BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

Application of SAN DIEGO GAS & ELECTRIC COMPANY (U902E) for Approval of its Electric Vehicle-Grid Integration Pilot Program.	Application 14-04-014 (Filed April 11, 2014)
And Related Matter.	Rulemaking 13-11-007

OPENING BRIEF OF SAN DIEGO GAS & ELECTRIC COMPANY (U902E)

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Cal. Pub. Util. Code § 740.2 (2015) 4

Cal. Pub. Util. Code § 740.3 (2015) ..... *passim*

Cal. Pub. Util. Code § 740.8 (2015) ..... *passim*

Cal. Pub. Util. Code § 748.5(c) (2015).....81

Cal. Pub. Util. Code § 8360 (2015) 47

Cal. Pub. Util. Code § 8360(h) (2015).....39

Assembly Bill 32, Stats. 2005-2006, Ch. 488 (Cal. 2006).....4

Senate Bill 535, Stats. 2011-2012, Ch. 830 (Cal. 2012).....25, 92

Senate Bill 1275, Stats. 2013-2014, Ch. 530 (Cal. 2014)..... *passim*

CALIFORNIA COURT DECISIONS

Northern Cal. Power Agency v. Cal. Pub. Util. Comm'n,
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FEDERAL COURT DECISIONS

Brooke Group Ltd. v. Brown & Williamson Tobacco Corp. 509 U.S. 209 (1993).....87

Brown Shoe Co. v. United States, 370 U.S. 294 (1962) 87

Brunswick Corp. v. Pueblo Bowl-O-Mat, Inc., 429 U.S. 477 (1977) 87

Copperweld Corp. v. Independence Tube Corp., 467 U.S. 752 (1984) 87

CALIFORNIA PUBLIC UTILITIES COMMISSION DECISIONS

D.11-07-029, 2011 Cal. PUC LEXIS 394 .....8, 12, 13

D.12-12-033, 2012 Cal. PUC LEXIS 584 81

D.14-12-079, 2014 Cal. PUC LEXIS 596 ..... *passim*

OTHER AUTHORITIES

2013 ZEV Action Plan, prepared by
Governor's Interagency Working Group on Zero-Emissions Vehicles (February 2013)
at http://opr.ca.gov/docs/Governor's_Office_ZEV_Action_Plan_(02-13).pdf
.....33

California Grid Integration Roadmap, prepared by CAISO (December 27, 2013) at
http://www.caiso.com/Documents/Vehicle-GridIntegrationRoadmap.pdf 1

Cap-and-Trade Auction Proceeds Investment Plan: Fiscal Years 2013-14 through 2015-16,
prepared by CARB (May 14, 2013) at
http://www.arb.ca.gov/cc/capandtrade/auctionproceeds/final_investment_plan.pdf
.....81

Commission Rules of Practice and Procedure, Rule 13.1 1

Commission Rules of Practice and Procedure, Rule 13.11 xi

Consideration of Alternatives to Transmission or Conventional Generation to Address Local Needs in the Transmission Planning Process,
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Demographic & Socio Economic Estimates – San Diego Region, prepared by
San Diego Association of Governments at:
http://profilewarehouse.sandag.org/profiles/est/reg999est.pdf. 32

Draft 2015 ZEV Action Plan, prepared by
Governor's Interagency Working Group on Zero-Emissions Vehicles (April 24, 2014)
at http://gov.ca.gov/docs/DRAFT_2015_ZEV_Action_Plan_042415.pdf
.....5, 33

Phillip Areeda, *Essential Facilities: An Epithet in Need of Limiting Principles*
58 ANTITRUST L.J. 841 (1990) 86

Executive Order B-16-2012 (March 2012) at
http://gov.ca.gov/news.php?id=17472. .....4, 28, 33

Executive Order B-30-15 (April 29, 2015) at
http://gov.ca.gov/news.php?id=18938 4

Commission Resolution E-4334 (August 31, 2010).....35

Adam Langton and Noel Crisostomo, *Vehicle-Grid Integration: A Vision for Zero-Emission Transportation Interconnected throughout California's Electricity System*, prepared by Energy Division (October 2013) ("White Paper"), at http://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M080/K775/80775679.pdf .....*passim*

LIST OF COMMONLY USED ACRONYMS/ABBREVIATIONS

AB	Assembly Bill
CEC	California Energy Commission
CAISO	California Independent System Operator
C-CPP Hourly Adder	Commodity critical peak pricing hourly adder
CBOs	Community Based Organizations
CTC	Competition Transition Charges
CPP-D	Cost critical peak pricing default
CPP	Critical peak pricing
DR	Demand Response
DWR-BC	Department of water resources bond charge
DG	Distributed generation
D-CPP	Distribution critical peak pricing
DBE	Diversified business enterprise
EV	Electric vehicle
EVSE	Electric vehicle supply equipment
E3	Energy and Environmental Economics
EE	Energy efficiency
EDF	Environmental Defense Fund

GRC	General rate case
GHG	Greenhouse gas
M/L C&I	Medium and large commercial and industrial
MuDs	Multi-unit dwellings
NPV	Net present value
NCD	Non-coincident demand
ND	Nuclear decommissioning
PEV	Plug-in electric vehicle
PPP	Public Purpose Programs
RIM	Ratepayer Impact Measure
RS	Reliability services
RFI/RFP	Request for information/request for proposal
SB	Senate Bill
TOU	Time of use
TRAC	Total rate adjustment component
VGIBA	Vehicle grid integration balancing account

RECORD CITATION FORM

Citation to the record transcript: "[witness surname, if applicable], T. [page number(s)]: [line number(s)] (date)." *E.g.*, Mutialu, T. 1086:17-21 (May 4, 2015)

Citations to Prepared Testimony identified as exhibits in this case shall use the exhibit numbers assigned by the ALJs. For brevity, the prefix "SDG&E" is shortened to "SD." Cite as follows: Ex. [party abbreviation] [exhibit number] ([witness surname]) [page:line number(s) and/or footnote number]. *E.g.*, Ex. SD-4 (Schimka) 19:5-6 and n.2.

Citation to Other Record Exhibits identified as exhibits will use the exhibit number assigned by the ALJs. *E.g.*, "Ex. [party abbreviation] [exhibit number], [exhibit title, if referenced (date,

if any)] [page number(s) if applicable]. *E.g.,* Ex. SD-17, "ChargePoint press release (May 16, 2014), p. 2.

Citations Regarding the Settlement Agreement: Citations to Appendices, Sections and ¶¶ are to provisions in the Settlement Agreement, unless otherwise indicated. Citations to "paragraph" are to unnumbered paragraphs in the Settlement Agreement appendices.

Terms with initial capitalization, not otherwise titles or proper names, are used as defined in the Settlement Agreement. Unless otherwise indicated, acronyms used herein are as defined in the Settlement Agreement.

SHORT FORM PARTY/ENTITY DESIGNATIONS

Alliance of Automobile Manufacturers	
American Honda Motor Co., Inc.	Honda
California Center for Sustainable Energy	CSE
California Energy Storage Alliance	CESA
ChargePoint, Inc.	ChargePoint
Clean Coalition	
Coalition of California Utility Employees	CCUE
Environmental Defense Fund	EDF
General Motors LLC	General Motors
Green Power Institute	GPI
Greenlining Institute	Greenlining
Joint Minority Parties	JMP
KnGrid, LLC	KnGrid
Marin Clean Energy	Marin
Natural Resources Defense Council	NRDC
NRG EV Services LLC	NRG
Office of Ratepayer Advocates	ORA

Plug In America	PIA
San Diego Consumer Action Network	
San Diego Gas & Electric Company	SDG&E
Shell Energy North America (US), L.P.	Shell
Sierra Club	
Smart Grid Services – Siemens AG	Siemens
Southern California Edison	SCE
The Federal Executive Agencies	FEA
The Greenlining Institute	Greenlining
The Utility Reform Network	TURN
Utility Consumers' Action Network	UCAN
Vote Solar	

SUMMARY OF RECOMMENDATIONS (RULE 13.11)

The Commission should approve SDG&E's Application in this proceeding, as modified by the Settlement Agreement filed June 3, 2015 (the "VGI Program"), as reasonable and in the public interest, based on the following findings of fact and conclusions of law:

1. **Fulfills tasks to reach state goals:** The VGI Program is consistent with the governor's electric transportation goals,[1] the legislature's objectives of AB 32, P.U. Code §§ 740.3 and 740.8, and of R.13-11-007 (the "OIR"). To these ends, the VGI Program fulfills the following tasks assigned to the Commission by the Governor's draft 2015 ZEV Action Plan:

   - "… [f]inding solutions to provide access to charging for multi-family dwellings and workplaces … and … to investigate ways to smoothly integrate PEVs into the State's electricity…. (*id*., p. 11).

   - "Enabling necessary infrastructure …. [by identifying] the appropriate role for utility investment in electric vehicle charging equipment and infrastructure that increases electric miles driven and improves utilization of the electrical grid" (*id*., pp. 11-12).

   - "Create electricity rates and programs for PEV home charging that incentivize charging operations and optimize electric grid performance" (p. 14).

   - "Develop operational strategies that will help to offset or defray the economic impact of peak demand charges associated with the electrical load generated by … charging … infrastructure" (p. 15).

   - "Support VGI pilots that help develop implementation use cases, communication functionality and application value, including pilots designed to assess load impact per number of vehicles under various charging patterns driven by time-of-use rates, dynamic pricing, and fixed fee charging" (*id*.).

   - "Develop time-of-use or dynamic pricing structure or incentives that maximize vehicle charging during times of sufficient electric supply or over-generation and minimize charging during times of constrained electric supply" (*id*.).

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[1] *See* Executive Order B-16-2012 (March 2012) sets a goal of one million zero emission vehicles by 2020, and ensure 1.5 million zero emission vehicles are on California roads by 2025; found at http://gov.ca.gov/news.php?id=17472; Executive order B-30-15 (April, 29, 2015) set a goal of reducing greenhouse gas ("GHG") emissions at 40% below 1990 levels by 2030 (halfway to 2050 goals), and reducing petroleum use in cars and trucks in California up to 50 percent by 2030. Governor Brown ordered agencies, including the Commission, to "… [i]mplement measures under existing agency and departmental authority to reduce greenhouse gas emissions."

2. **Provides ratepayer benefits under P.U. Code §§ 740.3, 740.8:** The VGI Program will reduce emissions and avoid new generation and other infrastructure costs with price signals to encourage off-peak charging by drivers, and should yield ratepayer and societal benefits net of program costs:

   - Encourages the efficient integration of EV charging loads with the grid , enabling EV Drivers and site hosts to integrate and manage charging loads with grid operation, including the efficient integration of energy from renewable resources.

   - Factors in loading on individual distribution circuits and impact on overall system peak, incenting the customer to charge during off peak periods, greatly reducing the need for costly system upgrades and new fossil generation additions.

   - Will reduce carbon and harmful air emissions.

   - Transparent data collection and cost effectiveness measurement will inform future Commission EV policy; customer data collected on program participation will be aggregated to protect customer privacy and made available to the Commission and stakeholders.

3. **Promotes EV adoption:** Through feedback effects, introduction of charging infrastructure to currently underserved venues (MuDs and workplaces) will promote EV adoption and contribute to the ratepayer benefits described above.

   - Provides scalable solution where utility is responsible for installing, managing, and reliably maintaining the charging equipment.

   - Offers EV customers choices for charging their vehicles via day-ahead hourly rates based on circuit and system conditions, and the cost of energy.

   - Allows SDG&E to install charging infrastructure at locations that offer the best opportunity for grid-integrated charging due to frequently used, long parking durations: MuDs and work places.

   - Helps the market through competition and innovation by creating opportunities for third-party vendors and contractors to design, build, install, operate and maintain charging equipment to SDG&E specifications.

   - Customer billing: Allows VGI customers (EV Drivers and VGI Facility site hosts) to pay SDG&E directly for their energy used by EVs on their monthly bills with no additional service fees.

   - Maintenance benefit: funds ongoing maintenance for the customer charging apparatus to ensure that the VGI system remains used and useful to benefit all ratepayers.

4. **The VGI Program design is reasonable:**

- Competitive procurement of VGI products and services from vendors will yield a VGI architecture that will:
  - send the VGI Rate to the EV drive or VGI Facility site host ("site host") customer.
  - fulfill any EV Driver charging requirements, including any load management plan selected by the site host.
  - Gather and send to SDG&E the VGI Facility energy usage data for billing and program analysis.
- Site hosts can select from two VGI Rate or Billing options, and may switch annually:
  - VGI Rate-to-EV Driver;
  - VGI Rate-to-Host (subject to the site host providing a load management plan).
- Targets underserved venues – MuDs and workplaces – yielding high VGI value.
- Site host may choose among vendors of EVSE and related products and services.
- The site host participation payment concept, and the process for determining the payment amount, is reasonable
- Third party service providers pre-qualified by SDG&E may offer the VGI Facility site host any additional or complementary services and may contract directly with site hosts, as long as these services do not interfere with the objectives of the VGI Program.
- Third party service providers pre-qualified by SDG&E, in coordination with SDG&E customer contact personnel, will market and sign up potential VGI Facility site hosts.
- SDG&E ownership of VGI Facilities will provide consumer protection to ensure that these assets remain used and useful to the benefit of all ratepayers.
- Will be included within SDG&E's Diversified Business Enterprise ("DBE") goal of 40%. The RFP and contract will contain a DBE subcontracting plan, which requires the bidder/contractor to list its expected annual DBE spend and any subcontractors it plans to use to achieve its DBE goal.
- Site selection will be market (site host customer demand)-driven and prioritized based on potential benefits.

- A diverse stakeholder advisory council (the VGI "PAC") will assist program planning and implementation.

5. **The VGI Rate is reasonable, consistent with California Rate Policy and should achieve the following public interest objectives:** (1) to test an alternative rate design; (2) to encourage reduction of both coincident and non-coincident peak demand; (3) to encourage cost-effective grid-integrated charging solutions for EV customers; (4) to base rates on cost causation; and (5) to encourage economically efficient decision making.

   - Without grid integration such as that encouraged by the VGI Rate, EV charging will tend to increase electricity costs and impede progress towards the state's carbon-reduction goals

   - Pilot testing by SDG&E suggests that the VGI Rate will incent charging during times of lower cost and help integrate renewable resources.

   - The rate design embodies cost causation and should incent charging during times of lower cost, through the use of day-ahead CAISO hourly pricing and the Critical Peak Pricing hourly adders.

   - The VGI Rate reflects changes in energy prices throughout the day, as well as changes in grid conditions at the circuit and system level. By addressing circuit and system needs hourly rather than through TOU periods, the VGI Rate can provide customers with prices that reflect more low cost hours, *i.e.,* more hours where favorable circuit and system conditions occur.

   - The dynamic components (D-CPP and C-CPP) of the VGI Rate provide a strong price signal for when circuit and/or system conditions are not favorable for charging by signaling the hours in which peak conditions occur at the circuit or system level

   - The VGI Program costs and revenue requirement are reasonable

   - The VGI Program cost recovery mechanism is reasonable

   - The VGI Program's rate and bill impacts are reasonable

   - The VGI Program is eligible for the D.12-12-033 cap-and-trade GHG allowance revenue allocation funding.

6. **The size and duration of the VGI Program are reasonable:** VGI Program sign-ups and contracting are proposed to take place over 4 years, and installations to take place over 4 to 5 years, with a goal of VGI Facility installations as follows:

   - Year 1 (2015) – 50 site installations of 10 charging stations
   - Year 2 (2016) – 100 site installations of 10 charging stations
   - Year 3 (2017) – 200 site installations of 10 charging stations

- Year 4 (2018) – 200 site installations of 10 charging stations

- The 10 charging stations per VGI Facility represent an expected average per site; individual sites may have more or fewer stations.

- The 550 VGI Facilities is a maximum, subject to the $103 million cap on spending authority requested in the Application. SDG&E will not build over the 550 VGI Facilities even if the spending cap is not reached with that rollout level.

- Host sites planning for new construction or major tenant improvements may complete installation of VGI Facilities beyond the 5th year of the program if the commitment is made by the end of the 4th year of the program

- The size of the rollout is also limited by site host customer demand; VGI Facilities will not be built unless the demand materializes.

- The program is sized to provide economies of scale in procurement and to support a robust study sample, while also supporting the Governor's grid-integrated fueling infrastructure goals for 2020.

7. **The proposed cost effectiveness methodology and data gathering are reasonable and will inform state policy:**

   - SDG&E's proposed cost-benefit model is well-grounded in Commission experience.

   - Illustrative modeling results are informative and suggest potential program net benefits

   - Per the scoping memo in R.13-11-007 (July 16, 2015), p. 11, states that pilot programs initiated in the OIR will not be required to demonstrate positive cost-benefit ratios as a condition for approval.

   - An interim progress report to the Commission will provide a mid-point program assessment

   - The VGI Program Research Plan (*i.e.*, data collection and analysis) is robust and reasonable.

8. **The VGI Program is procompetitive and satisfies the competitive balancing test**: The Decision requires weighing the benefits of utility charging infrastructure ownership against the potential competitive limitations of such ownership.

   - The proper focus of the Commission's competition policy is impact on consumer welfare.

   - The customer choice and competitive procurement in the Settlement Agreement resolve any competitive concerns.

- The VGI Program has no anticompetitive effects and has ample public interest and consumer welfare benefits.

    - The VGI Program will give site hosts choice and access to charging equipment and service options, as well as complementary services.
    - The VGI Program cannot enable unfair pricing.
    - The VGI Program is limited in scope, will not dominate the EV charging market, and targets underserved segments of the market.
    - The program's competitive procurement process will benefit other market participants and encourage innovation.

9. **The VGI Program assists Disadvantaged Communities:** At least 10% of VGI Facilities will be installed in Disadvantaged Communities as identified by Cal EPA's Enviroscreen tool developed pursuant to SB 535 (de León, 2013).

    - All program contractors shall have hiring goals to support opportunities to increase hiring from Disadvantaged Communities. The PAC will also monitor and provide recommendations, including specific numerical targets for meeting hiring targets, to contractors or subcontractors associated with the increase of hiring from Disadvantaged Communities, including best practices for hiring in Disadvantaged Communities.

    - The VGI PAC will include representatives of Disadvantaged Communities.

    - The participation payment for site hosts will be waived for VGI Facilities at sites located in Disadvantaged Communities.

    - Third party vendors pre-qualified by SDG&E for the VGI Program will include Disadvantaged Communities in their efforts to market and sign-up potential VGI Facility site hosts. Responses to the RFP should reflect this requirement.

    - SDG&E will scale up deployment of VGI Facilities at qualified locations above the 10% target (in line with screening criteria identified in SDG&E's prepared direct testimony).

    - SDG&E will complement and coordinate with federal, state and locally funded programs, such as those being developed by the Air Resources Board pursuant to SB 1275, that are expected to grow the demand for EVs in Disadvantaged Communities (*e.g.*, such as those supporting EV car-sharing services).

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And Related Matter.	Rulemaking 13-11-007

OPENING BRIEF OF SAN DIEGO GAS & ELECTRIC COMPANY (U902E)

Pursuant to Commission Rule 13.11 and the Assigned Commissioner and Administrative Law Judge's August 5, 2015 ruling,[1] San Diego Gas & Electric Company ("SDG&E") submits this opening brief on the above application for an electric vehicle-grid integration ("VGI") pilot program.[2]

I. INTRODUCTION

The subject Application is California's first utility pilot proposal to help develop EV charging infrastructure, and the only proposal to date to offer innovative vehicle-grid integrated charging – *i.e.*, customer managed charging - to reduce the impact of electric transportation growth on grid operation and infrastructure costs. The Application's VGI proposal has been

[1] *Assigned Commissioner and Administrative Law Judge's Ruling Regarding the Procedural Schedule for Addressing the Settlement and the SDG&E Application*. SDG&E addresses this ruling in more detail at pp. 16-17, *infra*.

[2] To emphasize the vehicle-grid integration benefits of the application, SDG&E refers to its proposal in this case as its "VGI" proposal. This is consistent with the Commission's use of the term in R.13-11-007 (pp. 14-17, 24) and as referenced in, *e.g.*, the California Grid Integration Roadmap (December 27, 2013) (http://www.caiso.com/Documents/Vehicle-GridIntegrationRoadmap.pdf) and Adam Langton and Noel Crisostomo, *Vehicle-Grid Integration: A Vision for Zero-Emission Transportation Interconnected throughout California's Electricity System*, Energy Division, California Public Utilities Commission, October 2013 ("White Paper"). Found at: http://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M080/K775/80775679.pdf

sharpened and improved by substantial stakeholder input, culminating in the Settlement Agreement filed June 3, 2015.[3]

In broad terms, the Settlement Agreement enables adoption of the VGI proposal with significant modifications to address some of Settling Parties' concerns about the Application's effect on customer choice and market innovation, inclusion of Disadvantaged Communities, and other issues. The Settlement Agreement states (p. 3): "The Settling Parties find reasonable, as modified, SDG&E's proposal for the implementation of its VGI Program[4] and cost recovery as described in SDG&E's Application and supporting testimony." If approved by the Commission, the settlement would resolve all issues in A.14-04-010.

SDG&E appreciates the opportunity to submit the VGI Program to the test of evidentiary hearings, briefing and submission to the Commission for decision. Getting to this stage is an achievement for the Commission in its efforts to meet the state's goals for carbon reduction and electric transportation. SDG&E will, in this brief, and in reply, show why approving the VGI

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[3] *Joint Motion to Adopt Settlement Agreement* ("joint motion"). For convenient reference, the Settlement Agreement is Attachment A hereto. The Settling Parties are SDG&E, ChargePoint, Inc. ("ChargePoint"), Environmental Defense Fund ("EDF"), The Greenlining Institute ("Greenlining"), Coalition of California Utility Employees ("CCUE"), Natural Resources Defense Council ("NRDC"), Plug In America, General Motors LLC, Smart Grid Services – Siemens AG, NRG EV Services LLC ("NRG"), Green Power Institute ("GPI"), Sierra Club, American Honda Motor Co., Inc., Alliance of Automobile Manufacturers, and KnGrid, LLC ("KnGrid").

Terms herein with initial capitalization are used as defined in the Settlement Agreement. Unless otherwise indicated, acronyms used herein are as defined in the Settlement Agreement. If there are any perceived inconsistencies between characterizations in this brief and the Settlement Agreement, the terms and conditions set forth in the Settlement Agreement shall prevail.

Citations to Appendices, Sections and ¶¶ are to provisions in the Settlement Agreement. Citations to "paragraph" are to unnumbered paragraphs in the Settlement Agreement appendices. Note that this brief also references an Appendix C to Mr. Schimka's testimony (Ex. SD-2), which is different from the Appendix C in the Settlement Agreement. Citations to the Ex. SD-2 appendix will make it clear that it is a testimony reference; otherwise, all citations to an "Appendix" are to the Settlement Agreement.

[4] "VGI Program" is used herein as defined in the Settlement Agreement (Section II, p. 3): "SDG&E'sVehicle-Grid Integration Pilot Program set forth in the application, as modified by the Settlement Agreement."

Program by granting the joint motion is in the public interest. Given the State's aggressive climate change goals and the current level of transportation electrification, SDG&E urges the Commission to act promptly and issue a decision by the end of the year.

A. Overview and Summary – the VGI Program Advances the Public Interest.

The VGI Program proposes to install up to 550 utility-owned grid-integrated charging facilities, over a five year period. The program specifically targets two currently underserved but frequently used long-term parking venues – workplaces, and multi-unit dwellings ("MuDs"). Crucial to the program's benefits is the innovative VGI Rate, which offers VGI customers a day-ahead dynamic hourly price that reflects changes in energy prices and grid conditions throughout the day, and accounts for loading on individual distribution circuits, as well as the loading on the overall system. This pilot-tested rate is designed to encourage charging during off peak periods, thus greatly reducing the need for costly system upgrades and new fossil generation, additions otherwise required to meet increased EV charging demand, and during times when the availability of renewable energy resources is plentiful.

Under SDG&E's original proposal, EV Drivers would get the VGI Rate and pay for the charging sessions on their SDG&E bill. The settlement, *inter alia*, adds the option for the VGI Facility site host to elect to receive the VGI Rate for all EV charging at the site, subject to the site host providing a load management plan.

Approving the Settlement Agreement will advance the public interest in three respects. First, it would represent an important advance toward the state's carbon reduction and electric transportation goals, as well as Commission objectives in R.13-11-007 (the "OIR" or "Rulemaking"). Second, it will further California's efforts to increase access to zero-emission

vehicles in Disadvantaged Communities established by the Charge Ahead California Initiative.[5] Third, it would provide net ratepayer benefits, including those direct ratepayer benefits as defined in Cal. Pub. Util. Code ("P.U. Code") §§ 740.3 and 740.8.

1. The VGI Program is needed to meet the state's goals set by the Governor's executive orders and this Commission's decisions.

The unchallenged evidence in this proceeding establishes that, unless charging infrastructure deployment is accelerated significantly, California will fall far short of meeting the Governor's goals to build grid-integrated infrastructure supporting one million zero emission vehicles by 2020, and ensure 1.5 million zero emission vehicles are on California roads by 2025,[6] as well as the goals of Assembly Bill ("AB") 32.[7] The legislature has specifically directed the Commission to promote the development of electric vehicle ("EV") fueling infrastructure in P.U. Code §§ 740.3. Recently, the Governor's new executive order (B-30-15, April, 29, 2015) set a goal of reducing greenhouse gas ("GHG") emissions at 40% below 1990 levels by 2030 (halfway to 2050 goals), and reducing petroleum use in cars and trucks in California up to 50 percent by 2030. He ordered agencies, including the Commission, to "…

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5 *See* Senate Bill ("SB") 1275, Chapter 530, approved September 21, 2014 at http://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201320140SB1275

6 *See* Executive Order B-16-2012 (March 2012) at http://gov.ca.gov/news.php?id=17472. SDG&E's testimony showed the extent of charging infrastructure shortfall under different levels of infrastructure installation. Ex. SD-7 (Schimka) ST-40:10-ST-41:8; *see also*, Ex. SD-14 (*The Market for Electric Vehicles: Indirect Network Effects and Policy Impacts, February 2015*), p. 1; Ex. SD-15 (California Energy Commission Lead Commission Report: *2015-2016 Investment Plan Update for the Alternative and Renewable Fuel and Vehicle Technology Program*, March 2015), pp. 40-41.

For this brief's form of citation to the evidentiary record, *see* "Form of Record Citations, after the table of contents and table of authorities at p. ix above.

7 AB 32, the Global Warming Solutions Act of 2006, aims for a 30% reduction in greenhouse gas ("GHG") emissions by 2020. The OIR and P.U. Code § 740.2 recognizes that transportation electrification is important to meeting this goal. According to the California Energy Commission ("CEC"), the transportation sector accounts for more than one third of the state's GHG emissions. Ex. SD-15, p. 1.

[i]mplement measures pursuant to statutory authority, to achieve reductions of greenhouse gas emissions to meet the 2030 and 2050 greenhouse gas emissions reductions targets." To these ends, the Governor's draft *2015 ZEV Action Plan*[8] states that "… [f]inding solutions to provide access to charging for multi-family dwellings and workplaces, … and continuing to investigate ways to smoothly integrate PEVs into the State's electricity grid remain top priorities" (*id*., p. 11). The plan tasks this Commission with:

- Enable necessary infrastructure …. [by] "[i]dentifying the appropriate role for utility investment in electric vehicle charging equipment and infrastructure that increases electric miles driven and improves utilization of the electrical grid" (*id*., pp. 11-12).
- "Create electricity rates and programs for PEV home charging that incentivize charging operations and optimize electric grid performance" (p. 14).
- "Develop operational strategies that will help to offset or defray the economic impact of peak demand charges associated with the electrical load generated by DC fast charging … infrastructure" (p. 15).
- "Support VGI pilots that help develop implementation use cases, communication functionality and application value, including pilots designed to assess load impact per number of vehicles under various charging patterns driven by time-of-use rates, dynamic pricing, and fixed fee charging" (*id*.).

[8] Governor's Interagency Working Group on Zero-Emission Vehicles, *Draft 2015 ZEV Action Plan* (April 24, 2014).

- "Develop time-of-use or dynamic pricing structure or incentives that maximize vehicle charging during times of sufficient electric supply or over-generation and minimize charging during times of constrained electric supply" (*id*.).[9]

SDG&E's Application is the first to offer solutions directed to the Commission's assigned tasks – it focuses on the underserved MuDs and workplace charging. And, it is the *only* application to offer a grid integrated solution; it offers EV Drivers and VGI Facility site hosts a pilot-tested hourly rate uniquely tailored to their individual distribution circuit and overall system demand, as well as the efficient integration of renewable energy resources.

2. The VGI Program offers consumer and public interest benefits.

In addition to supporting the explicit state goals for carbon reduction and electric transportation development, SDG&E has designed this proposal to provide the following benefits (Ex. SD-7 (Avery) ST-1:11-ST-2:26), which are reinforced by the Settlement Agreement:

a. Provides ratepayer benefits[10]

The VGI Program will provide net ratepayer benefits, reduce emissions and avoid new generation and other infrastructure costs with price signals to encourage off-peak charging,

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[9] The evidence in this case reinforces that unmanaged EV charging's contribution to electric demand can frustrate the GHG benefits of electric transportation. For example, the Environmental Defense Fund ("EDF") acknowledges that "[i]n the absence of managed charging, the contribution to peak demand that EVs could have can be quite significant." Ex. EDF-1 (Fine) 23:3-4. Over 100 MW of projected statewide EV peak demand by 2020 is projected by the CEC in its 2013 mid scenario, as presented in EDF's testimony. *Id*., 24:8-12.

[10] The Settlement Agreement (pp. 3-4) recites Guiding Principles "which informed the proposed modifications [to the Application] and should guide VGI Program implementation…." Guiding Principle 2 provides that the VGI Program "… [m]ust be structured to provide net benefits to all ratepayers." Guiding Principle 1 provides that the VGI Program (*id*., footnote omitted):

> Must support the Governor's and California state goals to:
>
> a. Achieve installation of grid-integrated infrastructure to support 1 million zero emission vehicles by 2020;
> b. Accelerate the adoption of 1.5 million zero emission vehicles by 2025;
> c. Support clean air and climate change objectives.

thereby optimizing EV charging behavior with the efficient use of grid resources. To this end, SDG&E offers the VGI Rate, which reflects changes in energy prices throughout the day, as well as changes in grid conditions (at the circuit and system level):[11]

- Day-ahead pricing and hourly rates allow EV Drivers or VGI Facility site hosts to meet energy needs even on grid impacted days.
    - Encourages EV charging at times of grid surplus and to integrate and manage charging loads with grid operation, including the efficient integration of energy from renewable energy resources.[12]
    - Factors in loading on individual distribution circuits, and loading on overall system, incenting EV charging during off peak periods, greatly reducing the need for costly system upgrades and new fossil generation additions to serve growing EV loads.
- Reduces carbon and harmful air emissions.
- Allows transparent data collection and cost effectiveness measurement of otherwise private proprietary data which will inform future Commission EV policy; VGI customer data collected on program participation will be aggregated to protect customer privacy and made available to the Commission and stakeholders.[13] Ex. SD-6 (Martin) JCM-35 – JCM-37.[14]

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[11] For example, hours with lower pricing reflect hours of the day experiencing lower energy prices and/or favorable circuit and/or system conditions; conversely, the hours with higher pricing reflect the hours of the day experiencing higher energy prices and/or unfavorable circuit and/or system conditions (e.g., peak loads).

[12] *Id*., Guiding Principle 10 states: "… [m]ust utilize rate design and load management practices to facilitate the integration of renewable energy resources, as well as deliver other grid benefits."

[13] Drawing on Commission experience with energy efficiency, SDG&E proposes a cost-effectiveness measurement methodology which will be populated with data generated by the proposed pilot. Ex. SD-6 (Martin) JCM-30 – JCM-35. The Settlement Agreement, Appendix B, referencing Mr. Martin's testimony, further clarifies the data collection.

[14] Settlement Agreement, Guiding Principle 9 (p. 3) provides that the VGI Program "… [m]ust provide data to help inform State policy."

b. Promotes EV adoption

By deploying charging infrastructure in currently underserved venues (MuDs and workplaces), the VGI Program will promote EV adoption.[15]

- Serves unmet charging needs of current EV Drivers and enables potential new drivers to overcome recognized obstacles to EV usage.
- Provides scalable solution with assurances that the charging equipment (electric vehicle supply equipment or "EVSE")[16] will be safely installed and reliably maintained[17].
- Offers choices for charging vehicles via day-ahead hourly rates based on circuit and system conditions.
- Installs charging infrastructure at locations that offer the best opportunity for grid-integrated charging due to high frequency usage and long parking durations: multi-family communities and work places.
- Helps develop the market by creating opportunities for third-party vendors and contractors to design, build, install, operate and maintain charging equipment to

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[15] Ex. SD-1 (Avery) LK-13:11-20; Ex. SD-12 (Martin) JCM-22:13-JCM-23:6; SD-14, pp. 1, 14-15. Please note that SDG&E witness James P. Avery adopted the testimony of Lee Krevat submitted with the application. Ex. SD-7 (Avery) ST-4:16-ST-5:2. *See*, Settlement Agreement, Guiding Principle 1.a: "Must … [a]ccelerate the adoption of 1.5 million zero emission vehicles by 2025…."

[16] EVSE is a defined term in the Settlement Agreement (p. 2). The Commission uses EVSE, for example, in Decision ("D.") 11-07-029, and in D.14-12-079, and it is generally understood to reference the equipment that a customer plugs into the EV. SDG&E understands the term to reference SAE J1772, the standard for electrical connectors for EVs maintained by the Society of Automotive Engineers. This standard defines a common EV conductive charging system architecture including operational requirements and the functional and dimensional requirements for the vehicle inlet and mating connector. Ex. SD-7 (Avery) ST-2, n.2.

[17] *See*, Settlement Agreement, Guiding Principle 3: "Must protect ratepayers by ensuring that assets continue to be used and useful."

SDG&E specifications. *See* Ex. SD-2 (Schimka) RS-8:2-6, Ex. SD-7 (Schimka) ST-42:15-17, Ex. SD-9 (Pulliam) BP-14:13-18.[18]

- Customer billing: Allows EV Drivers or VGI Facility site hosts to pay SDG&E directly for their energy on their monthly bills. Ex. SD-2 (Schimka) RS-20:17-19, Section III., ¶¶ A, M.
- Maintenance benefit: Funds ongoing maintenance for the EV charging apparatus for the life of the equipment. Ex. SD-2 (Schimka) RS-15:15-21; Ex. SD-10 (Schimka) RS-7:15-RS-8:4; RS-8:18-21; RS-9:1-7.[19]

As detailed in SDG&E's testimony and in section III. below, this unique program can yield ratepayer and societal benefits net of program costs, which will be tracked, measured and reported. Finally, as demonstrated in section III, below, the VGI Program satisfies the "competitive balancing test" established by D.14-12-079 by which the Commission will evaluate utility transportation electrification proposals. The program cannot dominate the EV charging market and it leaves plenty of room for non-utility charging solutions. In sum, the VGI Program will produce direct ratepayer benefits as defined under P.U. Code §§ 740.3 and 740.8.

3. Delay, "go small," and "one-size-fits-all" are not in the public interest.

Several parties do not share the sense of urgency or recognize the value of utility participation in reaching the state's goals. They argue that the Commission should do some combination of substantially reducing the size of this pilot, subjecting it to further process delays, and limit the utility's role to providing so-called "make ready" infrastructure, and while

[18] *See*, Settlement Agreement, Guiding Principle 7 (p. 2), which provides that the VGI Program: "… [m]ust support broad-based investment in electric vehicle charging equipment and services by public, private and utility entities and avoid anticompetitive impacts on the markets for EV charging equipment and related services."

[19] Settlement Agreement, Guiding Principle 3, states that the VGI Program "… [m]ust protect ratepayers by ensuring that assets continue to be used and useful."

imposing this common framework on all three utilities.[20] By issuing D.14-12-079, after a thorough process that included robust rounds of comment and workshops, the Commission set a course to act on the individual pilot applications submitted with the encouragement of the OIR. Those that continue to urge delay simply ignore that D.14-12-079 set forth a carefully considered test for evaluating utility ownership of EVSE, and set this application on a specific procedural schedule to apply that test. The matter has been thoroughly briefed in the context of ORA's April 13, 2015 motion to consolidate. It is sufficient to say here that what ORA and others propose is to simply pretend that D.14-12-079, and the process leading up to it, never happened. Given the state's goals and the Commission's well-considered recent action in the EV sphere, such efforts should be rejected.[21]

SDG&E appreciates that the Commission has stuck to its plan and schedule and has devoted resources to adjudicating SDG&E's VGI Application to this point. It may be useful to review here why proceeding to decide this Application before year-end is important. Fundamentally, the data gleaned and lessons learned from this pilot will help inform future decisions of the Commission and the conduct of the OIR. As has been already mentioned and will be further detailed below, SDG&E proposes a unique day-ahead dynamic hourly rate structure for electric vehicle charging in the workplace and multi-family unit settings designed to optimize EV charging with grid conditions, including integration of renewable energy resources. No other utility proposes a dynamic hourly rate to encourage the efficient integration of EV

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[20] Office of Ratepayer Advocates ("ORA") in particular, advocates such a result. Ex. ORA-2 (Mutialu) 1:10-11, 17:14-21, 21:18-22:2. *See e.g.*, The Utility Reform Network ("TURN") and ChargePoint testimony. Ex. TURN-1A (Jones) 2:17-3:4; Ex. TURN-2 (Borden) 4:11-7:6, 14:38-15:3; Ex. CP-1 (Quinn) 17:7-18:4, 23:4-8; CP-3 (Monsen) 8:1-7.

[21] In particular, ORA, TURN and UCAN continue to advocate a much smaller program, punctuated by pauses to evaluate progress based on the limited data the program could generate in the time they would allow. TURN comments at 29-30, 43; ORA comments at 6; UCAN comments at 19, 24-26. *See also* CESA, comments at 3.

charging with the operation of the grid and increase the use of renewable energy. Grid integration is essential to achieving the GHG-reduction benefits that underpin the state's climate change policies.

The OIR scoping memo[22] establishes that Phase I will consider how VGI resources should be valued and identify the costs and benefits associated with VGI applications. SDG&E's original Application, proposes a cost-effectiveness methodology that builds upon standard cost effectiveness tests familiar to the Commission in demand response, energy efficient and other contexts. The VGI Program cost effectiveness methodology will be tested with real-life data generated by the VGI Program. This subject will be a matter of great interest in the OIR. Delay will simply deprive the Commission and OIR stakeholders of valuable data and cost effectiveness results from this pilot. Furthermore, to inform Commission policy regarding the role of the utility in the nascent electric transportation space, the OIR encourages a variety of proposals, instead of convergence on a single approach – this will permit policy to be shaped with real market performance data from different approaches.

Finally, the size of SDG&E's proposal is necessary to generate a robust sample to evaluate the benefits of grid-integrated charging through the VGI Rate. SDG&E addresses the appropriate size of the VGI Program in section II.D.6. below. In sum, the Commission should reject calls to delay or reduce the VGI Program, or to homogenize programs across the state.

[22] *Assigned Commissioner's Scoping Memo and Ruling*, R.13-11-007 (July 15, 2014). The scoping memo (p. 11) states that pilot programs initiated in the OIR will not be required to demonstrate positive cost-benefit ratios as a condition for approval.

B. The Application and Settlement Agreement Have Been the Subject of a Robust Procedural Process Yielding a Well-Developed Record.

1. The Application and consolidation with the OIR

SDG&E filed A.14-04-014 April 11, 2014, supported by over 150 pages of prepared testimony by six witnesses.[23] After submitting the Application, SDG&E engaged in a number of forums to educate interested parties to understand its VGI proposal.[24] Ten protests and comments were filed in response to the Application.[25]

The July 16, 2014 Assigned Commissioner's Scoping Memo and Ruling in the OIR ("scoping memo") included the following inquiry as Question 2 (p. 13):

> Should the Commission consider an increased role for the utilities in PEV infrastructure deployment and, if so, what should that role be? If the Commission should consider utility ownership of PEV charging infrastructure, how should the Commission evaluate 'underserved markets' or a 'market failure' pursuant to D.11-07-029? What else should the commission consider when evaluating an increased role for utilities in EV infrastructure deployment?

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[23] SDG&E served prepared direct testimony as follows (with subsequently-assigned record exhibit numbers): Ex. SD-1 - Policy (Lee Krevat, now adopted by James P. Avery), Ex. SD-2 - Implementation Costs and Management (Randy Schimka), Ex. SD-3 – Rates (Cynthia Fang), Ex. SD-4 – Revenue Requirement (Jonathan Atun), Ex. SD-5 – Cost Recovery (Norma Jasso), Ex. SD-6 – Cost Effectiveness (J.C. Martin). On June 3, 2014, SDG&E served revised testimony for Ex. SD-3 – Rates (Cynthia Fang). On July 29, 2014, SDG&E served revised testimony for Ex. SD-6 – Cost Effectiveness (J.C. Martin).

[24] SDG&E noticed and held informational workshops in San Diego on April 28, 2014 and San Francisco on May 5, 2014, and SDG&E made presentations to the San Diego Association of Governments (SANDAG) on May 22, 2014, the California Air Resources Board on May 27, 2014, UC Davis NextSTEPS Program on May 29, 2014, San Diego Regional Chamber of Commerce – Water and Energy Subcommittee on June 5, 2014, California Energy Commission – Integrated Energy Policy Report on June 23, 2014, and Plug-in 2014 on July 28, 2014. In addition, SDG&E held informal discovery discussions with ORA (June 18 and July 16, 2014) and TURN (July 24, 2014) regarding the cost effectiveness model and the input assumptions used for the illustrative cost effectiveness results described in J.C. Martin's testimony (Ex. SD-6).

[25] The following parties submitted protests and responses: Utility Consumers' Action Network ("UCAN"); San Diego Consumer Action Network; California Center for Sustainable Energy; Joint Minority Parties; ORA; TURN; Natural Resources Defense Council ("NRDC"); California Energy Storage Alliance ("CESA"); ChargePoint, Inc. ("ChargePoint"); and NRG.

The OIR scoping memo invited parties to file comments and replies on the questions in the OIR scoping memo, and twenty-seven parties commented in response. Subsequently, the *Joint Assigned Commissioner and Administrative Law Judge's Scoping Memo and Consolidation Ruling* (September 29, 2014) ("scoping ruling") consolidated SDG&E's A.14-04-014 with the OIR. This scoping ruling specifically cited Question 2 from the OIR scoping memo as a common issue for both proceedings to justify consolidation. The scoping ruling's schedule for adjudicating SDG&E's pilot application assumed a proposed decision November 2014. SDG&E greatly appreciates that this schedule was kept with the issuance of a proposed decision on November 14, 2014.

2. D.14-12-079 and evidentiary hearings

On December 18, 2014, the Commission voted out D.14-12-079 ("Decision"), largely adopting the proposed decision.[26] This Decision sets aside the requirement in D.11-07-029 that the utilities demonstrate a "market failure" or "underserved market" as part of any application to own plug-in electric vehicle ("PEV")[27] EVSE charging infrastructure. The Decision now allows the Commission to consider utility requests on a case-specific basis, and it clarifies (p. 2) the elements the Commission will examine "in determining whether utility entrance into a competitive market with non-utility participants should be allowed." The Decision affirms the test applied in D.11-07-029, which would balance the benefits of utility ownership of EVSE against any competitive limitation that may result from that ownership. The Decision (p. 8) states the Commission's intent to:

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[26] *Phase 1 Decision Establishing Policy to Expand the Utilities' Role in Development of Electric Vehicle Infrastructure* (issued December 22, 2014).

[27] "Plug-in electric vehicles." This term is used to distinguish standard hybrid vehicles that do not require battery charging from an external source.

> … take a more detailed, tailored approach to assessing any proposed utility program based upon the facts of specific requests, the likely competitive impact on the market segment targeted, and whether any anticompetitive impacts can be prevented or adequately mitigated through the exercise of existing rules or conditions.

The Decision goes on to specify, without limitation, certain items it will consider in applying this competitive balancing test (*id*., p. 9).

On January 14, 2015, SDG&E served supplemental testimony to address the foregoing competitive items in compliance with D.14-12-079, including that of an expert economist, Barry Pulliam. In addition, SDG&E included the testimony of Randy Schimka and J.C. Martin to address three items: (1) how EVSE installation is falling short of that needed to support the State's electric transportation goals; (2) based on lessons learned in discovery,[28] they clarify the architecture of SDG&E's proposed VGI Facility; and (3) they address the concern expressed in the September 29, 2014 scoping ruling regarding the size of the proposal.[29]

On February 2, 2015, Judge Irene K. Moosen issued an email ruling setting forth a procedural schedule. Pursuant to that schedule, ORA and intervenor testimony was served March 16, 2015,[30] and concurrent rebuttal testimony was served April 13, 2015.[31] Between the filing of the Application and evidentiary hearings, in addition to workshops and informal discovery described above, SDG&E responded in writing to over 358 data request items from

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[28] At the time its supplemental testimony was served, SDG&E had responded to over 106 discovery request items.

[29] *Joint Assigned Commissioner and Administrative Law Judge's Scoping Memo and Consolidation Ruling* (September 29, 2014), pp. 3-4. The concern expressed was that the scope of the request "put the SDG&E Application on par with a full program business model, rather than an initial, research-oriented test project" (*id*., p. 4).

[30] In addition to ORA, intervenor testimony was served by TURN, CCUE, NRDC, EDF, Joint Minority Parties ("JMP"), ChargePoint, CESA, The Federal Executive Agencies ("FEA"), The Green Power Institute ("GPI"), KnGrid, and UCAN.

[31] Concurrent rebuttal testimony was served by ORA, TURN, EDF, FEA, GPI, NRDC, UCAN, and Plug In America ("PIA").

ORA, TURN, UCAN Commission Energy Division, CESA, FEA, and the Joint Minority Parties. As with all discovery in this proceeding, SDG&E responded timely to these data requests and posted its responses on SDG&E's website.

By a Chief ALJ Notice of Co-Assignment (April 24, 2015), Judge John S. Wong was co-assigned to the proceeding. The evidentiary hearings were held as scheduled on April 27 - May 4, 2015 in the Commission hearing rooms in San Francisco with Judges Moosen and Wong presiding. The evidentiary record amassed includes 1186 transcript pages and 83 exhibits.

Two motions were filed on April 13, 2015 – one by ORA,[32] and one by several parties to the consolidated dockets.[33] Both motions sought to defer indefinitely the evidentiary hearings scheduled to start April 27, to consolidate all three utility applications, and to convene workshops and other procedures in order to re-visit issues specifically addressed by the Decision. By email ruling dated April 21, 2015, Judge Moosen denied the motions to the extent they sought to delay the scheduled hearings, but promised to "seriously consider" the motions' proposals to "restructure" the proceedings. On May 5, 2015, in the Commission auditorium in San Francisco, an all-party meeting was held pursuant to notice issued April 24, 2015.[34] The agenda at the all-party meeting was devoted to such restructuring proposals.

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[32] … *[ORA]'s Motion to Consolidate Proceedings and Implement its Alternative Proposal for Deployment of Investor owned Utility Electric Vehicle Infrastructure Pilots*.

[33] *Joint Party Motion to Amend the Scope of the Rulemaking*, submitted by Marin Clean Energy ("Marin") and also signed by CESA, Center for Sustainable Energy, Clean Coalition, GPI, JMP, Shell Energy North America (US), L.P. ("Shell"), TURN, and UCAN. Both motions were filed on the date rebuttal testimony was served in A.14-04-014.

[34] The notice was issued to the service lists in this consolidated proceeding, and in the Pacific Gas & Electric ("PG&E") and Southern California Edison ("SCE") EV charging dockets (A.15-02-009 and A.14-10-014, respectively).

3. The Settlement and subsequent procedures

On May 22, 2015, SDG&E served on all parties a notice of a settlement conference pursuant to Rule 12.1(b), setting the conference at 1:00 pm on June 1, 2015 in San Francisco. This conference was held as noticed. On June 3, 2015, SDG&E filed, on behalf of the Settling Parties,[35] the *Joint Motion to Adopt Settlement Agreement* ("joint motion"). The Settlement Agreement enables adoption of the VGI proposal with significant modifications to address some of Settling Parties' concerns about the Application's effect on customer choice and market innovation, inclusion of Disadvantaged Communities, and other issues. The Settlement Agreement states (p. 3): "The Settling Parties find reasonable, as modified, SDG&E's proposal for the implementation of its VGI Program and cost recovery as described in SDG&E's Application and supporting testimony."[36]

Comments on the joint motion were submitted pursuant to Rule 12.2 on July 3, 2015 by certain parties;[37] SDG&E submitted reply comments on July 20, as did certain other parties.[38] Note that, to date, SDG&E has responded to 188 data request items directed at the Settlement Agreement.[39] On August 5, 2015, a ruling issued setting further procedures.[40] This ruling, inter

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[35] *See*, p. 2, fn. 3, *supra*.

[36] The joint motion also requested suspension of the briefing schedule, which had set opening briefs for June 5. This was anticipated by Judge John S. Wong's June 1, 2015 email ruling, which suspended the briefing schedule at SDG&E's request advising that a substantial number of parties at the settlement conference that day had executed the Settlement Agreement.

[37] Timely comments were submitted by ORA, TURN, Consumer Federation of California, Marin, CESA, JMP, UCAN, Shell, and Vote Solar.

[38] Other parties submitting timely reply comments were ChargePoint, JMP, TURN, ORA, UCAN, and a reply submitted by NRDC in support of the settlement on behalf of a "coalition of environmental, automaker and labor groups" including EDF, General Motors, CCUE, Alliance of Automobile Manufacturers, Greenlining, PIA, Honda, and Sierra Club.

[39] SDG&E has answered a total of 546 data request items to date in this proceeding.

alia, rejected contentions by the ORA, TURN and UCAN responses to the joint motion that the settlement requires additional evidentiary hearings to consider implementation issues. The August 5 ruling states that (p. 23):

> …. the proposed settlement introduces modifications to SDG&E's original VGI proposal that require further explanation for the Commission to have a more thorough understanding of how the proposed settlement is to be implemented. To achieve that, we have appended Attachment A to this ruling, which is a series of questions that we have about the proposed settlement. SDG&E is directed to provide responses to the questions set forth in Attachment A by August 21, 2015….[41]

SDG&E submitted the responses as directed on August 21. With respect to additional procedures, the ruling determined (pp. 23-24):

> ….that the most efficient process for the Commission to address the contested proposed settlement, and SDG&E's underlying VGI proposal, is to have the parties file opening and reply briefs on whether SDG&E's original VGI proposal, or the proposed settlement, should be adopted or not, or if some variation of these proposals should be adopted by the Commission. We pursue this process because the proposed settlement is predicated on SDG&E's VGI proposal as set forth in A.14-04-014. Six days of EH on SDG&E's VGI proposal have been held. Since the briefing schedule following the EH was suspended, as noted earlier, and because SDG&E's original VGI proposal, and the proposed settlement agreement, are both contested, the parties should be provided the opportunity to fully brief SDG&E's original VGI proposal, and the proposed settlement.

The ruling sets the opening briefs for September 4, and replies on September 18. To be clear, SDG&E's briefing will advocate adoption of the Settlement Agreement, which modifies the Application's original proposal. SDG&E's briefs will address the evidence pertinent to the original proposal insofar as it has been adopted by the Settlement Agreement.[42]

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[40] *Assigned Commissioner and Administrative Law Judge's Ruling Regarding the Procedural Schedule for Addressing the Settlement and the SDG&E Application*.

[41] *See also*, ruling, ordering paragraph 1, p. 24.

[42] Settlement Agreement, section IV.A. (p. 8) provides:

> The Settling Parties agree to support and defend this Settlement Agreement, and shall perform diligently, and in good faith, all actions required or implied hereunder,

In sum, SDG&E's Application and the Settlement Agreement have been thoroughly vetted in prepared testimony, evidentiary hearings, and other procedures, with the active participation of stakeholders representing all facets of interest in EV development, including consumer groups, environmentalists, the automobile industry, and EV charging providers. Upon submission of reply briefs on September 18, the VGI Program will be ripe for Commission decision.

II. THE VGI PROGRAM ELEMENTS

A. Overview of VGI Program

First, it offers EV Drivers or VGI Facility site hosts an innovative pilot-tested day-ahead hourly rate to incentivize charging at times best for the grid. This alternative rate structure for EV charging in the workplace and MuD context incorporates dynamic hourly prices that reflect: (1) a system critical peak, (2) a distribution circuit peak, and (3) energy and surplus energy events. The EV Driver or VGI Facility site host can also pay for the energy used on his or her SDG&E customer account. The VGI Rate is the primary means to deliver the benefits to ratepayers and promote state climate change policies.

Second, the VGI architecture will be developed through a competitive process designed to inspire the market to propose innovative solutions through third parties to:

- Send the VGI Rate to the EV Driver or VGI Facility site host;

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including, but not necessarily limited to, the execution of any other documents required to effectuate the terms of this Settlement Agreement, and … to obtain the approval and adoption of this Settlement Agreement by the Commission. No Settling Party will contest in this proceeding … or in any manner before this Commission, the recommendations contained in this Settlement Agreement.

- Fulfill EV Driver or VGI Facility site host charging requirements, including any load management selected by the site host site under the VGI Rate-to-Host option;
- Gather and send SDG&E the energy use data for billing and program analysis.

SDG&E will not dictate the design; it will publish the "what" – the foregoing elements - and rely on its market-driven supply management process to supply the "how" from third party vendors.

Third, the pilot will yield transparent data that would not otherwise be available to policy makers to determine the program benefits and to inform future Commission action, using a cost-effectiveness methodology that builds upon standard cost effectiveness tests familiar to the Commission in demand response, energy efficiency and other contexts. Indeed, based on sensitivity runs using illustrative data, the VGI cost effectiveness analysis suggests that the pilot will yield robust net benefits to all ratepayers.

Fourth, the VGI Program targets the installation of VGI Facilities at workplace and MuD sites. Both types of sites offer around-the-clock opportunities for grid-integrated charging. The VGI Program's proposed MuD and workplace siting has great potential to increase EV ownership and zero emission miles driven per EV.[43]

Fifth, SDG&E proposes to sign up customers over a four year program period, and install *up to* a maximum of 550 VGI charging facilities totaling to 5,500 charging units or EVSE over a

[43] In addition, the VGI Program focuses on MuD and workplace installations, because of the need for additional EV charging facilities at these sites. After two years of solicitation at our quarterly EV charging workshops, SDG&E can document three MuD charging site case studies to share with interested customers. As for the workplace charging projects, SDG&E is aware of approximately 35 operational workplace charging facilities in San Diego (as of April 2014). Because of this, SDG&E believes that there are additional opportunities in the region to install more charging facilities at MuD and workplace locations. Ex. SD-3 (Schimka) RS-1:22-RS-2:17 and n. 1. Ex. SD-15, pp. 40-41.

five year period.[44] The evidence shows that the VGI Program is an experiment of reasonable size, given (1) its rollout over a fixed period of time, (2) fully-deployed, it should constitute a relatively small share of the total commercial charging outlets in San Diego, and (3) the size is necessary to generate a robust sample to evaluate the benefits of grid-integrated charging. Charging equipment will be deployed only where there is demand from the site owner/manager, subject to SDG&E's screening criteria, thus mitigating the risk of unused charging equipment.

1. EV charging under SDG&E's original proposal

In testimony supporting the Application, SDG&E proposed to offer site hosts the opportunity to install charging facilities whereby EV Drivers can charge their vehicles and pay the charging costs on their monthly SDG&E bill. SDG&E describes the VGI system and functional requirements at Ex. SD-2 (Schimka) Appendix C, and clarified further in Ex. SD-7 (Schimka) ST-42-ST-43:4-25, including illustrations, descriptions and diagrams. This section summarizes the information in Appendix C to Mr. Schimka's testimony.

Under the Application's original VGI proposal, SDG&E would contract with third parties to build, install, operate and maintain EV charging facilities to SDG&E's specifications, and under SDG&E's overall supervision. SDG&E would also contract with interested MuD and workplace host sites wishing to participate in the VGI Program by providing no-cost charging equipment and installation, while the potential hosts provide a charging site location and appropriate parking for EV Drivers. After installation of the VGI equipment, SDG&E would offer VGI charging services to its EV Drivers at the workplace and MuD locations under a new

[44] This rollout is also subject to an expenditure cap of $103 million. At hearings, SDG&E witness Randy Schimka clarified that SDG&E is requesting authority to build up to the 550 charging stations, subject to the $103 million cap on spending authority requested in the application (at Ex. SD-4 (Atun) JBA-4:2-7 and Table JBA-5, which shows total capital and O&M expenditures of $102,753). SDG&E will not build over the 550 charging stations if the spending cap is not reached with that rollout level. Schimka, T. 534:5-23 (April 29, 2015).

VGI Rate, with SDG&E billing the participating EV Drivers directly for EV charging (using the VGI Rate at VGI Facilities) on the customer's home energy bill. Ex. SD-2 (Schimka) RS-1:22-RS-2:17.

Under the original proposal, the VGI system would allow an EV Driver on the VGI Rate to enter preferences for energy price and quantity (hours) into a mobile phone application or a website, according to the customer's preference. Hourly pricing for each day will be made available on the VGI mobile and web application, on a day-ahead basis. As described in section II.C. above and in Ex. SD-3 (Fang), the VGI Rate is designed so hourly charging prices will reflect the expected hourly price of electricity and will encourage EV charging at times that will minimize incremental loads on the electrical distribution system, integrate high levels of renewable energy use, and avoid charging on system peak. The EV charging preferences selected by the EV Driver will be used by the VGI system to determine EV charging session "boundaries" such as:

- What is the maximum hourly price the EV charging customer wishes to pay?
- When does the EV customer (driver) plan to leave the VGI charging facility?
- How much energy does the EV charging customer need?

Based on the customer's charging preferences regarding pricing, energy and duration, for example, the VGI system will dispense electricity at the lowest possible price within these EV charging preferences, during a time period prior to the specified departure time. Ex. SD-2 (Schimka) RS-3:12-RS-4:8.

2. The settlement enhances the original proposal's customer choice

The Settlement Agreement maintains the VGI Rate and other key aspects of SDG&E's original proposal. The settlement enhances the Application in several ways, including more

space for customer choice and market innovation and inclusion of Disadvantaged Communities. The settlement supports the adoption, as modified, of SDG&E's proposal for the implementation of its VGI Program and cost recovery as described in SDG&E's Application and supporting testimony. The following summarizes the Settlement Agreement's principal modifications to SDG&E's proposal:[45]

a. Site hosts will have two VGI billing options, and may switch annually.

SDG&E's original proposal offered potential VGI site hosts the single option of providing the VGI Rate to the EV Driver using the EVSE at the VGI Facility. Under the settlement, VGI Facility site hosts (*e.g.*, property manager/owner of an MuD or workplace setting, as originally proposed) will have the choice of two VGI billing options (Section III., ¶¶ A., B.):

- VGI Rate-to-EV Driver – the VGI Rate offered directly to the EV Driver (as originally proposed), or
- VGI Rate-to-Host – the VGI Rate offered to the site host, who must provide a load management plan for the VGI Facility.

After the first year of participation in the VGI Program, the VGI Facility site host will have an annual option to switch VGI Rate or Billing plans (*i.e.*, the VGI Rate-to-EV Driver plan or VGI Rate-to-Host plan).[46]

Where the site host opts to receive the VGI Rate (*i.e.*, the VGI Rate-to-Host option), the site host or its selected vendor will be required to submit to SDG&E the load management tactics

[45] This summary of the Settlement Agreement is an overview and does not attempt to capture every item in the Settlement Agreement. In the event that there are any perceived inconsistencies between this Joint Motion and the Settlement Agreement, the terms and conditions set forth in the Settlement Agreement (Attachment A hereto) are to prevail.

[46] Section III., ¶ E.

it will implement at its VGI Facility, including the incremental costs and equipment required to implement the load management tactics, the prices or fees that will be levied on VGI Facility users (*i.e.*, the EV Drivers), and any vehicle or EVSE communication systems necessary to implement the load management tactics. Load management plans must be consistent with the Guiding Principles of the Settlement Agreement. Facility usage patterns will be monitored, just like Facility site hosts that opt for the VGI Rate-to-EV Driver option. Site usage patterns will be monitored, and in addition, site host determined prices or charging fees (for EV Drivers using the VGI Facility) will be tracked. These data will be used to inform Commission policy. SDG&E will also monitor metered data and other metrics specified in the Settlement Agreement for both the VGI Rate-to-EV Driver and VGI Rate-to-Host options, and will provide these data to the Program Advisory Council,[47] along with other information as described in Appendix B. *See*, Section III., ¶ B.

b. Site host may choose among vendors of EVSE and related services.

SDG&E will solicit participation from multiple third parties to provide equipment, install, maintain and operate the VGI system. VGI Facility site hosts may choose electric vehicle supply equipment and related products and services from a list of vendors pre-qualified by SDG&E through its RFP process to provide such equipment, products and services for the VGI Program. Section III., ¶ C.[48]

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[47] Per Settlement Agreement, Section III., ¶¶ K., L. and Appendix B, SDG&E will solicit the participation of a broad and diverse stakeholder advisory group (the "VGI Program Advisory Council" or "PAC") in planning and implementing the VGI Program. The PAC will include local and state level representatives of industry, labor, ratepayer and environmental advocates, and representatives of Disadvantaged Communities. A primary role of the PAC will be to provide input to SDG&E for programmatic changes as needed during the course of the VGI Program, to improve the program's performance.

[48] Construction, installation and maintenance contractors will be required to meet certain safety and training certification standards. Section III., ¶ G. a. and Appendix C.

c. Participation payment for site hosts

Site hosts that elect to participate in the VGI Program will be required to make a participation payment. The participation payment will be waived for VGI Facilities at sites located in Disadvantaged Communities. SDG&E shall file for approval of the proposed participation payment by way of a Tier 2 advice letter, subject to protest by any party, after consulting with the VGI PAC (as described below). Section III., ¶ D.

d. Third party vendors may offer additional services.

Third party service providers pre-qualified by SDG&E for the VGI Program may offer the VGI Facility site host any additional or complementary services and may contract directly with site hosts, as long as these services do not interfere with the objectives of the VGI Program. The costs of these additional services will not be borne by the VGI Program, unless they are complementary services necessary to support the VGI Program objectives. Section III., ¶¶ F, O.

e. Third parties will market the program to site hosts

Third party service providers pre-qualified by SDG&E for the VGI Program, in coordination with SDG&E customer contact personnel, will market and sign up potential VGI Facility site hosts to participate in the VGI Program in the targeted customer segments (MuD and workplace settings), and to any other customer sub-segments identified in the Settlement (*e.g.*, Disadvantaged Communities and housing or sites that support car-sharing entities). SDG&E will develop competitively-neutral descriptions of the VGI Rate plans for use by third parties; third parties may also develop their own marketing materials at their own expense, consistent with and subject to SDG&E's Co-branding Policy and approval process. Section III., ¶ G.

f. VGI Program will support DBE goals

The VGI Program will be included within SDG&E's company-wide Diversified Business Enterprise ("DBE") goal of 40%. The RFP and contract will contain a DBE subcontracting plan,

which requires the bidder/contractor to include goals to support opportunities to increase hiring from Disadvantaged Communities. Bidders will be requested to provide proposals in support of SDG&E's 40% goal. Section III., ¶ H.

g. At least ten percent of VGI Program installations in Disadvantaged Communities

At least 10% of VGI Facilities will be installed in "Disadvantaged Communities" as identified by Cal EPA's Enviroscreen tool developed pursuant to SB 535 (de León, 2013). SDG&E will work with Community Based Organizations to assist with education and outreach, as well as pre-qualifying and signing-up site hosts for participation in the VGI Program (see Ex. SD-2 (Schimka) RS-7:4-18) to support accelerated EV adoption in Disadvantaged Communities. The Settlement Agreement also establishes a process to scale up deployment in Disadvantaged Communities to both keep pace and accelerate with demand and to complement programs that will be implemented pursuant to SB 1275. Section III., ¶ I.

h. A diverse stakeholder advisory council will assist program planning and implementation

As noted above, SDG&E will solicit the participation of a broad and diverse stakeholder advisory group (the "PAC") in planning and implementing the VGI Program. The VGI PAC will include the Commission's Energy Division as well as representatives of industry, labor, ratepayer and environmental advocates, and representatives of Disadvantaged Communities. A primary role of the PAC will be to provide input to SDG&E to improve the program's performance. SDG&E will make programmatic changes as needed during the course of the VGI Program based on PAC input, in line with the Settlement Agreement's Guiding Principles, and recognizing that certain changes may require filings with the Commission for approval. Programmatic changes will be made on an on-going basis, running concurrent with the VGI Program, so as not to impede its overall progress. Data will be provided to the PAC and state

agencies regularly to help assess the need for programmatic changes. Section III., ¶¶ K., L. and Appendix B. *See also*, n. 47, *supra*.

i. An Interim Progress Report will provide a mid-point program assessment

SDG&E expects to provide data generated by the Program on an on-going basis. In order to provide an assessment of the VGI Program consistent with the Guiding Principles, SDG&E will file an Interim Progress Report two years after the VGI Program is launched and data collection commences. Parties may file comments and reply comments on the report. Section III., ¶ P.

j. Metering and billing must meet SDG&E specifications

Metering at the EVSE level must be compatible with SDG&E billing and metering requirements, which have been moderately relaxed in this pilot to accommodate the use of embedded meters or those provided with EVSE to facilitate cost-effective program implementation. This provision adds detail to SDG&E's original proposal, and adds clarification to the VGI Rate-to-EV Driver option and other choices added by the settlement. Section III., ¶ M.[49] Consistent with SDG&E's original application, VGI Facilities will be separately-metered under Commission jurisdiction.

[49] VGI bills will be sent directly to the EV Driver (SDG&E customer, as originally proposed) receiving the VGI Rate, *or* to the VGI Facility site host receiving the VGI Rate under the VGI Rate-to-Host pricing plan. Data will be provided to SDG&E by the qualified third party to SDG&E's specifications in a manner acceptable to both parties to allow for this. Billing specifications are per SDG&E's proposal: to send VGI Rate on a day-ahead basis, allow customer (site host or EV Driver) to set charging needs, meet these charging needs, collect usage data, and send data to SDG&E for billing processing. For exceptional instances when a non-SDG&E customer is allowed by the VGI Facility site host to use the VGI Facility for vehicle charging temporarily, the site host will have the option to be the VGI Rate customer (*i.e.*, enrolled in the VGI Rate), and will be billed for this usage, similar to how the site host is billed under the VGI Rate-to-Host pricing plan. *Id*.

k. Modification for potential VGI Facility sites planning for new construction or major tenant improvements

SDG&E's proposal is modified to allow host sites planning for new construction or major tenant improvements to complete installation of VGI Facilities beyond the 5th year of the VGI Program if the commitment is made by the end of the 4th year of the program. Section III., ¶ N.

l. Clarification of VGI procurement

SDG&E will contract with one or more third parties to provide operating systems and related hardware to control EVSE networks to implement the VGI system. To foster the growth in innovation, the Settlement Agreement reinforces SDG&E's aim to specify "what" is required to achieve the VGI Program objectives, and not "how" these requirements are met. Further clarification of the VGI Program procurement processes is provided in Appendix C of the Settlement Agreement. Section III., ¶ O and Appendix C.

B. Grid integration is a unique and crucial element of the VGI Program

The importance of and the potential benefits from VGI was introduced in a report ("White Paper") published by the Commission's Energy Division, coincident with the launch of the OIR (Rulemaking 13-11-007).[50] This White Paper proposed that the growth in the adoption of PEV requires that grid operators prepare for these potentially sizeable and mobile loads on the electric distribution infrastructure, and states that (p. 2):

> … [VGI] can harness the usage characteristics of and technologies within PEVs to allow them to serve as a grid asset, reducing operating costs for facility and vehicle owners, the utilities' distribution maintenance requirements, and energy prices in the wholesale market…. Additional pilot demonstrations are needed to quantify the actual costs and benefits of VGI....The utilities need to develop methods to capture and return to customers the value that VGI provides to their distribution infrastructure.

[50] *See* n. 2, *supra*. White Paper (October 2013) available at: http://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M080/K775/80775679.pdf.

The White Paper notes that by meeting the governor's state target of getting 1.5 million zero-emission vehicles on California roads by 2025:[51]

> … battery electric vehicles … would represent an additional load of 10,000 MW on the grid. Accounting for plug-in hybrid electric vehicles (PHEV), total load exceeds 30,000 MW, which represents nearly 60% of the summer peak load in 2013.[52] If this load were to occur on peak, serving these vehicles would require major grid upgrades and construction of additional generation capacity…. VGI allows these vehicles to be used as a resource that helps us reduce grid operations costs, avoid or defer distribution maintenance and upgrades…. Coupling the unique usage attributes of PEVs with new business and operational strategies have the potential to mitigate system impacts resulting from the growth of electrified transportation, and in turn, accelerate PEV adoption and hasten benefits to air quality, reduced GHG emissions, and the development of the industry.[53]

The next sections show in more detail the changing resource picture and how that drives the need for SDG&E's VGI Program.

1. Without grid integration, EV charging will tend to increase electricity costs and impede progress towards the state's carbon reduction goals

Renewable technologies including solar and wind energy are expected to have significant impacts on California electricity markets in the near future, in part because of California's push for a low carbon economy and preference for in-state renewables. As distributed and central station renewable generation (particularly solar) grows, daily energy price profiles will change and the net demand (*i.e.*, the total demand minus renewable power) will shift to later in the day. Increased solar renewable generation will produce increasingly more energy during the afternoon, including hours resulting in overgeneration and/or negative pricing. When renewable resources produce energy it must be accepted by the grid regardless of price, because of RPS

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[51] Executive Order B-16-2012.

[52] CEC, California Energy Demand 2012-2022 Final Forecast, June 2012. Table 1-10, page 39. Capacity based on "High Scenario" shares of cumulative vehicles and charging levels of 6.6 kW for BEVs and 3.3 kW for PHEVs. For comparison, the "Low Scenario" results in a total load of 6,000 MW in 2022.

[53] White Paper, p. 3, *cited in* Ex. SD-7 (Avery) ST-1, footnote 1.

requirements.[54] Hence, renewable production is "must-take" at the time it is produced. Ex. SD-1 (Avery) LK-5:4-LK-6:10.

Table LK-1 below shows the large increase in renewable generation that the California Energy Commission's Electricity Analysis Office has projected for the next 10 years, with over 70 percent being in-state renewable generation.[55]

Table LK-1: Significant Increase in Renewables

Projected RPS Additions
2013 - 2022

Technology	Projected Annual Energy (GWh)			Nameplate Capacity (MW)
	In-State	Out-of-State	Total	
Solar	18,843	1,633	20,476	9,115
Wind	4,481	1,496	5,977	2,149
Geothermal	3,766	1,200	4,965	688
Biofuels	1,377	0	1,377	193
Small Hydro	0	0	0	0
Total	28,468	4,328	32,796	12,144

Source: California ISO

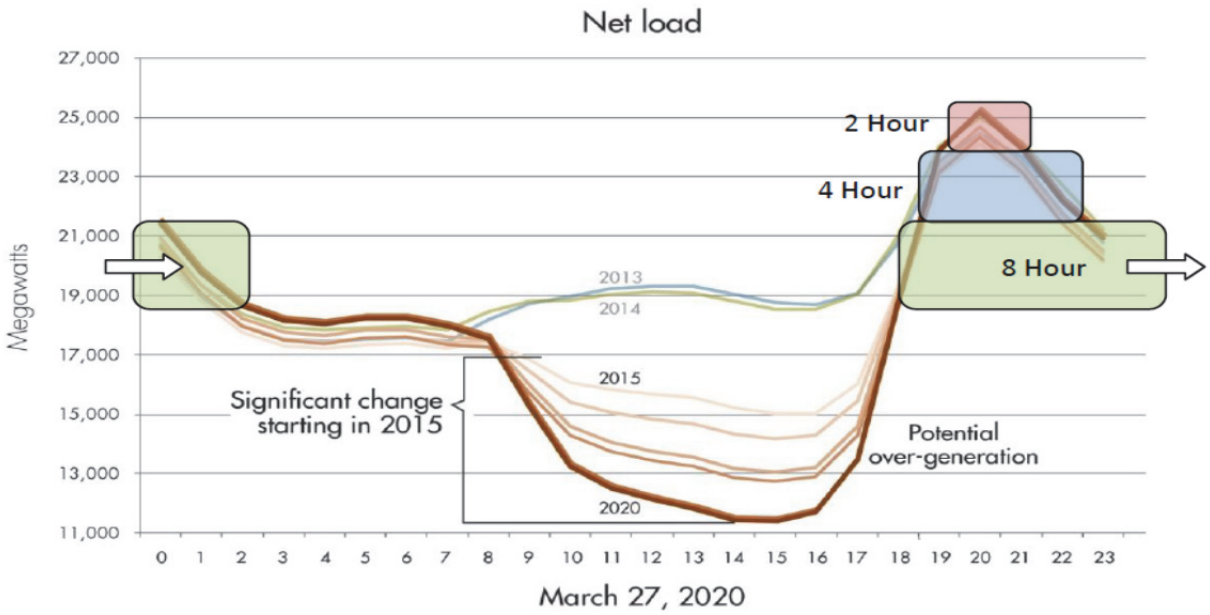
Chart LK-1 below shows how the California Independent System Operator Corp. ("CAISO") has projected the impact of solar on the net load shape to be substantial over the next

[54] The benefits of using electricity as an alternative fuel will also increase as the percentage of renewable energy in the resource portfolio increases, especially if grid integrated charging is in place.

[55] Ex. SD-1 (Avery) LK-7:1-2, reproduced from: Dave Vidaver, Electricity Analysis Office, Electricity Supply Assessment Division, "Evaluating Electricity System Needs in 2030," Integrated Energy Policy Report (IEPR) Lead Commissioner Workshop on Evaluation of Electricity System Needs in 2030, Sacramento, CA, August 19, 2013.

few years, requiring significant ramping resources in the afternoon to meet peak net demands in the evening during days with low peak loads (aka the "duck curve"):[56]

Chart LK-1. Spring Loads Net of Wind and Solar



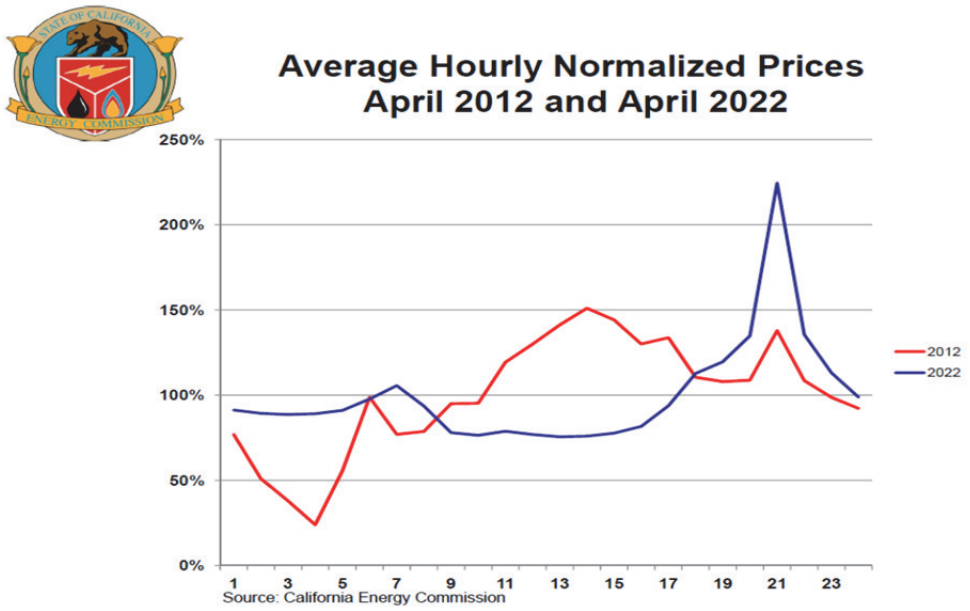
The above chart is similar to one presented in the White Paper.[57]

The addition of must-take renewable energy is also expected to impact electricity prices, as shown in Chart LK-2 below. Marginal energy costs will become lower midday and higher in the early evening hours.

[56] CAISO, "Consideration of Alternatives to Transmission or Conventional Generation to Address Local Needs in the Transmission Planning Process," September 4, 2013, p. 13. The blocks refer to the need for demand response or customer load reductions in response the net peak occurring in the evening.

[57] White Paper, Figure 6, p. 9.

Chart LK-2. Change in Electricity Price Shape[58]



These charts are presented to show that California is expecting a change in circumstances in the near future as a high penetration of variable renewable generation occurs. The VGI Program could improve system efficiency by encouraging customers to charge vehicles when solar energy is plentiful and prices are low, as well as disincentivizing charging at system peaks [or 'during stressed grid conditions when prices are high']. Ex. SD-1 (Avery) LK-9:3-7.

2. Targets underserved venues – MuDs and workplaces – with high VGI value

The VGI Program exclusively targets two critical customer segments where there is very low deployment of EV charging facilities, where cars are parked the longest on a frequent basis, and which have the greatest potential to demonstrate the benefits of VGI, including increased EV adoption and zero emission miles driven per EV: workplaces and MuDs.[59] Both of these

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[58] Ex. SD-1 (Avery) LK-9:1-2, reproduced from: Dave Vidaver, Electricity Analysis Office, Electricity Supply Assessment Division, "Evaluating Electricity System Needs in 2030," IEPR Lead Commissioner Workshop on Evaluation of Electricity System Needs in 2030, Sacramento, CA, August 19, 2013.

[59] According to the California Center for Sustainable Energy website, a February 2014 California PEV Driver survey showed that, of responding EV drivers: 88% live in a single-family detached home,

customer segments offer around-the-clock opportunities for grid-integrated charging, due to the long parking durations, and their high use at these locations. The term "workplace" is made up of several private location types, such as fleet, large commercial, municipalities, small business; any private location where EVs will be parked for several hours during the day and stay plugged-in for EV charging on a frequent basis. These differ from public fast charging and commercial "convenience" locations where parking tends to be short-duration or inconsistent. The workplace setting offers the opportunity to charge vehicles during times when renewable energy is at its highest level of production, net of load, from solar photovoltaic resources on the grid.[60] Customers located at MuDs are expected to respond similarly to and enjoy the same benefits as single-family home customers, who take advantage of super-off peak energy rates from midnight to 5 AM, when the system and circuits experience lower loads and low-cost energy is plentiful. MuD units currently comprise approximately 50%[61] of residential living units in the greater San Diego region, offering a vast underserved market for grid-integrated home charging. Ex. SD-1 (Avery) LK-3:6-10, LK-13:12-20; Ex. SD-2 (Schimka) RS-4:10-RS-5:2.

93% own their own homes, and 46% had access to workplace charging. Survey results are available at: https://energycenter.org/clean-vehicle-rebate-project/vehicle-owner-survey/feb-2014-survey. By targeting MuD and workplace siting, the VGI Program is designed to increase EV adoption.

[60] The Energy Division White Paper states (p. 11):

> …PEVs may be able to help meet emerging system needs at a lower cost than stand-alone storage or flexible thermal generation. For example, these needs are expected to vary throughout the day. In the mornings, the grid needs flexible load to absorb the increase in solar generation. PEVs that are plugged in and charging at the workplace could absorb this over-generation from solar PV systems, reducing the magnitude of the evening ramp.

[61] *See* the "Demographic & Socio Economic Estimates – San Diego Region" from the San Diego Association of Governments ("SANDAG") website: http://profilewarehouse.sandag.org/profiles/est/reg999est.pdf.

In 2010, approximately half of San Diego's residents lived in MuDs: http://sandag.org/uploads/publicationid/publicationid_485_637.pdf

Several barriers to investment in charging infrastructure at MuDs have severely hampered adoption of electric vehicles by MuD residents. Barriers include complications related to the ownership of facilities (*e.g.* landlord/tenant), access to dedicated parking areas, difficulty of installation, and priority of other facility investment needs, to mention a few. Ex. SD- 7 (Schimka) ST-47:20-ST-48:3. The "underserved" nature of MuDs with respect to charging infrastructure is well-documented.[62] The VGI Program addresses many of these barriers.

In discussions with industry groups,[63] SDG&E estimates that there are approximately 15,500 MuD properties in its service territory ranging from small apartment buildings to large complexes. Based on work with customers and EV service providers in the region, at the time of SDG&E's Application (April 2014), SDG&E was aware of approximately 14 MuD charging sites that were installed in the region at the time of SDG&E's submission of supplemental testimony in January 2015. These estimates suggest that at that time EVSEs were deployed at less than 0.1% of MuD locations in the SDG&E service territory. The VGI Program will help expand EVSE installations for MuD residents, expanding their adoption of EVs and the benefits of "home" charging available to residents of single family housing. Ex. SD-7 (Schimka) ST-48:4-13.

After residential locations, workplaces or other similar frequently used, long duration charging locations are often preferred by customers due to the convenience of EV charging while the vehicle sits all day or all night. Perhaps more importantly, when residential charging at home

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[62] *E.g.*, Ex. SD-2 (Schimka) RS-2, n. 1; Ex. SD-15, pp.39-43. Indeed, the governor's goals and the 2015 ZEV Action Plan draft recognizes the underserved nature of workplaces MuDs by making the installation of charging infrastructure at those locations a priority. *See* Executive Order B-16-2012 (March 2012) at http://gov.ca.gov/news.php?id=17472. *See also,* Governor's Interagency Working Group on Zero-Emissions Vehicles, 2013 ZEV Action Plan (February 2013), p. 6, ¶ 2 and p. 12, ¶ 1. Located at: http://opr.ca.gov/docs/Governor's_Office_ZEV_Action_Plan_(02-13).pdf.

[63] CA Association of Community Managers, and the CA Apartment Association.

is not available, workplaces become the primary locations for vehicle charging, as well as a means for increasing zero emission miles driven for plug-in hybrid vehicles with lower battery capacities. Under the VGI Program, the rate of installation at such facilities will be driven by the demand from the property managers or owners, as well as the presence of EV Drivers with charging needs. The VGI Rate applicable to participating workplace locations can also offer customer EV Drivers the opportunity to reduce their fuel costs by taking advantage of lower-cost energy that may be available during the day, especially during times of the year when renewable resources are relatively plentiful and demands on the grid are light.[64] Ex. SD-7 (Schimka) ST-48:16-ST-49:5.

3. Pilot testing shows that the VGI Rate can move EV charging off-peak

The VGI Program builds on SDG&E's substantial prior study of EV charging behavior. Given the flexible demand characteristics of EV charging (*e.g.*, by location, rate of charge, duration of charge), SDG&E has conducted two studies to investigate whether time-variant pricing influences EV charging decisions, with the aid of enabling technology.

The first is SDG&E's PEV Pricing and Technology study to test how EV charging time decisions respond to varying price ratios between time-of-use periods for home EV charging. Ex. SD-1 (Avery) LK-11:19-LK-12:1 and n. 22. This longitudinal study (over a three year period of data collection) incorporated a temporary experimental time of use ("TOU") EV rate

[64] Although sites sometimes referred to as "destination locations" have long parking duration characteristics similar to workplaces, these locations have a much lower frequency of usage, and as such have a unique role in the non-home EV charging space. Examples of such locations in the SDG&E service area include Sea World, the San Diego Zoo, Safari Park, Balboa Park and Qualcomm Stadium. Such locations are not the target of SDG&E's VGI Program because their low frequency of usage reduces the opportunity for grid benefits. Ex. SD-7 (Schimka) ST-49:6-12. Similarly, short-term convenience parking and trip-continuation locations will not be targeted. *Id*.,ST-49:13-ST-50:14.

approved by the Commission.[65] Over 400 SDG&E EV customer participants in the study (in single-family homes) were randomly assigned to one of three experimental EV tariffs, each with different price ratios between on-peak, off-peak and super off-peak prices. The study concluded that TOU prices in conjunction with enabling technology, such as customer-initiated programming of the on-board LEAF charging timer or the timer in the charging unit, results in the vast majority of EV customers charging late at night and in the early morning rather than during early evening hours and on-peak times. The evidence indicates that the prices encouraged the EV Drivers to employ the enabling technology of charging timers to provide a convenient means to charge off-peak. Findings suggest that a strong tendency for off-peak charging is induced by a small rate differential.[66]

Second, since 2011, SDG&E has purchased over a dozen fleet EVs, and SDG&E employees have individually purchased or leased about 70 vehicles (a mix of battery all-electric and plug-in hybrids).[67] SDG&E has installed several different types of workplace charging equipment for charging fleet and employee-owned/leased EVs. SDG&E has examined how these charging facilities are used by employees and fleet vehicles, including energy use patterns. SDG&E currently has over 148 EVSE (charging stations) available at 22 company locations, made up of AC Level 1 units, AC Level 2 units, and a DC Fast charging station.[68] SDG&E

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65 Advice Letter 2157-E, *approved*, Resolution E-4334 (August 31, 2010).

66 Nexant, *Final Evaluation for SDG&E's PEV TOU Pricing and Technology Study* (February 2014) p. 5, cited at Ex. SD-1 (Avery) LK-11:19-LK-12:1 and n. 22. Found at: https://www.sdge.com/sites/default/files/documents/1681437983/SDGE%20EV%20%20Pricing%20&%20Tech%20Study.pdf?nid=10666

67 This was the number as of April, 2014, when the application was filed. The current number is 159.

68 Schimka, T. 500:5-20 (April 29, 2015). Since Mr. Schimka's examination, SDG&E now has 158 charging stations at company sites. Note that at the time of SDG&E's prepared direct testimony (April 2014), SDG&E had on-site 45 charging ports at 13 company locations. Ex. SD-2 (Schimka) RS-5:13-17.

employees must pay for the energy they use to charge their EVs. In 2013, SDG&E deployed a VGI prototype grid-integrated charging facility (similar to that proposed for the VGI Program). This charging prototype was launched in 2013, with a TOU rate, and replaced in early 2014 with an hourly VGI-like rate, with enabling charging technology and controls, to help to better understand employee charging preferences in response to this time-variant rate. Since introducing the VGI prototype, SDG&E has retrofitted most of the company-located charging ports for VGI charging, and will continue to increase the volume of VGI-like charging ports. Schimka, T. 500:11-20 (April 29, 2015). This enables SDG&E employees to have the full VGI charging experience, including the VGI Rate. *Id*., 515:1-516:5.

The VGI prototype has influenced employee EV charging behavior, and has informed this application in terms of the pricing, technology, architecture, and configurations that work best for charging at the workplace, and other long-term parking venues such as MuDs. Ex. SD-2 (Schimka) RS-5:8-RS-6:6; Schimka T. 500:21-502:2 (April 29, 2015). Recent EV charging data from the VGI Facilities for SDG&E employees illustrates how the EV charging demand is impacted by the VGI Rate. The two graphs in Chart 3 below contrast two VGI-like pricing conditions:[69]

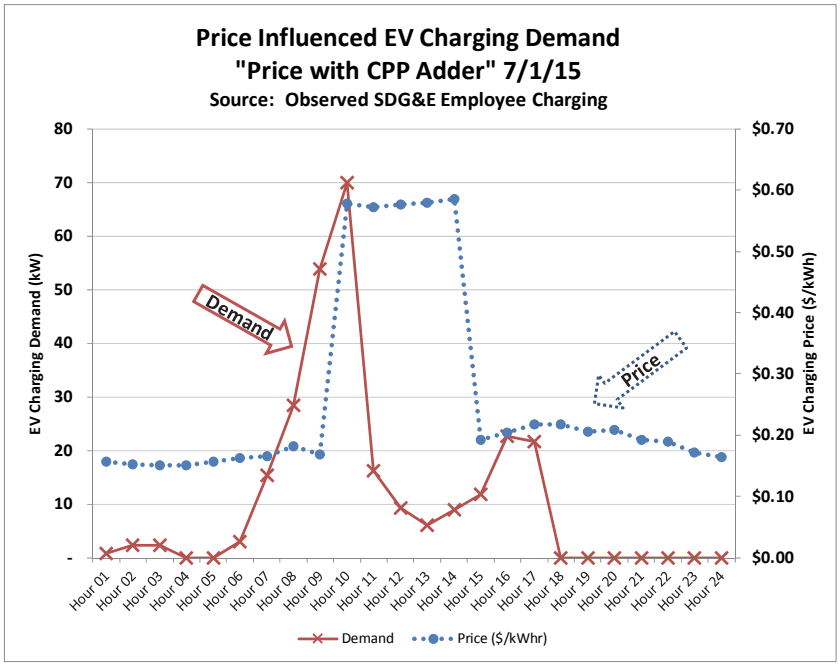
1) The top graph shows EV charging demand on a day with a high prices for some of the hours that correspond to a Critical Peak Pricing ("CPP") day, reflecting peak system conditions, as described in Ex. SD-3 (Fang) CF-10:11-CF-13:13, and illustrated on Ex. SD-3 (Fang) CF-11:1-3 (Chart CF-1: Load Duration Curve of the System).

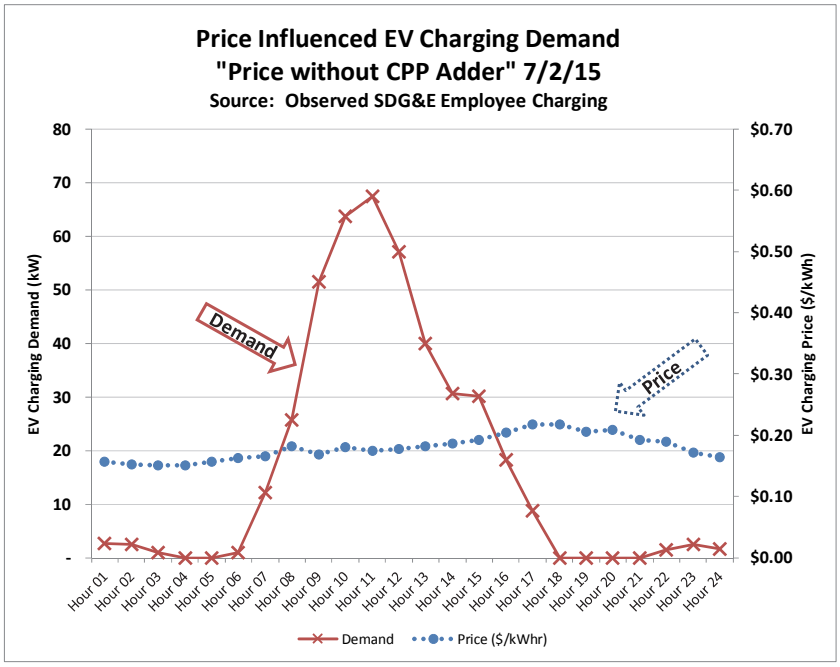
[69] The graphs depict data from charging behavior by SDG&E employees at VGI Facilities at SDG&E workplaces. These graphs were previously provided as Attachment H to ... *[SDG&E's] Response to assigned Commissioner and administrative Law Judge Questions* (August 21, 2015) and described there at pp. 34-35.

2) The bottom graph shows EV charging demand on a day *without* Critical Peak Pricing reflecting lower pricing throughout the day.

Note that the maximum EV charging demand is the same for both days, but the top graph shows EV charging demand is reduced and shifted away from the hours of the day with higher prices. Contrast this with the EV charging demand shown in the bottom graph that is higher during those same hours due to the lower prices. This sample of SDG&E employees' patterns using the VGI Facilities suggest that the VGI Rate is an effective means for meeting the managed charging objectives of the VGI Program.

Chart 3 - How Price Affects EV Charging Demand





The two graphs above illustrate how hourly prices for EV charging influence hourly EV charging demand. The top graph shows a day where a Critical Peak Pricing (CPP) adder increases prices in hours 10 through 14, resulting in lower EV charging demand compared the bottom graph without a CPP price adder.

These graphs are observed EV charging by SDG&E employees using a VGI system and pricing implemented at SDG&E workplaces.

In sum, given that grid-integrated EV charging is in its nascent stage of development, SDG&E has already amassed robust evidence to show that its VGI Rate will have the desired effect on EV charging behavior through dynamic price signals. The next section details the VGI Rate.

C. The Innovative VGI Rate Will Incent Grid Integrated Charging and Recover Cost of Service Consistent with California Rate Policy.

The evidence in this proceeding shows that the VGI Rate is reasonable, and will reflect cost causation consistent with Commission rate policy. It also shows that the program costs are reasonable and will have a minimal impact on customer bills.

It is useful and appropriate to conceive of the VGI Program as a program to deliver a charging rate to EV Drivers and VGI Facility site hosts. This rate design provides price signals to minimize EV charging impacts to SDG&E's system and local distribution capacity. The VGI Rate is designed for consistency with the California electric transportation and carbon policy objectives outlined in section I. above and the rate design principles identified in R.12-06-013.[70] SDG&E testimony (*e.g.*, Ex. SD-2 (Schimka)) describes how the VGI Program is designed to provide an easily understood presentation of the VGI hourly variable rate via a smart phone application or website that will help the customer decide when to charge. The dynamic hourly design for the VGI rate behind the customer interface is described below. In this way, the VGI Program and rate are consistent with the policy stated in P.U. Code § 8360(h), that customers should have timely information and control options, and the Commission directive that rates should be understandable.[71]

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[70] *See*, *Order Instituting Rulemaking on the Commission's Own Motion to Conduct a Comprehensive Examination of Investor Owned Electric Utilities' Residential Rate Structures, the Transition to Time Varying and Dynamic Rates, and Other Statutory Obligations* (June 28, 2012) ("Rate Reform OIR").

[71] Rate Reform OIR, p. 7.

The rate is how the benefits of the VGI Program are realized. Indeed, intervenor GPI appropriately recommends that SDG&E add the following as a stated objective of the VGI Rate: "increase the ability to absorb excess solar generation during times of peak production."[72] In sum, the focus of SDG&E's proposed VGI Rate is: (1) to test an alternative rate design; (2) to encourage reduction of both coincident and non-coincident peak demand; (3) to provide a rate design that encourages cost-effective grid-integrated charging solutions for VGI customers; (4) to avoid cross-subsidies; (5) to base rates on cost causation principles; and (6) to encourage economically efficient decision making. Ex. SD-3 (Fang) CF-5:2-6.

A typical electric cost-based rate would include the following elements (Ex. SD-3 (Fang) CF-3:20-CF-4:21):

- Customer Costs – SDG&E incurs these costs on a fixed basis for each interconnected customer whether or not the customer uses electricity and therefore should be recovered in a fixed or monthly charge ($/month).
- System Capacity/Transmission Costs – SDG&E incurs these costs independent of energy use, on the basis of meeting peak capacity needs of the system; therefore these costs should be recovered in a peak demand charge, *i.e.*, demand at time of system peak ($/peak-kW).
- Distribution Demand Costs – SDG&E incurs these costs independent of energy usage, on the basis of local capacity needs to meet the combined maximum demand of customers served off of a circuit; therefore these costs should be recovered in a non-coincident demand ("NCD") charge ($/NCD – kW).

[72] Ex. GPI-1 (Morris) 12:21-22.

- Commodity Costs – SDG&E incurs these costs on a variable basis (based on energy usage), and the cost depends on the time of delivery; therefore these costs should be recovered in an energy charge ($/kWh) that varies by time period.

The VGI Program presents a challenge on how to translate demand charge price signals in a commercial EV charging facility context, where multiple users contribute to the facility's peak load, in line with how capacity costs occur. The VGI Program would establish multi-vehicle charging facilities at workplace and MuDs, where demand for these charging facilities is expected to exceed 20 kW. This is consistent with SDG&E's rates for medium and large commercial and industrial ("M/L C&I") customers (demand greater than 20 kW), which thus forms the VGI Rate's base component. Ex. SD-3 (Fang) CF-4:15-21.

1. The VGI Rate design is consumer-friendly and embodies cost causation.

SDG&E's electric rates currently comprise the following components: (1) transmission, (2) distribution, (3) public purpose programs ("PPP"), (4) nuclear decommissioning ("ND"), (5) ongoing competition transition charges ("CTC"), (6) reliability services ("RS"), (7) total rate adjustment component ("TRAC"), (8) Department of Water Resources bond charge ("DWR-BC"), and (9) commodity. SDG&E's VGI Rate proposal incorporates the following components (Ex. SD-3 (Fang) CF-2:1-CF-3:6):

- The VGI rate's hourly "base" component recovers transmission, PPP, ND, CTC, RS, and DWR-BC cost charges. This hourly base component is based on the class average rate for medium and large commercial and industrial (M/L C&I) customers.
- The VGI rate's hourly commodity component incorporates the following:
    - the California Independent System Operator ("CAISO") day-ahead hourly price;

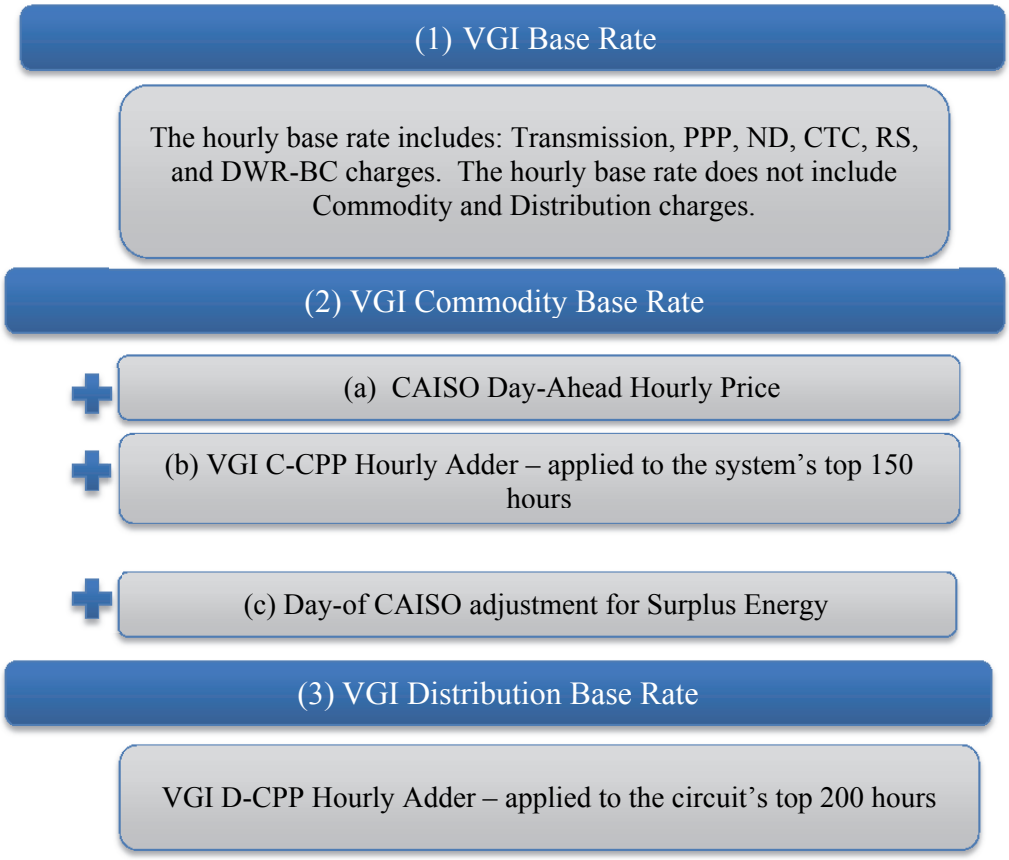
- a critical peak pricing signal (Commodity Critical Peak Pricing Hourly Adder or "C-CPP Hourly Adder"), applied to the top 150 system hours and provided to customers on a day-ahead basis; and

- day-of pricing benefits in the event that CAISO day-of prices drop below a threshold level relative to CAISO day-ahead prices. To protect consumers, SDG&E does not propose to increase rates on a day-of basis if CAISO day-of prices increase.

- The VGI Rate's hourly distribution component incorporates a circuit-level critical peak pricing signal (Distribution Critical Peak Pricing ("D-CPP") Hourly Adder), applied to the top 200 circuit hours and provided to customers on a day-ahead basis.

The VGI Rate components which address these principles are identified in Diagram CF-1 (Ex. SD-3 (Fang) CF-5:6-19):

Diagram CF-1: Proposed VGI Pilot Rate



SDG&E's VGI Rate will encourage EV charging in a way that will manage peak capacity concerns at the system and local level, as well as address and manage surplus energy supply situations, both in an hourly pricing structure. The VGI Rate will facilitate charging at the workplace and at MuD sites when economically efficient and during least-cost hours. The move away from TOU to an hourly dynamic rate greatly reduces the number of high cost hours, from approximately 1,300 to 350 out of 8,760 per year. Ex. SD-11 (Fang) CF-4:2-9.

The VGI Rate's three basic components (shown in Diagram CF-1) are discussed in further detail below. *See also*, Ex. SD-3 (Fang) Attachment A, for a illustrative examples of SDG&E's proposed VGI Rate.

a. VGI Base Rate

As discussed above, the VGI Rate is based on rates for M/L C&I customers, the applicable class for non-residential service with demand greater than 20 kW. Excluding the commodity and distribution modifications previously mentioned, the VGI Base Rate will include Transmission, PPP, ND, CTC, RS, and DWR-BC charges based on the M/L C&I class average rate for these components:

Table CF-1: VGI Base Rate (Ex. SD-3 (Fang) CF-6:10-CF-7:2)

	M/L C&I Class Average Rate[73] (cents/kWh)	VGI Base Rate (cents/kWh)
Distribution	4.17	2.65
Transmission	1.80	1.80
PPP	0.84	0.84
ND	0.04	0.04
CTC	0.27	0.27
RS	0.03	0.03
DWR-BC	0.47	0.47
Commodity	9.63	7.13
Total	17.23	13.22

*The sum of the individual rates in Table CF-1 may not tie to the corresponding total in the table due to rounding.

The use of class average energy rates is intended to provide an hourly price structure while limiting the scope of study related to SDG&E's VGI Rate in its initial implementation. The VGI Program will allow SDG&E to examine the appropriate rate design for the recovery of system and local capacity costs associated with commodity and distribution rate components through the test-and-learn approach described in the SDG&E's testimony (Ex. SD-2 (Schimka) and Ex. SD-6 (Martin)).

b. VGI commodity base rate

The VGI Rate commodity component is based on the M/L C&I class average commodity rate and will consist of the following:

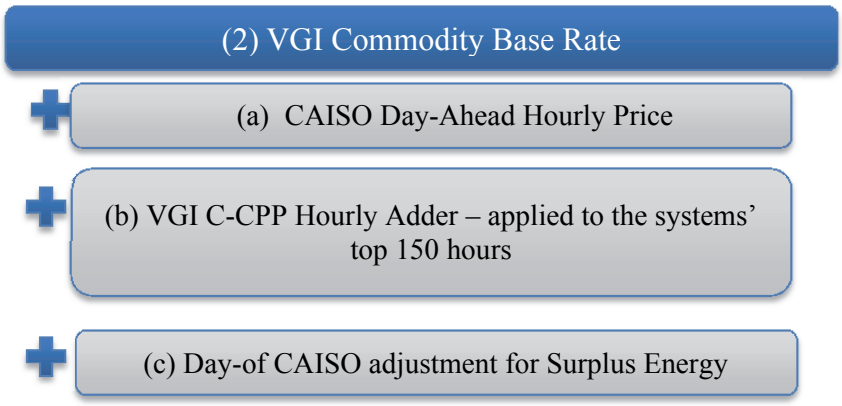
- A VGI commodity base rate, which includes the CAISO day-ahead hourly price excluding the VGI C-CPP Hourly Adder.
- A VGI C-CPP Hourly Adder applied to the top 150 system peak hours on a day-ahead basis.

[73] Based on rates effective April 1, 2014 (Advice Letter 2587-E).

- A surplus energy credit applied on a day-of basis in the event that day-of prices are lower than day-ahead prices by one cent or greater.

These commodity components are shown below and in Ex. SD-3 (Fang) CF-8:1 – CF-9:2, Diagram CF-2 and Table CF-2:

Diagram CF-2: VGI Commodity Rate



With the inclusion of the CAISO hourly day-ahead price, the VGI base commodity rate will be reduced to reflect the removal of comparable variable costs embedded in current rates.[74] In addition, SDG&E will incorporate commodity price signals based on CAISO surplus energy events. Unexpected events, such as high wind on a sunny spring day, can result in unanticipated negative commodity prices on the day energy is delivered. These surplus energy events would not be captured in CAISO's hourly day-ahead price. To integrate surplus energy events into the VGI Rate, SDG&E will include day-of credits where the CAISO day-of price falls below CAISO's day-ahead price, in excess of a threshold of one cent for any given hour.

[74] These include: net CAISO market purchases and fuel and variable operations and maintenance (O&M) costs for both utility owned generators and tolling agreements.

Table CF-2: VGI Commodity Rate

	Rate (cents/kWh)	*Applicability*
M/L C&I Class Average Commodity Rate	9.63	
VGI Base Commodity Rate	7.13	All hours
VGI System CPP Hourly Adder	46.73	Applied to top 150 system hours

c. Commodity cost background

Commodity costs consist of the cost of providing energy services, including the cost of energy, capacity/resource adequacy, and regulatory compliance. Currently, commodity costs for M/L C&I customers are recovered through the following rate structure: (1) energy charges ($/kWh) variable by TOU period, voltage level and season to recover commodity energy cost; and (2) peak demand charges ($/kW) variable by voltage level and season or CPP Adder ($/kWh) variable by voltage level to recover commodity capacity costs. Pursuant to D.08 02 034, M/L C&I customers defaulted to Schedule EECC-CPP-D, Electric Energy Commodity Cost Critical Peak Pricing Default ("CPP-D") beginning in May 2008 for commodity service. The CPP-D rate is a commodity rate structure that includes a higher energy price applied to peak periods on system critical event days that are called on a day-ahead basis.

The CPP rate is designed to recover the costs of system capacity during event days, up to 18 days per year with an assumed 9 days per year, called on a day-ahead basis rate rather than through a peak demand charge every month of the year in order to solicit demand response. The current CPP-D rate is based on preset triggers to call events on a day-ahead basis that would apply a premium price, *i.e.*, CPP Adder to the Otherwise Applicable Tariff energy price during a pre-defined event period of 11 a.m. to 6 p.m. The investment in system capacity is driven by anticipated growth in system peak load. The current CPP-D allows from 0 to 18 event days to be

called per calendar year with the rate design based on an assumption of 9 event days. On event days, the CPP Adder is applied to a pre-defined 7 hour event period of 11 a.m. to 6 p.m., resulting in total annual CPP hours of 0 to 126 hours with rate design based on an average of 63 hours.

d. VGI commodity rate

i. CAISO Day-Ahead Hourly Price

Consistent with California policy,[75] SDG&E proposes to incorporate the CAISO day-ahead hourly price into the VGI Rate.[76] The VGI base commodity component would incorporate the CAISO day-ahead hourly price and would be included in the price provided to VGI customers on a day-ahead basis.

ii. VGI commodity Critical Peak Pricing hourly adder (C CPP Hourly Adder)

The CPP price signal is intended to provide incentives for customers to avoid adding to the system peak load thereby delaying capacity investments. To ensure that the VGI Rate sufficiently encourages reduction in system peak demand for EV charging, SDG&E proposes to apply the C-CPP Hourly Adder to the top 150 system hours.

The system's top 150 hours over 8,760 hours in the year represent approximately 1.71% of the hours in the year. These top 150 hours represented approximately 2.79% of the total GWh of the system load, from January 1, 2013 until December 31, 2013, as presented in Chart CF-1 (Ex. SD-3 (Fang) CF-11:1-4).

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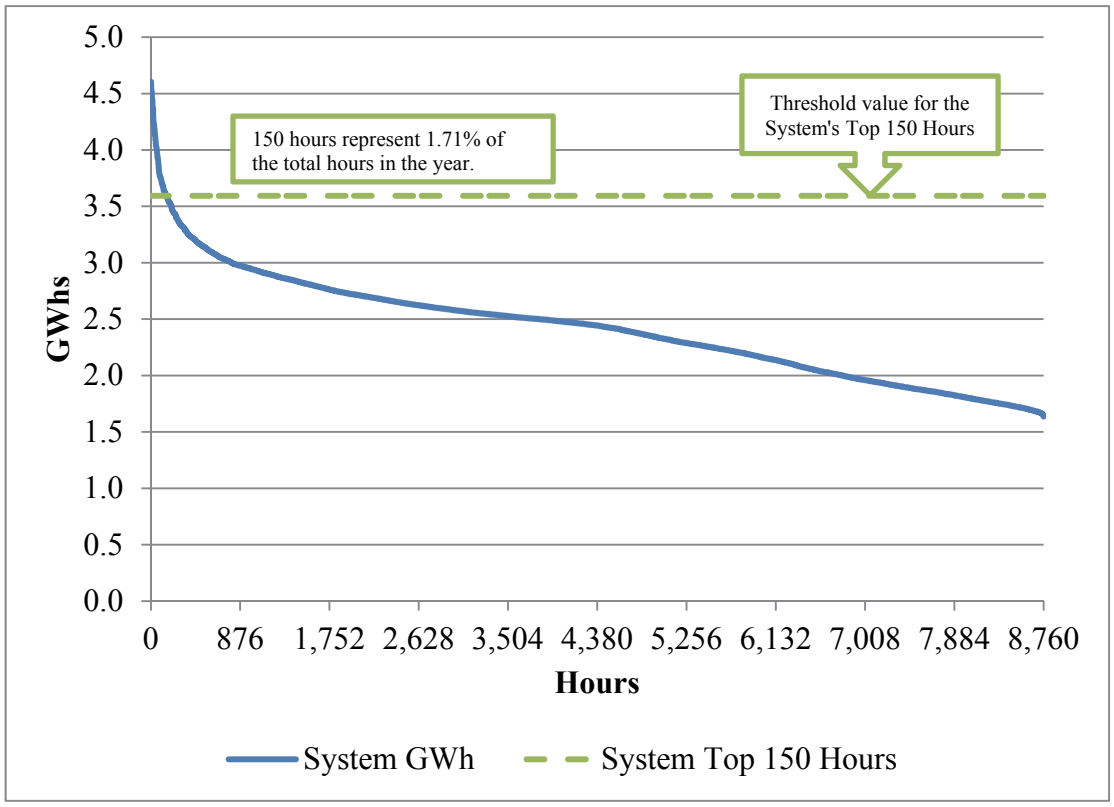
[75] *See* P.U. Code § 8360.

[76] http://oasis.caiso.com/mrioasis/logon.do

Chart CF-1: Load Duration Curve of the System:
8,760 Hours from January 1, 2013 until December 31, 2013



SDG&E proposes to apply a C-CPP Hourly Adder to the top 150 system peak hours per year. Customers will be notified on a day-ahead basis of when these hours are expected to occur. Currently CPP event days are called day-ahead based on pre-established triggers and the CPP Adder is then applied to a pre-established time period of 11 a.m. to 6 p.m.[77] The VGI Rate proposal is different in that it identifies the top system hours, not a pre-defined time period on high load days. SDG&E will continue to notify customers on a day-ahead basis of event hours, but the C-CPP Hourly Adder will be applied only to hours in which the CAISO day-ahead demand forecast exceeds the top 150 hours of the prior year. While this methodology is intended to provide a best estimate of the top 150 system peak hours, the year to year difference in load

[77] Special Condition 16 on Sheet 6 of http://regarchive.sdge.com/tm2/pdf/ELEC_ELEC-SCHEDS_EECC-CPP-D.pdf.

can result in actual event hours greater than or less than 150 hours. In addition, SDG&E proposes that the event hours would have the same price per hour on a given day. This would be achieved by averaging the event hour prices in any given day. An illustration of the application of the C-CPP Hourly Adder is included in Ex. SD-3 (Fang) Attachment A.2

If a CPP day is called on the existing CPP program that does not include any forecasted hours, SDG&E will still implement the C-CPP Hourly Adder consistent with the program; that is, implement C-CPP Hourly Adder to the hours associated with event periods called on SDG&E's existing CPP program. *Id*., CF-12:7-10.

iii. Day of CAISO adjustment for Surplus Energy

Previously, unexpected events (*i.e.*, outages) resulted in higher than anticipated energy prices. Now, unexpected events can result in lower than expected prices and potentially negative energy prices. Potential negative prices currently do not occur in the day-ahead price and are currently showing up in day-of prices. Ex. SD-3 (Fang) CF-12:15-18. Chart LK-1, Ex. SD-1 (Avery) LK-7:1-2, illustrates the potential need for flexible load that can respond to surplus generation events.

SDG&E proposes to include a surplus generation credit as part of the VGI Rate to encourage charging during these surplus generation events. In the event that there are hours in which day-of prices are below day-ahead prices beyond a pre-set threshold, SDG&E proposes to update those day-of prices to reflect the lower prices in those hours. SDG&E proposes a threshold of one-cent for the reduction in day-of prices. An illustration of the application of the Surplus Energy credit is included in Ex. SD-3 (Fang) Attachment A.5.

e. VGI Distribution Base Rate

The distribution rate for SDG&E's VGI proposal is based on the M/L C&I class average distribution rate with the modification to incorporate a D-CPP Hourly Adder based on the

circuit's top 200 hours. Diagram CF-3 and Table CF-3 (Ex. SD-3 (Fang) CF-13:3-12) present the distribution rate for SDG&E's VGI proposal:

Diagram CF-3: VGI Distribution Rate

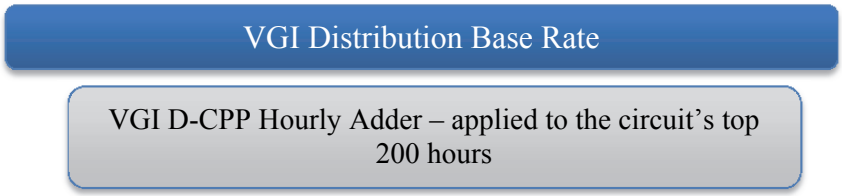


Table CF-3: VGI Distribution Rate

	Rate (cents/kWh)	***Applicability***
M/L C&I Class Average Distribution Rate	4.17	
VGI Base Distribution Rate	2.65	All hours
VGI D-CPP Hourly Adder	39.02	Applied to top 200 circuit hours

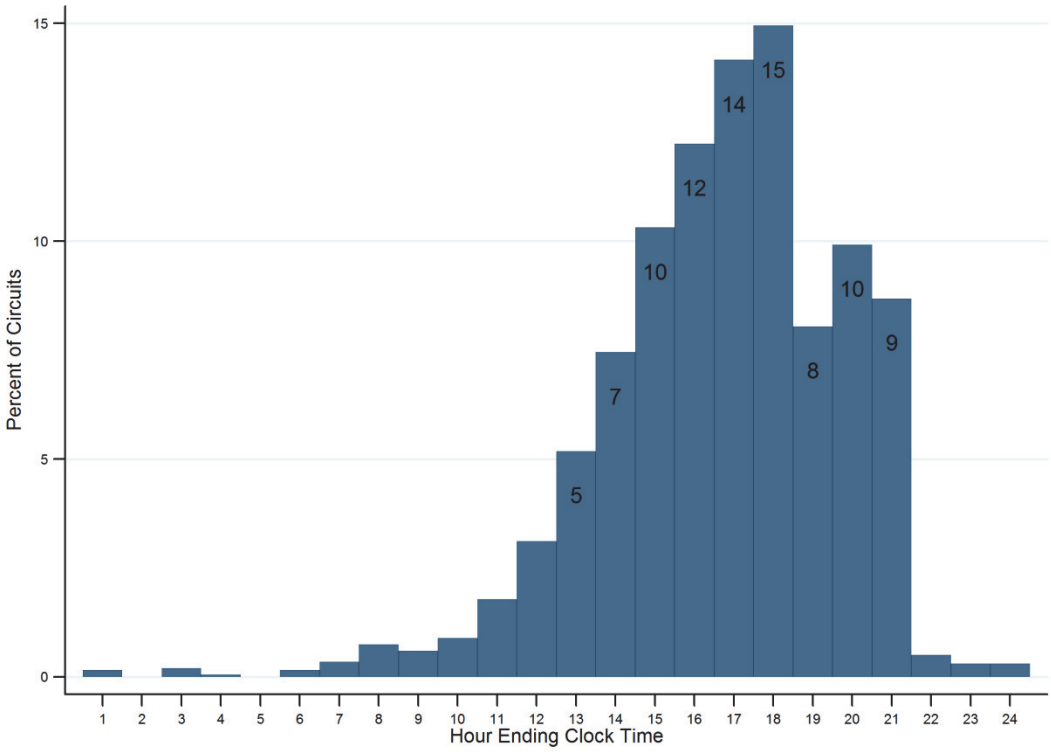
i. Distribution cost background

Currently, distribution costs for M/L C&I customers are recovered through the following rate structure: (1) a monthly customer charge ($/month) (also known as basic service fee) variable by voltage level and customer size to recover fixed distribution costs; (2) demand charges ($/kW) for both NCD variable by voltage level and peak demand variable by voltage level and season to recover demand related distribution costs; and (3) energy charges variable by TOU period, voltage level and season to recover the remaining distribution costs. The cost-causation behind distribution costs differ from system and commodity costs in that the distribution cost drivers focus on more localized demand drivers. This is because the distribution system is built to meet local, as opposed to system, demand. Distribution Demand Costs, which include substations, circuits, feeders, and applicable O&M costs, are the costs SDG&E incurs to ensure reliable service to customers at the local neighborhood level. The planning criteria for the

distribution infrastructure are based on local load at the circuit and substation level. In other words, in order to provide reliable service to a range of distribution circuits, each of which has different levels of peak demand, the distribution system is designed to have adequate capacity to serve the combined peak demand of all customers served off of a distribution circuit, without regard to when that demand occurs (non-coincident peak). The distribution costs utilities incur to provide service to customers is therefore best measured on the basis of a customer's individual maximum demand, distinct from demand at time of peak system capacity need. Ex. SD-3 (Fang) CF-13:14 – CF-14:12.

As can be seen in Chart CF-3 below, distribution circuits peak over a wide range of time that do not necessarily coincide with times of system peak capacity need. This has traditionally translated into a NCD charge based on a customer maximum demand at any time, as contrasted with a peak demand charge that measures a customer's demand during the system peak capacity need period (*id*., CF-14:12 – CF-15:3):

Chart CF-3: Distribution of 2012-2013 SDG&E Circuit Peaks by Hour Ending



However, the concept of peak load driving incremental costs is true whether that load is system load or local distribution load. The ability to forecast load at the circuit level allows for the ability to break from traditional rate design tools for addressing concerns regarding local capacity and explore alternative approaches to address the same issues. *Id*., CF-15:4-7.

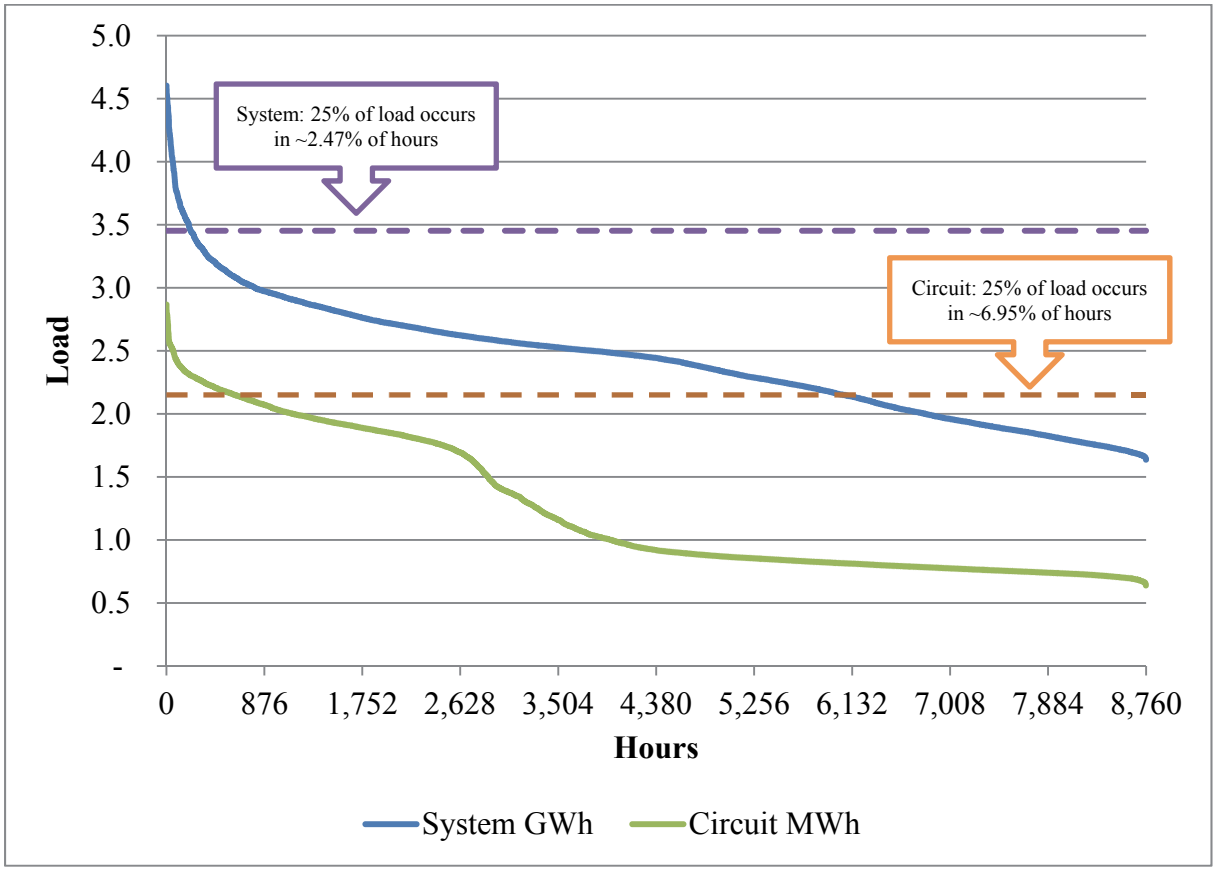
ii. VGI Distribution Rate

SDG&E proposes to use the CPP rate design previously only used to address system capacity to now address local distribution capacity. That is, SDG&E proposes to incorporate a D-CPP Hourly Adder to the top 200 circuit peak hours.

Chart CF-4 (Ex. SD-3 (Fang) CF-17:1-4) presents the load duration curve, which ranks distribution of load in descending order of magnitude for all hours, for the system and an illustrative circuit. The system load duration curve has a much steeper slope than the circuit load

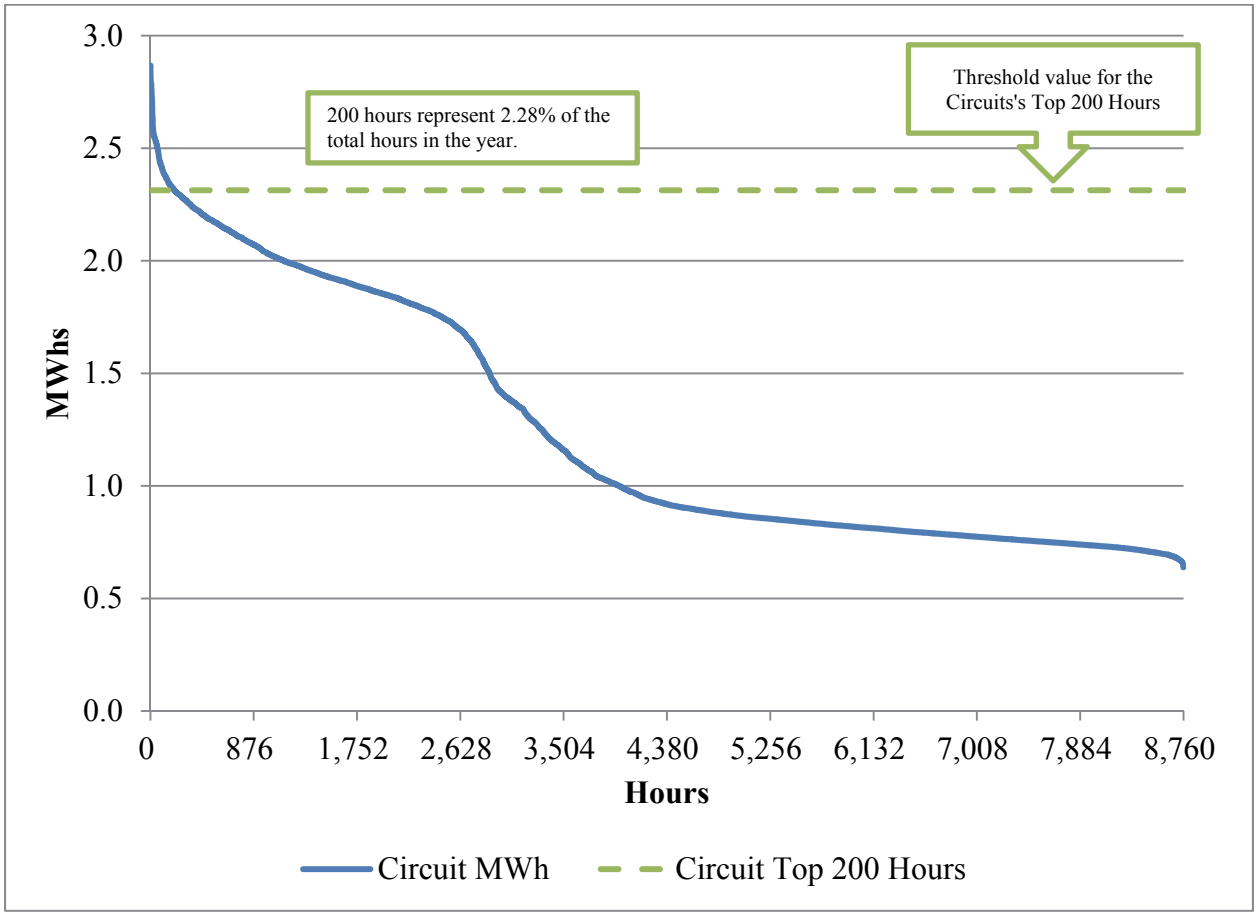
duration curve, especially in the top hours. As shown Chart CF-4, 25% of system capacity occurs in less than 2.5% of the hours in a year at the system level, while 25% of circuit capacity occurs in just under 7% of the hours in a year at the circuit level, more than double the hours compared to the system level. Given the differences between the system and circuit load duration curves, specifically that the equivalent peak load occurs over a larger number of hours for the circuit level than the system level, SDG&E proposes that the D-CPP Hourly Adder be applied to a larger number of circuit peak hours than at the system level for the system D-CPP Hourly Adder. To balance the objectives of managing local distribution peak and encouraging workplace charging, SDG&E proposes the D-CPP Hourly Adder be applied to the top 200 circuit hours. SDG&E will monitor the occurrence of the circuit peak hours and may revisit the appropriate number of circuit peak hours. Ex. SD-3 (Fang) CF-15:12 – CF-16:12.

Chart CF-4: Load Duration Curve for the System and an Illustrative Circuit: 8,760 Hours from January 1, 2013 until December 31, 2013



The circuit's top 200 hours over 8,760 hours in the year represent approximately 2.28%. Of this, the total kWh of the sample circuit from January 1, 2013 until December 31, 2013 represented approximately 4.51% of the load, as shown in chart CF-5 below (Ex. SD-3 (Fang) CF-18:1-3):

Chart CF-5: Load Duration Curve for an Illustrative Circuit: 8,760 Hours from January 1, 2013 until December 31, 2013



Similar to the system CPP Hourly Adder applied to the top 150 system peak hours, the D-CPP Hourly Adder will be added to the top 200 hours on a day-ahead basis when the forecasted load exceeds a threshold level established based on historic load. The forecast model is based upon historical hourly load at the circuit level with explanatory variables based on the local weather (both dry-bulb temperature and humidity taken into account), and calendar based variables (weekends, holidays, day of week, month, etc.). Historic circuit load will be used to determine the threshold amount for forecasting the top 200 circuit peak hours. When the forecast identifies an hour exceeding the prior year's top 200 hour threshold, a D-CPP Hourly Adder will be applied and presented to the customer on a day-ahead basis. Year-to-year differences in load

can result in actual circuit peak hours to differ from the forecast top 200 hours. Ex. SD-3 (Fang) CF-18:4-13.

SDG&E proposes to collect 50% of the distribution demand costs through the D-CPP Hourly Adder and the remainder through the hourly variable distribution rate. The VGI Rate is designed to limit any incremental distribution demand growth that can lead to distribution system upgrades. However, VGI customers do utilize the distribution system and have the distribution system standing by to serve their energy needs. While the appropriate levels for utilization and stand by services will be reviewed, at this time SDG&E includes 50% of the distribution demand cost to reflect that those costs are incurred for those customers and provide a service to them. *Id*., CF-19:1-8.

2. The VGI Program costs and revenue requirement are reasonable.

The direct testimony of Jonathan B. Atun (Ex. SD-4) (1) identifies the costs associated with the proposed VGI Program, (2) describes the methodology used to determine the revenue requirements for the VGI Program, and (3) identifies the resulting annual revenue requirement. Since the VGI Program proposes services and capital costs above and beyond those authorized by the Commission in SDG&E's most recent general rate case ("GRC"),[78] all costs associated with the VGI Program are incremental, and thus additive to any currently authorized levels of revenue requirement. As described in Ex. SD-4 (Atun) JBA-1:13-JBA-4:7, the total VGI Program costs for purposes of calculating the revenue requirement are shown in Table JBA-5 (*id*.,JBA-4:6-7) below:

[78] D.13-05-010.

Table JBA-5
Capital and O&M Costs
(includes escalation, loaders, and sales taxes)

(in $000)	**2015**	**2016**	**2017**	**2018**	**2019**	**2020 - 2037**	**Total**
Capital	$ 6,810	$ 10,470	$ 20,958	$ 20,980	$ -	$ -	$ 59,218
O&M	$ 897	$ 1,043	$ 1,272	$ 1,725	$ 768	$ 37,830	$ 43,536
Total	$ 7,706	$ 11,513	$ 22,230	$ 22,706	$ 768	$ 37,830	$ 102,753

Note that the Total Capital costs in this table are based on the costs provided by Ex. SD-2 (Schimka) RS-14:1-RS-15:6. Ex. SD-4 (Atun) Appendix A converts the per-installation costs provided by Mr. Schimka to the total capital costs in Table JBA-5 above.

The VGI Program revenue requirement represents the total dollars that need to be collected each year in order to cover the costs and returns associated with the VGI Program. 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. Ex. SD-4 (Atun) JBA-4:9-15. The projected revenue requirements are broken out by component and presented in Ex. SD-4 (Atun) Appendix B.

3. The VGI cost recovery mechanism is reasonable.

SDG&E requests authority to establish a new Vehicle Grid Integration Balancing Account ("VGIBA") to track and account for revenues and costs associated with SDG&E's VGI Program, as described in the previous section. Ex. SD-5 (Jasso) NGJ-1:4-21.

This two-way interest bearing VGIBA is needed to record revenue and incremental costs (*i.e.*, incremental to existing company resources) resulting from implementing the VGI Program. SDG&E proposes that the balancing account records the authorized revenue requirement and actual operations and maintenance and capital-related costs (*e.g.*, depreciation expense, authorized return on equity, and taxes) incurred for the VGI Program. The details of the revenue

requirement are described in the prior section and presented in the testimony of Jonathan B. Atun (Ex. SD-4).

The disposition of this account will be addressed in SDG&E's Annual Regulatory Account Balance Update filing, or other applicable proceeding as directed by the Commission. However, during the installation period (2015-2019), any over/under-collection will be carried forward to the following year until the end of the period currently projected to be on or about 2019. Ex. SD-5 (Jasso) NGJ-1:17-21. Following the installation period, any authority to recover ongoing costs[79] will be addressed in the next GRC. Ex. SD-11 (Fang) CF-7:12-CF-8:2.

4. The VGI Program's rate and bill impacts are reasonable.

The evidence shows that the VGI Program cost impacts on rates are reasonable and will have a minimal effect on customer bills amounting to 1/100 to 2/100 of 1% annually.

Ex. SD-3 (Fang) Attachment B, provides the impact to class average rates associated with recovery of the proposed annual revenue requirements during the 2015-2019 VGI Program period compared to SDG&E's current rates at the time of filing.[80] Table CF-4 below (*id*., CF-20:1-2) presents the illustrative class average electric rate impacts for 2015 and 2019 of the proposed revenue requirements:

[79] *See*, Ex. SD-4 (Atun) Appendix B, pp. B1-B2.

[80] Rates effective April 1, 2014 (Advice Letter 2587-E).

Table CF-4- Class Average Rates Impact in cents/kWh

	4/1/2014	*VGI Proposal 2015*	*% Change from 4/1/2014*	*VGI Proposal 2019*	*% Change from 2015 to 2019*
Residential	20.624	20.629	0.02%	20.701	0.35%
Small Commercial	21.172	21.175	0.01%	21.231	0.26%
Medium/Large C&I	17.233	17.235	0.01%	17.265	0.17%
Agriculture	20.869	20.873	0.02%	20.927	0.26%
Lighting	17.696	17.698	0.01%	17.736	0.21%
System Total	18.873	18.877	0.02%	18.925	0.25%

SDG&E proposes to recover the costs of implementing the VGI Program, which consists of costs for such things as charger equipment, transformers, services and meters as addressed in Ex. SD-4 (Atun), through distribution rates, consistent with the recovery of similar costs. Ex. SD-3 (Fang) CF-20:3-5.

The first year of proposed revenue requirement impacts are anticipated to have an annual bill impact that will be approximately 18 cents in 2015 for a typical residential customer using 500 kWh per month in both the Inland and Coastal climate zones, as compared to current rates. On a percentage basis, this equates to an increase of 0.02% for a typical residential customer in the Inland climate zone and 0.01% for a typical residential customer in the Coastal climate zone. Ex. SD-3 (Fang) CF-20:6-12. Table CF-5 below (Ex. SD-3 (Fang) CF-21:1-2) describes the illustrative bill impacts for Inland and Coastal Customers for the years 2015 and 2019.

Table CF-5: Annual Illustrative Bill Impacts for Inland and Coastal Customers

	4/1/2014	*VGI Proposal 2015*	*Change from 4/1/2014*	*% Change from 4/1/2014*	*VGI Proposal 2019*	*Change from 2015 to 2019*	*% Change from 2015 to 2019*
Inland							
300 kWh	$556.20	$556.20	$0.00	0.00%	$556.20	$0.00	0.00%
500 kWh	$1,131.00	$1,131.18	$0.18	0.02%	$1,133.10	$1.92	0.17%
750 kWh	$2,238.00	$2,238.60	$0.60	0.03%	$2,247.48	$8.88	0.40%
1,000 kWh	$3,383.34	$3,384.48	$1.14	0.03%	$3,400.26	$15.78	0.47%
1,500 kWh	$5,674.26	$5,676.36	$2.10	0.04%	$5,705.94	$29.58	0.52%
Coastal							
300 kWh	$557.88	$557.88	$0.00	0.00%	$557.88	$0.00	0.00%
500 kWh	$1,242.06	$1,242.24	$0.18	0.01%	$1,245.48	$3.24	0.26%
750 kWh	$2,365.56	$2,366.28	$0.72	0.03%	$2,376.42	$10.14	0.43%
1,000 kWh	$3,511.02	$3,512.16	$1.14	0.03%	$3,529.20	$17.04	0.49%
1,500 kWh	$5,801.88	$5,803.98	$2.10	0.04%	$5,834.88	$30.90	0.53%

D. Competitive procurement of vendor services will ensure innovative VGI charging solutions

1. VGI implementation requires a combination of utility and third-party provided products and services.

The Settlement Agreement preserves the value of the separate utility service construction design and third party provided products and services encompassed within cloud-based components (pictured below in Figure 2 - #11) that provide the grid-integrated managed charging and control functions necessary to implement the VGI Rate, such as:

- Receive the day-ahead pricing (and communicate this to EV Driver or VGI Facility site host)

- Manage the charging session to the price and charging requirements (selected by the EV Driver or VGI Facility site host)
- Collect price and energy use data and send the data to SDG&E to complete the billing process, and for pilot evaluation.

Figure 2 identifies the various components of a new electric service and equipment that would be included in a typical VGI installation. The VGI Program proposes to contract with third party service providers to provide these "cloud" functions and other relevant functions under SDG&E's supervision, within the VGI specifications summarized above, to the greatest extent possible (Ex. SD-7 (Schimka) ST-42:6-ST-43:24).

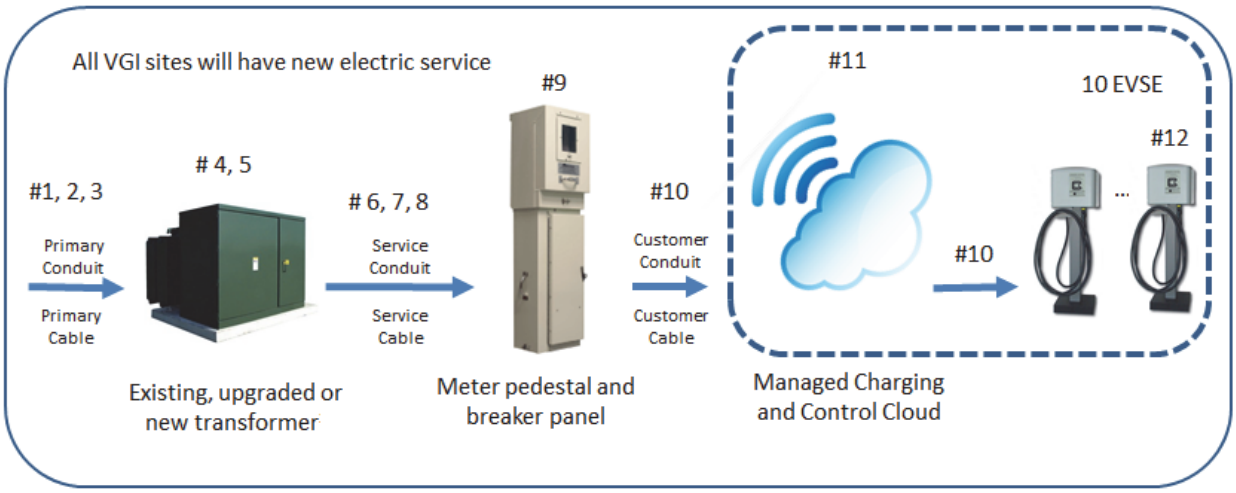


Figure 2 - Components of a VGI charging installation– Conceptual illustration. SDG&E to be responsible for building, operating and maintaining all of the components of a VGI facility, leveraging the resources of third parties

1) Primary trenching/restoration
2) Primary conduit
3) Primary cable
4) Transformer
5) Transformer pad
6) Service trenching/restoration
7) Service conduit
8) Service cable
9) Meter pedestal / panel
10) Customer conduit / cable from meter to EVSE
11) Managed Charging and control cloud
12) EVSE

Note that an easement would be required from property owner for placement of utility equipment.

SDG&E proposes to fund a new separate electric service for each location as part of the VGI Program.[81] SDG&E's involvement with many EVSPs and installations in the SDG&E region since 2011 indicates that a typical commercial EVSE installation has been connected to its respective existing building electric panels, which may, as described below, limit the volume of EVSE that can be installed. Based on this experience, only about 5-10% of recent commercial EVSE installations have been connected to a new electric service (*i.e.*, a new distribution service point at the customer premises).[82] This is usually done for economic reasons, as it can be more expensive to install a new electric service to feed an installation of EV charging stations than to connect to the host site's existing building electric panel. SDG&E's experience suggests that

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[81] This new service is also required for the VGI Rate-to-Host option introduced by the Settlement Agreement.

[82] SDG&E's experience is confirmed by record evidence, which reinforces that most commercial (including workplace and MuD) charging sites use the premise's existing service panel. *See,* Jones, T. 752:4-754:5; 773:15-774:16 (April 30, 2015); Ex. SD-22.

using an existing electric panel may limit the number of EVSE at workplaces and MuDs for three reasons (Ex. SD-7 (Schimka) ST-44:1-23):

> 1. The capacity of existing panels at such sites is usually close to being fully subscribed; therefore many otherwise excellent locations for installing charging stations are discarded because power is not readily available in the existing panel.
>
> 2. Even if power is available in the existing panel, in many cases only a small number of EVSE can be fed (which limits future expansion).
>
> 3. Mixing EVSE/EV energy consumption with that of the existing facility on an existing electric service limits billing rate options in the future, and also makes it difficult to reconcile EVSP billing for the site owner.

Installing a new electric service for each VGI site will provide much-needed flexibility and scalability for the installations that help overcome these obstacles and allow VGI Facility installations to occur at more locations without the above power-related limitations.

2. Competitive procurement will provide opportunity for multiple vendors and charging products and services choices for site hosts.

Under the VGI Program, SDG&E proposes to contract with third parties to purchase and operate EV charging systems to SDG&E's VGI specifications.[83] SDG&E will be purchasing and contracting for products and services from vendors in the marketplace to support the VGI Program via an open Request For Information/Request For Proposal ("RFI/RFP") process.[84] As a result, SDG&E's VGI Program will create new opportunities for third party service providers and vendors. Ratepayers will also benefit from the RFI/RFP process because this form of competitive bidding will encourage innovation at least cost and can enhance the customer's VGI experience.[85] This process will also expand SDG&E's opportunities to meet DBE objectives.[86]

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[83] Ex. SD-1 (Avery) LK-13:22-LK-14:4; Ex. SD-2 (Schimka) RS-8:3-6; Section III, ¶ G.a.

[84] Ex. SD-2 (Schimka) RS-8:2-16; Section III., ¶ O and Appendix C.

[85] Ex. SD-1 (Avery) LK-14:1-4.

[86] Ex. SD-1 (Avery) LK-14:2-4; Ex. SD-2 (Schimka) RS-8:13-14; Section III., ¶ H.

Despite this, some parties allege that SDG&E's ownership of EVSE could limit customer choice of EVSE products and services.[87] Because SDG&E is not a vendor or manufacturer of EVSE, EVSE network operating systems, or maintenance services for electric vehicle charging systems, SDG&E must solicit third parties to provide those products and services for the VGI Program via the RFI/RFP process described in its testimony and Settlement Agreement,[88] thus opening up new opportunities for qualified vendors and contractors.

The first step in the process will be for SDG&E to issue an RFI, to help inform the vendor community regarding the VGI requirements and to inform and encourage potential bidders to participate in the eventual RFP process.[89] The RFI process, including an RFI conference, will be held with a variety of third parties, such as EVSPs, vendors, contractors, and subcontractors to help inform and increase participation. Following the RFI process, SDG&E will issue RFPs to qualify successful bidders. The proposed RFP process is expected to award contracts to multiple bidders on an on-going basis (*e.g.*, an annual RFP process each year of the four year program).[90] In this context, any notion that SDG&E's VGI specifications are prescriptive is misplaced. In other words, the evidence shows that the RFI/RFP process will clarify "what" is required but not "how" the requirements are to be fulfilled, thereby encouraging innovative solutions from a variety of vendors.[91]

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87 *E.g.*, Ex. ORA-1 (Durvasula) 3-7:6-8.

88 Ex. SD-2 (Schimka) RS-8:2-16; Section III., ¶ G. and Appendix C.

89 Ex. SD-2 (Schimka) RS-8:8-9. "RFI" refers to requests for information from potential bidders; "RFP" refers to a solicitation for bids. The RFP process is detailed at *id*., RS-7:1-20; and addressed at Section III., ¶ O and Appendix C.

90 Ex. SD-2 (Schimka) RS-8:21-22; Ex. SD-10 (Schimka) RS-4:13-14.

91 Ex. SD-10 (Schimka) RS-2:5-RS-3:14; Section III., ¶ O.

This process will ensure that not only will VGI Facility site hosts have choices for the type of EVSE equipment to be installed from a list of VGI qualified vendors,[92] but it will create opportunity for vendors and providers to compete by offering innovative products and services to support the VGI Program.[93] Assertions that the VGI Program will limit customer choice or lock out providers misunderstand the RFI/RFP process described in SDG&E's Application and testimony, as clarified by the Settlement Agreement.

3. SDG&E ownership will provide consumer protection for customers and all ratepayers.

SDG&E ownership will provide unique consumer protections in at least two regards. First, the charging units will be maintained to utility reliability standards. Second, the availability of EV charging costs as a separate item on the SDG&E customer bill will provide transparency and inform customer charging preferences, including for customer/hosts enrolled in the VGI Rate-to-Host option.

It is self-evident that for EV Drivers to find a substantial number of charging outlets not operating increases EV range anxiety and chills EV adoption.[94] With respect to maintenance, the record shows that installed but inoperable charging units are currently a problem; up to 10% of installed publicly-accessible charging equipment may be out-of-service at any given time in SDG&E's service area.[95] SDG&E believes ongoing maintenance is important for EVSE and associated equipment in the VGI Program that will be affected by weather conditions, vandalism,

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92 Ex. SD-2 (Schimka) RS-8:10-11; Section III., ¶ C.

93 Ex. SD-10 (Schimka) RS-3:15-RS-4:2; Section III., ¶ O.

94 *See,* Avery, T. 28:6-30:21 (April 27, 2013). Given Mr. Avery's substantial early adopter experience as an EV Driver, his observation is not mere anecdote. *Id.,* T. 22:6-27, 37:10-24: Ex. SD-8 (Avery) 13.

95 Schimka, T. 354:24-355:28 (April 28, 2015); T. 538:12-540:17 (April 29, 2015). For a report on out-of-action charging stations in Baltimore, *see*: http://www.plugincars.com/why-baltimores-vandalized-charging-stations-have-taken-too-long-fix-127614.html

and wear and tear from normal use. As outlined in testimony,[96] SDG&E will enter into a Service Level Agreement[97] with one or more third parties to operate and maintain the VGI systems to SDG&E's specifications. In that testimony, examples of these operational requirements and responsibilities are described. Additional terms and conditions will pertain to monitoring equipment for failure, repair and replacement of failed or damaged equipment, and related maintenance criteria. Since it is proposed that the VGI Facility assets are to be funded by all ratepayers, SDG&E is responsible for ensuring that the entire set of assets from end-to-end are kept in good working order and are used and useful for the life of these assets, to the benefit of all ratepayers. Ex. SD-10 (Schimka) RS-7:16-RS-8:5. The VGI Program, under the Commission's oversight, is designed to ensure equipment remains in good working order.

TURN concludes that SDG&E's request for replacement charging equipment is consistent with the intent for initial-stage investment with an eye toward long-term, wide-ranging deployment, rather than a pilot.[98] Given the risk that some equipment paid for by ratepayers may not be maintained (*e.g.*, should the provider go bankrupt or leave the San Diego market), SDG&E believes guaranteed and timely maintenance is an essential customer and ratepayer protection regardless of the length of the program.

A second important source of consumer protection is that the metering, billing and pricing will be part of a Commission-regulated process consistent with well-established, Commission-enforced protocols for handling customer metering and billing disputes, SDG&E ownership ensures customers will not be left without recourse.

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[96] Ex. SD-2 (Schimka) RS-19:2-5.

[97] *See*, Ex SD-2 (Schimka) RS-19: 1-22.

[98] Ex. TURN-1a (Jones) 2:14-16.

4. The VGI Program targets underserved venues – MuDs and workplaces – with high VGI value.

The VGI Program exclusively targets two critical customer segments where there is very low deployment of EV charging facilities and where cars are parked the longest in high-usage locations, and which have the greatest potential to demonstrate the benefits of VGI, including increased EV adoption and zero emission miles driven per EV: workplaces and MuDs.[99] This brief addresses the reasons for, and the benefits of, targeting this segment at section II.B.2., *supra*.

5. VGI Facility site selection will be customer-driven and will be prioritized based on potential benefits.

SDG&E plans to conduct marketing and outreach to potential VGI Facility site hosts site participants and will work in concert with pre-qualified third-parties (vendors), some of whom may deploy resources to engage their own VGI Program marketing and sales efforts with potential site host VGI Program participants.[100] This is important to the VGI Program for several reasons. First, as noted in Ex. SD-2 (Schimka) RS-6:16-RS-7:3 (original emphasis):

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[99] According to the California Center for Sustainable Energy website, a February 2014 California PEV Driver survey showed that, of responding EV drivers: 88% live in a single-family detached home, 93% own their own homes, and 46% had access to workplace charging. Survey results are available at: https://energycenter.org/clean-vehicle-rebate-project/vehicle-owner-survey/feb-2014-survey. By targeting MuD and workplace siting, the VGI Program is designed to increase EV adoption.

[100] Section III., ¶ G. (p. 5) provides for third party vendors pre-qualified by SDG&E for the VGI Program, in coordination with SDG&E customer contact personnel, to sign up potential VGI Facility site hosts to participate in the VGI Program in the two targeted customer segments (MuD and workplace settings), and in any other customer sub-segments identified in the Settlement Agreement (*e.g.*, Disadvantaged Communities and housing or sites that support car-sharing entities). The Settlement Agreement *(id*.) specifically references the use of marketing materials and SDG&E's shared relationship with the site host:

> Competitively neutral descriptions of the VGI Rate plans will be prepared by SDG&E and shall be used by third parties; third parties shall be permitted to develop and utilize their own marketing materials at their own expense, consistent with and subject to SDG&E's Co-branding Policy and approval process. In order to create and maintain a positive customer experience with the VGI Program, the third parties will

> Customer Engagement – SDG&E has long established customer relations and channels of communication regarding EVs with service territory agencies, municipalities, trade associations and planning councils; SDG&E also has working relationships with SDG&E's workplace and MuD customers.[101] SDG&E has regular workshops, outreach and assigned account relationships with account executives for these customers. SDG&E also works with Smart Cities San Diego, CleanTech San Diego, and other general education and outreach venues.

Second, as SDG&E witness James P. Avery testified, T. 33:19-26; 65:1-24 (April 27, 2015), SDG&E's External Affairs and Community Relations organizations work with a variety of Community Based Organizations ("CBOs") during the course of SDG&E's everyday business. SDG&E has partnerships with over 200 community based organizations and partners throughout its service territory. These partners are particularly effective at assisting us with the translation of messaging into multiple languages, cultural nuances and communicating and explaining those messages to their constituencies. SDG&E and these local CBOs have a vital "public education and outreach" role in fulfilling the Section III., ¶ I. undertaking to install at least 10% of the VGI Facilities in Disadvantaged Communities.

SDG&E will work with the pre-qualified third parties to leverage these relationships to contact potential site hosts.

Once a workplace or MuD host customer expresses an "indication of interest" for VGI Program siting, SDG&E will evaluate and prioritize the interested site for a VGI Facility installation in terms of the following criteria (Ex. SD-2 (Schimka) RS-7:18):

- Date of indicated interest (first-in-line priority);
- Current and expected volume of EV Drivers;

> be required to describe how they will share the initial and ongoing customer relationships with SDG&E and the VGI Facility host and EV Driver.

[101] *See* the PEV Collaborative publication "Amping up California Workplaces" and "Plug-in Electric Vehicle Charging Infrastructure Guidelines for Multi-unit Dwellings," available at: http://www.evcollaborative.org/sites/all/themes/pev/files/WPC_Report4web.pdf, and http://www.evcollaborative.org/sites/all/themes/pev/files/MUD_Guidelines4web.pdf.

- Number of VGI installations desired;
- Type of VGI installation (workplace, MuD);
- Nearby transformer available capacity;
- Distance between transformer and new service point;
- Site conditions related to construction feasibility (*i.e.*, trenching surface, EV Supply Equipment (EVSE) mounting surface, condition of facility);
- Land and property ownership;
- If leasing, term and conditions of lease; and
- Existing /available Americans with Disabilities Act-accessible parking.

6. The size of the VGI Program is reasonably scaled for deployment over the period of the pilot.

a. SDG&E's VGI Program size and duration

VGI Program enrollment sign-ups and contracting are proposed to take place over 4 years, and installations to take place over 4 to 5 years, with a goal of VGI Facility installations at a blend of workplace and MuD host sites as follows:

- Year 1 (2015) – 50 site installations of 10 charging stations
- Year 2 (2016) – 100 site installations of 10 charging stations
- Year 3 (2017) – 200 site installations of 10 charging stations
- Year 4 (2018) – 200 site installations of 10 charging stations

This proposed limited time schedule and number of VGI Facility installations is designed to encourage MuD and workplace host sites to sign up quickly, thus encouraging the success of

the program. Ex. SD-2 (Schimka) RS-3:1-10. This rollout and installation goal is also subject to the $103 million cap on spending authority requested in the Application.[102]

The Settlement Agreement (Section III., ¶ N.) adds clarification that SDG&E's VGI proposal is modified to allow host sites planning for new construction or major tenant improvements to complete installation of VGI Facilities beyond the 5th year of the VGI Program if the commitment is made by the end of the 4th year of the program.

The foregoing rollout schedule does not assume that every site will request or justify the installation of 10 charging stations (a station or EVSE equals one charging port or "nozzle") some may justify more and others less. Therefore, SDG&E's cost estimates were calculated with an expectation of cost averaging due to higher and lower charging station counts at the various VGI sites. Ex. SD-10 (Schimka) RS-12:9-17.

b. The scoping memo did not opine on the reasonableness of the program size

The September 29, 2014 scoping memo (pp.3-4) for SDG&E's Application addressed the characterization of the VGI Program as a "pilot" for purposes of determining the appropriate process for considering the Application (emphasis added):

> SDG&E's request for *expedited treatment* of its Application is predicated in large measure on the assertion that the proposed VGI program is a pilot program. However, SDG&E's Application includes at least three defining characteristics that make expedited treatment inappropriate. First, the size of the estimated cost is over $103 million, of which approximately $55 million represents a potential capital investment for which SDG&E seeks ratebase treatment … It is also on par with the size of a fully developed utility program, not an initial experimental pilot. Second, SDG&E's Application requests authority to own charging infrastructure raising the issue of whether utility ownership of … [EVSE] may be appropriate

[102] At hearing, SDG&E witness Randy Schimka clarified that SDG&E is requesting authority to build up to the 550 charging stations, subject to the $103 million cap on spending authority requested in the Application (at Ex. SD-4 (Atun) JBA-4:2-7 and Table JBA 5, which shows total capital and O&M expenditures of $102,753). SDG&E will not build over the 550 charging stations if the spending cap is not reached with that rollout level. Schimka, T. 534:5-23 (April 29, 2015).

> …. Third, SDG&E's Application proposes to implement the new program over ten years and collect the costs in rates until 2037. Taken together, these factors go beyond typical pilot programs and put the SDG&E Application on par with a full program business model, rather than an initial, research-oriented test project. These factors require the Commission to allow adequate time to meaningfully assess the reasonableness of a request of this length, cost and complexity.

Note that SDG&E had asked for expedited consideration of the Application, but the Decision declined the request to expedite on grounds of program size and its novel policy implications. This scoping memo did not in any way suggest that the program size was unreasonable, and it gave SDG&E the opportunity to show that the program size is, if fact, reasonable. The Decision (D.14-12-079) has since addressed the utility ownership issue as described in section I. above. SDG&E appreciates the opportunity provided by the Decision to show why the size of its proposal is appropriate, and why the pilot characterization is apt. In sum, in addition to its experimental nature, SDG&E considers the VGI Program a pilot because of its novel program features (VGI Rate), limited scope (MuDs and workplaces only), size (up to 550 sites) and limited duration (four year enrollment period). In any event, to approve the settlement, the Commission need not decide whether the pilot characterization is apt, and the Settlement Agreement did not find it necessary to address that characterization.

c. The program is sized to support a robust study sample

The proposed program size is needed to support robust study results. As described in Ex. SD-3 (Fang) CF-2:1-CF-3:9, the VGI Rate is influenced by changes in the price of energy as well as system and circuit conditions. In order for the VGI Program to achieve robust results from the pilot's data collection sufficient to measure the impact of the VGI Rate and technology, the number of VGI facilities must be large enough to ensure a reasonably strong statistical representation of SDG&E circuits. Although no two circuits are alike, there are some parameters that help to characterize the population of circuits. The relevant parameters include: type of

distribution circuit (*e.g.*, Residential, Commercial, or mixed), solar penetration on the circuit, load factor of the circuit, and peak demand hours of the circuit. These circuit characteristics are expected to impact the calculation of the VGI Rate's hourly prices (specifically the VGI D-CPP Hourly Adder), across more than 1,000 distribution circuits within SDG&E's service territory.[103] Any risk attendant to the program's size as reflected in the above rollout plan is mitigated by the size limit, and the fact that site enrollment and the installation rate for VGI Facilities require customer site host interest and driver demand for charging at those sites. If the interest and demand from customers (*i.e.*, site hosts) do not materialize, unwanted charging facilities will not be installed. Ex. SD-7 (Schimka) ST-47:8-10; Ex. SD-2 (Schimka) RS-7:5-18.

d. The program size supports the goals of the state and this Commission

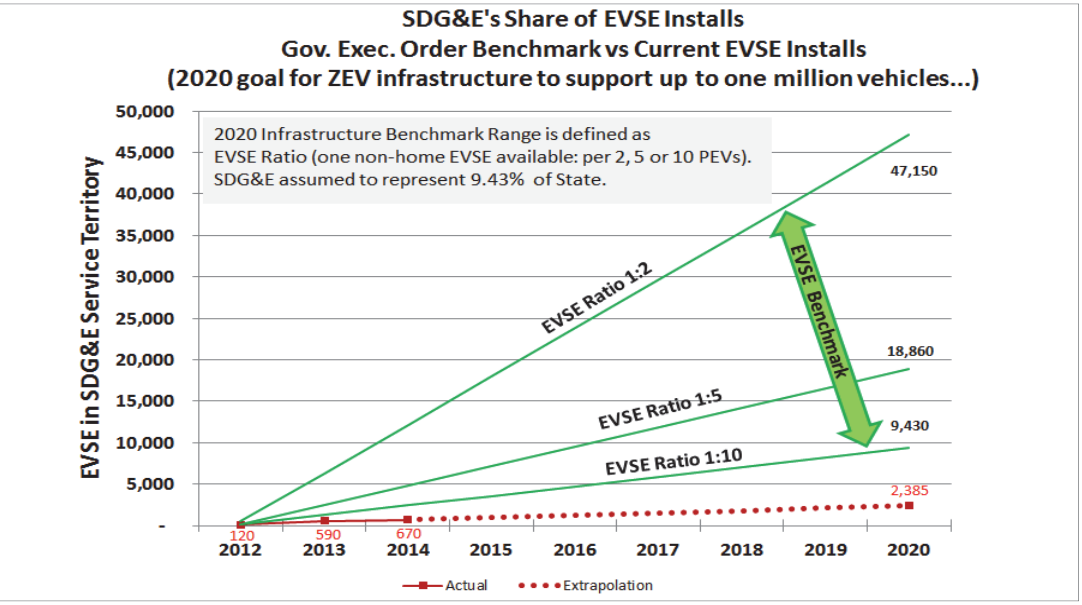
The record is unequivocal that current EVSE installation trends will fall short of the state's goals. While SDG&E's proposal will not make up for this shortfall alone, the trends indicated by the evidence strongly argue against either a piecemeal or a scaled-down approach as commenters advocate. SDG&E's evidence examines the overall volume of EVSE with various trajectories to 2020. Figure 1 below illustrates an estimate of non-residential charging stations required in the SDG&E service territory to meet its portion of the State charging infrastructure

[103] Ex. SD-7 (Schimka) ST-46:2-13. This does *not* mean that charging stations must be installed on each of SDG&E's circuits to get a robust data sample. Ex. SD-7 (Martin) Appendix A contains an illustrative distribution circuit sample frame and a discussion of associated sampling error that supports the proposed sample size. SDG&E's Illustrative Sample Frame and Error Calculations (*id.*, p. A-3 Figure A-1 and p. A-5 Table A-1) indicate significant statistical validity can be achieved, using 550 VGI systems (5,500 charging stations) deployed within a 30 cell (distribution circuit) sample frame (*id*., p. A-4). This quantity of VGI systems and VGI chargers is necessary to ensure that the pilot results will have sufficient statistical validity, to show "whether hourly-variant pricing influences changing decisions, with the aid of enabling technology." *Id*., p. A-1; Ex. SD-1 (Avery) LK-11:18-19.

goal by 2020.[104] Although EV Drivers charge their vehicles at a variety of private and public locations, the use of commercial facilities here is intended to be a yardstick by which to measure progress toward charging infrastructure deployment goals.[105]

Figure 1

Estimate of San Diego Charging Station Installations by 2020 (current commercial EVSE 2012-2014, extrapolated to 2020)



Currently, there is one installed commercial (non-residential) charging station for every 15 vehicles in the SDG&E service territory. At the current rate of installation of commercial EVSE, the San Diego region will have just under 2,400 installed charging stations or EVSE by 2020, or approximately 25% of the amount targeted by the Governor. To meet the Governor's 2020 charging infrastructure goal, SDG&E and other industry experts believe that much more

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[104] SDG&E has 9.43% of California's PEVs. Source: ICF International, California Transportation Electrification Assessment – Phase 1: Final Report (2014).

[105] Ex. SD-7 (Schimka) ST-40:12-ST-41:9. SDG&E references non-home commercial EVSE here. Note that the MuD "home" segment of SDG&E's customer population is still not "adequately supported" in that about 50% of its residential customers reside in MuDs. Ex. SD-2 (Schimka) RS-5:1-2 and n. 4.

EVSE deployment is needed at both public and private sites.[106] The volume of EVSE is just part of the EVSE deployment adequacy aspect of the Governor's 2020 grid-integrated infrastructure deployment goal. For the most effective deployment of the EVSE infrastructure, the location of such facilities is the more important consideration. The effectiveness of EVSE deployment and the locations targeted by the VGI Program are described in greater detail in section II.D.4. and 5. above. Finally, the expert evidence suggests that making the VGI Program available to these locations should boost demand for PEVs in the SDG&E service territory; an increase in demand for PEVs will in turn lead to an increase in demand for PEV fueling services at commercial locations that are not a part of the VGI Program. Ex. SD-9 (Pulliam) BP-13:3-8.[107]

e. VGI Program size will yield economies of scale

The evidence is uncontested, as common sense would suggest, that the proposed program size will support economies of scale in both siting and procurement of EV charging services and infrastructure. Ex. SD-10 (Schimka) RS-12:13-15. And, while it would be pure speculation to quantify the effect, especially when the scope of what individual vendors might offer cannot be known until the RFI/RFP process described in SDG&E's testimony takes place, it is self-evident that a lower price for services and equipment can be obtained with a larger order, not to mention more interest (and hence, more innovation) among vendors. Such benefits of scale in procurement must be weighed when considering whether the size of the VGI Program is appropriate. With the settlement's addition of the VGI Rate-to-Host option, which requires a load management plan from the site hosts enrolled in this option, there is a greater need to keep

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[106] *See*, *e.g.*, http://www.mercurynews.com/business/ci_24947237/charge-rage-too-many-electric-cars-not-enough-workplace-chargers; Mercury News article "Charge Rage" by Dana Hull, January 19, 2014. *See also*, EPRI, Guidelines for Infrastructure Planning: An Explanation of the EPRI Red Line/Blue Line Model (product ID: 3002004096), 2014. http://www.epri.com/abstracts/Pages/ProductAbstract.aspx?ProductId=000000003002004096.

[107] ChargePoint's expert agrees with Mr. Pulliam on this point. Ex. CP-3 (Monsen) 7:18-21.

the VGI Program size as proposed in order to generate an adequate data on this option to help inform Commission policy.

E. The proposed cost/benefit analysis illustrates potential pilot benefits and will inform state policy.

The testimony submitted with the Application showed how the proposed cost-benefit analysis and methodology will enable the Commission and other stakeholders to determine how effectively grid-integrated charging provides benefit to the grid and ratepayers. As explained in the OIR (pp. 15-16), potential benefits to the grid and ratepayers include:

- reducing system ramping needs by building loads during the lowest demand periods;
- providing load to absorb low cost energy supply; and
- avoiding local distribution impacts by minimizing load when local distribution system is near capacity.

To this end, the VGI Program offers a cost-effectiveness methodology applicable to VGI solutions based on and adapted from models used by the Commission to evaluate other preferred resource programs (*e.g.*, demand response and energy efficiency. This methodology will enable the Commission to quantify the benefits of the VGI Program, including the effect of grid-integrated pricing and managed charging, and evaluate these benefits relative to the cost of the program. And the Settlement Agreement adopts, clarifies and supplements the data gathering required to support this methodology and analysis.[108] The VGI Program is the only proposal before the Commission to offer a means to demonstrate that the benefits of making this investment outweigh the costs.[109]

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[108] Section III, ¶ L and Appendix B.

[109] The cost-effectiveness methodology is detailed at Ex. SD-6 (Martin) JCM-18:4-JCM-35:8.

1. SDG&E's proposed cost benefit methodology is well-grounded in Commission experience.

Consistent with the Commission's VGI White Paper,[110] the VGI Application introduced a cost-effectiveness methodology for the Commission's consideration for evaluating VGI solutions, such as those proposed in the settlement. The methodology relies on an analytical model developed at SDG&E's direction by Energy and Environmental Economics ("E3"), a consulting firm that has conducted numerous economic assessments to support the Commission's policy development in the areas such as distributed energy resources, demand response, and energy efficiency. The methodology and model described in SDG&E's testimony builds upon the standard cost-effectiveness tests familiar to the Commission in these areas, leveraging many of the models, data and policies adopted and articulated by the Commission in those proceedings (*i.e.*, the Standard Practice Manual). Ex. SD-12 (Martin) JCM-1:18-JCM-2:1; Ex. SD-6 (Martin) JCM-4:20-21. The construct of the cost effectiveness model and the basis for the illustrative inputs are described in detail at Ex. SD-6 (Martin) JCM-4:20-JCM-29:6. The VGI Program, as improved by the settlement,[111] allows robust collection of data – data that would be largely unavailable without the pilot – that will be fed into the model, yielding informative and actionable results.

2. Illustrative results from the model are informative and suggest that the VGI Program can yield net benefits

The illustrative modeling SDG&E performed suggests that the VGI Program can yield net benefits to both ratepayers and society as a whole and can be implemented without upward pressure on rates for non-participating customers. Under most scenarios studied, rates can

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[110] *See,* p. 1, n. 2, *supra.*

[111] Appendix B of the Settlement Agreement specifically supplements the data collection described in Mr. Martin's testimony to account for the addition of the settlement's VGI Rate-to-Host option.

actually be reduced. SDG&E's testimony offers modeling results using hypothetical assumptions (Ex. SD-6 (Martin) JCM-2:10-15):

> Cost-effectiveness methodology is used to model EV charging in SDG&E's service territory under two sets of hypothesized assumptions, including assumptions on SDG&E's VGI Pilot Program. Results are used to infer market level insights into the cost and benefits of deploying EV charging at workplace and … [MuD] locations. The model output is illustrative only and is not intended to be predictive. However, results may provide policy makers with insights about various VGI solutions in the SDG&E EV charging market.

Notwithstanding its use of hypothetical assumptions, the modeling is especially informative with respect to scenario comparisons. The methodology models future EV charging in SDG&E's service territory under two EV market scenarios. The two EV market scenarios are: the SDG&E VGI Rate Scenario and a Non-utility Flat Fee Scenario. These scenarios include similar EV charging deployments at MuD and workplace charging locations, but with two key differences: 1) who owns the deployed charging technology (SDG&E or a Non-utility entity); and 2) what price the EV Driver pays at the charging technology (VGI Rate or Flat Fee).[112] The scenarios model all current and future EV charging in the SDG&E service territory through 2028. Ex. SD-12 (Martin) JCM-2:10 – JCM-3:2.

TURN complains that SDG&E compares market-level benefits to program-level costs. [113] SDG&E uses results from these scenarios to infer market level costs and benefits,[114] because discrete project evaluation is less applicable to a price-based EV charging program due to the

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[112] Ex. SD-6 (Martin) JCM-5:9-JCM-6:2.

[113] TURN *comments on joint settlement motion* (July 3, 2015), pp. 23-25. TURN also wrongly alleges (*id*., pp. 24-25) that "SDG&E does not include the costs of building an additional 100,000 or so chargers necessary to induce" the assumed level of market growth. TURN is dead wrong. SDG&E included in its assumption the costs of installing all chargers – VGI Program chargers, as well as single family residential chargers, and pre-existing workplace charging equipment. Ex. SD-6 (Martin) JCM-27:3-28:2.

[114] The results are detailed at Ex. SD-6 (Martin) JCM-29:7 - JCM-35:8, and are presented using the standard cost-benefit test methodologies familiar to the Commission.

unique flexibility of EV charging decisions. An EV customer can choose when, where, and how quickly, how long and how often to charge. To capture these interrelated charging location and time dynamics, a market level approach is required to evaluate load impacts, as well as costs and benefits.[115]

Cost test results are prepared to isolate relative benefits of the SDG&E VGI Rate scenario. The table below (from Ex. SD-12 (Martin) JCM-3:11-17) describes the key questions answered by the cost-benefit tests:

Cost-Benefit Tests - Key Questions Answered		
Cost Test	**Acronym**	**Key Question Answered**
Ratepayer Impact Measure	RIM	Will utility rates increase?
Participant Cost Test	PCT	Will the participants benefit over the measure life?
Total Resource Cost	TRC	Will the total costs of energy in the utility service territory decrease?
Societal Cost Test	SCT	Is the utility, state, or nation better off as a whole?

The modeling results described in SDG&E's testimony suggests that EV Drivers paying the VGI Rate at VGI Facilities save electric supply costs of $16.8 Million Net Present Value ("NPV") compared to the Non-utility Flat Fee scenario.[116] This translates to an electric supply cost savings of over $3,000 NPV per each of the 5,500 VGI chargers. Sensitivity analyses performed by SDG&E, including those requested by intervenors, not only confirm robust net benefits from the VGI Program, but show that all ratepayers, EV Drivers, California and society as a whole are better off with VGI Facilities where drivers (or site hosts, per the settlement) pay

[115] Ex. SD-6 (Martin), JCM-4:10-18.

[116] Ex. SD-6 (Martin) JCM-34, Table 6-14.

the VGI Rate, than if ratepayers subsidize a third party to install similar chargers and the EV Drivers pay a flat fee. Ex. SD-12 (Martin) JCM-12:1-21.

Indeed, this ratepayer benefit *increased* to $3,500 and $3,600 NPV per VGI charger when SDG&E ran sensitivities requested by UCAN.[117] Bottom line, SDG&E's testimony shows that there are net benefits under each test – which demonstrates that EV Drivers are better off, all ratepayers are better off and society is better off under the VGI Program. Ex. SD-6 (Martin) JCM-33, Table 6-12.

Note that the Commission does not require a positive Ratepayer Impact Measure ("RIM") test for energy efficiency ("EE"), demand response ("DR") or distributed generation ("DG"). In fact, the RIM test is less than 1.0 for many EE, DR and DG programs. These programs are nevertheless encouraged by the Commission because they promote policy goals, provide environmental and societal benefits, reduce energy procurement costs and reduce participating customer bills.[118] Passing the RIM test is not a requirement for EE, DR or DG programs, nor should it be an absolute requirement for the VGI Program.[119] Nevertheless, applying the RIM test with VGI Program assumptions shows that, unlike other programs, the VGI Program can potentially be implemented without upward pressure on rates for non-participating customers. Under most scenarios studied, rates can actually be reduced. Ex. SD-12 (Martin) JCM-13:6-14. These robust sensitivity results are, at minimum, sufficient to support the Commission approving the Settlement Agreement.

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[117] Ex. SD-12 (Martin) JCM-4:12-13, JCM-12:1-21. SDG&E also ran scenarios for TURN and ORA.

[118] This is consistent with the benefits specified in P.U. Code § 740.8, which is part of a statute that specifically encourages the Commission to involve utilities in supporting electric transportation and that defines ratepayer "interests" to include environmental and societal benefits.

[119] The OIR scoping memo (July 16, 2014), p. 11, states that pilot programs initiated in the OIR will *not* be required to demonstrate positive cost-benefit ratios as a condition for approval.

3. The Settlement Agreement should not affect the benefits suggested by the illustrative modeling results.

Although performed prior to the settlement, the cost effectiveness analysis in Ex. SD-6 (Martin) described in the previous section captures the range of possible outcomes of a cost benefit analysis under the Settlement Agreement. Thus, no additional modeling analysis is needed to confirm that the settlement will likely yield net benefits. To confirm that this is so, consider the following:

As described in the prior section, the analysis in Ex. SD-6 contains two scenarios – EV charging with the VGI Rate, and EV charging based on a flat rate. The settlement adds the choice for the site host to elect a VGI Rate-to-Host option (to the originally proposed option of VGI Rate-to-EV Driver). If the site host chooses the Rate-to-Host option, it must include a load management plan, consistent with the Agreement's Guiding Principle that "must be structured to provide net benefits to all ratepayers."[120] By the Settlement Agreement providing this choice to site hosts, it introduces the chance to explore (1) the extent to which site hosts would prefer to get the VGI Rate directly, and (2) how site hosts receiving the VGI Rate can creatively manage the charging load in response to the rate's price signal. This settlement option allows the pilot to explore other approaches to encourage off-peak charging and charging at times of day when the price per hour is low, perhaps reflecting the availability of renewable energy resources. Even if a large portion of site hosts choose the VGI Rate-to-Host option, it is still expected that the resultant EV charging behavior would yield results similar to those of Mr. Martin's modeling for the original Rate-to-EV Driver option alone in Ex. SD-6. This is because the substantial hourly

[120] Settlement Agreement, Section III. ¶¶ A., B. and Guiding Principle 2.

pricing differentials in the VGI Rate give the site host under the Rate-to-Host option a strong incentive to efficiently manage the charging loads at the site.[121]

F. The VGI Program is eligible for the D.12-12-033 cap-and-trade GHG allowance revenue allocation funding.

In addition to approval of this proposed project, SDG&E also requests a determination that this project is eligible to receive funding from the revenues generated by the sale of cap-and-trade allowances consistent with the P.U. Code § 748.5(c). In order to receive such a designation, D.12-12-033 states the Commission must determine that the proposed project will (1) have a goal of reducing GHGs (Conclusion of Law 46)[122] and (2) be administered by the electrical corporation and is not otherwise funded by another funding source.[123] In addition to the VGI Program GHG reduction potential, charging infrastructure is one of the project types in the California Air Resources Board's Investment Plan for GHG reductions.[124] As stated in the application, the project would be administered by SDG&E and is currently not funded. Ex. SD-1 (Avery) LK-14:5-16.

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[121] In any event, the data yielded by the pilot should reveal customer preferences and the effectiveness of the VGI Rate to affect driver charging behavior under both options in the Settlement Agreement. *See* Settlement Agreement, Appendix B.

[122] D.12-12-033, p. 198, Conclusion of Law 46: "Should the Commission decide at a later date to direct GHG revenues toward energy efficiency or clean energy programs or projects, such projects should have as a stated and measurable goal a reduction in GHG emissions."

[123] D.12-12-033, p. 191, Conclusion of Law 7 states: "Section 748.5(c) states that the Commission may allow investor-owned utilities to use up to 15% of the revenues, including any accrued interest, received by an electrical corporation as a result of the direct allocation of GHG allowances to electrical distribution utilities pursuant to subdivision (b) of Section 95890 of Title 17 of the California Code of Regulations, for clean energy and energy efficiency projects established pursuant to statute that are administered by the electrical corporation and that are not otherwise funded by another funding source."

[124] California Air Resources Board, *Cap-and-Trade Auction Proceeds Investment Plan: Fiscal Years 2013-14 through 2015-16* (May 14, 2013), p. B-7. Available at: http://www.arb.ca.gov/cc/capandtrade/auctionproceeds/final_investment_plan.pdf.

III. THE VGI PROGRAM IS PROCOMPETITIVE AND SATISFIES THE COMPETITIVE BALANCING TEST

A. The Decision requires weighing the benefits of utility charging infrastructure ownership against potential competitive limitations of that ownership.

D.14-12-079 (pp. 8-9) states that the Commission will examine the potential competitive impacts on the market segment targeted by SDG&E's Application as part of a balancing test intended to weigh the benefits of utility EV fueling infrastructure ownership against the potential competitive limitations associated with that ownership. The inquiry includes examination of the following points:

- The nature of the proposed utility program and its elements;
- The degree to which the market into which the utility program would enter is competitive, and in what level of concentration;
- Potential unfair utility advantages, if any; and
- If the potential for the utility to unfairly compete is identified, the Commission will determine if rules, conditions or regulator protections are needed to effectively mitigate the anticompetitive impacts of unfair advantages held by the utility.

The Decision is consistent with, and must be interpreted in light of, a statute that specifically encourages the Commission to involve utilities in supporting electric transportation and that defines ratepayer "interests" to include environmental and societal benefits.[125] It is also

[125] P.U. Code § 740.3 directs the Commission to:

> (a) …evaluate and implement policies to promote the development of equipment and infrastructure needed to facilitate the use of electric power … to fuel low-emission vehicles…. (c) … that the costs and expenses of those programs are not passed through to … ratepayers unless the commission finds and determines that those programs are in the ratepayers' interest.

And P.U. Code § 740.8 defines the § 740.3 ratepayer interests:

> … short- or long-term, mean direct benefits that are specific to ratepayers in the form of safer, more reliable, or less costly gas or electrical service, consistent with Section 451, and activities that benefit ratepayers and that promote energy efficiency,

consistent with the more fundamental rule that the Commission must consider competitive effects in determining whether it is in the public interest to grant an application, and it may balance those effects against other considerations, such as environmental effects. *Northern Cal. Power Agency v. Cal. Pub. Util. Comm'n*, 5 Cal.3d 370 (1971).

B. The settlement resolves any proper competitive concerns

ORA (comments at 7-9), TURN (comments at 30-31) and UCAN (comments at 14-19) maintain that the Settlement Agreement remains anticompetitive because the utility owns the chargers, and this feature will crowd out third party investment.[126] This assertion is based on the comments' express or implied conclusion that this ownership feature alone causes the VGI Program to fail the Commission's competitive balancing test.

At the most basic level, commenters' arguments fail because of the nature of the settlement itself. Four well-resourced entities who have actively participated in the EV charging market support the settlement.[127] The one entity purporting to represent EV charging interests that commented in opposition, CESA, has not clarified the extent to which its members are actual or potential participants in the EV charging market – and two of its members are Settling

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reduction of health and environmental impacts from air pollution, and greenhouse gas emissions related to electricity and natural gas production and use, and increased use of alternative fuels.

[126] These positions were taken in the comments filed July 3, 2015 on the joint motion to approve the settlement.

[127] ChargePoint, Inc., has the second largest charging presence in the San Diego region. Ex. SD-7 (Pulliam) ST-19:19-21:6 and Appendix 3. NRG has installed charging facilities at several sites in the San Diego region pursuant to its 2012 settlement with the Commission. KnGrid is currently working with the University of California, San Diego, on an intelligent charging demonstration project. *See*: http://www.energy.ca.gov/2014_energypolicy/documents/2014-06-23_workshop/comments/KnGrid_Comments_2014-07-11_TN-73370.pdf. Siemens' portfolio of electric vehicle charging stations offers charging stations for residential, commercial and outdoor public applications.

Parties![128] In sum, the industry settlement signatories represent the great weight of the interests in this proceeding (in terms of numbers and actual market participation) that commenters suggest would be disadvantaged by the settlement.

There are two additional reasons the comments asserting anticompetitive effects fail. First, no explanation is given why utility ownership is anticompetitive – it is just assumed. TURN unwittingly reveals why utility ownership, from a competition perspective, is not the issue. TURN observes that ChargePoint's "business model is not to own charging stations but to provide additional billing and management services."[129] Ownership, in and of itself, is one means to an end for a market participant; but there is *no evidence* that ownership is what drives private interest in the EV charging market. This is further indicated by the nature of the charging industry opposition to the Application and by the compromises that led to the Settlement Agreement. The industry opposition was concerned that SDG&E's original proposal would deprive consumers – the site hosts – choice in equipment and service options.[130] The most competitively significant settlement provisions – the VGI Rate-to-Host option and the competitive procurement provisions[131] - enhance consumer choice. Ownership in this context is

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[128] CESA (comments, pp. 2-5), without citing any evidence, offers conditions that it simply asserts will "address the competitive impact" of the settlement, but does not explain how its conditions relate to competition. Note that the listed CESA members (comments at 1, n. 1) include two of the Settling Parties, ChargePoint, Inc., and NRG Solar, LLC (an affiliate of Settling Party NRG EV Services LLC). CESA, a trade association for energy storage businesses, not electric vehicle service providers, does not explain whether or how its other listed members are interested in the EV charging market, or how it can square its comments with the fact that two of its listed members have signed the Settlement Agreement, except to note that "… [t]he views expressed in these Comments are those of CESA, and do not necessarily reflect the views of all of the individual CESA member companies." Because CESA's views differ from those of its members, its comments should be given no weight.

[129] TURN comments at 30, *citing* Ex. CP-2 (Jones) 3:12 – 4:17.

[130] *See*, *e.g.*, Ex. CP-1 (Quinn) 12:14-18, Ex. CP-2 (Jones) 11:12-12:9.

[131] Settlement Agreement, Section III., ¶¶ A-C, G, O and Appendix C.

irrelevant.[132] Indeed, the settlement promotes competition among providers of enabling technology and services. This outcome is consistent with SDG&E's expert evidence that the Application would be procompetitive.[133]

Second, except for UCAN, none of the comments on this point rely on record evidence; instead, they offer mere conclusory assertion that utility ownership will chill third party investment.[134] ORA's expert, in effect, conceded that utility ownership was the sole basis he could offer for finding the Application anticompetitive.[135] And ORA's comments cite no evidence at all to support that utility ownership is anticompetitive. In any event, the record evidence UCAN cites is mostly conclusory testimony that utility ownership is anticompetitive.[136]

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[132] Of course the Commission is properly concerned about utility ownership because ratepayer funds are involved, but that does not necessarily mean it is a competitive problem. SDG&E explains in the next section why utility ownership is necessary for the VGI Program.

[133] "SDG&E's Pilot should accelerate demand for (and supply of) EVSE at targeted locations. This will serve to accelerate growth in [PEV] demand and demand for EV services at non-targeted locations (*i.e.*, commercial locations) as well." Ex. SD-9 (Pulliam) BP-1:18 – BP-2:2.

[134] ORA's prepared testimony cited an unsworn statement by prehearing conference participant to the effect that venture capitalists pulled his project financing when they learned of the utility EV charging applications. Ex. ORA-1(Mutialu) 3-2:16-25, *citing* T. 61:21-62:14 (August 31, 2014). This should be disregarded for two reasons. First, it is unsworn hearsay, and its vague contest does not appear to relate to SDG&E's service area. Second, the record shows that ChargePoint initiated a very successful San Diego project with 32 charging ports after the subject prehearing conference. Jones, T. 752:22-753:19, 769:24-770:2 (April 30, 2015). So the record evidence suggests no such chilling effect.

[135] *See, e.g.*, Durvasula, T. 1023:26- 1028:5 (May 1, 2015); T. 1035:5-1037:13 (May 4, 2015), where ORA's witness could offer no justification for concluding that the VGI proposal was anticompetitive other than the fact that ratepayers would pay for it. In any event, ORA's competition expert had no credentials or any prior testimony on competition issues that would qualify him as an expert on competition. Durvasula, T. 1040:20-1041:18 (May 4, 2015).

[136] UCAN does cite to ChargePoint testimony that SDG&E's proposal was "analogous to" predatory pricing." UCAN comments at 14-15, citing Ex. CP-3 (Monsen) 4:14-20. But the cited testimony was pre-settlement. Ex. SD-9 (Pulliam) BP-29:6-9. Note that, whatever the pre-settlement views of the Settling Parties were with respect to the evidence on the competitive balancing test applied to SDG&E's original proposal, per Settlement Agreement Section IV.C:

> The Settling Parties acknowledge that the positions expressed in the Settlement Agreement were reached after consideration of all positions advanced in all the

In sum, anticompetitive is not just a self-defining "epithet" – it must be shown with reference to evidence of market effects, and this the complaining commenters failed to do in their comments and testimony.[137]

C. The VGI Program has no anticompetitive effects and ample public interest benefits.

The balancing test involves weighing the potential benefits offered by utility participation against the potential harm arising from utility ownership of EV infrastructure and participation in the EV fueling market. In weighing the benefits against potential competitive harm, it is appropriate to examine the impacts on public and ratepayer welfare. As shown in the remainder of this section, the potential benefit to public and ratepayer welfare from SDG&E's VGI proposal are significant, while the potential for competitive harm is essentially non-existent.

1. The proper focus of competitive analysis is on consumer welfare

SDG&E submitted expert economic testimony by Barry Pulliam,[138] who thoroughly examined the potential for competitive harm under SDG&E's VGI proposal. As Mr. Pulliam testified, in analyzing the potential competitive impacts of changes in the structure of a market, such as the entry of a new provider (*e.g.*, SDG&E's VGI proposal), or the acquisition of one

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testimony sponsored in the proceeding by all parties and declare and mutually agree that the terms and conditions herein are reasonable, consistent with the law, and in the public interest.

[137] *Cf*., Phillip Areeda, *Essential Facilities: An Epithet in Need of Limiting Principles*, 58 ANTITRUST L.J. 841 (1990). Professor Areeda, the renowned antitrust economist and treatise author, was cited by both the SDG&E and ChargePoint competition experts. Ex. SD-9 (Pulliam) 8:2-9:4 and n. 15; Ex. CP-3 (Monsen) 19:10-16 and n. 28.

[138] Mr. Pulliam is an economist with more than 25 years' experience working on competitive issues in the energy industry. Mr. Pulliam's experience includes work on behalf of the U.S. Department of Justice and the Federal Trade Commission ("FTC"). In addition, Mr. Pulliam has examined competitive issues on behalf of the State of California's Department of Justice and Attorney General numerous times. Ex. SD-7 (Pulliam) ST-38:21-39:13 and Appendix 1 to that testimony. Note that Mr. Pulliam's testimony preceded the Settlement Agreement. To the extent he testified to the pro-competitive effects of the Application on consumer choice, such conclusions would apply with even more force to the increased customer options made available by the settlement.

provider by another, it is essential to focus on the impact to competition, rather than the impact to competitors. In evaluating the impact on competition, economists and policy makers are concerned with how changes in a market will impact consumer welfare. Current FTC Commissioner Joshua Wright discussed the focus on consumer welfare in recent congressional testimony, noting that "consumer welfare is the lodestar of competition policy and antitrust, and it guides the decision-making at the FTC."[139]

Changes in a market that have the effect of reducing consumer welfare may be viewed as anti-competitive (or unfair if they involve specific business practices). If however, a change in the market (*e.g.*, entry of a new provider) enhances consumer welfare, then that change is not anticompetitive, even if it negatively impacts competitors.[140] A change in the market that enhances consumer welfare is a pro-competitive change, *even if* it gores the ox of another competitor. Noting the focus of competition policy on consumer welfare, the U.S. Supreme Court has held repeatedly that "the antitrust laws were passed for the protection of *competition*, not *competitors*."[141]

The Commission stated in D.14-12-079 that it will weigh (or balance) the issue of unfair competition against the potential public benefits under utility proposals. As articulated by the Commission, the goal of the balancing test is consistent with a policy of maximizing consumer welfare. In this regard, it is similar to the focus of competition policy on consumer (public)

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[139] Ex. SD-7 (Pulliam) ST-32:12-14, n. 62. The FTC's testimony is especially pertinent here, because the FTC's statutory charge bans "unfair methods of competition," a mandate that echoes the "unfairness" concerns stated in the D.14-12-079 balancing test. *See* 15 U.S.C. § 45 (a).

[140] Ex. SD-7 (Pulliam) ST-32:15-ST-33:3.

[141] Ex. SD-7 (Pulliam) ST-33:4-6, n. 64, *citing*, *Brooke Group Ltd. v. Brown & Williamson Tobacco Corp*. 509 U.S. 209 (1993) (original emphasis). *See also, Copperweld Corp. v. Independence Tube Corp*., 467 U.S. 752, 767 n.14 (1984); *Brunswick Corp. v. Pueblo Bowl-O-Mat, Inc*., 429 U.S. 477, 488 (1977); *Brown Shoe Co. v. United States*, 370 U.S. 294, 320 (1962).

welfare in dealing with questions of anti-competitive or unfair competitive behavior.[142] Mr. Pulliam examined the potential for the VGI proposal to result in competition limitations using this consumer-welfare focus.

2. The VGI Program cannot enable unfair pricing

Market power is the ability to raise price by restricting output.[143] All else equal, more concentrated markets will tend to have participants with market power and the ability to raise prices to the detriment of consumer welfare.[144] But it is not necessary here to address all of the substantial evidence on market power submitted in this case. The bottom line is that the prices that SDG&E can charge under its VGI proposal are subject to pervasive regulation.[145] The prices can be no higher than SDG&E's cost of service. Moreover, the overall proposal is subject to the Commission's jurisdiction and oversight. In this situation it is impossible for SDG&E to enjoy or exercise market power. On this point ChargePoint's witness Mr. Monsen agrees.[146] In any event, Plug Share recently estimated that 63% of public EV fueling locations and 76% of restricted access locations in the U.S. offer fueling for free.[147] ChargePoint's Mr. Jones agreed that the majority of the market provides free charging.[148] In the face of this record, there can be no proper concern about anticompetitive pricing under the VGI Program.

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142 Ex. SD-7 (Pulliam) ST-33:12-18.

143 Ex. SD-9 (Pulliam) BP 28:21-29-1 and n. 69.

144 Ex. SD-7 (Pulliam) ST-27:11-13.

145 Ex. SD-7 (Pulliam) ST-37:13-16.

146 Ex. CP-3 (Monsen) 17:16-18:2. Monsen, T. 836:20-838:24, 860:25-861:12 (May 1, 2015).

147 Ex. NRDC-10, PDF p. 2 of 5.

148 Jones, T. 797:16-26 (April 30, 2015).

3. The VGI Program is Limited in Scope and Targeted at Underserved Segments of the Market

The VGI proposal is limited to 5,500 EVSE units. Based on Navigant's forecasts, this would represent less than 20% of the non-residential EVSE in 2020, and less than 10% in 2023. This limitation means that SDG&E can only meet a small portion of the expected demand in the San Diego area. The current number of non-residential EVSE in the SDG&E service are is approximately 751.[149] Assuming market growth in line with Navigant's forecasts, San Diego will have approximately 18,200 EVSE in 2020. Subtracting the maximum 5,500 EVSE in the VGI Program leaves 12,700 units that must be provided by other participants. That is a growth in the portion of the market over and above SDG&E's share of about 12,000 units over the next 5 years. The actual growth for manufactures of EVSE that must be satisfied includes the 5,500 VGI Program units as well, as SDG&E will not manufacture these, but will purchase them from other parties.

Even assuming for the sake of argument that SDG&E were to give EV charging away for free, the VGI Program would still only be able to satisfy a small portion of the total market demand. The excess demand that is projected to exist in the market (12,000 units above SDG&E's share as of 2018) will be more than sufficient to attract and maintain a robust level of participation by other providers of EV fueling services. Just as SDG&E does not have enough market share to exercise market power by raising prices (even if it could), it does not have enough market share to harm competition, or competitors though potential below-market pricing (though as discussed above, estimated VGI rates are not below market).

[149] Ex. SD-9 (Pulliam) BP-11, Table 3.

The VGI Program targets underserved portions of the market. The segments targeted by SDG&E currently comprise just 15% of total non-residential EVSE units.[150] To the extent that SDG&E is able to penetrate these locations, EV deployment will increase and the overall demand for EV fueling services will increase, benefiting non-SDG&E providers.[151]

4. The VGI Program will Benefit Other market Participants Through the RFP Process

SDG&E will contract with third-parties to supply and provide products and services within the VGI Program. For example, whatever EVSE units SDG&E is able to install will be provided by other market participants, either current or future. This aspect of the VGI Program will bolster participation in the market, providing increase opportunities above those available today.[152]

The Application and Settlement Agreement lay out a fair and competitive solicitation process for qualifying vendors to participate in the program. The settlement further expands market opportunities with provisions that allow vendors to provide additional products and services as long as they do not impede project objectives or require additional program funds.[153]

5. Limited Scope limits competitive affect

As discussed above, the scope of SDG&E's VGI Program is limited and should comprise less than 10% of the market by 2023. The limited scope of the program ensures that the vast majority of the market, and market growth, will flow to third party other providers. Those providers will be free to innovate as they see fit.

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[150] Ex. SD-9 (Pulliam) BP-11, Table 3; BP-12:2-4.

[151] Ex. SD-9 (Pulliam) BP-13:3-14.

[152] Ex. SD-9 (Pulliam) BP-14:13-18.

[153] Section III., ¶ H and Appendix C.

Moreover, the VGI Program should help grow the total market, thereby increasing participation from independent providers. This growth will foster robust competition and innovation in the EV market.

6. RFI/RFP Process is procompetitive

The RFI/RFP process offers further protection against the potential that pricing under the VGI Program could somehow stifle innovation. As described in Section II.D. above, the VGI Program will draw on the best and brightest throughout the industry in designing equipment and services. In addition, host sites can choose the vendors of the EVSE from a list of qualified vendors that is continually refreshed through an open solicitation process.[154] This process will also foster competition as to innovation.

7. The VGI Program Provides Options and Additional Choice

The VGI Program is itself innovative. The pricing that is proposed is not currently available in the marketplace. In addition, the program offers host sites the option to manage charging at their facility or to have SDG&E bill EV Drivers directly.[155]

In sum, the VGI Program enhances consumer welfare by providing addition customer choice to the EV charging market. It also has great promise to deliver carbon reduction consistent with state goals. The VGI Program cannot dominate the market by size or by pricing, and there is no evidence, other than speculation, of anticompetitive effects. Therefore, in light of these considerations, the VGI Program satisfies the competitive balancing test.

IV. THE SETTLEMENT IS GENEROUS TO DISADVANTAGED COMMUNITIES

The Settlement Agreement contains the following provisions aimed to assist Disadvantaged Communities:[156]

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[154] Section III., ¶¶ C., O. and Appendix C.

[155] Ex. SD-9 (Pulliam) 33:5-34:19; *see*, Section III., ¶¶ A., C.

- "At least 10% of VGI Facilities will be installed in Disadvantaged Communities as identified by Cal EPA's Enviroscreen tool developed pursuant to SB 535 (de León, 2013). SDG&E will work with community based organizations to assist with education and outreach, as well as pre-qualifying and signing-up site hosts for participation in the VGI Program. In addition, SDG&E will:

    a. Scale up deployment of VGI Facilities at qualified locations above the 10% target (in line with screening criteria identified in SDG&E's prepared direct testimony, Ex. SDG&E-2 (Schimka) RS-7:4-18) to support accelerated EV adoption in Disadvantaged Communities.

    b. SDG&E will complement and coordinate with federal, state and locally funded programs, such as those being developed by the Air Resources Board pursuant to SB 1275, that are expected to grow the demand for EVs in Disadvantaged Communities (*e.g.*, EV car-sharing services)." *Id*., Section III., ¶ I.

- "All contractors shall have hiring goals to support opportunities to increase hiring from Disadvantaged Communities, including first-source hiring and targeted-hiring goals for projects in Disadvantaged Communities. The PAC[157] will also monitor and provide recommendations, including specific numerical targets for meeting hiring targets, to contractors or subcontractors associated with the increase of hiring from Disadvantaged Communities, including best practices for hiring in Disadvantaged Communities." *Id*., Section III., ¶ J.

- The VGI Program Advisory council will include representatives of Disadvantaged Communities. *Id*., Section III., ¶ K.

- The participation payment for site hosts will be waived for VGI Facilities at sites located in Disadvantaged Communities. *Id*., Section III., ¶ D.

- Third party vendors pre-qualified by SDG&E for the VGI Program will include Disadvantaged Communities in their efforts to market and sign up potential VGI Facility site hosts. Responses to the RFP should reflect this requirement (*see* SDG&E's prepared direct testimony, Ex. SDG&E-2 (Schimka) 18:7-20); Settlement Agreement, Section III., ¶ G.

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[156] The Settlement Agreement (p. 2) defines Disadvantaged Communities "as identified by the California Environmental Protection Agency's Enviroscreen tool developed pursuant to SB 535 (de León, 2013)."

[157] "PAC" refers to the VGI Program Advisory Council, a "broad and diverse stakeholder advisory group" established by the Settlement Agreement (Section III., ¶ K and Appendix A).

This is in addition to the inherent benefit to Disadvantaged Communities of the VGI Program's focus on MuD sites, where the disadvantaged disproportionately reside.[158] Given that EVs, at this stage of development, are a premium consumer item, the settlement's effort to include Disadvantaged Communities is extraordinary.[159]

V. CONCLUSION

SDG&E's evidence shows that (1) the VGI Program is needed to support the state's electric transportation and GHG goals, (2) the VGI Rate promises to induce EV Drivers to charge at times beneficial to grid operation, thus avoiding fossil generation and other infrastructure investments (3) that the cost and scope of the VGI Program are reasonable, especially given the prospect of net ratepayer benefits if the program is implemented, and (4) the proposal satisfies the Commission's competitive balancing test and is pro-competitive. SDG&E's VGI Application should be approved as in the public interest.

Respectfully submitted,
/s/ E. Gregory Barnes

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September 4, 2015

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[158] Ex. SD-2 (Schimka) RS-5:1-2 and n. 4.

[159] The Settlement Agreement includes support of car-sharing in Disadvantaged Communities. Section III., ¶ I. b. provides that:

> SDG&E will complement and coordinate with federal, state and locally funded programs, such as those being developed by the Air Resources Board pursuant to SB 1275, that are expected to grow the demand for EVs in Disadvantaged Communities (*e.g.*, EV car-sharing services).

See also, Appendix B.

ATTACHMENT A

SETTLEMENT AGREEMENT FILED ON JUNE 3, 2015

SETTLEMENT AGREEMENT REGARDING SAN DIEGO GAS & ELECTRIC COMPANY'S VEHICLE-GRID INTEGRATION PILOT PROGRAM APPLICATION, A.14-04-014

Pursuant to California Public Utilities Commission's Rules of Practice and Procedure, Article 12, Rule 12.1, San Diego Gas & Electric Company ("SDG&E"), Natural Resources Defense Council, Environmental Defense Fund, California Coalition of Utility Employees, The Greenlining Institute, Plug In America, General Motors LLC, ChargePoint, Inc., Smart Grid Services Siemens AG, NRG EV Services LLC, American Honda Motor Co., Inc., Sierra Club and other parties signatory hereto (collectively, together with SDG&E, the "Settling Parties") enter into this settlement agreement ("Settlement Agreement") regarding SDG&E's Vehicle-Grid Integration Pilot Program ("VGI Program") proposal, submitted for Commission consideration in Application A.14-04-014 (the "Application"). Except as otherwise identified, citation references in this Settlement Agreement are to the materials filed with or issued by the Commission in connection with the Application.

The Settling Parties believe that the Settlement Agreement is reasonable in light of the whole record, consistent with law, and in the public interest.

I. Introduction and Background

The Settling Parties believe that the record is sufficient to establish that this Settlement Agreement is reasonable and to allow the Commission to make a reasoned decision to approve the Settlement Agreement as in the public interest. The VGI Program Application has been the subject of a robust evidentiary process.

SDG&E filed A.14-04-014 April 11, 2014, supported by more than 150 pages of prepared testimony by six witnesses.

On January 14, 2015, SDG&E served supplemental testimony. On February 2, 2015, Judge Irene K. Moosen issued an email ruling setting forth a procedural schedule. Pursuant to that schedule, prepared testimony by twelve intervenors and parties was served March 16, 2015, and concurrent rebuttal testimony was served by eight parties on April 13, 2015. Between the filing of the application and evidentiary hearings, SDG&E responded in writing to more than 358 discovery request items from other parties.

The evidentiary hearings were held on April 27 - May 4, 2015 in the Commission hearing rooms in San Francisco with Judges Irene K. Moosen and John S. Wong presiding. The evidentiary record amassed includes 1186 transcript pages and 83 exhibits.

In sum, Settling Parties acknowledge that SDG&E's Application has been thoroughly vetted in prepared testimony, evidentiary hearings, and other procedures, with the active participation of stakeholders representing all facets of interest in EV development, including consumer groups, environmentalists, the automobile industry, labor, representatives of disadvantaged communities, and EV charging providers. The Settling

Parties have agreed that certain important modifications to SDG&E's proposal are desirable to incorporate the views of stakeholders and to support the Governor's 2020 grid-integrated infrastructure and 2025 vehicle deployment goals, as well as California's clean air and climate change objectives.

II. Definitions

"Air Resources Board" means the California Air Resources Board of the California Environmental Protection Agency.

"Application" means SDG&E's Application A.14-04-014 filed with the Commission April 11, 2014.

"Commission" means the California Public Utilities Commission.

"DBE" means a disadvantaged business enterprise certified by The Supplier Clearinghouse pursuant to Commission General Order 156.

"DC Fast Charging" means a method of quickly charging certain electric vehicles with a high power direct current (DC) charging source.

"Disadvantaged Communities" means disadvantaged communities as identified by the California Environmental Protection Agency's Enviroscreen tool developed pursuant to SB 535 (de León, 2013).

"Energy Division" means the Energy Division of the California Public Utilities Commission.

"EV Driver" means a person using VGI Facilities to charge an EV.

"EV" means an electric vehicle that is capable of being charged using EVSE.

"EVSE" means electric vehicle supply equipment used for charging EVs (SDG&E Rebuttal Testimony Ex. SDG&E 8, p. JPA-4, footnote 6).[1]

"Guiding Principles" means those guiding principles agreed by the Settling Parties to guide VGI Program implementation, as set forth in Section III below.

"MuD" means multi-unit dwelling.

"PAC" means the VGI Program Advisory Council.

"SDG&E" means San Diego Gas & Electric Company, a California regulated public utility.

"Settlement Agreement" means this Settlement Agreement dated as of June 1, 2015 by and among the Settling Parties.

"Settling Parties" means the parties signatory to this Settlement Agreement.

"VGI Facility" means a group of EVSE or charging stations installed with a separate

[1] Citations to testimony herein are to the evidentiary record for the Application before the Commission.

electric service per SDG&E's VGI Program.

"VGI Program Advisory Council" means the stakeholder advisory council formed pursuant to Section III.L of this Settlement Agreement.

"VGI Program" means the SDG&E's Vehicle-Grid Integration Pilot Program set forth in the Application, as modified by this Settlement Agreement.

"VGI Rate" means the dynamic hourly EV charging rate described in SDG&E's direct testimony, Ex. SDG&E-3 (Fang).

"VGI Rate-to-EV Driver" means the VGI Rate billing plan option where the VGI Rate is offered directly to the EV driver as originally proposed in SDG&E's Application.

"VGI Rate-to-Host" means the VGI Rate billing option where the VGI Rate is billed to the VGI Facility site host as outlined in this Settlement Agreement.

III. Settlement Agreement Provisions

The Settling Parties find reasonable, as modified, SDG&E's proposal for the implementation of its VGI Program and cost recovery as described in SDG&E's Application and supporting testimony. The Settling Parties have developed the following Guiding Principles, which informed the proposed modifications and should guide VGI Program implementation:

1. Must support the Governor's and California state goals to:[2]
    a. Achieve installation of grid-integrated infrastructure to support 1 million zero emission vehicles by 2020;
    b. Accelerate the adoption of 1.5 million zero emission vehicles by 2025;
    c. Support clean air and climate change objectives.
2. Must be structured to provide net benefits to all ratepayers.
3. Must protect ratepayers by ensuring that assets continue to be used and useful.
4. Must provide EV drivers the opportunity to maximize fuel cost savings relative to conventional transportation fuels.
5. Must provide equitable deployment of services to all ratepayers, including statutory requirements and directives to serve disadvantaged communities and increase access to clean transportation.[3]
6. Must provide customer choice.
7. Must support broad-based investment in electric vehicle charging equipment and services by public, private and utility entities and avoid anticompetitive impacts on the markets for EV charging equipment and related services.
8. Must incorporate learning-by-doing and make adjustments to the VGI Pilot Program as needed.
9. Must provide data to help inform State policy.

[2] Please see links HTTP://GOV.CA.GOV/NEWS.PHP?ID=17472, third ordering paragraph, first bullet, and the sixth bullet that orders that "electric vehicle charging will be integrated into the electricity grid."; and, http://opr.ca.gov/docs/Governor's_Office_ZEV_Action_Plan_(02-13).pdf

[3] See, SB 535 (De León, 2013), SB 1275 (De León, 2014).

10. Must utilize rate design and load management practices to facilitate the integration of renewable energy resources, as well as deliver other grid benefits.
11. Must align with SDG&E's companywide Diversified Business Enterprise ("DBE") goal of 40% and request subcontractors to provide proposals in support of the 40% goal.

Each of the modifications is set forth below:

A. VGI Facility site hosts (e.g., property manager/owner of a multi-unit dwelling ("MuD") or workplace setting, as originally proposed) will have the choice of two billing options[4]:

   a. VGI Rate-to-EV Driver – the VGI Rate offered directly to the EV driver (as originally proposed), or
   b. VGI Rate-to-Host – the VGI Rate offered to the site host.

B. Where the VGI Facility site host opts to receive the VGI Rate (i.e., the VGI Rate-to-Host pricing plan), the site host, or its selected vendor, will be required to submit to SDG&E the load management tactics it will implement at its VGI Facility, including the incremental costs and equipment required to implement the load management tactics, the prices or fees that it intends to levy on VGI Facility users (EV drivers)[5], and any vehicle or EVSE communication systems necessary to implement the load management tactics. Site hosts that do not submit load management plans consistent with the Guiding Principles will be asked by SDG&E to revise accordingly and will be ineligible to participate in the Program until SDG&E determines that the load management plan is consistent with the Guiding Principles. Participation in the VGI Rate-to-Host option will not be unreasonably withheld. As with VGI Facility site hosts that opt for the VGI Rate-to-EV Driver pricing plan, site usage patterns will be monitored, and in addition, site host determined prices or fees (to use the VGI Facility) will be tracked for those site hosts that opt for the VGI Rate-to-Host pricing plan. These data will be used to inform Commission policy.

C. VGI Facility site hosts will choose electric vehicle supply equipment ("EVSE") and related services from a list of vendors pre-qualified by SDG&E to provide such services for the VGI Program. SDG&E's VGI Program does not include the installation of DC Fast Charging equipment.

D. SDG&E will assess a VGI Program participation payment on VGI Facility Site Hosts that elect to participate in the VGI Program. The participation payment will

[4] VGI Facility site host refers to any MuD or workplace site host entity or person that has decision making authority at such site, such as, but not limited to a third party, property manager, or property owner of a MuD or a workplace setting or similar site (i.e., with frequently used, long duration parking). For purposes of clarification, this VGI Program is not available to single family residential customers, and public parking locations that do not serve and support MuD or workplace settings.

[5] SDG&E recognizes that site hosts on the VGI Rate-to-Host pricing plan may want the flexibility to change prices or fees over time, as appropriate.

be waived for VGI Facilities at sites located in Disadvantaged Communities. SDG&E shall file for approval of the proposed participation payment by way of a Tier 2 advice letter, subject to protest by any party, after consulting with the VGI Program Advisory Council (as described below). In developing the proposed participation payment, factors that will be considered include, but are not limited, to the following: customer commitment, avoiding adverse impacts to deployment, total VGI Facility cost and customer segment.

E. After the first year of participation in the VGI Program, the VGI Facility site host shall have an annual option to switch VGI Rate plans (i.e., the VGI Rate-to-EV drivers pricing plan or VGI Rate-to-VGI host pricing plan). In the event that ownership or control of a VGI Facility site changes, the new site host shall have the option to select a VGI Rate plan, consistent with current utility tariff and billing practices.

F. Third party vendors of EV supply equipment and services pre-qualified by SDG&E for the VGI Program may offer and contract with the VGI Facility site host to provide any additional or complementary services, as long as these services do not interfere with the objectives of the VGI Program. Specifically, such services may not include activities, agreements, arrangements, policies or procedures that inhibit the ability of the EV driver or VGI Facility site host to respond to the pricing signal of the VGI Rate. The costs of these additional services will not be borne by the VGI Program, unless they are complementary services necessary to support the VGI Program objectives. As such, as noted in Appendix C, SDG&E will encourage discussions during the RFI process that allow vendors to explore with SDG&E the funding of innovative opportunities that may exceed the minimum implementation requirements of the VGI Program, and have the potential to enhance and improve the grid-integration outcomes of the VGI Program overall.

G. Third party vendors pre-qualified by SDG&E for the VGI Program, in coordination with SDG&E customer contact personnel, will market and sign up potential VGI Facility site hosts to participate in the VGI Program in the two targeted customer segments (MuD and workplace settings), and in any other customer sub-segments identified in the Settlement Agreement (e.g., Disadvantaged Communities and housing or sites that support car-sharing entities). Responses to the RFP should reflect this requirement (see SDG&E's prepared direct testimony, Ex. SDG&E-2 (Schimka) p. 18 lines 7-20). Competitively neutral descriptions of the VGI Rate plans will be prepared by SDG&E and shall be used by third parties; third parties shall be permitted to develop and utilize their own marketing materials at their own expense, consistent with and subject to SDG&E's Co-branding Policy and approval process. In order to create and maintain a positive customer experience with the VGI Program, the third parties will be required to describe how they will share the initial and ongoing customer relationships with SDG&E and the VGI Facility host and EV driver. Vendors will be permitted to contract directly with site hosts for services as long as these services do not interfere with the objectives of the VGI Program (as stated above).

a. SDG&E will solicit participation from multiple third parties to provide equipment, install, maintain and operate the VGI System in a manner consistent with SDG&E's Supply Management policy and procedures.[6] Construction, installation and maintenance contractors will have Electric Vehicle Infrastructure Training Program (EVITP) certification, and SDG&E will require that all construction, installation and maintenance of VGI Facilities that is not performed by employees of SDG&E shall be performed by contractors signatory to the IBEW who hold a valid C-10 contractor's license, as defined in the governing labor agreement between SDG&E and the IBEW.

H. The VGI Program will be included within SDG&E's companywide Diversified Business Enterprise goal of 40%. (See SDG&E prepared testimony, Ex. SDG&E-2, pages RS-8, 9 and RS-19). The RFP and contract will contain a DBE subcontracting plan, which requires the bidder/contractor to list its expected annual DBE spend and list any subcontractors it plans to use to achieve its DBE goal. Bidders will be requested to provide proposals in support of SDG&E's 40% goal.

I. At least 10% of VGI Facilities will be installed in Disadvantaged Communities as identified by Cal EPA's Enviroscreen tool developed pursuant to SB 535 (de León, 2013). SDG&E will work with community based organizations to assist with education and outreach, as well as pre-qualifying and signing-up site hosts for participation in the VGI Program. In addition, SDG&E will:

a. Scale up deployment of VGI Facilities at qualified locations above the 10% target (in line with screening criteria identified in SDG&E's prepared direct testimony, Ex. SDG&E-2 (Schimka) p. RS 7 lines 4-18) to support accelerated EV adoption in Disadvantaged Communities.

b. SDG&E will complement and coordinate with federal, state and locally funded programs, such as those being developed by the Air Resources Board pursuant to SB 1275, that are expected to grow the demand for EVs in Disadvantaged Communities (e.g., EV car-sharing services).

J. All contractors shall have hiring goals to support opportunities to increase hiring from Disadvantaged Communities, including first-source hiring and targeted-hiring goals for projects in Disadvantaged Communities. The PAC will also monitor and provide recommendations, including specific numerical targets for meeting hiring targets, to contractors or subcontractors associated with the increase of hiring from Disadvantaged Communities, including best practices for hiring in Disadvantaged Communities.

K. SDG&E will solicit the participation of a broad and diverse stakeholder advisory group (the "VGI Program Advisory Council" or "PAC") in planning and implementing the VGI Program following its approval by the Commission. The

[6] See references to SDG&E's Supply Management policy and procedures as outlined in SDG&E's prepared direct testimony Ex. SDG&E-2 (Schimka) p. 8 line 1 – p. 9 line 20.

VGI PAC will include representatives from local and state government (including representation from the Energy Division), industry, labor and other stakeholder participants, ratepayer and environmental advocates, and representatives of Disadvantaged Communities. Details regarding the roles, responsibilities and frequency of meetings are described in Appendix A to this Settlement Agreement.

L. With guidance from the VGI Program Advisory Council, SDG&E will make programmatic changes as needed during the course of the VGI Program in line with the Guiding Principles noted above. The Settling Parties recognize that certain changes may require filings with the Commission for approval. Programmatic changes will be made on an on-going basis, running concurrent with the VGI Program, so as not to impact its overall progress. Data collection and program assessment criteria used to determine the need for any programmatic change are identified in SDG&E's prepared direct testimony, Ex. SDG&E-6 (Martin) p. 35 line 9 – p. 37 line 13, and will be supplemented pursuant to the Settlement Agreement as further described in Appendix B. Information will be provided to the PAC in a manner similar to SDG&E's Procurement Review Group. Data will be provided to the PAC and Commission to assess the need for programmatic changes.

M. Metering at the EVSE level must be compatible with SDG&E billing and metering requirements (i.e., tolerances, accessibility, testability, and re-calibration, as needed), and/or submetering protocol if and as approved by the Energy Division. SDG&E reserves the right to make exceptions as conditions of the VGI Program warrant. Minimum acceptable metering tolerance is anticipated to be 1% and if needed to meet meter testing and re-calibration requirements, removal (and replacement) of the entire EVSE will be acceptable.

VGI bills will be sent directly to the SDG&E EV driver (SDG&E customer, as originally proposed) receiving the VGI Rate or to the VGI Facility site host receiving the VGI Rate under the VGI Rate-to-Host pricing plan. Data will be provided to SDG&E by the qualified third party to SDG&E's specifications in a manner acceptable to both parties to allow for this billing (see SDG&E's prepared direct testimony, Ex. SDG&E-2 (Schimka) p. 20 lines 1-19). Billing specifications per SDG&E's prepared testimony, Ex. SDG&E-7 (Schimka, Martin) p. ST-42 lines 8-13 are to send VGI rate on a day-ahead basis, allow customer (site host or EV driver) to set charging needs, meet these charging needs, collect usage data and send data to SDG&E for billing processing. For exceptional instances when a non-SDG&E customer is allowed by the VGI Facility site host at a site that is on the VGI Rate-to-EV Driver pricing plan to use the VGI Facility for vehicle charging temporarily, the site host will have the option to be the VGI Rate customer (i.e., enrolled in the VGI Rate), and will be billed for this usage, similar to how the site host is billed under the VGI Rate-to-Host pricing plan.

N. Unless directed otherwise by the Commission, as originally proposed SDG&E will cease marketing the VGI Program and will not sign up any additional sites as of the end of the 4th year of VGI Program implementation, except for the limited exception described in this paragraph. The original proposal is modified for

potential VGI Facilities sites with documented plans for new construction or major tenant improvements. For such sites the VGI Facility installation period may extend beyond the 5th year of the VGI Program proposed installation period if the site host commitment is made by the end of the 4th year of VGI Program implementation. SDG&E will allow for flexibility in the design of the VGI Facility configuration to meet the needs of a host site. The costs of any incremental configuration needs will not be funded within the VGI Program (see SDG&E's prepared direct testimony, Ex. SDG&E-2 (Schimka) p. RS-7 lines 4-18). Implementation and site screening process will accommodate host site construction, tenant improvement timelines and situational needs. The Settling Parties acknowledge that some sites may be rejected due to physical limitations, unusually large construction costs and/or level of difficulty.

O. As stated throughout SDG&E's VGI Program proposal, SDG&E will contract with one or more third parties to provide operating systems and related hardware to control EVSE networks to implement the VGI system. It is SDG&E's aim to specify "what" is required to be achieved per the objectives of the VGI Program, and not "how" these requirements are met. This is intended to foster innovation and enhancement to the customer's experience. Although described in SDG&E's prepared direct testimony, Ex. SDG&E-2 (Schimka) p. RS-8 line 1 to p. RS-9, lines 1-20, further clarification of the RFI and RFP processes, in light of the Settlement Agreement's provisions and modifications to SDG&E's VGI Program proposal, are further described in Appendix C.

P. In order to provide an assessment of the VGI Program consistent with the Guiding Principles, two years after the VGI Program is launched SDG&E will provide an interim progress report to the Commission and serve it on all parties to A.14-04-014 and R.13-11-007. The interim progress report will include data as described in Appendix B and a description of any programmatic changes implemented by SDG&E prior to the date of the report. Parties will be permitted to file comments and reply comments on the report.

IV. Additional Terms and Conditions

A. Performance

The Settling Parties agree to support and defend this Settlement Agreement, and shall perform diligently, and in good faith, all actions required or implied hereunder, including, but not necessarily limited to, the execution of any other documents required to effectuate the terms of this Settlement Agreement, and the preparation of exhibits for, and presentation of witnesses at, any required hearings to obtain the approval and adoption of this Settlement Agreement by the Commission. No Settling Party will contest in this proceeding, or in any other forum, or in any manner before this Commission, the recommendations contained in this Settlement Agreement. It is understood by the Settling Parties that time is of the essence in obtaining the Commission's approval of this Settlement Agreement and that all will extend their best efforts to ensure its adoption. In this regard, Settling Parties agree that they will not seek or support any measure that would

delay immediate Commission consideration and disposition of the motion filed submitting this Settlement Agreement for the Commission's approval.

B. Non-Precedential Effect

This Settlement Agreement is not intended by the Settling Parties to be precedent for any other proceeding, whether pending or instituted in the future. The Settling Parties have assented to the terms of this Settlement Agreement only for the purpose of arriving at the settlement embodied in this Settlement Agreement. Each Settling Party expressly reserves its right to advocate, in other current and future proceedings, or in the event that the Settlement Agreement is rejected by the Commission, positions, principles, assumptions, arguments and methodologies which may be different than those underlying this Settlement Agreement, and the Settling Parties expressly declare that, as provided in Rule 12.5 of the Commission's Rules of Practice and Procedure, this Settlement Agreement should not be considered as a precedent for or against them.

C. Indivisibility, General Provisions

This Settlement Agreement embodies compromises of the Settling Parties' positions in this proceeding. No individual term of this Settlement Agreement is assented to by any Settling Party, except in consideration of the other Settling Parties' assents to

all other terms. Thus, the Settlement Agreement is indivisible and each part interdependent on each and all other parts. Any party may withdraw from this Settlement Agreement if the Commission modifies, deletes from, or adds to the disposition of the matters settled herein. The Settling Parties agree, however, to negotiate in good faith with regard to any Commission-ordered changes in order to restore the balance of benefits and burdens, and to exercise the right to withdraw only if such negotiations are unsuccessful.

The Settling Parties acknowledge that the positions expressed in the Settlement Agreement were reached after consideration of all positions advanced in all the testimony sponsored in the proceeding by all parties and declare and mutually agree that the terms and conditions herein are reasonable, consistent with the law, and in the public interest. This document sets forth the entire agreement of Settling Parties on all of the subject matters addressed herein and may only be modified in writing subscribed by all Settling Parties.

No Settling Party has relied, or presently relies, upon any statement, promise, or representation by any other Settling Party, whether oral or written, except as specifically set forth in this Agreement.

This Settlement Agreement may be executed in counterparts by the Settling Parties with the same effect as if all Settling Parties had signed one and the same document. All such counterparts shall be deemed to be an original and shall together constitute one and the same Settlement Agreement.

IN WITNESS WHEREOF, the Settling Parties have duly executed this Settlement Agreement by their authorized representatives as of this 1st day of June, 2015.

SAN DIEGO GAS & ELECTRIC COMPANY

By: _____
Name: Laura J. McDonald
Title: Director Clean Transportation

NATURAL RESOURCES DEFENSE COUNCIL

By: _____
Name: Max Baumhefner
Title: Attorney

ENVIRONMENTAL DEFENSE FUND

By: _____
Name: Larissa Koehler
Title: Attorney

CALIFORNIA COALITION OF UTILITY EMPLOYEES

By: _____
Name: Marc D. Joseph/Jamie L. Mauldin
Title: Attorney

THE GREENLINING INSTITUTE

By: _____
Name: Vien Truong
Title: Environmental Equity Director

PLUG IN AMERICA

By: _____
Name: Jay Friedland
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Title: Manager, Advanced Vehicle and Infrastructure Policy, Public Policy

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By: _____
Name: Colleen C. Quinn
Title: VP - Gov't. Relations and Public Policy

SMART GRID SERVICES, SIEMENS AG

By: _____
Name: Chris King
Title: Global Chief Regulatory Officer

NRG EV SERVICES LLC

By: _____
Name: Terry O'Day
Title: Vice President

AMERICAN HONDA MOTOR CO., INC.

By: _____
Name: _____
Title: _____

SIERRA CLUB

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Name: _____
Title: _____

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AMERICAN HONDA MOTOR CO., INC.

By: _____
Name: _____
Title: _____

SIERRA CLUB

By: _____
Name: _____
Title: _____

IN WITNESS WHEREOF, the Settling Parties have duly executed this Settlement Agreement by their authorized representatives as of this 1st day of June, 2015.

GENERAL MOTORS LLC

By: _____
Name: Alexander Keros
Title: Manager, Advanced Vehicle and Infrastructure Policy, Public Policy

CHARGEPOINT, INC.

By: _____
Name: Colleen C. Quinn
Title: VP - Gov't. Relations and Public Policy

SMART GRID SERVICES, SIEMENS AG

By: _____
Name: Chris King
Title: Global Chief Regulatory Officer

NRG EV SERVICES LLC

By: _____
Name: Terry O'Day
Title: Vice President

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Name: Terry O'Day
Title: Vice President

AMERICAN HONDA MOTOR CO., INC.

By: Steven Center
Name: STEVEN CENTER
Title: Vice President, EBDO.

SIERRA CLUB

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Title: _____

SIERRA CLUB

By: _____
Name: Joshua R. Stebbins
Title: Managing Attorney

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ALLIANCE OF AUTOMOBILE MANUFACTURERS

By: Steven P. Douglas
Name: Steven Douglas
Title: Senior Director, Environmental Affairs

CENTER FOR SUSTAINABLE ENERGY

By: _____
Name: Sachu Constantine
Title: Director of Policy

CALSTART

By. _____
Name: Jamie Hall
Title. Policy Director

KnGRID, LLC

By: _____
Name: Stephen Davis
Title: Chief Executive Officer

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GREEN POWER INSTITUTE

By: _____
Name: Tam Hunt
Title. Consulting Attorney

Appendix A

Roles, Responsibilities of the VGI Program Advisory Council

SDG&E will solicit the participation of a broad and diverse stakeholder VGI Program Advisory Group ("VGI Program Advisory Council" or "PAC") in the planning and implementing the VGI Program, once it has been approved by the Commission. This independent advisory council will include representatives from local and state government (including representation from the Energy Division), industry and other stakeholders, ratepayer and environmental advocates, and representation from Disadvantaged Communities. Participation in the PAC will not be funded by the VGI Program. The PAC does not have formal decision-making authority. The PAC will make recommendations and/or provide key information and materials to the VGI Program Managers at SDG&E, who will organize and chair PAC meetings. Information will be provided to the PAC in a manner similar to SDG&E's Procurement Review Group.

Overall, the key role and purpose of the PAC will be to provide input to SDG&E for programmatic changes as needed during the course of the VGI Program (e.g., VGI Rate - as originally proposed, or with VGI host site prioritization for an equitable deployment of VGI Facilities), to improve the performance of the VGI Program, in line with the Guiding Principles and consistent with any applicable Commission orders, tariff rules, regulations, etc. SDG&E will give careful consideration to all programmatic modifications recommended by the PAC at their meetings and implement such changes deemed feasible and necessary. Programmatic changes will be made on an on-going basis, running concurrent with the VGI Program, so as not to impact its overall progress.

The VGI PAC will employ a process for examining the data described in Appendix B to determine if a program modification should be implemented to improve the performance of the VGI Program.

In line with input from the VGI PAC, SDG&E will make programmatic changes as needed during the course of the VGI Program (e.g., VGI Rate - as originally proposed, or with VGI host site prioritization for an equitable deployment of VGI Facilities). Programmatic changes will be made on an on-going basis, running concurrent with the VGI Program, so as not to impact its overall progress. The VGI PAC and SDG&E will consider before the conclusion of the VGI Program, and when there is sufficient data, a shareholder reward/risk mechanism that is contingent on delivery of proposed benefits.

To fulfill this role, the VGI Program Advisory Council and its members will have the following responsibilities:

1. Attend all VGI Program Advisory Council meetings, planned to take place at least twice per year over the four-year VGI Program period (however, year one will include additional organizational and planning meetings to launch the PAC, as appropriate). Members' individual representatives will be authorized by the sponsoring member organization to accurately represent the member's position or perspectives. There will be only one representative per member organization. Participation in the PAC will not affect a member's right to speak individually.

2. Examine the VGI Program data and findings presented by SDG&E and PAC members in order to make informed recommendations.
3. Timely vet recommendations for VGI Program modifications.
4. Actively participate in PAC meetings, and related assignments; contribute resources (e.g., data, expertise, and related) to the PAC where applicable.
5. VGI PAC meeting locations will alternate between San Diego and San Francisco, as determined by the VGI PAC.

Appendix B

Supplemental Data Collection Objectives, Requirements and VGI Program Assessment Criteria

Data collection and VGI Program assessment criteria used by the VGI Program Advisory Council to determine the need for any programmatic change are identified in the Research Plan (Data Collection and Analysis) described in SDG&E's prepared direct testimony Ex. SDG&E-6 (Martin) p. JCM-35 line 9 – p. 37 line 13, and will be supplemented as described below pursuant to the Settlement Agreement's modifications to SDG&E's VGI Program proposal. Data collection identified in this testimony specifically relate to measuring VGI Program performance and cost-effectiveness. With the addition of the VGI Rate-to-Host option, there is a need for additional data collection in order to compare and contrast the performance of the two VGI options (i.e., VGI Rate-to-EV driver and VGI Rate-to-Host). To accomplish this, the data collection in the Research Plan will include, but will not be limited to:

- Customer (EV drivers and site Hosts) enrollment by site and VGI pricing plan (i.e., VGI Rate-to-EV driver and VGI Rate-to-Host)
- Under the VGI Rate-to-Host, load management plans and pricing or fees, including those measures taken that encourage the facilitation of the integration of renewable energy
- Estimates of fuel cost savings through the use of the VGI Facility, under both the VGI Rate-to-EV Driver and VGI Rate-to-Host pricing plans
- VGI Facility utilization rates
- Deployment of VGI Facilities within or adjacent to a Disadvantaged Community, including EV car-sharing deployment

There is also a need for data collection adequate to provide a description of the VGI Program's status and activities, and an assessment of the VGI Program's progress consistent with the Guiding Principles in the Interim Progress Report. To accomplish this, additional data collection will include, without limitation, data related to:

- Status of program implementation to date
- Rate of achievement of supplier diversity and workforce objectives

The VGI PAC will have the flexibility to determine if additional VGI Program related measurement and evaluation objectives are of interest and will help to inform Commission policy. The VGI PAC will then articulate the purpose behind these objectives, specify these additional data collection requirements, and determine how they will be funded and resourced.

Appendix C

RFI and RFP Process Clarification

In light of the Settlement Agreement's provisions and modifications to SDG&E VGI Program proposal, the following are clarifications of the RFI and RFP processes.

With respect to the selection process and selection criteria for pre-qualifying vendors who will be authorized to provide VGI operating systems and related hardware to control EVSE networks to implement the VGI system, SDG&E prefers generally functional requirements per the objectives of the VGI Program, and not "how" these requirements are met. This is intended to foster innovation and enhance the customer's experience and ensure customer choice of vendor, equipment and services. Vendors will be permitted to contract directly with site hosts for services, as necessary, as long as these services do not interfere with the objectives of the VGI Program. SDG&E will use a multi-faceted approach to evaluating RFI responses and RFP bid proposals. All responses will be evaluated based on, but not limited to, the following criteria (not listed in order of importance):

- Total cost of ownership over the lifecycle of the EVSE and its operating system, including all indirect and direct costs
- Responsiveness to the RFI and RFP (including response to SDG&E's Terms and Conditions included in the RFP)
- Overall product and service offering including cost, quality, warranty and capability
- Ability to meet safety, reliability, operational and VGI Program requirements
- Demonstrated ability to provide innovative functionality to enhance the VGI Program experience for the customer while meeting program objectives
- Minimum requirements met for EVSE and operating systems
- VGI Program value-added features
- Performance history
- Proposed schedule/time required to complete the required deliverables
- Prior experience in providing EVSE services as described in the RFI/RFP
- Financial strength of the service provider
- Sustainability ("green")
- DBE proposals and plans to achieve stated targets

SDG&E reserves the right to investigate the references and past performance of any bidders/vendors with respect to, among other factors, compliance with specifications, safety, completion or delivery on schedule, and lawful payment of suppliers, sub-suppliers, and workers prior to any contract award. It is anticipated that vendors meeting all the selection criteria will be qualified to participate in providing equipment and services under the VGI Program. Except as otherwise set forth in Appendix C, it is anticipated and preferred that multiple vendors will be selected as an outcome of this bidding event however SDG&E reserves the right to accept or reject any or all proposals on the basis of any reason, and although SDG&E is under no obligation to disclose the reason for rejection, SDG&E will provide feedback to any vendor whose proposal was rejected, if requested.

With respect to the installation and maintenance of the VGI Facilities, SDG&E plans to

seek the most effective form of VGI Facility development, installation and maintenance, consistent with utility standards and practices. Construction, installation and maintenance contractors will have Electric Vehicle Infrastructure Training Program (EVITP) certification, and SDG&E will require that all construction, installation and maintenance of VGI Facilities that is not performed by employees of SDG&E shall be performed by contractors signatory to the IBEW who hold a valid C-10 contractor's license, as defined in the governing labor agreement between SDG&E and the IBEW.

Finally, the RFI and RFP process and vendor qualification process will remain open throughout the duration of the VGI Program to allow for and encourage participation from qualified third parties over time. SDG&E will encourage discussions during the RFI process that allow vendors to explore with SDG&E the funding of innovative opportunities that may exceed the minimum implementation requirements of the VGI Program, and have the potential to enhance and improve the grid-integration outcomes of the VGI Program overall.