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The IEPR in Distribution Planning

High DER Proceeding

October 2, 2024

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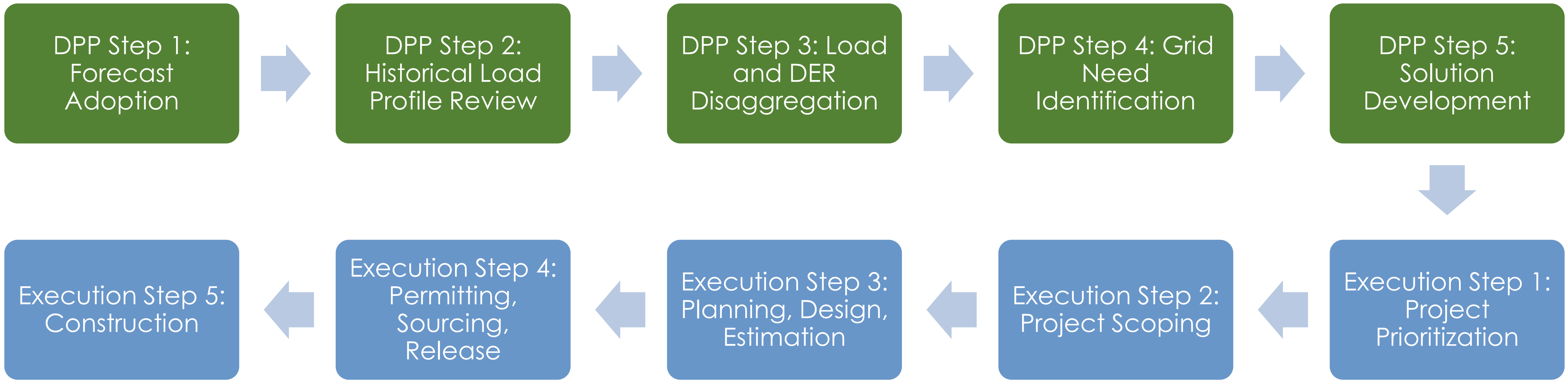
California Public
Utilities Commission

Overview of the Distribution Planning and Execution Process

And the connection to the energization process

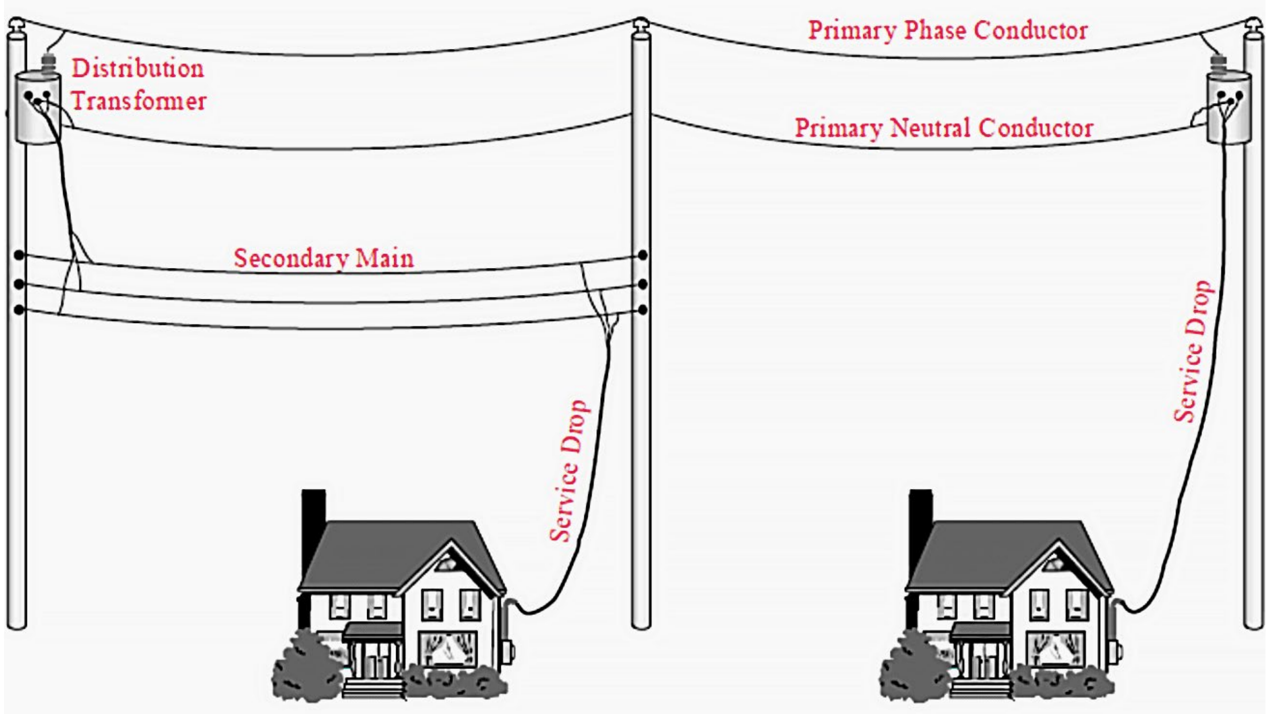
Distribution Planning and Execution Process*



*For illustrative purposes. These steps generally characterize the main activities.

Energization Process vs Distribution Planning Process

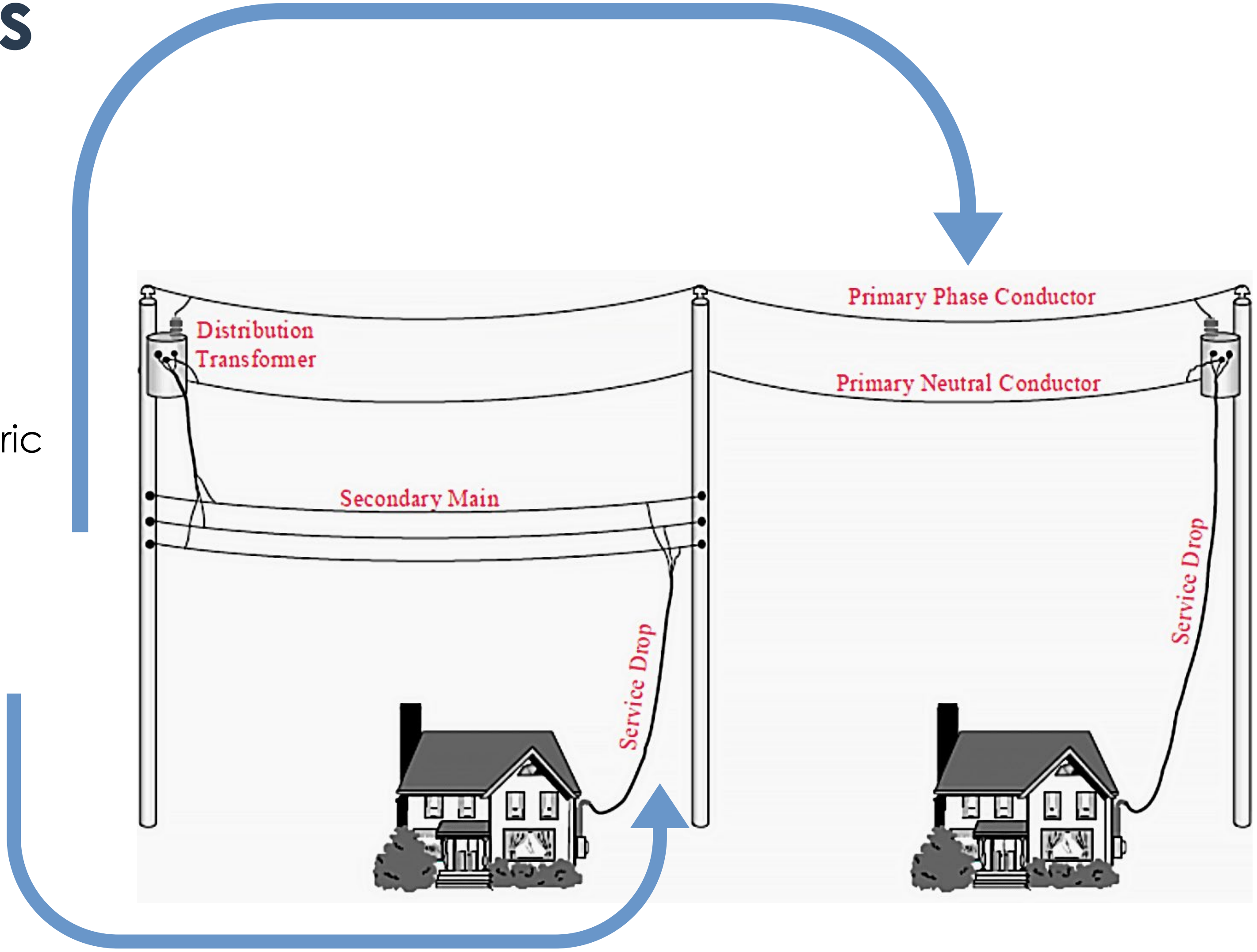
- The Distribution Planning Process (DPP) is a proactive and reactive process for planning upgrades to the **primary distribution system** that relies both on known loads and economic forecasting.



- The energization process is a different process from DPP and is governed by Rules 15/16/29/45.
  - The energization process is a reactive process that is triggered when a customer submits an electric service request application, which requires the utility to conduct a study of needed electrical facilities to provide that customer service.
  - The energization process generally covers the **secondary distribution system and service drops**, as well as direct work with customers, although is sometimes covers and always informs work on the primary system. The energization rules govern that process and deal with cost allocations between the customer and the utility.

Energization Process vs Distribution Planning Process

One of the primary goals of the distribution planning process is to ensure sufficient electric system capacity is already planned and potentially constructed **at the primary level and above,** so that the core work of the energization process **from the Distribution Transformer to the customer panel** can proceed normally.



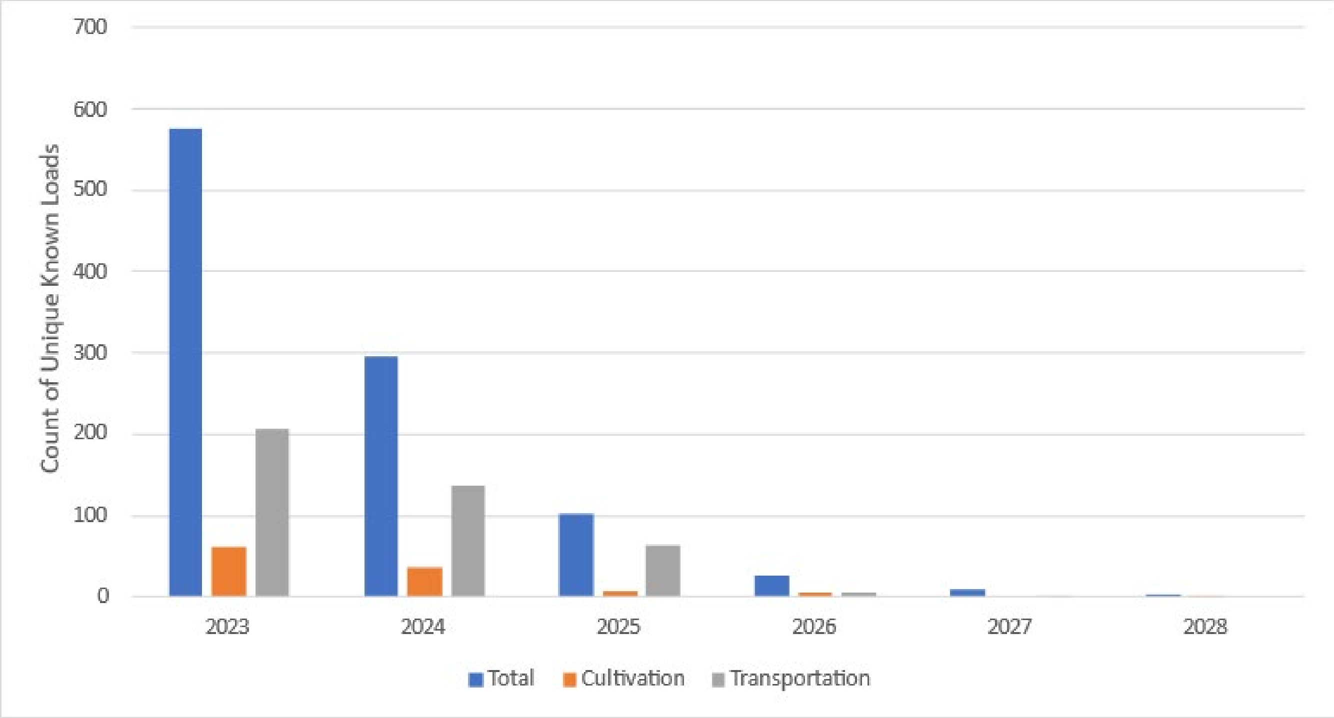
Data used in the DPP:

Key Source of Distribution Planning Data: Energization Requests from Customers (Known Loads)

- Known Load data are relatively accurate, both in the **amount** but also in the **location** of load.

- **Only exists in the near term** and are diminish rapidly.
  - Customers typically do not plan out or communicate their needs to utilities 3+ years in advance

- Known loads **always** exceed the IEPR forecast in Year 1



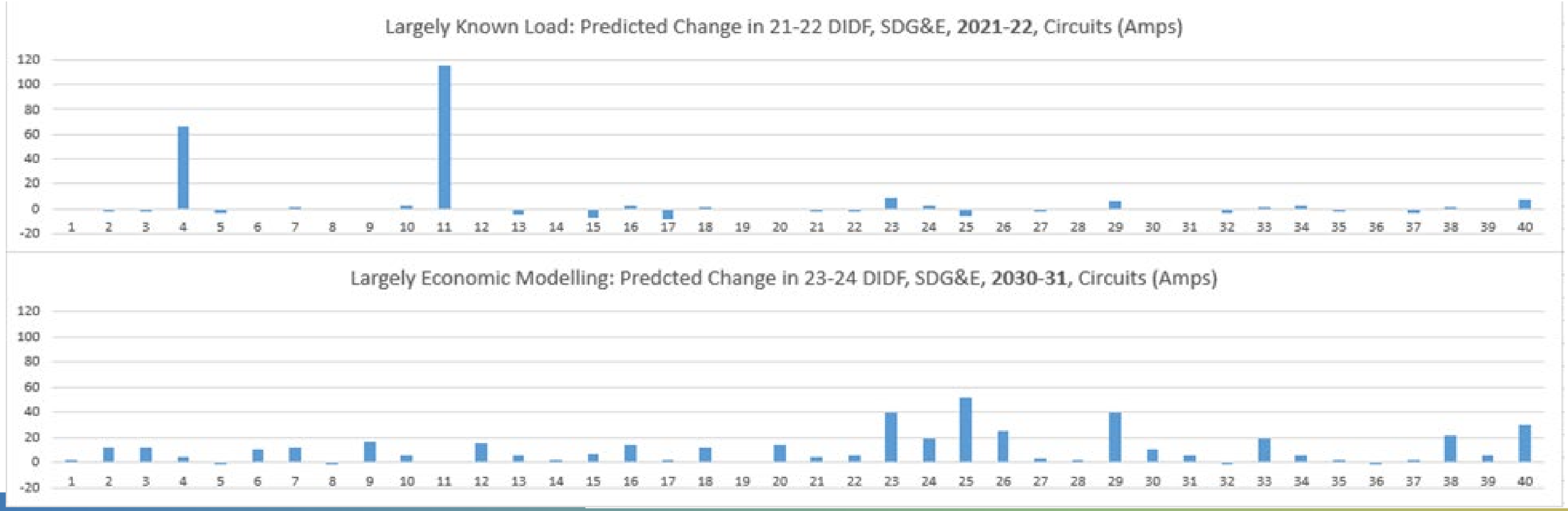
Known Loads versus Econometric Disaggregation (IEPR)

The top graph shows the Year 1 forecast based primarily on Known Loads

- Load growth is relatively **lumpy and concentrated**
- Both large and small loads
- More often reflects load decreases

The bottom graph shows the Year 8 forecast based primarily on econometric disaggregation (IEPR)

- Load growth is relatively **smooth and distributed**
- Almost entirely small loads
- Reflects fewer load decreases



Source: Random sampling of circuits from SDG&E data. Circuits listed from 1 to 40. Change measured in Amps.

IEPR in the DPP: Issues and Solutions

Process Lag

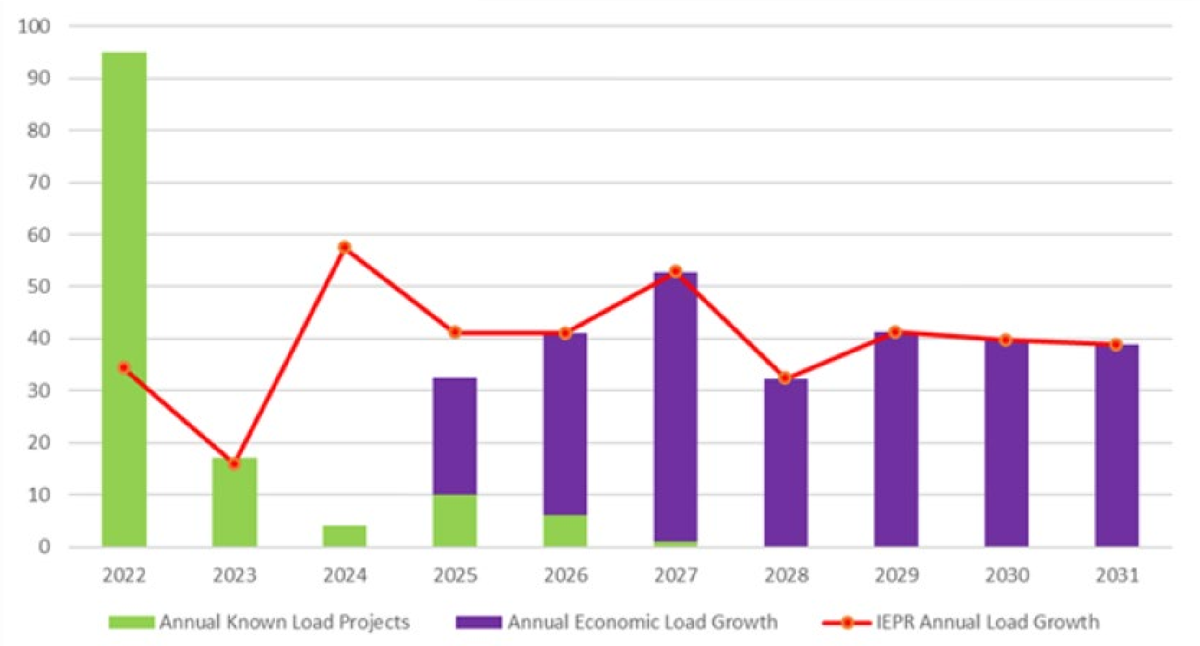
- The IEPR data is 2 years old by the time it makes its way through the DPP
  - i.e. load data from 2018 is used in the DPP that is published in August 2020

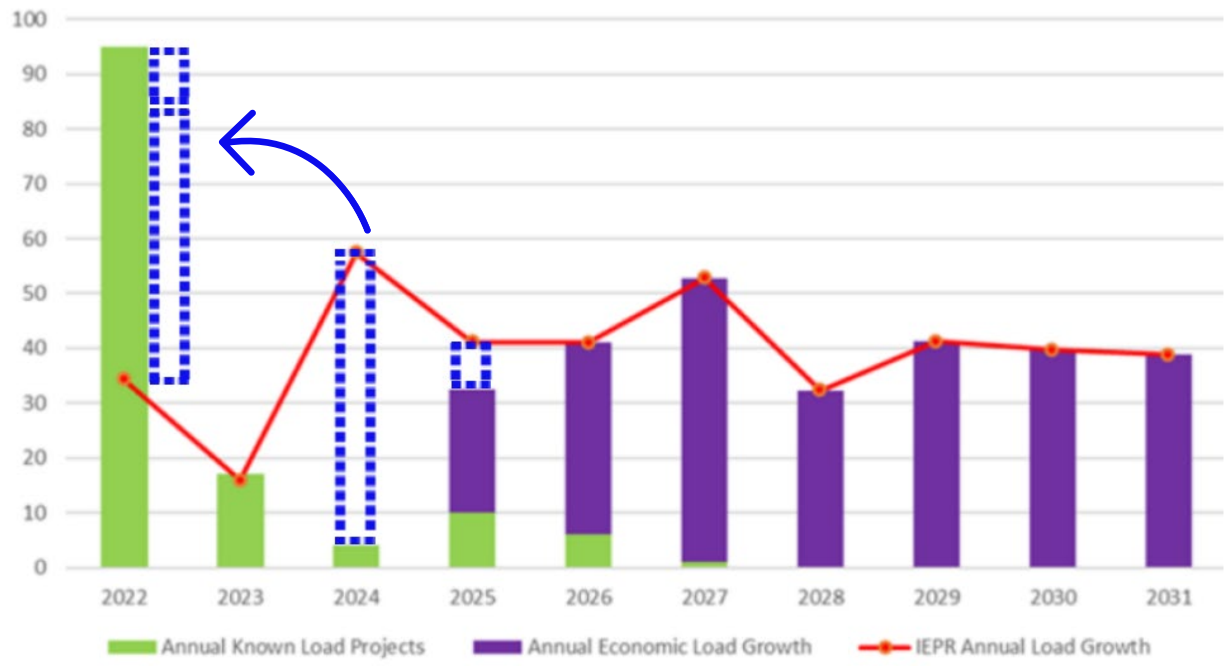
*Table 2: Linking IEPR Vintages to DIDF and GRC Filings**

IEPR Vintage	IEPR Release Date[19]	Distribution Planning Cycle	Associated GNA/DDOR	GNA/DDOR Release Date[20]	Associated GRC	GRC Release Date[21]
2018 IEPR	2/20/2019	2019-2020	2020	8/15/2020		
2019 IEPR	2/20/2020	2020-2021	2021	8/15/2021	PG&E 2023 SDG&E 2024	6/30/2021 5/16/2022
2020 IEPR	3/23/2021	2021-2022	2022	8/15/2022	SCE 2025	5/12/2023
2021 IEPR	2/17/2022	2022-2023	2023	8/15/2023		
2022 IEPR	2/10/2023	2023-2024	2024	8/15/2024	PG&E 2027	Q2 2025
2023 IEPR	1/30/2024	2024-2025	2025	8/15/2025	SDG&E 2028	Q2 2028

**Red font indicates future filings*

IEPR Forecast as a 10-year Cap





- Borrows load from the future years of IEPR forecast
- Makes mid- and long-term forecast less realistic and less reliable
- Challenge for proactive planning of mid- and long-term needs

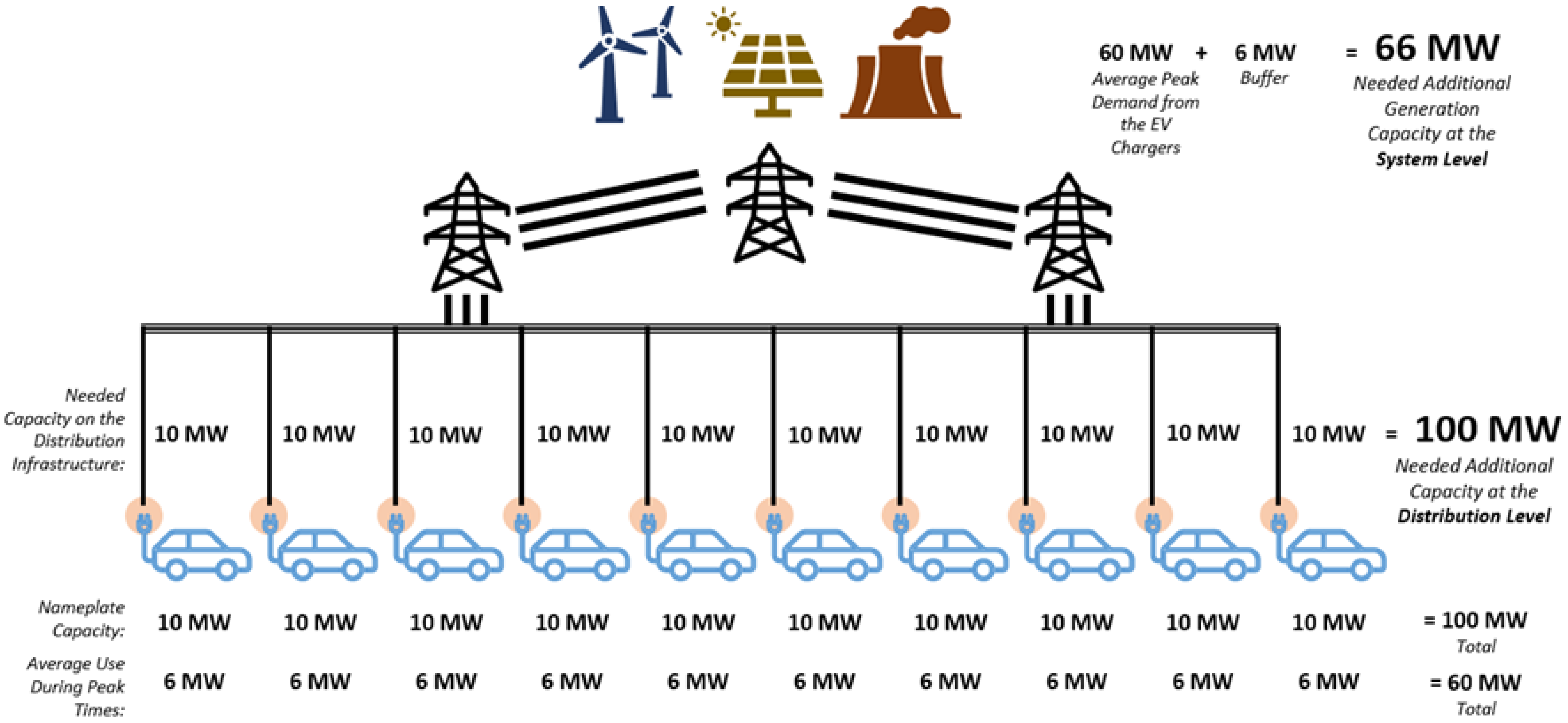
Solution: Allow Utilities to use Bottom-Up, Known Load Data to Determine Load Growth

- All parts of the forecast should be reliable. Reliable near-term forecasts should not come at the expense of the mid- and long-term.
- Known loads are a good base for planning.

Therefore, we should use reliable bottom-up data to estimate total load growth in a given year **even if it exceeds the IEPR** forecasted load growth for that year.

Reconciling Top-Down and Bottom-Up Forecasting

- The IEPR serves as the basis for transmission and resource planning for the larger electric grid.
- Using the IEPR at the distribution level ensures alignment with transmission and resource planning. However, there are differences between planning at the system-level and local-level.



Improve Method for Setting Caps on Load Growth from IEPR Data

- There are real differences between distribution level and system level planning.

We can improve methods of bringing the IEPR into the DPEP

- Account for these differences and move toward a method that allows more direct comparison

Table 3: Comparison of Peak System-Level Load from IEPR Forecasts with the Sum of Circuit-Level Peak Loads, PG&E and SDG&E (in GW)

Distribution Planning Cycle	2020-21 DIDF Cycle		2021-22 DIDF Cycle		2022-23 DIDF Cycle		2023-24 DIDF Cycle	
Utility	PG&E	SDG&E	PG&E	SDG&E	PG&E	SDG&E	PG&E	SDG&E
IEPR-Based Load Forecast	18.6	4.5	18.7	4.4	18.3	4.5	19.1	4.8
Load Forecast from Sum of Historical Peak Loading at the Circuit-Level	21.7	5.0	22.3	4.9	22.2	4.9	23.2	5.2
Circuit-Level as percentage of IEPR-Based	116%	112%	119%	110%	121%	109%	121%	109%

Source: IOU data from PG&E and SDG&E, SCE uses a different method based on the IEPR energy forecast so is not included here.