Application: _____

Exhibit No.: SDGE-_____

Witness: Gregory D. Shimansky_____

PREPARED TESTIMONY OF

GREGORY D. SHIMANSKY

ON BEHALF OF SAN DIEGO GAS & ELECTRIC COMPANY

CHAPTER 5

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

January 22, 2018

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PREPARED TESTIMONY OF
GREGORY D. SHIMANSKY
CHAPTER 5

I. PURPOSE AND SUMMARY

The purpose of my testimony is to: (1) identify the costs associated with San Diego Gas & Electric Company's ("SDG&E") Senate Bill ("SB") 350 transportation electrification ("TE") proposal comprised of a Medium-Duty and Heavy-Duty Electric Vehicle Charging Infrastructure Program ("Program") and a Vehicle to Grid ("V2G") Electric School Bus Pilot ("V2G Pilot" or "Pilot"); (2) describe the methodology used by SDG&E in determining the revenue requirements for the proposals; and (3) identify the resulting annual revenue requirements for the Program and the V2G Pilot. The costs and revenue requirements for the Program are based on a scenario where 100% of the participants in the program choose the option of having SDG&E ("Utility") own the electric vehicle supply equipment ("EVSE"), also referred to as an electric vehicle charger. The cost and revenue requirements for the Pilot assumes that SDG&E owns 100% of the EVSE. Additionally, an illustrative case for illustrative purposes only has been included for the Program. In the illustrative case, the costs and revenue requirement figures are based on a scenario where 50% of the participants elect to have the Utility own and maintain the EVSE and 50% choose the option where the customer owns and maintains the EVSE ("Illustrative Case"). The illustrative case does not apply to the Pilot.

Since the SB 350 TE proposals include services and capital costs above and beyond those authorized by the California Public Utilities Commission ("Commission" or "CPUC") in any other proceeding including SDG&E's most recent general rate case ("GRC"), all costs associated with the Program and Pilot are incremental, and thus additive to any currently authorized levels of revenue requirement.

SDG&E is requesting that the Commission approve, for the years 2019-2025, the capital costs, operations & maintenance ("O&M") costs, and the associated revenue requirement for the 100% utility ownership scenario for the Program as explained in more detail below in Section III and IV of my testimony. SDG&E is also seeking approval to roll forward for recovery in a subsequent GRC (currently estimated to be Test Year 2025) any undepreciated book value of utility-owned plant balances associated with the Program.

In addition, SDG&E is requesting that the Commission approve, for the years 2019-2025, the capital costs, O&M costs, and the associated revenue requirement for the Pilot, as explained in more detail below in Section III and IV of my testimony. SDG&E is also seeking approval to roll forward for recovery in a subsequent GRC (currently estimated to be Test Year 2025) any undepreciated book value of utility-owned plant balances associated with the Pilot.

Please refer to the direct testimony of Norma G. Jasso (Chapter 6) regarding cost recovery for details regarding the balancing account requested for recovering the costs of the Program and Pilot.

II. REVENUE REQUIREMENT OVERVIEW

The revenue requirements for each project shown in Section IV of this testimony are designed to capture all costs necessary to run the Program and Pilot proposals. These costs referred to as capital costs, include asset or equipment costs for chargers, transformers, and overhead equipment, which provide benefits to its users over multiple years of the asset's useful life. O&M costs consumed within a one-year period that are incurred to maintain equipment, as well as provide support to customer outreach and billing, are also part of the revenue requirement.

The capital costs require significant cash outflows, and are financed through contributions from shareholders, as well as borrowed funds from lending institutions.

Shareholders and lenders are paid back for the principal portion of their contributions and loans through the component of depreciation expense of the revenue requirement (referred to as a "return of investment"). Interest costs on the portion of debt that is borrowed from lenders to finance a portion of the projects are also collected as part of the revenue requirement. In addition, while being paid back for their contribution, shareholders are allowed to earn an after-tax return (approved by the Commission) on their investment. Taxes on the return are collected as part of the revenue requirement so that shareholders are made whole on an after-tax basis.

In summary, the components of the revenue requirement include recovery of O&M costs on a dollar-for-dollar basis, capital costs through depreciation, taxes, and return (interest on debt financing, and shareholder return) (*see* Section IV).

III. COSTS ASSOCIATED WITH SDG&E'S 1OO% OWNERSHIP FOR THE PROGRAM AND PILOT PROPOSALS[1]

SDG&E's Program includes: (1) Class 2-3 Vehicles, (2) Class 4-5 Vehicles, (3) Class 6 Vehicles, (4) Class 7-8 Vehicles, (5) On Route Fast Chargers for Buses, and (6) Forklifts / Transport Refrigeration Units ("TRU"). For more detail regarding the capital and O&M costs of this program, see the direct testimony of Hannon J. Rasool (Chapter 2 Section I.A. and I.E.). In addition to the six components of the Program identified above, SDG&E's proposal also includes a V2G Pilot. For more detail regarding the capital and O&M costs of the V2G Pilot, see the direct testimony of David M. Goldgraben (Chapter 3 Section I.A and I.E.).

A. Capital Expenditures

Table GDS-1 below identifies the capital expenditures for the Program for the years 2019- 2025, prior to adjustments for overheads and escalation factors.

[1] Amounts reflected throughout the tables and appendices of this testimony may not add to the exact sum totals shown due to rounding associated with supporting spreadsheets.

Table GDS-1
MD/HD EV Charging Infrastructure Program
Capital Expenditures
(Excludes escalation & loaders; Includes sales tax)

(000's)

Capital Expenditures	Class 2-3 Vehicles								Class 4-5 Vehicles							
	2019	2020	2021	2022	2023	2024	2025	Total	2019	2020	2021	2022	2023	2024	2025	Total
Transformer & Installation	$438	$877	$877	$877	$877	$438	$0	$4,384	$329	$658	$658	$658	$658	$329	$0	$3,288
Electrical Services	$3,304	$6,608	$6,608	$6,608	$6,608	$3,304	$0	$33,041	$2,445	$4,890	$4,890	$4,890	$4,890	$2,445	$0	$24,449
Chargers (EVSE)	$120	$233	$218	$204	$190	$91	$0	$1,056	$162	$314	$295	$275	$256	$123	$0	$1,426
Total Capital Expenditures	$3,862	$7,718	$7,703	$7,689	$7,675	$3,834	$0	$38,481	$2,936	$5,862	$5,842	$5,823	$5,803	$2,897	$0	$29,162

Capital Expenditures	Class 6 Vehicles								Class 7-8 Vehicles							
	2019	2020	2021	2022	2023	2024	2025	Total	2019	2020	2021	2022	2023	2024	2025	Total
Transformer & Installation	$353	$705	$705	$705	$705	$353	$0	$3,527	$529	$1,058	$1,058	$1,058	$1,058	$529	$0	$5,291
Electrical Services	$1,087	$2,174	$2,174	$2,174	$2,174	$1,087	$0	$10,870	$1,649	$3,297	$3,297	$3,297	$3,297	$1,649	$0	$16,487
Chargers (EVSE)	$1,050	$2,037	$1,911	$1,785	$1,659	$798	$0	$9,240	$2,025	$4,050	$4,050	$4,050	$4,050	$2,025	$0	$20,250
Total Capital Expenditures	$2,490	$4,916	$4,790	$4,664	$4,538	$2,238	$0	$23,637	$4,203	$8,406	$8,406	$8,406	$8,406	$4,203	$0	$42,028

Capital Expenditures	On Route								Forklifts & TRUs							
	2019	2020	2021	2022	2023	2024	2025	Total	2019	2020	2021	2022	2023	2024	2025	Total
Transformer & Installation	$71	$141	$141	$141	$141	$71	$0	$705	$82	$164	$164	$164	$164	$82	$0	$822
Electrical Services	$205	$409	$409	$409	$409	$205	$0	$2,047	$628	$1,255	$1,255	$1,255	$1,255	$628	$0	$6,276
Chargers (EVSE)	$200	$400	$400	$400	$400	$200	$0	$2,000	$45	$90	$90	$90	$90	$45	$0	$450
Total Capital Expenditures	$475	$951	$951	$951	$951	$475	$0	$4,753	$755	$1,510	$1,510	$1,510	$1,510	$755	$0	$7,548

Total Capital Expenditures for Projects Combined 2019-2025 **$145,609**

Table GDS-2 below identifies the capital expenditures for the V2G Pilot for the years 2019-2025, prior to adjustments for overheads and escalation factors.

Table GDS-2
V2G Pilot
Capital Expenditures
(Excludes escalation & Loaders; Includes sales tax)

(000's)

Capital Expenditures	V2G							
	2019	2020	2021	2022	2023	2024	2025	Total
Transformer & Installation	$13	$13	$0	$0	$0	$0	$0	$26
Electrical Services	$193	$193	$0	$0	$0	$0	$0	$385
Chargers (EVSE)	$123	$123	$0	$0	$0	$0	$0	$246
Total Capital Expenditures	$329	$329	$0	$0	$0	$0	$0	$657

B. O&M Costs

Table GDS-3 below identifies the O&M costs for the Program, prior to any applied loaders and escalators. O&M consists of ongoing service costs which will be provided by either third-party vendors or SDG&E internal labor for customer engagement, measurement evaluation, and maintenance. There are no expensed customer allowances in the 100% ownership case since SDG&E will own all EVSEs.

Table GDS-3
MD/HD EV Charging Infrastructure Program
O&M Costs
(Excludes escalation & loaders; Includes sales tax)

(000's)

O&M Costs	Class 2-3 Vehicles								Class 4-5 Vehicles							
	2019	2020	2021	2022	2023	2024	2025	Total	2019	2020	2021	2022	2023	2024	2025	Total
Customer Allowances	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Customer Engagement	$104	$209	$209	$209	$209	$104	$0	$1,044	$78	$157	$157	$157	$157	$78	$0	$783
Measurement & Evaluations	$7	$14	$14	$14	$14	$7	$0	$71	$7	$14	$14	$14	$14	$7	$0	$71
Maintenance - Equipment	$4	$9	$9	$9	$9	$9	$9	$57	$6	$12	$12	$12	$12	$12	$12	$77
Total O&M Costs	$116	$232	$232	$232	$232	$120	$9	$1,172	$91	$183	$183	$183	$183	$97	$12	$931

O&M Costs	Class 6 Vehicles								Class 7-8 Vehicles							
	2019	2020	2021	2022	2023	2024	2025	Total	2019	2020	2021	2022	2023	2024	2025	Total
Customer Allowances	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Customer Engagement	$26	$52	$52	$52	$52	$26	$0	$261	$39	$78	$78	$78	$78	$39	$0	$391
Measurement & Evaluations	$7	$14	$14	$14	$14	$7	$0	$71	$7	$14	$14	$14	$14	$7	$0	$71
Maintenance - Equipment	$38	$77	$77	$77	$77	$77	$77	$498	$84	$168	$168	$168	$168	$168	$168	$1,091
Total O&M Costs	$72	$143	$143	$143	$143	$110	$77	$830	$130	$260	$260	$260	$260	$214	$168	$1,554

O&M Costs	On Route								Forklifts & TRUs							
	2019	2020	2021	2022	2023	2024	2025	Total	2019	2020	2021	2022	2023	2024	2025	Total
Customer Allowances	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Customer Engagement	$0	$0	$0	$0	$0	$0	$0	$0	$20	$39	$39	$39	$39	$20	$0	$196
Measurement & Evaluations	$7	$14	$14	$14	$14	$7	$0	$71	$7	$14	$14	$14	$14	$7	$0	$71
Maintenance - Equipment	$8	$17	$17	$17	$17	$17	$17	$108	$2	$4	$4	$4	$4	$4	$4	$24
Total O&M Costs	$15	$31	$31	$31	$31	$24	$17	$179	$29	$57	$57	$57	$57	$30	$4	$291

Total O&M Costs for Projects Combined 2019-2025 **$4,958**

Table GDS-4 below identifies the O&M costs for the V2G Pilot, prior to any adjustment factors. O&M consists of service costs which will be provided by either third-party vendors or SDG&E internal labor for electricity costs, measurement evaluation, and licensing and analysis fees. Also included as part of O&M are SDG&E contributions toward the purchase of operating equipment (such as electric buses) owned by third parties.

Table GDS-4
V2G Pilot
O&M Costs
(Excludes escalation & Loaders; Includes sales tax)

(000's)

O&M Costs	V2G							
	2019	2020	2021	2022	2023	2024	2025	Total
Contributions	$225	$225	$0	$0	$0	$0	$0	$450
Electricity Costs	$50	$50	$0	$0	$0	$0	$0	$100
Measurement & Evaluations	$8	$17	$0	$0	$0	$0	$0	$25
Licensing & Analysis Fees	$59	$94	$70	$70	$70	$70	$70	$500
Total O&M Costs	$342	$385	$70	$70	$70	$70	$70	$1,075

C. Total Capital Expenditures and O&M Costs Before Adjustments

Table GDS-5 below identifies the total capital expenditures (referred to a Capital Costs in the tables) and O&M costs for the Program before adjustments for loaders and escalation.

Table GDS-5
MD/HD EV Charging Infrastructure Program
Summary of Capital Expenditures & O&M Costs (Total Costs)
(Excludes escalation & loaders; Includes sales tax)

(000's)

	Class 2-3 Vehicles								Class 4-5 Vehicles							
Total Costs	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**Total**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**Total**
Capital Costs	$3,862	$7,718	$7,703	$7,689	$7,675	$3,834	$0	$38,481	$2,936	$5,862	$5,842	$5,823	$5,803	$2,897	$0	$29,162
O&M Costs	$116	$232	$232	$232	$232	$120	$9	$1,172	$91	$183	$183	$183	$183	$97	$12	$931
Total Costs	$3,978	$7,950	$7,935	$7,921	$7,906	$3,954	$9	$39,653	$3,027	$6,044	$6,025	$6,005	$5,986	$2,994	$12	$30,094

	Class 6 Vehicles								Class 7-8 Vehicles							
Total Costs	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**Total**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**Total**
Capital Costs	$2,490	$4,916	$4,790	$4,664	$4,538	$2,238	$0	$23,637	$4,203	$8,406	$8,406	$8,406	$8,406	$4,203	$0	$42,028
O&M Costs	$72	$143	$143	$143	$143	$110	$77	$830	$130	$260	$260	$260	$260	$214	$168	$1,554
Total Costs	$2,561	$5,059	$4,933	$4,807	$4,681	$2,348	$77	$24,467	$4,333	$8,666	$8,666	$8,666	$8,666	$4,417	$168	$43,582

	On Route								Forklifts & TRUs							
Total Costs	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**Total**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**Total**
Capital Costs	$475	$951	$951	$951	$951	$475	$0	$4,753	$755	$1,510	$1,510	$1,510	$1,510	$755	$0	$7,548
O&M Costs	$15	$31	$31	$31	$31	$24	$17	$179	$29	$57	$57	$57	$57	$30	$4	$291
Total Costs	$491	$981	$981	$981	$981	$499	$17	$4,932	$783	$1,567	$1,567	$1,567	$1,567	$785	$4	$7,840

Total Costs for Projects Combined 2019-2025 **$150,567**

Table GDS-6 below identifies the total capital expenditures and O&M costs for the V2G Pilot before adjustments for loaders and escalation.

Table GDS-6
V2G Pilot
Summary of Capital Expenditures & O&M Costs (Total Costs)
(Excludes escalation & Loaders; Includes sales tax)

(000's)

	V2G							
Total Costs	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**Total**
Capital Costs	$329	$329	$0	$0	$0	$0	$0	$657
O&M Costs	$342	$385	$70	$70	$70	$70	$70	$1,075
Total Costs	$671	$714	$70	$70	$70	$70	$70	$1,733

D. Adjustments to Capital and O&M Costs

1. Overhead Loaders

Overhead loaders are used to allocate undistributed company overhead costs across capital projects and O&M. Overhead costs are those activities and services that are associated with direct costs, such as payroll taxes and pension and benefits, or are costs that cannot be economically direct-charged, such as administrative and general overheads. Overhead loaders used to develop the revenue requirement for both the Program and the Pilot are for illustrative purposes only and are subject to change. The overhead loader values adhere to the methodology

proposed by the Federal Energy Regulatory Commission ("FERC")[2] and were derived using the same methodology used in SDG&E's most recent GRC filing. If the Program and the Pilot proposals are approved, then the Commission-approved overhead loaders in effect at the time of approval will be used.

2. Escalation of Future Costs

Cost escalation factors are used to reflect the effect of inflation on SDG&E's costs. SDG&E's escalation costs were derived using IHS/Market Global Insight's 2nd Quarter 2017 Power Planner forecast, which was published in August 2017.

Tables GDS-7 and GDS-8 show the capital expenditures for the Program and the Pilot adjusted for SDG&E overhead loaders and cost escalation.

Table GDS-7
MD/HD EV Charging Infrastructure Program
Capital Expenditures
(Includes escalation, loaders, and sales tax)

(000's)

Capital Expenditures	Class 2-3 Vehicles								Class 4-5 Vehicles							
	2019	2020	2021	2022	2023	2024	2025	Total	2019	2020	2021	2022	2023	2024	2025	Total
Transformer & Installation	$594	$1,218	$1,256	$1,295	$1,334	$682	$0	$6,379	$446	$914	$942	$971	$1,000	$511	$0	$4,784
Electrical Services	$4,692	$9,615	$9,916	$10,218	$10,528	$5,382	$0	$50,351	$3,476	$7,123	$7,347	$7,570	$7,799	$3,987	$0	$37,303
Chargers (EVSE)	$155	309	299	287	275	135	$0	$1,460	$210	$417	$403	$388	$371	$183	$0	$1,971
Total Capital Expenditures	$5,442	$11,142	$11,471	$11,800	$12,136	$6,199	$0	$58,190	$4,131	$8,454	$8,692	$8,929	$9,171	$4,682	$0	$44,058

Capital Expenditures	Class 6 Vehicles								Class 7-8 Vehicles							
	2019	2020	2021	2022	2023	2024	2025	Total	2019	2020	2021	2022	2023	2024	2025	Total
Transformer & Installation	$487	$998	$1,029	$1,061	$1,093	$559	$0	$5,227	$731	$1,497	$1,544	$1,591	$1,639	$838	$0	$7,841
Electrical Services	$1,511	$3,096	$3,193	$3,290	$3,389	$1,733	$0	$16,211	$2,294	$4,701	$4,848	$4,996	$5,147	$2,632	$0	$24,618
Chargers (EVSE)	$1,358	$2,700	$2,612	$2,514	$2,407	$1,184	$0	$12,776	$2,620	$5,369	$5,537	$5,705	$5,878	$3,005	$0	$28,115
Total Capital Expenditures	$3,356	$6,794	$6,834	$6,864	$6,890	$3,476	$0	$34,214	$5,645	$11,567	$11,930	$12,292	$12,665	$6,475	$0	$60,574

Capital Costs	On Route								Forklifts & TRUs							
	2019	2020	2021	2022	2023	2024	2025	Total	2019	2020	2021	2022	2023	2024	2025	Total
Transformer & Installation	$97	$200	$206	$212	$219	$112	$0	$1,045	$111	$228	$236	$243	$250	$128	$0	$1,196
Electrical Services	$284	$582	$600	$618	$637	$326	$0	$3,046	$890	$1,824	$1,882	$1,939	$1,998	$1,021	$0	$9,554
Chargers (EVSE)	$259	$530	$547	$564	$581	$297	$0	$2,777	$58	$119	$123	$127	$131	$67	$0	$625
Total Capital Costs	$640	$1,312	$1,353	$1,394	$1,436	$734	$0	$6,868	$1,060	$2,172	$2,240	$2,308	$2,378	$1,216	$0	$11,375

Total Capital Expenditures for Projects Combined 2019-2025 **$215,279**

[2] FERC guidelines reference the Statement of Federal Financial Accounting Standards 4: Managerial Cost Accounting Standards and Concepts. See, *e.g.*, Paragraphs 88, 89 and 91.

Table GDS-8
V2G Pilot
Capital Expenditures
(Includes escalation, loaders, and sales tax)

(000's)

	V2G							
Capital Expenditures	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**Total**
Transformer & Installation	$17	$18	$0	$0	$0	$0	$0	$35
Electrical Services	$278	$283	$0	$0	$0	$0	$0	$561
Chargers (EVSE)	$159	$162	$0	$0	$0	$0	$0	$321
Total Capital Expenditures	$455	$463	$0	$0	$0	$0	$0	$918

Tables GDS-9 and GDS-10 show the O&M costs for the Program and the V2G Pilot adjusted for SDG&E overhead loaders and cost escalation.

Table GDS-9
MD/HD EV Charging Infrastructure Program
O&M Costs
(Includes escalation, loaders, and sales tax)

(000's)

	Class 2-3 Vehicles								Class 4-5 Vehicles							
O&M Costs	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**Total**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**Total**
Customer Allowances	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Customer Engagement	$110	$224	$231	$238	$245	$125	$0	$1,173	$82	$168	$173	$178	$184	$94	$0	$880
Measurement & Evaluations	$8	$15	$16	$16	$17	$9	$0	$80	$8	$15	$16	$16	$17	$9	$0	$80
Maintenance - Equipment	$5	$9	$9	$10	$10	$10	$10	$63	$6	$12	$13	$13	$13	$14	$14	$85
Total O&M Costs	$122	$249	$256	$264	$271	$144	$10	$1,316	$96	$196	$202	$208	$214	$116	$14	$1,045

	Class 6 Vehicles								Class 7-8 Vehicles							
O&M Costs	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**Total**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**Total**
Customer Allowances	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Customer Engagement	$27	$56	$58	$59	$61	$31	$0	$293	$41	$84	$87	$89	$92	$47	$0	$440
Measurement & Evaluations	$8	$15	$16	$16	$17	$9	$0	$80	$8	$15	$16	$16	$17	$9	$0	$80
Maintenance - Equipment	$40	$81	$83	$85	$87	$89	$91	$554	$87	$177	$181	$186	$190	$194	$198	$1,213
Total O&M Costs	$75	$152	$156	$161	$165	$128	$91	$927	$136	$276	$284	$291	$299	$250	$198	$1,734

	On Route								Forklifts & TRUs							
O&M Costs	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**Total**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**Total**
Customer Allowances	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Customer Engagement	$0	$0	$0	$0	$0	$0	$0	$0	$21	$42	$43	$45	$46	$23	$0	$220
Measurement & Evaluations	$8	$15	$16	$16	$17	$9	$0	$80	$8	$15	$16	$16	$17	$9	$0	$80
Maintenance - Equipment	$9	$17	$18	$18	$19	$19	$20	$120	$2	$4	$4	$4	$4	$4	$4	$27
Total O&M Costs	$16	$33	$34	$35	$36	$28	$20	$200	$30	$61	$63	$65	$67	$36	$4	$327

Total O&M Costs for Projects Combined 2019-2025 **$5,550**

Table GDS-10
V2G Pilot
O&M Costs
(Includes escalation, loaders, and sales tax)

(000's)

	V2G							
O&M Costs	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**Total**
Contributions	$233	$235	$0	$0	$0	$0	$0	$468
Electricity Costs	$52	$52	$0	$0	$0	$0	$0	$104
Measurement & Evaluations	$9	$18	$0	$0	$0	$0	$0	$27
Licensing & Analysis Fees	$61	$100	$77	$79	$82	$84	$86	$570
Total O&M Costs	$355	$406	$77	$79	$82	$84	$86	$1,169

E. Total Costs After Adjustments

After updating the capital expenditures and O&M costs with the appropriate adjustment factors noted above, the Program and the Pilot for purposes of calculating the revenue requirement are shown in Tables GDS-11 and GDS-12 below.

Table GDS-11
MD/HD EV Charging Infrastructure Program
Summary of Capital Expenditures & O&M Costs (Total Costs)
(Includes escalation, loaders, and sales tax)

(000's)

	Class 2-3 Vehicles								Class 4-5 Vehicles							
Total Costs	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**Total**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**Total**
Capital Costs	$5,442	$11,142	$11,471	$11,800	$12,136	$6,199	$0	$58,190	$4,131	$8,454	$8,692	$8,929	$9,171	$4,682	$0	$44,058
O&M Costs	$122	$249	$256	$264	$271	$144	$10	$1,316	$96	$196	$202	$208	$214	$116	$14	$1,045
Total Costs	$5,563	$11,391	$11,727	$12,064	$12,408	$6,343	$10	$59,507	$4,227	$8,650	$8,894	$9,137	$9,385	$4,798	$14	$45,104

	Class 6 Vehicles								Class 7-8 Vehicles							
Total Costs	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**Total**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**Total**
Capital Costs	$3,356	$6,794	$6,834	$6,864	$6,890	$3,476	$0	$34,214	$5,645	$11,567	$11,930	$12,292	$12,665	$6,475	$0	$60,574
O&M Costs	$75	$152	$156	$161	$165	$128	$91	$927	$136	$276	$284	$291	$299	$250	$198	$1,734
Total Costs	$3,431	$6,946	$6,990	$7,025	$7,054	$3,604	$91	$35,141	$5,780	$11,844	$12,213	$12,584	$12,964	$6,725	$198	$62,307

	On Route								Forklifts & TRUs							
Total Costs	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**Total**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**Total**
Capital Costs	$640	$1,312	$1,353	$1,394	$1,436	$734	$0	$6,868	$1,060	$2,172	$2,240	$2,308	$2,378	$1,216	$0	$11,375
O&M Costs	$16	$33	$34	$35	$36	$28	$20	$200	$30	$61	$63	$65	$67	$36	$4	$327
Total Costs	$656	$1,344	$1,386	$1,428	$1,472	$762	$20	$7,069	$1,090	$2,233	$2,303	$2,373	$2,445	$1,252	$4	$11,702

Total Costs for Projects Combined 2019-2025 **$220,829**

Table GDS-12
V2G Pilot
Summary of Capital Expenditures & O&M Costs (Total Costs)
(Includes escalation, loaders, and sales tax)

(000's)

	V2G							
Total Costs	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**Total**
Capital Costs	$455	$463	$0	$0	$0	$0	$0	$918
O&M Costs	$355	$406	$77	$79	$82	$84	$86	$1,169
Total Costs	$810	$868	$77	$79	$82	$84	$86	$2,087

IV. REVENUE REQUIREMENT ASSOCIATED WITH SDG&E'S 100% OWNERSHIP FOR THE PROGRAM AND PILOT PROPOSALS

The revenue requirement represents the total dollars that need to be collected each year in order to recover the costs and provide for returns associated with the Program and the Pilot. Specifically, the components that make up the revenue requirement are: return of capital (via depreciation), O&M costs, debt and equity returns, federal and state taxes, franchise fees, and uncollectible revenue. The total revenue requirements for the Program and Pilot are identified

below in Tables GDS-13 and GDS-14 respectively. A more detailed description of the components of the revenue requirement is presented in the sections that follow.

Table GDS-13
MD/HD EV Charging Infrastructure Program- Combined Projects
Utility Ownership of EVSE's - 100%
Annual Revenue Requirement
(000's)

Revenue Requirement	2019	2020	2021	2022	2023	2024	2025	Total
FF&U:	$18	$162	$421	$687	$949	$1,192	$1,244	$4,672
O&M:	$474	$968	$995	$1,023	$1,051	$702	$337	$5,550
Working Capital:	$0	$0	$0	$0	$0	$0	$0	$0
Depreciation:	$0	$1,304	$3,943	$6,628	$9,350	$12,111	$12,525	$45,861
Return on Common:	$0	$1,110	$3,260	$5,334	$7,322	$9,230	$9,795	$36,050
Return on Preferred:	$0	$36	$105	$172	$236	$298	$316	$1,163
Return On Debt:	$0	$435	$1,277	$2,089	$2,867	$3,614	$3,836	$14,117
Federal Taxes:	$0	$350	$994	$1,584	$2,151	$2,698	$2,720	$10,497
State Taxes:	$0	$138	$408	$681	$956	$1,234	$1,234	$4,651
Property Taxes:	$0	$0	$308	$916	$1,502	$2,063	$2,602	$7,392
Total Combined Projects	**$492**	**$4,502**	**$11,711**	**$19,114**	**$26,384**	**$33,142**	**$34,609**	**$129,953**

Table GDS-14
Vehicle to Grid (V2G)-Pilot
Utility Ownership of EVSE's - 100%
Annual Revenue Requirement
(000's)

Revenue Requirement	2019	2020	2021	2022	2023	2024	2025	Total
FF&U:	$13	$18	$9	$9	$9	$9	$7	$76
O&M:	$355	$406	$77	$79	$82	$84	$86	$1,169
Working Capital:	$0	$0	$0	$0	$0	$0	$0	$0
Depreciation:	$0	$39	$79	$79	$79	$79	$45	$400
Return on Common:	$0	$25	$47	$43	$39	$35	$31	$219
Return on Preferred:	$0	$1	$2	$1	$1	$1	$1	$7
Return On Debt:	$0	$10	$18	$17	$15	$14	$12	$86
Federal Taxes:	$0	$8	$14	$12	$11	$10	$5	$61
State Taxes:	$0	$4	$8	$8	$8	$7	$3	$37
Property Taxes:	$0	$0	$7	$13	$12	$11	$10	$53
Total V2G	**$368**	**$511**	**$261**	**$261**	**$255**	**$250**	**$201**	**$2,107**

A. Return of Capital

The return of capital is equal to annual book depreciation which uses the straight-line remaining life method.[3] Consistent with the FERC Code of Federal Regulations, SDG&E assumes the following useful lives for each asset category as presented in Table GDS-15.[4]

Table GDS-15
Capital - FERC Useful Life

Asset Category	FERC Useful Life Years
Chargers[4]	5
New Electric Service	55
Transformers & Installation	34

B. O&M Costs

O&M costs represent the total costs required to ensure the ongoing successful operation of the Program and the Pilot. O&M costs are included in the revenue requirement and treated as a pass-through item on a dollar-for-dollar basis.

C. Return

The current authorized annual return components of the revenue requirement for the Program, and the Pilot consist of return on debt (4.59 percent), return on preferred stock (6.22 percent), and return on equity (10.20 percent).[5] These values are then weighted by their

[3] This method is consistent with Standard Practice U-4, Determination of Straight-Line Remaining Life Depreciation Accruals. The CPUC issued this standard practice in 1961 as a guide for determining proper depreciation accruals.

[4] Study conducted by Sargent and Lundy on life expectancy of chargers. Results of study and request for adoption of a 5-year life for chargers was submitted in SDG&E's most recent GRC Application ("A.") 17-10-007 to the CPUC in October 2017.

[5] Adopted in CPUC Decision ("D.") 17-07-005 and implemented in SDG&E Advice Letter 3120-E.

authorized capital allocation percentages and multiplied by the average rate base[6] to determine the revenue requirement for each return component. The authorized weighted returns are listed in Table GDS-16 below. The next Cost of Capital proceeding is scheduled for a test year 2020. The final decision in that proceeding will be reflected in the revenue requirement ultimately approved in this proceeding at that time.

Table GDS-16
SDG&E Rate of Return (ROR) Calculation

	Capital Ratio %	Cost	Authorized Weighted Cost
Long-Term Debt	45.25%	4.59%	2.08%
Preferred Equity	2.75%	6.22%	0.17%
Common Equity	52.00%	10.20%	5.30%
	100.00%		7.55%

D. Tax

1. Property Tax

The annual property tax expense for the Program and the Pilot is calculated by multiplying the period ending rate base by SDG&E's effective property tax rate of 1.499 percent.[7]

[6] D.16-06-054 at 216 ("SDG&E defines rate base as, 'the net investment of property, plant, equipment and other assets that SDG&E has acquired or constructed to provide utility services to its customers'").

[7] Consistent with previous filings, SDG&E's effective property tax rate is calculated by dividing the total property taxes due by county (per SDG&E property tax bills) by the total assessed value by county.

2. Federal and State Income Tax

a. Federal Income Tax

Federal income tax expense is calculated by multiplying federal Earnings before Income Tax ("EBIT")[8] by the current corporate federal income tax rate of 21 percent which was reduced from 35 percent as part of the Tax Reform Bill in 2017. In accordance with established Commission policy, federal income taxes are computed on a normalized basis for utility ratemaking purposes.[9] An annual breakout of the federal tax component of the revenue requirement is provided in Table GDS-13 for the Program and Table GDS-14 for the Pilot.

b. State Income Tax

State income tax expense is calculated by multiplying state EBIT[10] by the current California Corporation Franchise Tax rate of 8.84 percent. State income taxes are not normalized, but instead are calculated on a flow-through basis.[11]

E. Franchise Fees and Uncollectible

Franchise Fees and Uncollectible ("FF&U") are the final calculated components of the revenue requirement. Franchise fees cover the payments made to counties and incorporated

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[8] For ratemaking purposes, federal EBIT is calculated as the sum of Common and Preferred Stock Returns minus prior year state taxes, multiplied by a tax gross-up factor. The tax gross-up factor is mathematically required to compute a pre-tax earnings number that, once taxes are applied, results in SDG&E's achievement of its authorized rate of return.

[9] Normalization requires that any tax adjustments for deferred taxes (due to accelerated federal tax depreciation methods) are not included when calculating the annual required taxes due from ratepayers through the revenue requirement.

[10] For ratemaking purposes, state EBIT is calculated as the sum of Common and Preferred Stock Returns minus any deferred state income tax, multiplied by a tax gross-up factor. The tax gross-up factor is mathematically required to compute a pre-tax earnings number that, once taxes are applied, results in SDG&E's achievement of its authorized rate of return.

[11] Consistent with Commission policy, flow-through accounting treats temporary differences between recognition of expenses for book purposes and their tax return treatment as current adjustments to the revenue requirement.

cities pursuant to local ordinances granting a franchise to the company to place utility property in the public right of way. Uncollectibles represent the estimated uncollectible expenses incurred by SDG&E. FF&U is calculated by multiplying the sum of all other revenue requirement components by the authorized multipliers[12] for franchise fees and uncollectibles.

V. COST OF THE MD/HD EV CHARGING INFRASTRUCTURE PROGRAM "ILLUSTRATIVE CASE"

As stated earlier in this testimony, the "Illustrative Case" is based on a scenario where 50% of the participants elect to have the Utility own and maintain the EVSE and 50% choose the option where the customer owns and maintains the EVSE. Identical to the Program explained in Section III, SDG&E's Illustrative Case includes: (1) Class 2-3 Vehicles, (2) Class 4-5 Vehicles, (3) Class 6 Vehicles, (4) Class 7-8 Vehicles, (5) On Route Fast Chargers for Buses, and (6) Forklifts / TRUs. However, the Illustrative Case assumes that 50% of the EVSEs are owned and maintained by customers and therefore expensed. The expense which SDG&E incurs represents an allowance paid for the cost of the customer-owned EVSE. The cost details regarding the capital expenditures and O&M costs of the illustrative case are based on the same program details previously discussed in the direct testimony of Hannon J. Rasool (Chapter 2 Section I.A. and I.E.). The Pilot does not have an Illustrative Case. For the Pilot SDG&E will own the vehicle chargers.

[12] FF&U multipliers used for these revenue requirements are consistent with those supported in D.16-06-054.

A. Capital Expenditures

Table GDS-17 below identifies the capital expenditures for the Program for the years 2019-2025 prior to adjustments for overheads and escalation factors.

Table GDS-17
MD/HD EV Charging Infrastructure Illustrative Case
Capital Expenditures
(Excludes escalation & loaders; Includes sales tax)

(000's)

Capital Expenditures	Class 2-3 Vehicles								Class 4-5 Vehicles							
	2019	2020	2021	2022	2023	2024	2025	Total	2019	2020	2021	2022	2023	2024	2025	Total
Transformer & Installation	$438	$877	$877	$877	$877	$438	$0	$4,384	$329	$658	$658	$658	$658	$329	$0	$3,288
Electrical Services	$3,304	$6,608	$6,608	$6,608	$6,608	$3,304	$0	$33,041	$2,445	$4,890	$4,890	$4,890	$4,890	$2,445	$0	$24,449
Chargers (EVSE)	$60	$116	$109	$102	$95	$46	$0	$528	$81	$157	$147	$138	$128	$62	$0	$713
Purchased & SD Software	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total Capital Expenditures	$3,802	$7,601	$7,594	$7,587	$7,580	$3,788	$0	$37,953	$2,855	$5,705	$5,695	$5,685	$5,675	$2,835	$0	$28,450

Capital Expenditures	Class 6 Vehicles								Class 7-8 Vehicles							
	2019	2020	2021	2022	2023	2024	2025	Total	2019	2020	2021	2022	2023	2024	2025	Total
Transformer & Installation	$353	$705	$705	$705	$705	$353	$0	$3,527	$529	$1,058	$1,058	$1,058	$1,058	$529	$0	$5,291
Electrical Services	$1,087	$2,174	$2,174	$2,174	$2,174	$1,087	$0	$10,870	$1,649	$3,297	$3,297	$3,297	$3,297	$1,649	$0	$16,487
Chargers (EVSE)	$525	$1,019	$956	$893	$830	$399	$0	$4,620	$1,013	$2,025	$2,025	$2,025	$2,025	$1,013	$0	$10,125
Purchased & SD Software	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total Capital Expenditures	$1,965	$3,898	$3,835	$3,772	$3,709	$1,839	$0	$19,017	$3,190	$6,381	$6,381	$6,381	$6,381	$3,190	$0	$31,903

Capital Expenditures	On Route								Forklifts & TRUs							
	2019	2020	2021	2022	2023	2024	2025	Total	2019	2020	2021	2022	2023	2024	2025	Total
Transformer & Installation	$71	$141	$141	$141	$141	$71	$0	$705	$82	$164	$164	$164	$164	$82	$0	$822
Electrical Services	$205	$409	$409	$409	$409	$205	$0	$2,047	$628	$1,255	$1,255	$1,255	$1,255	$628	$0	$6,276
Chargers (EVSE)	$100	$200	$200	$200	$200	$100	$0	$1,000	$23	$45	$45	$45	$45	$23	$0	$225
Purchased & SD Software	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total Capital Expenditures	$375	$751	$751	$751	$751	$375	$0	$3,753	$732	$1,465	$1,465	$1,465	$1,465	$732	$0	$7,323

Total Capital Expenditures for Projects Combined 2019-2025 **$128,398**

B. O&M Costs

Table GDS-18 below identifies the O&M costs for the Illustrative Case, prior to any applied loaders and escalators. O&M consists of ongoing service costs which will be provided by either third-party vendors or SDG&E internal labor for customer engagement, measurement evaluation, and maintenance. O&M also consists of customer allowances which represent a portion of the charger costs paid by SDG&E in cases where customers have elected to own and maintain the EVSE.

Table GDS-18
MD/HD EV Charging Infrastructure Illustrative Case
O&M Costs
(Excludes escalation & loaders; Includes sales tax)

(000's)

O&M Costs	Class 2-3 Vehicles 2019	2020	2021	2022	2023	2024	2025	Total	Class 4-5 Vehicles 2019	2020	2021	2022	2023	2024	2025	Total
Customer Allowances	$60	$116	$109	$102	$95	$46	$0	$528	$81	$157	$147	$138	$128	$62	$0	$713
Customer Engagement	$104	$209	$209	$209	$209	$104	$0	$1,044	$78	$157	$157	$157	$157	$78	$0	$783
Measurement & Evaluations	$7	$14	$14	$14	$14	$7	$0	$71	$7	$14	$14	$14	$14	$7	$0	$71
Maintenance - Equipment	$4	$9	$9	$9	$9	$9	$9	$57	$6	$12	$12	$12	$12	$12	$12	$77
Total O&M Costs	$176	$348	$341	$334	$327	$166	$9	$1,700	$172	$340	$330	$320	$311	$159	$12	$1,644

O&M Costs	Class 6 Vehicles 2019	2020	2021	2022	2023	2024	2025	Total	Class 7-8 Vehicles 2019	2020	2021	2022	2023	2024	2025	Total
Customer Allowances	$525	$1,019	$956	$893	$830	$399	$0	$4,620	$1,013	$2,025	$2,025	$2,025	$2,025	$1,013	$0	$10,125
Customer Engagement	$26	$52	$52	$52	$52	$26	$0	$261	$39	$78	$78	$78	$78	$39	$0	$391
Measurement & Evaluations	$7	$14	$14	$14	$14	$7	$0	$71	$7	$14	$14	$14	$14	$7	$0	$71
Maintenance - Equipment	$38	$77	$77	$77	$77	$77	$77	$498	$84	$168	$168	$168	$168	$168	$168	$1,091
Total O&M Costs	$597	$1,162	$1,099	$1,036	$973	$509	$77	$5,450	$1,143	$2,285	$2,285	$2,285	$2,285	$1,227	$168	$11,679

O&M Costs	On Route 2019	2020	2021	2022	2023	2024	2025	Total	Forklifts & TRUs 2019	2020	2021	2022	2023	2024	2025	Total
Customer Allowances	$100	$200	$200	$200	$200	$100	$0	$1,000	$23	$45	$45	$45	$45	$23	$0	$225
Customer Engagement	$0	$0	$0	$0	$0	$0	$0	$0	$20	$39	$39	$39	$39	$20	$0	$196
Measurement & Evaluations	$7	$14	$14	$14	$14	$7	$0	$71	$7	$14	$14	$14	$14	$7	$0	$71
Maintenance - Equipment	$8	$17	$17	$17	$17	$17	$17	$108	$2	$4	$4	$4	$4	$4	$4	$24
Total O&M Costs	$115	$231	$231	$231	$231	$124	$17	$1,179	$51	$102	$102	$102	$102	$53	$4	$516

Total O&M Costs for Projects Combined 2019-2025 **$22,169**

C. Total Costs Before Adjustments

Table GDS-19 below identifies the total capital expenditures and O&M costs for the Illustrative Case before adjustments for loaders and escalation.

Table GDS-19
MD/HD EV Charging Infrastructure Illustrative Case
Summary of Capital Expenditures & O&M Costs (Total Costs)
(Excludes escalation & loaders; Includes sales tax)

(000's)

Total Costs	Class 2-3 Vehicles 2019	2020	2021	2022	2023	2024	2025	Total	Class 4-5 Vehicles 2019	2020	2021	2022	2023	2024	2025	Total
Capital Costs	$3,802	$7,601	$7,594	$7,587	$7,580	$3,788	$0	$37,953	$2,855	$5,705	$5,695	$5,685	$5,675	$2,835	$0	$28,450
O&M Costs	$176	$348	$341	$334	$327	$166	$9	$1,700	$172	$340	$330	$320	$311	$159	$12	$1,644
Total Costs	$3,978	$7,950	$7,935	$7,921	$7,906	$3,954	$9	$39,653	$3,027	$6,044	$6,025	$6,005	$5,986	$2,994	$12	$30,094

Total Costs	Class 6 Vehicles 2019	2020	2021	2022	2023	2024	2025	Total	Class 7-8 Vehicles 2019	2020	2021	2022	2023	2024	2025	Total
Capital Costs	$1,965	$3,898	$3,835	$3,772	$3,709	$1,839	$0	$19,017	$3,190	$6,381	$6,381	$6,381	$6,381	$3,190	$0	$31,903
O&M Costs	$597	$1,162	$1,099	$1,036	$973	$509	$77	$5,450	$1,143	$2,285	$2,285	$2,285	$2,285	$1,227	$168	$11,679
Total Costs	$2,561	$5,059	$4,933	$4,807	$4,681	$2,348	$77	$24,467	$4,333	$8,666	$8,666	$8,666	$8,666	$4,417	$168	$43,582

Total Costs	On Route 2019	2020	2021	2022	2023	2024	2025	Total	Forklifts & TRUs 2019	2020	2021	2022	2023	2024	2025	Total
Capital Costs	$375	$751	$751	$751	$751	$375	$0	$3,753	$732	$1,465	$1,465	$1,465	$1,465	$732	$0	$7,323
O&M Costs	$115	$231	$231	$231	$231	$124	$17	$1,179	$51	$102	$102	$102	$102	$53	$4	$516
Total Costs	$491	$981	$981	$981	$981	$499	$17	$4,932	$783	$1,567	$1,567	$1,567	$1,567	$785	$4	$7,840

Total Costs for Projects Combined 2019-2025 **$150,567**

D. Illustrative Case Adjustments to Capital and O&M Costs

The same methodology for overhead loaders and escalation and applicable percentages, as explained in above in Section III.D.1. and 2., is applied to the Illustrative Case Capital &

O&M costs. Table GDS-20 shows the capital expenditures for the Illustrative Case adjusted for SDG&E overhead loaders and cost escalation.

Table GDS-20
MD/HD EV Charging Infrastructure Illustrative Case
Capital Expenditures
(Includes escalation, loaders, and sales tax)

(000's)

Capital Expenditures	Class 2-3 Vehicles								Class 4-5 Vehicles							
	2019	2020	2021	2022	2023	2024	2025	Total	2019	2020	2021	2022	2023	2024	2025	Total
Transformer & Installation	$594	$1,218	$1,256	$1,295	$1,334	$682	$0	$6,379	$446	$914	$942	$971	$1,000	$511	$0	$4,784
Electrical Services	$4,692	$9,615	$9,916	$10,218	$10,528	$5,382	$0	$50,351	$3,476	$7,123	$7,347	$7,570	$7,799	$3,987	$0	$37,303
Chargers (EVSE)	$78	$154	$149	$144	$138	$68	$0	$730	$105	$208	$201	$194	$186	$91	$0	$986
Purchased & SD Software	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total Capital Expenditures	$5,364	$10,988	$11,322	$11,656	$11,999	$6,132	$0	$57,460	$4,027	$8,245	$8,490	$8,735	$8,985	$4,590	$0	$43,073

Capital Expenditures	Class 6 Vehicles								Class 7-8 Vehicles							
	2019	2020	2021	2022	2023	2024	2025	Total	2019	2020	2021	2022	2023	2024	2025	Total
Transformer & Installation	$487	$998	$1,029	$1,061	$1,093	$559	$0	$5,227	$731	$1,497	$1,544	$1,591	$1,639	$838	$0	$7,841
Electrical Services	$1,511	$3,096	$3,193	$3,290	$3,389	$1,733	$0	$16,211	$2,294	$4,701	$4,848	$4,996	$5,147	$2,632	$0	$24,618
Chargers (EVSE)	$679	$1,350	$1,306	$1,257	$1,204	$592	$0	$6,388	$1,310	$2,684	$2,769	$2,853	$2,939	$1,503	$0	$14,057
Purchased & SD Software	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total Capital Expenditures	$2,677	$5,444	$5,528	$5,608	$5,686	$2,884	$0	$27,826	$4,335	$8,883	$9,161	$9,440	$9,726	$4,972	$0	$46,516

Capital Expenditures	On Route								Forklifts & TRUs							
	2019	2020	2021	2022	2023	2024	2025	Total	2019	2020	2021	2022	2023	2024	2025	Total
Transformer & Installation	$97	$200	$206	$212	$219	$112	$0	$1,045	$111	$228	$236	$243	$250	$128	$0	$1,196
Electrical Services	$284	$582	$600	$618	$637	$326	$0	$3,046	$890	$1,824	$1,882	$1,939	$1,998	$1,021	$0	$9,554
Chargers (EVSE)	$129	$265	$273	$282	$290	$148	$0	$1,388	$29	$60	$62	$63	$65	$33	$0	$312
Purchased & SD Software	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total Capital Expenditures	$511	$1,046	$1,079	$1,112	$1,146	$586	$0	$5,480	$1,031	$2,112	$2,179	$2,245	$2,313	$1,182	$0	$11,062

Total Capital Expenditures for Projects Combined 2019-2025 **$191,417**

Table GDS-21 shows the O&M costs for the Illustrative Case adjusted for SDG&E overhead loaders and cost escalation.

Table GDS-21
MD/HD EV Charging Infrastructure Illustrative Case
O&M Costs
(Includes escalation, loaders, and sales tax)

(000's)

O&M Costs	Class 2-3 Vehicles								Class 4-5 Vehicles							
	2019	2020	2021	2022	2023	2024	2025	Total	2019	2020	2021	2022	2023	2024	2025	Total
Customer Allowances	$62	$123	$118	$113	$107	$53	$0	$575	$84	$165	$159	$152	$145	$71	$0	$777
Customer Engagement	$110	$224	$231	$238	$245	$125	$0	$1,173	$82	$168	$173	$178	$184	$94	$0	$880
Measurement & Evaluations	$8	$15	$16	$16	$17	$9	$0	$80	$8	$15	$16	$16	$17	$9	$0	$80
Maintenance - Equipment	$5	$9	$9	$10	$10	$10	$10	$63	$6	$12	$13	$13	$13	$14	$14	$85
Total O&M Costs	$184	$372	$374	$377	$379	$196	$10	$1,892	$180	$362	$361	$360	$359	$187	$14	$1,822

O&M Costs	Class 6 Vehicles								Class 7-8 Vehicles							
	2019	2020	2021	2022	2023	2024	2025	Total	2019	2020	2021	2022	2023	2024	2025	Total
Customer Allowances	$543	$1,072	$1,032	$988	$939	$459	$0	$5,033	$1,048	$2,132	$2,187	$2,241	$2,293	$1,166	$0	$11,067
Customer Engagement	$27	$56	$58	$59	$61	$31	$0	$293	$41	$84	$87	$89	$92	$47	$0	$440
Measurement & Evaluations	$8	$15	$16	$16	$17	$9	$0	$80	$8	$15	$16	$16	$17	$9	$0	$80
Maintenance - Equipment	$40	$81	$83	$85	$87	$89	$91	$554	$87	$177	$181	$186	$190	$194	$198	$1,213
Total O&M Costs	$618	$1,224	$1,188	$1,148	$1,104	$588	$91	$5,960	$1,183	$2,408	$2,470	$2,532	$2,592	$1,416	$198	$12,800

O&M Costs	On Route								Forklifts & TRUs							
	2019	2020	2021	2022	2023	2024	2025	Total	2019	2020	2021	2022	2023	2024	2025	Total
Customer Allowances	$103	$211	$216	$221	$226	$115	$0	$1,093	$23	$47	$49	$50	$51	$26	$0	$246
Customer Engagement	$0	$0	$0	$0	$0	$0	$0	$0	$21	$42	$43	$45	$46	$23	$0	$220
Measurement & Evaluations	$8	$15	$16	$16	$17	$9	$0	$80	$8	$15	$16	$16	$17	$9	$0	$80
Maintenance - Equipment	$9	$17	$18	$18	$19	$19	$20	$120	$2	$4	$4	$4	$4	$4	$4	$27
Total O&M Costs	$120	$243	$250	$256	$262	$143	$20	$1,293	$53	$109	$112	$115	$118	$62	$4	$573

Total O&M Costs for Projects Combined 2019-2025 **$24,341**

E. Total Illustrative Case Costs After Adjustments

After updating the capital expenditures and O&M costs with the appropriate adjustment factors, the total costs for the Illustrative Case are shown in Table GDS-22 below.

Table GDS-22
MD/HD EV Charging Infrastructure Illustrative Case
Summary of Capital Expenditures & O&M Costs (Total Costs)
(Includes escalation, loaders, and sales tax)

(000's)

	Class 2-3 Vehicles								Class 4-5 Vehicles							
Total Costs	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**Total**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**Total**
Capital Costs	$5,364	$10,988	$11,322	$11,656	$11,999	$6,132	$0	$57,460	$4,027	$8,245	$8,490	$8,735	$8,985	$4,590	$0	$43,073
O&M Costs	$184	$372	$374	$377	$379	$196	$10	$1,892	$180	$362	$361	$360	$359	$187	$14	$1,822
Total Costs	$5,548	$11,359	$11,696	$12,033	$12,378	$6,328	$10	$59,352	$4,206	$8,607	$8,851	$9,095	$9,344	$4,777	$14	$44,895

	Class 6 Vehicles								Class 7-8 Vehicles							
Total Costs	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**Total**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**Total**
Capital Costs	$2,677	$5,444	$5,528	$5,608	$5,686	$2,884	$0	$27,826	$4,335	$8,883	$9,161	$9,440	$9,726	$4,972	$0	$46,516
O&M Costs	$618	$1,224	$1,188	$1,148	$1,104	$588	$91	$5,960	$1,183	$2,408	$2,470	$2,532	$2,592	$1,416	$198	$12,800
Total Costs	$3,295	$6,668	$6,716	$6,756	$6,790	$3,472	$91	$33,786	$5,518	$11,291	$11,631	$11,972	$12,318	$6,388	$198	$59,317

	On Route								Forklifts & TRUs							
Total Costs	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**Total**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**Total**
Capital Costs	$511	$1,046	$1,079	$1,112	$1,146	$586	$0	$5,480	$1,031	$2,112	$2,179	$2,245	$2,313	$1,182	$0	$11,062
O&M Costs	$120	$243	$250	$256	$262	$143	$20	$1,293	$53	$109	$112	$115	$118	$62	$4	$573
Total Costs	$630	$1,290	$1,329	$1,368	$1,408	$729	$20	$6,773	$1,084	$2,221	$2,290	$2,360	$2,431	$1,245	$4	$11,635

Total O&M Costs for Projects Combined 2019-2025 **$215,758**

VI. MD/HD EV CHARGING INFRASTRUCTURE ILLUSTRATIVE CASE REVENUE REQUIREMENTS

The revenue requirement for the Illustrative Case is shown below in Table GDS-23. The components that make up the Illustrative Case revenue requirement are identical to those presented in the Program Section IV of this testimony.

Table GDS-23
MD/HD EV Charging Infrastructure Illustrative Case - Combined Projects
Utility Ownership of EVSE's - 50%
Annual Revenue Requirement
(000's)

Revenue Requirement	2019	2020	2021	2022	2023	2024	2025	Total
FF&U:	$87	$273	$477	$689	$899	$1,024	$1,014	$4,463
O&M:	$2,338	$4,718	$4,755	$4,788	$4,813	$2,592	$337	$24,341
Working Capital:	$0	$0	$0	$0	$0	$0	$0	$0
Depreciation:	$0	$816	$2,468	$4,156	$5,873	$7,620	$8,014	$28,946
Return on Common:	$0	$986	$2,920	$4,820	$6,678	$8,500	$9,147	$33,051
Return on Preferred:	$0	$32	$94	$155	$215	$274	$295	$1,066
Return On Debt:	$0	$386	$1,143	$1,887	$2,615	$3,329	$3,582	$12,942
Federal Taxes:	$0	$299	$865	$1,401	$1,926	$2,441	$2,549	$9,481
State Taxes:	$0	$88	$264	$446	$633	$825	$860	$3,117
Property Taxes:	$0	$0	$275	$821	$1,358	$1,883	$2,398	$6,735
Total Combined Projects	**$2,425**	**$7,598**	**$13,261**	**$19,163**	**$25,010**	**$28,489**	**$28,196**	**$124,142**

VII. CONCLUSION

This concludes my prepared direct testimony.

VIII. STATEMENT OF QUALIFICATIONS

My name is Gregory D. Shimansky. My business address is 8330 Century Park Court, San Diego, California 92123. I am employed by SDG&E as the GRC Program Manager for both SDG&E and Southern California Gas Company ("SoCalGas") covering various GRC chapters and the companies' Cost of Capital proceedings. I have held this position since June of 2013. Prior to this position I was the Regulatory Accounts and Financial Services Manager at SDG&E in the Financial Analysis Department for 3 years. In that position, I was responsible for managing the process for the development, implementation, and analysis of regulatory balancing and memorandum accounts as well as supervising the treasury function at SDG&E. I have been employed with SDG&E, SoCalGas and Sempra Energy since June 30, 2003. In addition to my current position in the GRC organization, I served as the Financial Planning Manager for Sempra Energy, the Regulatory Reporting Manager at SDG&E/SoCalGas, and from June 2003 through August 2008, I worked for SDG&E in utility planning.

I earned a Bachelor of Science degree in Economics from the University of California, Los Angeles in June 1993. I also earned a Master of Science in Management, with concentrations in Finance and Marketing, from Purdue University in May 1998.

I have previously provided testimony to the California Public Utilities Commission.