monitoring and Detection Programs	834	451	1,285	1,638	2,129	200	260	200	260	950	1,235	2,588	3,364	1,691	
	SDGE-01 TOTAL	**107,358**	**30,591**	**137,949**	**33,368**	**43,382**	**273,716**	**355,833**	**334,617**	**435,002**	**325,513**	**423,168**	**358,881**	**466,550**	**274,767**	
SDGE-02: C1/M1	Training[1]	-	129	129	124	136	-	-	-	-	-	-	124	136	1	
SDGE-02: C2/M2	Locate and Mark Activities[1]	253	2,195	2,448	2,595	2,868	232	257	251	278	256	283	2,851	3,151	553	
SDGE-02: C3/M3	Public Awareness[1]	-	20	20	19	21	-	-	-	-	-	-	19	21	-	
SDGE-02: M4	Prevention and Improvements	-	-	-	23	25	-	-	-	-	-	-	23	25	24	
	SDGE-02 TOTAL	**253**	**2,344**	**2,597**	**2,761**	**3,050**	**232**	**257**	**251**	**278**	**256**	**283**	**3,017**	**3,333**	**578**	
SDGE-03: C1/M1	Safety Policies & Programs[1]	5,014	34,597	39,611	33,221	39,865	6,780	8,136	6,780	8,136	6,780	8,136	40,001	48,001	4,390	
SDGE-3: C2/M2	Mandatory Employee Training, Retraining and Refresher programs[1]	-	16,673	16,673	16,675	20,010	-	-	-	-	-	-	16,675	20,010	1,670	
SDGE-3: C3/M3	Field Observation and Behavior Based Safety Programs	-	650	650	896	1,075	-	-	-	-	-	-	896	1,075	336	
SDGE-03: C4/M4	Regular Safety Meetings	-	3,524	3,524	3,524	4,229	-	-	-	-	-	-	3,524	4,229	353	
SDGE-03: C5/M5	Ongoing Maintenance Programs	-	2,664	2,664	2,808	3,370	-	-	-	-	-	-	2,808	3,370	425	
SDGE-03: C6/M6	Customer Communications and First Responder Training[1]	-	1,973	1,973	6,996	8,394	-	-	-	-	-	-	6,996	8,394	5,722	
SDGE-03: C7/M7	Contractor Safety Program	38,164	741	38,905	743	892	38,427	46,112	38,455	46,146	38,483	46,180	39,226	47,072	4,244	
SDGE-03: C8/M8	Customer Orders Relative to Public Safety	-	4,958	4,958	5,081	6,097	-	-	-	-	-	-	5,081	6,097	631	
	SDGE-03 TOTAL	**43,178**	**65,780**	**108,958**	**69,944**	**83,932**	**45,207**	**54,248**	**45,235**	**54,282**	**45,263**	**54,316**	**115,207**	**138,248**	**17,770**	
SDGE-04: C1/M1	Power Quality Studies of DER Interconnections	38	-	38	-	-	200	400	200	400	200	400	200	400	262	
SDGE-04: C2/M2	Improved Modeling Tools	1,643	-	1,643	50	125	-	-	-	-	-	-	50	125	(1,556)	
SDGE-04: M3	Increased Outreach Program	-	-	-	300	500	-	-	-	-	-	-	300	500	400	
SDGE-04: C3/M4	Interconnection Compliance	-	1	1	758	960	-	-	-	-	-	-	758	960	858	M: 758-960
SDGE-04: M5	Anti-Islanding Program	-	-	-	200	300	-	-	-	-	-	-	200	300	250	
	SDGE-04 TOTAL	**1,681**	**1**	**1,682**	**1,308**	**1,885**	**200**	**400**	**200**	**400**	**200**	**400**	**1,508**	**2,285**	**215**	
SDGE-05: M1	Upgrades and Installation of New Transmission Facilities	-	-	-	-	-	178,463	218,120	90,299	110,364	113,798	139,087	113,798	139,087	126,443	M: 382,560-467,571
SDGE-05: M2	Modernization of Grid Control Centers[1]	-	-	-	-	-	9,883	10,923	4,015	4,437	-	-	-	-	-	M: 2,085-2,303
SDGE-05: C1/M3	Advance Readiness	-	1,029	1,029	978	1,080	-	-	-	-	-	-	978	1,080	-	C: 1,029 M: 978-1,080
SDGE-05: C2/M4	Monitoring and Control of Bulk Electric System	4,923	1,575	6,498	1,496	1,654	4,047	4,473	4,047	4,473	4,047	4,473	5,543	6,127	(663)	C: 6,498 M: 13,637-15,073
	SDGE-05 TOTAL	**4,923**	**2,604**	**7,527**	**2,474**	**2,734**	**192,393**	**233,516**	**98,361**	**119,274**	**117,845**	**143,560**	**120,319**	**146,294**	**125,780**	
SDGE-06: M1	South Grid Blackstart Project	-	-	-	-	-	1,173	1,297	-	-	-	-	-	-	-	M: 352-390

		Control			Mitigation											
Company Risk ID (Chapter)	Control/ Mitigation	Capital	O&M	Control Total	2019 O&M		2017 Capital		2018 Capital		2019 Capital		Mitigation Total (2019 O&M + 2019 Capital)		Delta (Mitigation Total vs Control Total)[4]	Notes (Non-GRC amounts[5])
					Low	High	Low	High	Low	High	Low	High	Low	High		
SDGE-06: M2	Modernization of Grid Control Centers[1]	-	-	-	-	-	9,883	10,923	4,015	4,437	-	-	-	-	-	M: 2,085-2,303
SDGE-06: M3	Substation Backup Power Enhancements (Fuel Cells)	-	-	-	-	-	2,187	2,959	2,027	2,743	-	-	-	-	-	M: 4,214-5,702
SDGE-06: C1/M4	Maintenance, Certification, and Testing of Existing Blackstart Facilities	-	20	20	19	21	-	-	-	-	-	-	19	21	-	
SDGE-06: C2/M5	Blackstart Training and Procedure Development	-	60	60	57	63	-	-	-	-	-	-	57	63	-	C: 60 M: 57-63
	SDGE-06 TOTAL	**-**	**80**	**80**	**76**	**84**	**13,243**	**15,179**	**6,042**	**7,180**	**-**	**-**	**76**	**84**	**-**	
SDGE-07: C1/M1	Identify	(1)	1,416	1,415	1,103	1,569	-	-	-	-	-	-	1,103	1,569	(79)	C: 640 M: 640-850
SDGE-07: C2/M2	Protect[2]	1,824	2,883	4,707	3,998	6,022	1,000	3,000	1,000	3,000	1,000	3,000	4,998	9,022	2,303	C: 827 M: 3,826-9,886
SDGE-07: C3/M3	Detect	2	1,020	1,022	1,278	1,633	-	-	-	-	-	-	1,278	1,633	434	C: 137 M: 137-287
SDGE-07: C4/M4	Respond	-	812	812	935	1,496	-	-	-	-	-	-	935	1,496	404	C: 196 M: 196-346
SDGE-07: C5/M5	Recover	-	73	73	248	453	-	-	-	-	-	-	248	453	278	C: 49 M: 49-109
	SDGE-07 TOTAL	**1,825**	**6,204**	**8,029**	**7,562**	**11,173**	**1,000**	**3,000**	**1,000**	**3,000**	**1,000**	**3,000**	**8,562**	**14,173**	**3,339**	
SDGE-08: C1/M1	Aviation Safety Management Systems	16	34	50	57	76	-	-	-	-	-	-	57	76	17	
SDGE-08: C2/M2	Job Site Observation Program	-	12	12	11	15	-	-	-	-	-	-	11	15	1	
SDGE-08: C3/M3	Service Provider Audit Program	-	7	7	18	24	-	-	-	-	-	-	18	24	14	
SDGE-08: M4	Purchase a Twin-Engine Helicopter	-	-	-	203	264	7,650	11,050					203	264	234	
SDGE-08: C5	"Best Practices" Training	6	4	10	-	-	-	-	-	-	-	-	-	-	(10)	
SDGE-08: M5	Aviation Safety Training	-	-	-	18	23	-	-	-	-	-	-	18	23	21	
SDGE-08: M6	Currency and Proficiency Training with New Helicopter	-	-	-	3	4	-	-	-	-	-	-	3	4	4	
	SDGE-08 TOTAL	**22**	**57**	**79**	**310**	**406**	**7,650**	**11,050**	**-**	**-**	**-**	**-**	**310**	**406**	**279**	
SDGE-09: C1/M1	Physical Security Systems and Contract Security[1]	4,289	4,320	8,609	6,765	7,569	7,364	8,909	3,585	4,282	3,754	4,479	10,519	12,048	2,675	
SDGE-09: C2/M2	Planning, Awareness, and Incident Management	252	285	537	526	718	177	195	177	195	177	195	703	913	271	
	SDGE-09 TOTAL	**4,541**	**4,605**	**9,146**	**7,291**	**8,287**	**7,541**	**9,104**	**3,762**	**4,477**	**3,931**	**4,674**	**11,222**	**12,961**	**2,946**	
SDGE-10: C1/M1	CFR 192 Subpart M - Maintenance[1]	-	1,161	1,161	1,044	1,154	-	-	-	-	-	-	1,044	1,154	(62)	
SDGE-10: C2/M2	CFR 192 Subpart N - Qualifications of Pipeline Personnel[1]	-	102	102	133	181	-	-	-	-	-	-	133	181	55	
SDGE-10: C3/M3	CFR 192 Subpart I - Requirements for Corrosion Control	-	48	48	46	50	-	-	-	-	-	-	46	50	-	
SDGE-10: C4/M4	CFR 192 Subpart L - Operations[1]	412	103	515	98	108	391	433	391	433	391	433	489	541	-	
SDGE-10: C5/M5	CFR Part 192 Subpart O - Gas Transmission Pipeline Integrity Management[2]	7,074	3,876	10,950	4,971	5,495	7,592	8,392	3,796	4,196	3,796	4,196	8,767	9,691	(1,721)	
SDGE-10: C6/M6	CPUC 958 - PSEP: High Pressure Testing and Replacement[3]	86,690	4,453	91,143	-	-	49,500	60,500	900	1,100	-	-	-	-	(91,143)	C: 91,143 M: 50,400-61,600
	SDGE-10 TOTAL	**94,176**	**9,743**	**103,919**	**6,292**	**6,988**	**57,483**	**69,325**	**5,087**	**5,729**	**4,187**	**4,629**	**10,479**	**11,617**	**(92,871)**	
SDGE-11: C1	UAS Weight Limitations	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
SDGE-11: C2	Pilot in Command Experience and Training Requirements	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
SDGE-11: C3	UAS Software and Hardware Checked Prior to Flight	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

		Control			Mitigation											
Company Risk ID (Chapter)	Control/ Mitigation	Capital	O&M	Control Total	2019 O&M		2017 Capital		2018 Capital		2019 Capital		Mitigation Total (2019 O&M + 2019 Capital)		Delta (Mitigation Total vs Control Total)[4]	Notes (Non-GRC amounts[5])
					Low	High	Low	High	Low	High	Low	High	Low	High		
SDGE-11: C4	Flights Not Conducted Near Aircraft or People or Within Five Miles of an Airport Without Air Traffic Control Permission	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
SDGE-11: C5	Complied with State and Federal UAS Regulations	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
SDGE-11: M1	UAS SMS	-	-	-	54	77	-	-	-	-	-	-	54	77	66	
SDGE-11: M2	UAS Training Program for SDG&E Employees	-	-	-	16	23	-	-	-	-	-	-	16	23	20	
SDGE-11: M3	Contractor Qualification, Oversight and Audit Program	-	-	-	23	34	-	-	-	-	-	-	23	34	29	
SDGE-11: M4	Flight Management Controls	-	-	-	9	13	-	-	-	-	-	-	9	13	11	
SDGE-11: M5	Research Best Use Cases for Specific Systems as Technology Advances	-	-	-	10	14	-	-	-	-	-	-	10	14	12	
	SDGE-11 TOTAL	**-**	**-**	**-**	**112**	**161**	**-**	**-**	**-**	**-**	**-**	**-**	**112**	**161**	**137**	
SDGE-12: C1/M1	Premature Overhead Failure[1]	16,040	1,179	17,219	8,317	10,813	59,113	76,848	59,113	76,848	59,113	76,848	67,430	87,661	60,327	C: 756 M: 1,836-2,388
SDGE-12: C2/M2	Premature Underground Failure	33,107	-	33,107	1,280	1,664	71,713	93,227	71,713	93,227	71,713	93,227	72,993	94,891	50,835	
SDGE-12: C3/M3	Premature Substation Failure	4,189	-	4,189	261	339	13,309	17,302	12,118	15,753	12,118	15,753	12,379	16,092	10,047	C: 2,742 M: 8,986-11,681
SDGE-12: C4/M4	System Modernization[1]	571	52	623	681	886	8,723	11,340	8,723	11,340	8,723	11,340	9,404	12,226	10,192	
	SDGE-12 TOTAL	**53,907**	**1,231**	**55,138**	**10,539**	**13,702**	**152,858**	**198,717**	**151,667**	**197,168**	**151,667**	**197,168**	**162,206**	**210,870**	**131,400**	
SDGE-13: C1/M1	Administrative	-	577	577	698	989	-	-	-	-	-	-	698	989	267	
SDGE-13: C2/M2	Training	-	34	34	436	1,309	-	-	-	-	-	-	436	1,309	839	
SDGE-13: C3/M3	Operational Compliance and Oversight	7,365	5,650	13,015	7,464	8,957	7,652	9,182	7,634	9,161	7,634	9,161	15,098	18,118	3,593	C: 1,460 M: 4,407-5,288
SDGE-13: C4/M4	Information Management Systems[1]	19,561	-	19,561	-	-	29,979	35,975	22,820	27,384	16,506	19,807	16,506	19,807	(1,405)	
	SDGE-13 TOTAL	**26,926**	**6,261**	**33,187**	**8,598**	**11,255**	**37,631**	**45,157**	**30,454**	**36,545**	**24,140**	**28,968**	**32,738**	**40,223**	**3,294**	
SDGE-14: C1/M1	Meteorology Support	-	23	23	23	28	-	-	-	-	-	-	23	28	3	
SDGE-14: C2/M2	Climate Advisory Group	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
SDGE-14: M3	Consultant Support	-	-	-	120	180	-	-	-	-		-	120	180	150	
SDGE-14: M4	University Team	-	-	-	225	300	-	-	-	-	-	-	225	300	263	
	SDGE-14 TOTAL	**-**	**23**	**23**	**368**	**508**	**-**	**-**	**-**	**-**	**-**	**-**	**368**	**508**	**415**	
SDGE-15: C1/M1	Physical Security[1]	18,444	6,596	25,040	8,044	9,182	15,384	18,712	13,935	16,931	11,773	14,280	19,817	23,462	(3,401)	C: 18,216 M: 37,755-46,145
SDGE-15: C2/M2	Communications and Outreach[1]	-	731	731	631	757	-	-	-	-	-	-	631	757	(37)	
SDGE-15: C3/M3	Design, Operations and Maintenance	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	SDGE-15 TOTAL	**18,444**	**7,327**	**25,771**	**8,675**	**9,939**	**15,384**	**18,712**	**13,935**	**16,931**	**11,773**	**14,280**	**20,448**	**24,219**	**(3,438)**	
SDGE-16: C1/M1	Maintenance[1]	1,215	5,782	6,997	5,867	6,485	994	1,098	994	1,098	994	1,098	6,861	7,583	225	
SDGE-16: C2/M2	Qualifications of Pipeline Personnel[1]	200	500	700	787	961	662	809	463	565	293	358	1,080	1,319	500	
SDGE-16: C3/M3	Requirements for Corrosion Control	531	1,399	1,930	1,462	1,616	1,864	2,060	2,051	2,267	2,154	2,380	3,616	3,996	1,876	
SDGE-16: C4/M4	Operations[1]	496	496	992	471	520	471	520	471	520	471	520	942	1,040	(1)	
SDGE-16: C5/M5	Gas Distribution Integrity Management Programs	6,208	17	6,225	222	300	20,866	23,062	21,146	23,372	22,467	42,727	22,689	43,027	26,633	
SDGE-16: M6	Improvements	-	-	-	-	6,698	31,854	35,207	52,424	57,942	44,987	49,722	44,987	56,420	50,704	
	SDGE-16 TOTAL	**8,650**	**8,194**	**16,844**	**8,809**	**16,580**	**56,711**	**62,756**	**77,549**	**85,764**	**71,366**	**96,805**	**80,175**	**113,385**	**79,936**	
SDGE-17: C1/M1	Gas Operations[1,2]	-	-	-	203	434	-	-	-	-	-	-	203	434	319	M: 81-174
SDGE-17: C2/M2	Customer Service Field & Smart Meter Ops[1]	-	343	343	611	1,154	-	-	-	-	-	-	611	1,154	540	C: 75 M: 134-254
SDGE-17: C3/M3	Kearny[1]	-	21	21	23	63	-	-	-	-	-	-	23	63	22	C: 18 M: 20-54

		Control			Mitigation											
Company Risk ID (Chapter)	Control/ Mitigation	Capital	O&M	Control Total	2019 O&M		2017 Capital		2018 Capital		2019 Capital		Mitigation Total (2019 O&M + 2019 Capital)		Delta (Mitigation Total vs Control Total)[4]	Notes (Non-GRC amounts[5])
					Low	High	Low	High	Low	High	Low	High	Low	High		
SDGE-17: C4/M4	Electric Regional Operations[1]		1,069	1,069	1,903	3,578	-	-	-	-	-	-	1,903	3,578	1,672	C: 11 M: 19-36
SDGE-17: C5/M5	Electric Grid Operations[1]	-	13	13	14	28	-	-	-	-	-	-	14	28	8	C: 11 M: 12-24
SDGE-17: C6/M6	Construction Services[1]		5	5	50	555	-	-	-	-	-	-	50	555	298	C: 5 M: 45-500
SDGE-17: C7/M7	Electric Distribution Operations[1]		-	-	31	38	-	-	-	-	-	-	31	38	35	M: 9-11
SDGE-17: C8/M8	Electric Transmission & Distribution[1,2]	-	327	327	767	1,066	-	-	-	-	-	-	767	1,066	590	C: 262 M: 614-853
SDGE-17: C9/M9	HR Organizational Effectiveness	-	76	76	32	121	-	-	-	-	-	-	32	121	1	C: 76
	SDGE-17 TOTAL	**-**	**1,854**	**1,854**	**3,634**	**7,037**	**-**	**-**	**-**	**-**	**-**	**-**	**3,634**	**7,037**	**3,482**	

Notes:
- Control (C) and Mitigation (M).
- Numbers in risk chapter tables may differ due to rounding.
- The purpose of the 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.

[1] Controls/Mitigations for which the mitigation spending overlaps or is duplicative of spending for other Controls/Mitigations.

[2] Controls/Mitigations for which numbers in risk chapter tables may differ due to calculation errors.

[3] SDG&E does not have PSEP Phase 2A work (i.e., work in less populated areas).

[4] Delta calculated as the average of Low and High for the Mitigation Total minus the Control Total.

[5] Non-GRC Control (C) represents Baseline (2015) costs. Non-GRC Mitigation (M) represents Proposed costs for 2017-2019 Capital and 2019 O&M.

Chapter Legend

SDGE-01	Wildfires Caused by SDG&E Equipment
SDGE-02	Catastrophic Damage Involving Third Party Dig-Ins
SDGE-03	Employee, Contractor and Public Safety
SDGE-04	Distributed Energy Resources (DERs)
SDGE-05	Major Disturbance to Electrical Service (Blackout)
SDGE-06	Fail to Black Start
SDGE-07	Cyber Security
SDGE-08	Aviation Incident
SDGE-09	Workplace Violence
SDGE-10	Catastrophic Damage Involving High-Pressure Gas Pipeline Failure
SDGE-11	Unmanned Aircraft System (UAS) Incident
SDGE-12	Electric Infrastructure Integrity
SDGE-13	Records Management
SDGE-14	Climate Change Adaptation
SDGE-15	Public Safety Event - Electric
SDGE-16	Catastrophic Damage Involving Medium-Pressure Pipeline Failure
SDGE-17	Workforce Planning