BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

Application of Pacific Gas and Electric Company for Approval of its Residential Rate Design Window Proposals, including to Implement a Residential Default Time-Of-Use Rate along with a Menu of Residential Rate Options, followed by addition of a Fixed Charge Component to Residential Rates (U39E)	Application 17-12-011
And Related Matters.	Application 17-12-012 Application 17-12-013

PREPARED SUPPLEMENTAL TESTIMONY OF

BENJAMIN A. MONTOYA

ON BEHALF OF SAN DIEGO GAS & ELECTRIC COMPANY

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

September 26, 2018

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TABLE OF CONTENTS

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I. OVERVIEW AND PURPOSE

Decision ("D.") 15-07-001 "direct[s] the IOUs [investor-owned utilities], as part of their 2018 Residential RDW [Rate Design Window] application, to prepare better studies of the potential for cost savings and GHG [Greenhouse Gas] reduction."[1] In response, San Diego Gas & Electric Company ("SDG&E") filed direct testimony on December 20, 2017, to estimate the potential GHG reduction and energy cost impacts due to load shifting between time-of-use ("TOU") periods, when proposed TOU rates have been in effect for a full year (i.e., 2020).

On August 17, 2018, an Administrative Law Judge ("ALJ") Ruling directed the IOU's to file supplemental testimony after consulting with the Energy Division and interested parties to discuss the accuracy of the Itron model, and to develop a consistent set of values and assumptions to be used in their calculations of cost estimates and GHG reductions.[2] Each IOU was directed to address the appropriateness of the Energy Division staff's methodological variant (if proposed) and to present its revised calculation of cost estimates and GHG reductions based on the consistent set of values and assumptions.

II. MARGINAL GHG EMISSIONS RATE INPUTS

The three IOU's and the Energy Division met and agreed upon a consistent set of input assumptions to use in recalculation of the GHG emissions impact. It was agreed that the IOUs would provide four scenarios to demonstrate the effects of different input assumptions on the results. The scenarios are identified in this testimony as: Itron, Modified Itron, High-Spread, and

[1] D.15-07-001 at 162.
[2] August 17, 2018, Administrative Law Judge's Ruling Directing Supplemental Testimony on Calculation of Cost Estimates and Greenhouse Gas Reductions at 2.

Avoided Cost Calculator ("ACC"). The supporting narrative for these four scenarios is included in the testimony of Pacific Gas and Electric Company ("PG&E") and adopted by all three IOU's (PG&E's testimony, Attachment 1: "Investor-Owned Utility (IOU) discussion of marginal greenhouse gas (GHG) emission calculations"). The table below compares some of the major input assumptions for these scenarios with the assumptions used in the original testimony.

	Original Testimony	Supplemental Testimony			
		Itron	Modified Itron	High Spread	ACC
High Efficiency Heat Rate limit (Btu/kwh)	5,500	5,500	0	0	6,900
Low Efficiency Heat Rate limit (Btu/kwh)	11,000	11,000	11,000	12,500	12,500
Market Prices	2016 SDG&E DLAP	2017 SDG&E DLAP	2017 SDG&E DLAP	2017 SDG&E DLAP	2017 SDG&E DLAP
Gas Price	2016 SoCal CityGate	2017 SoCal CityGate	2017 SoCal CityGate	2017 SoCal CityGate	2017 SoCal Border
Variable O&M ($/MWh)	2017 ACC: 0.66	2018 ACC: 0.58	2018 ACC: 0.58	2018 ACC: 0.58	2018 ACC: 0.58
Base CO2 Price ($/tonne)	2017 ACC: $12.12	2017 Daily GHG Index	2017 Daily GHG Index	2017 Daily GHG Index	2018 ACC: $11
2020 CO2 Price ($/tonne)	N/A	2018 ACC: $18.91	2018 ACC: $18.91	2018 ACC: $18.91	2018 ACC: $18.91
Emissions Factor (kg/mmbtu)	53.2	53.2	53.2	53.2	53.2
Price Elasticity	-0.06	-0.1	-0.1	-0.1	-0.1
Opt Out Rate	N/A	20%	20%	20%	20%

Generally, inputs that were provided in the 2017 ACC model were used in the ACC scenario. For each of the Itron scenarios, the 2017 hourly day-ahead SDG&E Default Load Aggregation Prices ("DLAPs") were used for the market price of energy ("MP") inputs, the 2017 daily natural gas prices for SoCal CityGate were used for the GasPrice inputs, and the 2017 daily GHG price from California Independent System Operator Open Access Same-time Information System was used as the CO2Cost input. The California Air Resources Board ("CARB") emissions factor of 53.2 kg/MMBtu was used in all scenarios to multiply by the 2017 CO2 prices as a gas price adder. The ACC model value for Variable Operation and Maintenance ("VO&M") of $0.58/MWh was used in all scenarios.

The primary variant in each scenario were the heat rate limits used to adjust the calculated hourly Implied Market Heat Rates ("IMHRs"). The "Itron" scenario uses high- and low-efficiency heat rates of 5,500 and 11,000 BTU/kWh; the "Modified Itron" scenario does not have a high-efficiency threshold and uses a low-efficiency threshold of 11,000 BTU/kWh; the "High-Spread" scenario also does not have a high-efficiency threshold, and uses a low-efficiency

threshold of 12,500 BTU/kWh; and the "ACC" scenario uses 6,900 and 12,500 BTU/kWh. The supporting logic for the combinations of heat rate limits used in each scenario can be found in Attachment 1 of the supplemental testimony of PG&E's witness, Mr. Grygier. I support Mr. Grygier's testimony and incorporate it by reference into my testimony as it relates to SDG&E.

III. CONCLUSION – RESULTING MARGINAL GHG EMISSION AND COST IMPACTS

This Supplemental Testimony supersedes SDG&E's previously served testimony regarding calculation of GHG emission impacts and associated costs, based on the inputs and assumptions provided by the Energy Division. Using the foregoing methods and inputs, the following 2020 hourly marginal GHG emissions rates (t/MWh) by TOU period were calculated:

Marginal GHG Emissions Rates (t/MWh)

Itron				
2020	Adopted TOU Periods			
tonnes/MWh	Weekdays		Weekends and Holidays	
TOU Period	Summer	Winter	Summer	Winter
On-peak	0.582	0.548	0.572	0.537
Off-peak	0.448	0.451	0.481	0.431
Super-off-peak	0.392	0.358	0.392	0.373

2-Period Opt Out Rate	
On-peak	0.559
Off-peak	0.415

Modified Itron				
2020	Adopted TOU Periods			
tonnes/MWh	Weekdays		Weekends and Holidays	
TOU Period	Summer	Winter	Summer	Winter
On-peak	0.566	0.512	0.558	0.492
Off-peak	0.386	0.402	0.446	0.370
Super-off-peak	0.387	0.286	0.327	0.298

2-Period Opt Out Rate	
On-peak	0.530
Off-peak	0.359

High-Spread				
2020	Adopted TOU Periods			
tonnes/MWh	Weekdays		Weekends and Holidays	
TOU Period	Summer	Winter	Summer	Winter
On-peak	0.624	0.557	0.610	0.530
Off-peak	0.391	0.410	0.452	0.374
Super-off-peak	0.387	0.287	0.327	0.298

2-Period Opt Out Rate	
On-peak	0.578
Off-peak	0.363

ACC				
2020	Adopted TOU Periods			
tonnes/MWh	Weekdays		Weekends and Holidays	
TOU Period	Summer	Winter	Summer	Winter
On-peak	0.659	0.612	0.661	0.596
Off-peak	0.464	0.462	0.491	0.447
Super-off-peak	0.434	0.428	0.427	0.420

2-Period Opt Out Rate	
On-peak	0.629
Off-peak	0.446

Below are the estimated total net load impacts by TOU period. Load impacts per customer were identified in the Direct Testimony of Christopher Bender[3] and multiplied by a total customer count assuming an opt out rate of 20%[4] and an elasticity factor of -0.1.[5]

[3] December 20, 2017, Revised Prepared Direct Testimony of Christopher Bender, Chapter 6, at CB-2:9-10, 750,000 eligible residential customers were assumed for the Mass TOU Migration Plan. Applying a 20% opt out rate leaves 600,000 customers.
[4] Value agreed upon by all IOUs in a meet and confer with the Energy Division on September 5, 2018.
[5] *Ibid*.

Net Load Impacts (MWh)

2020	Adopted TOU Periods				
Load (MWh)	Weekdays		Weekends and Holidays		
TOU Period	Summer	Winter	Summer	Winter	TOTAL
On-peak	(12,258)	(1,177)	(5,961)	(616)	(20,012)
Off-peak	6,464	197	526	(71)	7,117
Super-off-peak	5,794	980	5,435	686	12,895
TOTAL	0	(0)	0	0	0

Multiplying these net load impacts by the corresponding GHG emissions rates produces the following GHG emissions impacts due to the implementation of TOU rates in 2020.

GHG Emissions Impacts (t)

Itron					
2020	Adopted TOU Periods				
GHG (Tonnes)	Weekdays		Weekends and Holidays		
TOU Period	Summer	Winter	Summer	Winter	TOTAL
On-peak	(7,201)	(634)	(3,431)	(326)	(11,592)
Off-peak	2,949	86	254	(30)	3,259
Super-off-peak	2,282	352	2,095	250	4,979
TOTAL	(1,970)	(196)	(1,082)	(106)	(3,354)

Modified Itron					
2020	Adopted TOU Periods				
GHG (Tonnes)	Weekdays		Weekends and Holidays		
TOU Period	Summer	Winter	Summer	Winter	TOTAL
On-peak	(7,041)	(595)	(3,359)	(300)	(11,295)
Off-peak	2,586	77	235	(25)	2,872
Super-off-peak	2,253	285	1,690	194	4,422
TOTAL	(2,203)	(233)	(1,434)	(131)	(4,002)

High-Spread					
2020	Adopted TOU Periods				
GHG (Tonnes)	Weekdays		Weekends and Holidays		
TOU Period	Summer	Winter	Summer	Winter	TOTAL
On-peak	(7,768)	(645)	(3,672)	(323)	(12,409)
Off-peak	2,623	78	239	(26)	2,914
Super-off-peak	2,253	286	1,691	195	4,424
TOTAL	(2,893)	(282)	(1,742)	(154)	(5,070)

ACC					
2020	Adopted TOU Periods				
GHG (Tonnes)	Weekdays		Weekends and Holidays		
TOU Period	Summer	Winter	Summer	Winter	TOTAL
On-peak	(8,127)	(707)	(3,957)	(360)	(13,151)
Off-peak	3,048	87	261	(32)	3,364
Super-off-peak	2,506	419	2,317	284	5,526
TOTAL	(2,573)	(201)	(1,379)	(108)	(4,261)

Multiplying the 2020 GHG price of $18.91/tonne by the total net GHG impacts produces the following cost of GHG impacts due to the implementation of TOU rates in 2020.

	GHG Impact (t)	GHG Cost Impact ($)
Itron	-3,354	$ (63,421)
Modified Itron	-4,002	$ (75,669)
ACC	-4,261	$ (80,576)
High Spread	-5,070	$ (95,880)

This concludes my prepared supplemental testimony.

IV. STATEMENT OF QUALIFICATIONS

My name is Benjamin A. Montoya. My business address is 8330 Century Park Court, San Diego, California, 92123.

I have been employed as a Principal Resource Planner in the Resource Planning group of San Diego Gas & Electric Company since 2000. Prior to that, I was employed in positions of increasing responsibility in the following SDG&E departments: Gas Engineering, Gas Operations, Gas Control, and Gas System Planning. I also served as a project engineer on the Mexicali Pipeline Project with Sempra International for two years. I have been employed with SDG&E for 31 years.

I received a B.S. in Engineering from the United States Naval Academy and an M.B.A. from the University of San Diego. I am a licensed professional Mechanical Engineer in the state of California.

I have previously testified before the Commission on issues related to gas system planning, electric resource planning, and in multiple Energy Resource Recovery Account proceedings.