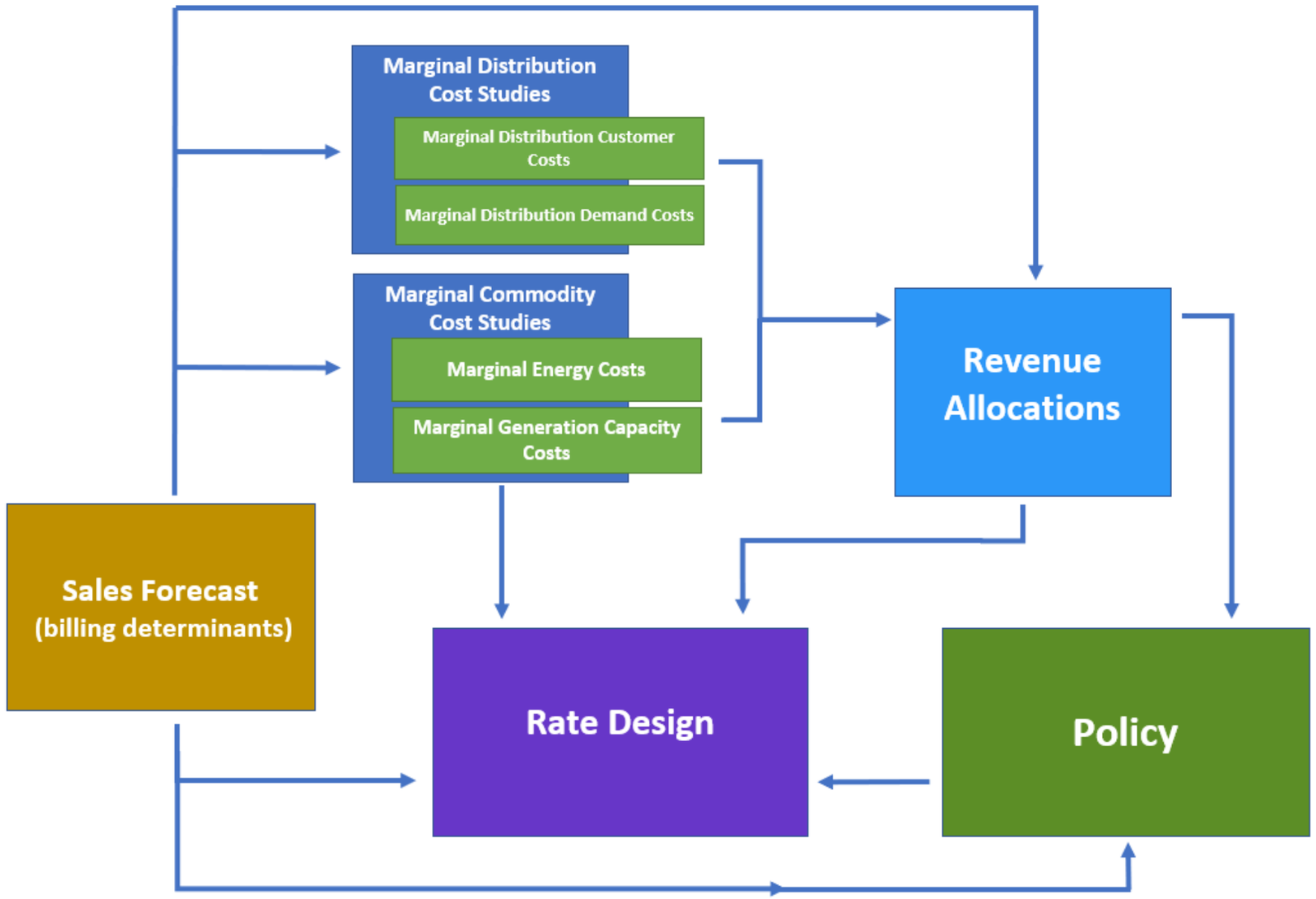
SDG&E 2019 GRC Phase 2
(A.19-03-002)
Workshop on Marginal Costs & Revenue Allocation

July 29, 2019

SDG&E 2019 GRC Phase 2
Overview

- GRC Phase 2 Components
  - Policy
  - Revenue Allocation
  - Rate Design
  - Sales Forecast
  - Marginal Distribution Costs
  - Marginal Commodity Costs
  - Streetlighting



SDG&E 2019 GRC Phase 2
Marginal Distribution Customer Costs

Four Workpapers – Chapter 5 WP#2, WP#3, WP#5, and WP#6

- Marginal Distribution Customer Costs ($/Customer-Month) – calculated for Non-Schools and Schools based on both the Rental Method (Proposed by SDG&E) and New Customer Only Method (Presented for Comparison Purposes in Attachment C of testimony).

- Marginal Distribution Customer Costs – consist of Capital Costs to hookup the customer and Ongoing Costs to maintain service for the Customer.

- Marginal Distribution Capital Costs – consists of Final Line Transformers, Service Drop, and Meter Costs.

- Ongoing Costs to maintain service – consist of O&M and Customer Service Costs.

SDG&E 2019 GRC Phase 2
Marginal Distribution Demand Costs

One Workpaper – Chapter 5 WP#4

- Marginal Distribution Demand Costs ($/kW) – calculated based on the National Economic Research Associates (NERA) Regression Method.

- Marginal Distribution Demand Costs – consist of Feeder & Local Distribution and Substation Investment Costs.

- NERA Regression Method – regresses 2005-2017 historical distribution investment costs and 2018-2019 forecasted distribution investment costs by distribution planning forecasted circuit and substation loads.

SDG&E 2019 GRC Phase 2
Distribution Revenue Allocation

One Workpaper – Chapter 5 WP#1

- Distribution Revenue Allocations and resulting Equal Percent of Marginal Costs (EPMC) Rates to recover the marginal distribution costs scaled up to recover SDG&E's authorized distribution revenues.

- Marginal Distribution Revenues calculated by multiplying Marginal Distribution Customer and Demand Costs by forecasted customer and demand determinants.

- Marginal Distribution Rates are multiplied by the EPMC factors to ensure the EPMC rates recover SDG&E's authorized distribution revenues, which in this proceeding reflect January 1, 2019 distribution revenues.

- Demand Charge rates reflect the results of SDG&E's distribution demand charge study allocation of demand costs between non-coincident and on-peak demand rates.

SDG&E 2019 GRC Phase 2
Marginal Generation Capacity Cost

Marginal Gen Commodity Cost – Chapter 6 Workpaper
2020 LOLE Analysis Workpaper

- **Marginal Capacity Cost ($/kw-year) –** calculated based on the cost of an advanced combustion turbine as shown in Table BAM-3 of testimony.

- **Top 100 hours** – determined using Loss of Load Probability (LOLP) analysis. The total energy not served is produced for both the San Diego sub area and the Greater San Diego – Imperial Valley area and then aggregated.

- **Top 100 Hours by TOU** – LOLP weightings of bundled usage for the top 100 hours are aggregated by TOU period and customer class.

SDG&E 2019 GRC Phase 2
Marginal Energy Cost

Marginal Gen Commodity Cost – Chapter 6 Workpaper
2020 Net Load Workpaper

- **2020 Net Load** – calculated by hour. Net Load is defined as bundled load minus must-take generation (primarily renewable generation); net load is a proxy for marginal energy demand.

- **Monthly Load Shape** – Each hourly net load is divided by its corresponding monthly average On or Off-Peak load to generate a load profile.

- **Hourly Market Prices** – The hourly load profile is multiplied by the corresponding monthly On or Off-Peak prices to generate 2020 hourly market prices.

- **Price Summary** – Hourly prices are aggregated by TOU period. A renewable price adder is calculated and added proportionately to represent a complete marginal energy price.

SDG&E 2019 GRC Phase 2
Marginal Revenue Allocation

Marginal Gen Commodity Cost – Chapter 6 Workpaper
CTC Allocations – Chapter 6 Workpaper

- **Marginal Energy Cost** – Marginal Energy Revenue Allocations by customer class and circuit level are calculated by multiplying marginal prices by losses and by energy usage. Marginal Energy Rates, including losses, are also calculated.

- **Marginal Generation Capacity Cost** – Marginal Capacity Revenue Allocations by customer class and TOU period are calculated by multiplying top 100 hour load by Capacity Marginal Cost and top 100 hour TOU allocation. Marginal Capacity Rates, including losses, are also calculated.

- **EPMC Revenue Allocations** – Marginal Rate Revenue for capacity and energy are calculated by TOU period and customer class using rates and customer usage. Equal Percent Marginal Cost is calculated by grossing marginal revenue up to SDG&E's authorized revenue requirement as of 1/1/2019.

- **CTC Revenue allocation –** CTC revenues are allocated by customer class based on top 100 hour load over a 3-year period.

SDG&E 2019 GRC Phase 2

Revenue Allocations

	Distribution		Commodity		CTC		LGC	
Customer Class	**Cost-Based**	**Proposed**	**Cost-Based**	**Proposed**	**Cost-Based**	**Proposed**	**Cost-Based**	**Proposed**
Residential	51.4%	44.2%	45.0%	42.8%	43.2%	38.6%	43.1%	41.8%
Small Commercial	14.5%	15.7%	13.5%	13.2%	11.9%	12.5%	10.5%	10.8%
M/L C&I	30.9%	36.8%	37.3%	40.3%	41.6%	45.9%	45.0%	46.1%
Agricultural	1.2%	1.3%	1.9%	1.5%	1.1%	1.1%	1.1%	0.9%
Streetlighting	0.6%	0.6%	0.6%	0.4%	0.2%	0.0%	0.3%	0.4%
Schools	1.4%	1.4%	1.8%	1.8%	2.0%	2.0%	N/A	N/A

SDG&E 2019 GRC Phase 2

Proposed Revenue Allocations - PPP

Customer Class	CARE	ESAP	EE	EPIC	CSI	SGIP	FERA	Food Bank
Residential	31.70%	35.36%	25.85%	35.20%	41.55%	8.42%	31.70%	31.70%
Small Commercial	12.36%	11.69%	15.50%	11.64%	11.37%	0.00%	12.36%	12.36%
M/L C&I	54.09%	51.20%	56.83%	50.96%	44.96%	87.71%	54.09%	54.09%
Agricultural	1.85%	1.75%	1.83%	1.74%	1.59%	3.87%	1.85%	1.85%
Streetlighting	0.00%	0.00%	0.00%	0.45%	0.53%	0.00%	0.00%	0.00%
Schools	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Item #1 from ALJ Ruling - ”To the extent SDG&E is using different years for different calculations, identify such differences and explain why different years are being used.”

Marginal Capacity Cost

- The CEC Report provided installed costs and fixed O&M in 2013 dollars so they needed to be escalated to 2020 dollars.

- The CAISO 2016 Annual Report provided energy market earnings in 2016 dollars so they needed to be escalated to 2020 dollars.

Item #2 and #3 from ALJ Ruling

Item #2 from ALJ Ruling - ”Explain how the “uncapped updated allocation” numbers in “Ch_2_WP#1_Allocation Workpaper_Public” file, “Distribution 1 Year” tab were calculated, and how these differ from the proposed total distribution revenue allocation numbers shown in “Ch_5_WP#1_Dist Rev Alloc_Public”, “Distrib Revenue Allocation” tab.”

- The “Uncapped Updated Allocations” presented in “Ch_2_WP#1_Allocation Workpaper Public” are calculated based on removing revenues associated with schools from each customer classes’ “Present “ revenue allocation. The revenues that are removed from “Present” allocations (column C) are then reallocated to the Schools customer class. The “Present” revenue allocations are pulled directly from column I in the “Distrib Revenue Allocation” tab within the “Ch_5_WP#1_Dist Rev Alloc_Public” workbook. The “Current Total Distribution Revenue Allocation ($000)” in Column I of the “Ch_5_WP#1_Dist Rev Alloc_Public” workbook is not calculated, rather these values were settled on during the 2016 GRC Phase 2.

Item #3 from ALJ Ruling – “Explain/identify the source of the rate caps used for energy efficiency rate calculations (“Ch_2_WP#2_Allocation Workpaper_Public” file, “Current PPP – Calculation (NEW)” tab).”

- The caps are established pursuant to PU Code 399.8(c)2. In this proceeding the caps are presented as part of this workbook, but are not used because there are no new revenue requirements for EE.

Item #4 from ALJ Ruling - ”Explain how SDG&E develops the escalation and loading factors utilized to calculate marginal distribution demand, marginal customer, and marginal generation capacity costs.”

Marginal Distribution Demand and Customer Costs

Escalation Factors: the escalation factors used in SDG&E’s 2019 GRC Phase 2 proceeding (A.19-03-002) are the escalators proposed in SDG&E’s 2019 GRC Phase 1 proceeding (A.17-10-007).

Real Economic Carrying Charge (RECC): RECC factors based on SDG&E's 2018 Financial Assumptions.

Loading Factors: the loading factors used in SDG&E’s 2019 GRC Phase 2 proceeding (A.19-03-002) are described below:

- **General Plant** – equals Total Electric General Plant divided over Total Electric Plant minus General Plant. The proposed general plant loading factor equals the five-year average (2013-2017) of the general plant loading factors.

- **Working Capital** – equals the sum of Working Cash and 50% of Material and Supplies divided over Non-Fuel Rate Base. The proposed working capital loading factor equals the average of the working capital loading factors in the last three GRC Phase 2 proceedings (2019 GRC Phase 2, 2016 GRC Phase 2, and 2012 GRC Phase 2).

- **Administrative and General (A&G)** – two loading factors: (a) A&G Loading Factor Applicable for Non-Plant equal to Total A&G Non-Plant minus Wild Fire Claims divided over Total O&M Expenses minus the sum of Fuel, Purchased Power and A&G and (b) A&G Loading Factor for Plant equal to Total Plant Related A&G divided over Total Electric Plant. The proposed A&G loading factors equal the five-year average (2013-2017) of the A&G loading factors.

(…continued on next slide)

Item #4 from ALJ Ruling - ”Explain how SDG&E develops the escalation and loading factors utilized to calculate marginal distribution demand, marginal customer, and marginal generation capacity costs.”

A Sempra Energy utility®

Marginal Capacity Cost

- **RECC: Real Economic Carrying Charge:** 2018 Financial Assumptions; FERC Account E-344 (Generators)

- **General Plant Loading Factor:** 5 year average (2013-17 actuals); 2019 GRC Phase 2 – Load Factors (Tax Adjusted).xlsx FERC Form 1 p.207

- **Working Capital Loading Factor:** Average of 2012, 2016, and 2019 GRC test year inputs; 2019 GRC Phase 2 – Load Factors (Tax Adjusted).xlsx SDG&E’s GRC Phase 1 Applications: 2012 (A.10-12-005), 2016 (A.14-11-003), 2019 (A.17-10-007)

- **A&G on Plant Loading Factor:** 5 year average (2013-17 actuals); 2019 GRC Phase 2 – Load Factors (Tax Adjusted).xlsx FERC Form 1 p.207, 320, 321, 323.

- **Escalation Factors:** $2013 and $2016 to $2020- 2019 GRC Phase 1 Testimony of Scott Wilder; data based on Global Insight 1st Quarter 2017 utility cost forecast (4/26/17).

Item #5 from ALJ Ruling - ”For marginal distribution demand costs, explain how SDG&E distinguishes capacity-related investments from non-capacity related investments.”

The distribution demand costs SDG&E includes in the calculation of its marginal distribution demand costs reflect distribution demand growth related costs, or rather costs that are needed to provide capacity on the SDG&E distribution system.

As explained in SDG&E’s 2019 GRC Phase 2 Distribution Demand Charge Study submitted in May 2019 as supplemental testimony (Attachment A, pages 2-3), distribution capacity and non-capacity related investments are defined as:

“Cost categories identified as being driven by capacity needs:

Capacity/Expansion: capacity projects needed to correct equipment loadings above 100%, due to an area load growth, or those projects required to increase system capacity where highly loaded equipment (above 90%) will adversely impact operations and reliability.

Cost categories not identified as being driven by capacity needs:

- *Equipment/Tools/Miscellaneous*: purchase of new electric distribution tools and equipment required by field personnel to safely and efficiently inspect, operate and maintain the electric distribution system.
- *Franchise*: projects required to perform municipal overhead to underground conversion work or work in accordance with SDG&E’s franchise agreements. The two categories of projects in this category are: 1) those devoted to conversion of overhead distribution systems to underground; and 2) street or highway relocations due to improvements by governmental agencies.
- *Mandated/Compliance*: Projects required in compliance with programs mandated by the CPUC or other regulatory agencies.

(…continued on next slide)

Item #5 from ALJ Ruling - For marginal distribution demand costs, explain how SDG&E distinguishes capacity-related investments from non-capacity related investments.

- *Materials*: expenditures required to provide distribution transformers necessary to operate and maintain the electric distribution system.
- *New Business*: Connection of new residential and non-residential customers, which includes new services, upgraded services, new distribution systems for commercial and residential developments, system modifications to accommodate new customer load, customer requested relocations, rearrangements, removals, and the conversion of existing overhead lines to underground.
- *Overhead Pools*: Expenditures for project direct labor, contracted invoice amounts, or total project direct costs for engineering capacity studies, reliability analysis, preliminary design work, and other expenditures that cannot be attributed to a single capital project and are thus spread to those applicable projects that are ultimately constructed and placed into service.
- *Reliability/Improvements*: Proactive infrastructure replacement projects in avoidance of reactive repair or replacements, projects required to maintain or improve reliability, and projects that are associated with risk and mitigation efforts.
- *Safety & Risk Management*: Capital investments made to address the mitigation of safety and physical system security risks, including expenditures to reduce wildfire risk.
- *Distributed Energy Resource Integration*: Investments needed to change the distribution grid from its original design of point-source one-way power flows to a grid that can accommodate multi-point two-way power flows, as well as investments to develop the instrumentation, troubleshooting, and safety procedures necessary to the modern DER-enabled grid.
- *Transmission/Federal Energy Regulatory Commission ("FERC") Driven Projects*: Investments made in transmission projects with a distribution component to modify or replace distribution facilities in conjunction with the transmission work to accommodate the new project."