# 2021 Integrated Energy Policy Report

# IEPR Commissioner Workshop on Gas Price and Demand Forecasts

**Presentation to the CEC, August 30, 2021**

# 2020 California Gas Report Overview

The **2021 IEPR gas filing** is based on the **2020 California Gas Report** (2020 CGR)

## 2020 CGR Background

- Filed every two years per CPUC Decision 95-01-039

- Decision requests that IOUs work cooperatively to prepare an annual report on current and future gas supply and requirements.

- The <u>CEC</u>, <u>CPUC</u>, and <u>IOUs</u> collaborate on major assumptions aiming for a consistent forecast.

**Major assumptions:**

- Electric demand
- Natural gas and GHG prices
- Hydro assumptions

- Future resource assumptions (retirements/additions)

# Purpose of the 2020 California Gas Report

The **2020 CGR** presents the outlook for natural gas supply and demand over a long-term planning horizon.

Projections are intended for long-term planning purposes and consist of two forecasts:

1.  Average temperature years
2.  Cold temperature and dry hydroelectric conditions.

*The methodologies, assumptions, results, and workpapers developed as part of the 2020 CGR provide additional context and can be used as additional reference material supporting this filing.*
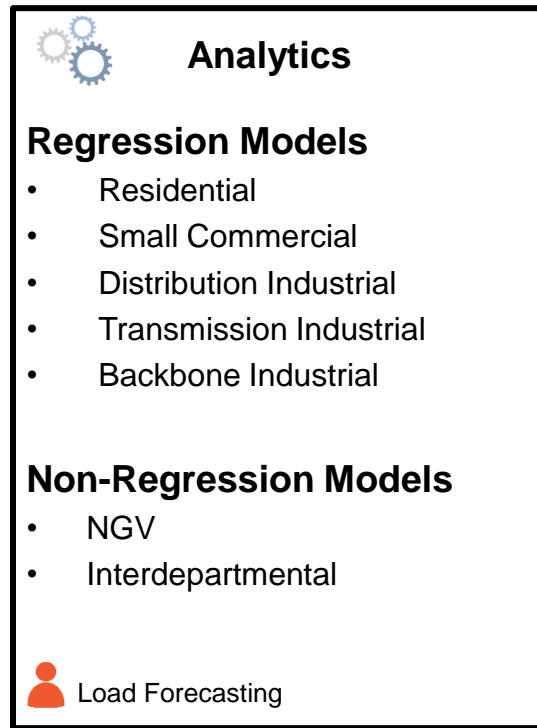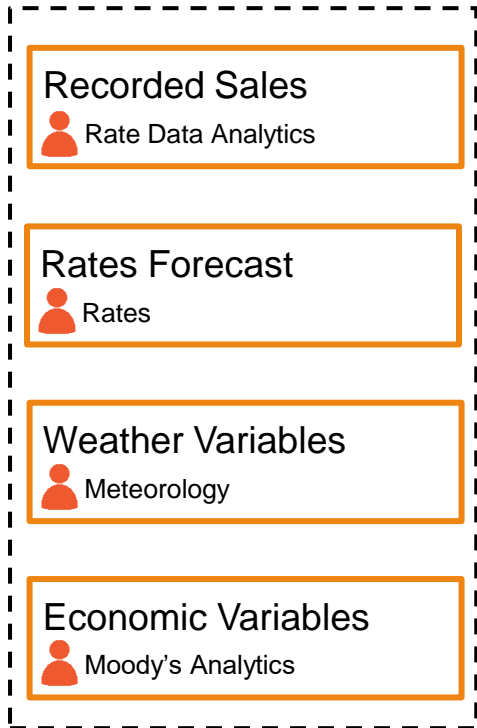
## Results contain information from 2020 California Gas Report Forecast

1. Average or 1 in 2 gas throughput forecast by category
2. Cold/Dry (1 in 10 high) gas throughput forecast by category
3. No hot year (not a typical stress scenario for gas)
4. Recorded and Weather Normalized (where applicable) Recorded data by category
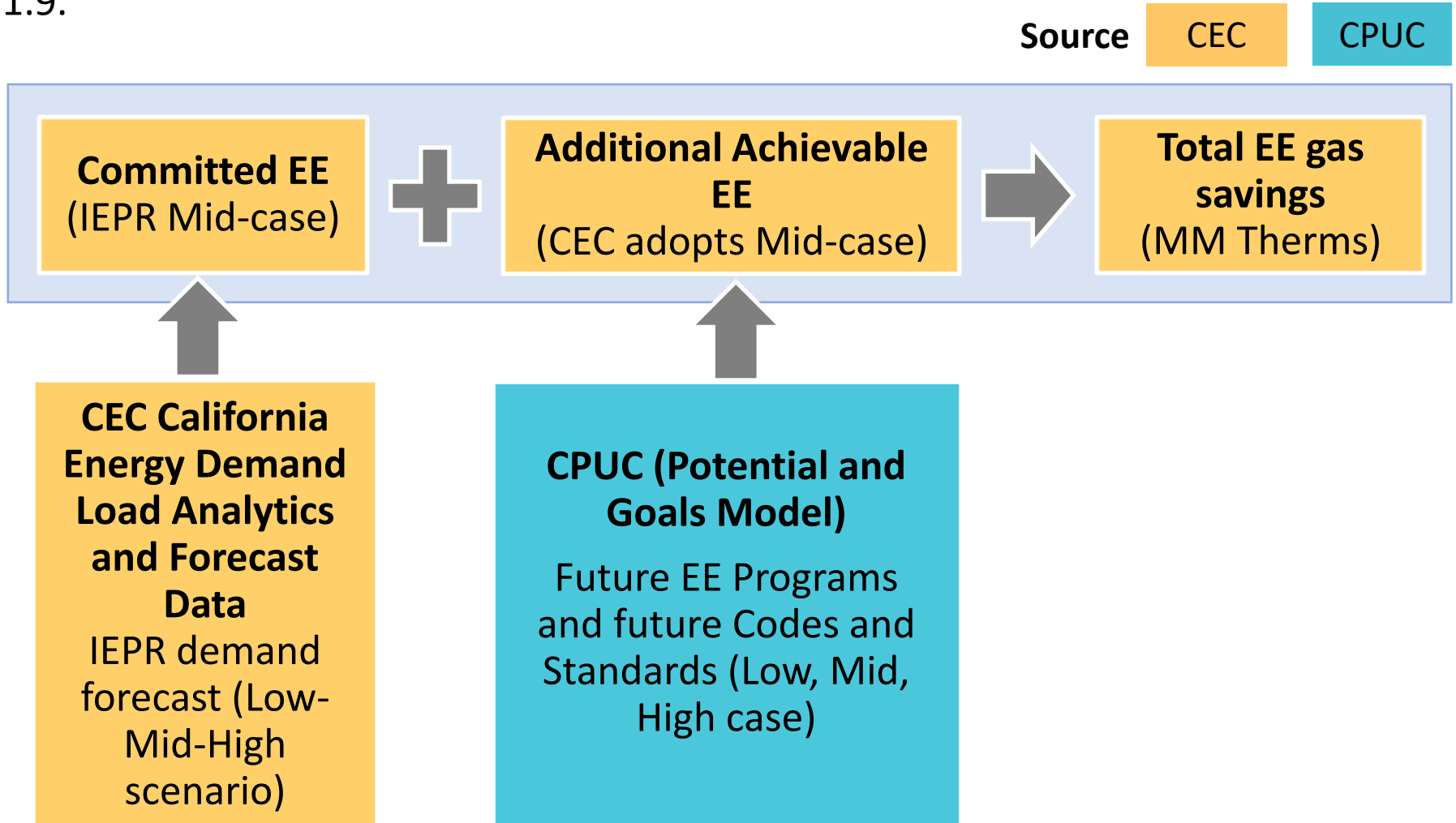
## Drivers are components from diagram

- Recorded Sales – PG&E internal data
- Temperature history – PG&E weather database
- Rates Forecast – internal
- Economic Assumptions – Moody's Update July 2019
- Electric Generation – described in slides below
- Building Electrification and Energy Efficiency – below



PG&E Service Area
Gas Throughput Forecast

## Weather and Economic Drivers

1. Historical HDD data (from 2019 back)
2. Forecast includes expected HDD and simple climate trend
3. Cold scenario is percentile calculated assuming bell curve distribution for monthly HDD
4. No CDD (heat not a typical stress scenario for gas)
5. We do not break out HDD data by location, but work with a weighted average for the region
6. PG&E subscribes to Moody's service; provides economic data specific to PG&E's service area
7. Residential forecast is driven by population and households
8. Commercial forecast is driven by GSP (for PG&E service area) and employment types.
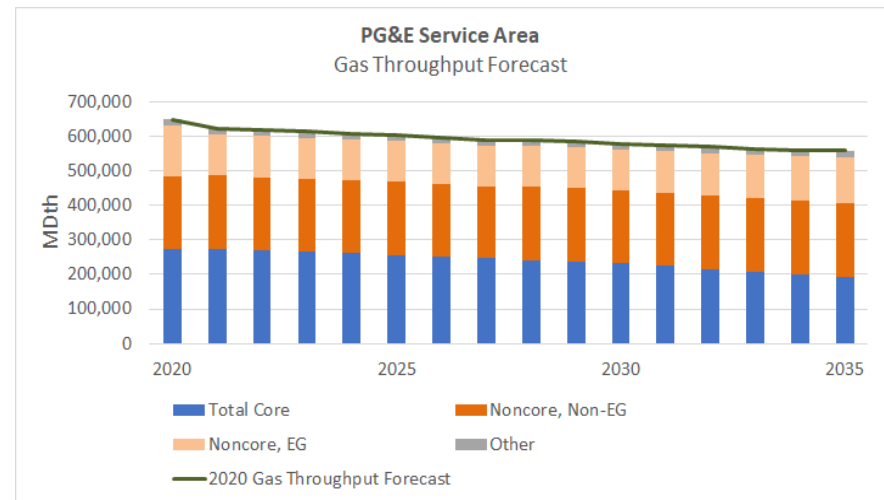
PG&E adopts the CEC's energy efficiency forecast framework to determine gas savings. Additional Achievable Energy Efficiency (AAEE) is provided in IEPR Form 1.9.

**Source**  CEC  CPUC

**Committed EE** (IEPR Mid-case)

**+**

**Additional Achievable EE** (CEC adopts Mid-case)

**Total EE gas savings** (MM Therms)

**CEC California Energy Demand Load Analytics and Forecast Data** IEPR demand forecast (Low-Mid-High scenario)

**CPUC (Potential and Goals Model)** Future EE Programs and future Codes and Standards (Low, Mid, High case)

PG&E forecasts building electrification in the Residential and Commercial sector, located on IEPR Form 1.10

**Key** | Input | Model | Output

| Residential | | | | Electric load impact (GWh) |
|---|---|---|---|---|

New construction / Retrofit existing stock → Policy-based scenarios → Scenario weighting: Final forecast → Electric load impact (GWh) / Gas load impact (MM Therms) / Peak impact (MW)

Residential, Commercial → New construction, Retrofit existing stock → Policy-based scenarios → Scenario weighting: Final forecast → Electric load impact (GWh), Gas load impact (MM Therms), Peak impact (MW)

| Scenarios | Assumption | Summary |
|---|---|---|
| New construction (Low to High) | • Driven by Codes & Standards<br>• Informed by varying assumptions on future policy, statewide legislation, city reach-codes and mandates, CEC's zero net emission policy | % of new buildings which are all-electric, by 2035 |
| Retrofit (Low to High) | • Driven by policies, economics, and customer perception<br>• Informed by research data collected by PG&E in 2018 | % of existing gas-fueled appliance stock electrified by 2035 |

**Key Forecast Drivers:**
1. Lower Southern California gas prices decrease EG burns in Northern California from 2019 to 2020.
2. Increasing RPS requirements, 60% in 2030, lowers EG throughput.
3. EG throughput increases in 2035 due to higher electric load driven by building electrification, up 51 MDth/d compared to 2030.



PG&E Service Area Electric Generation Gas Demand
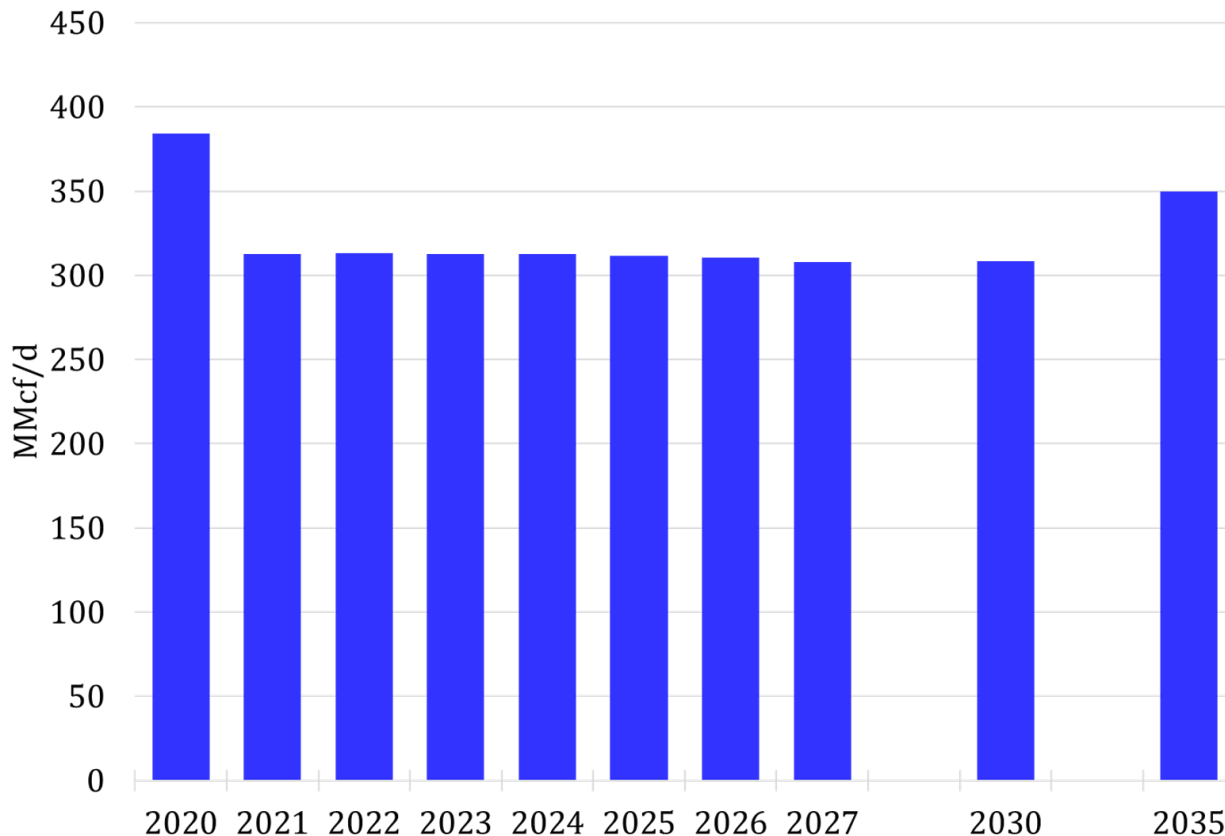
**EG data location on IEPR forms:**

**Forms 1.1 & 1.2**
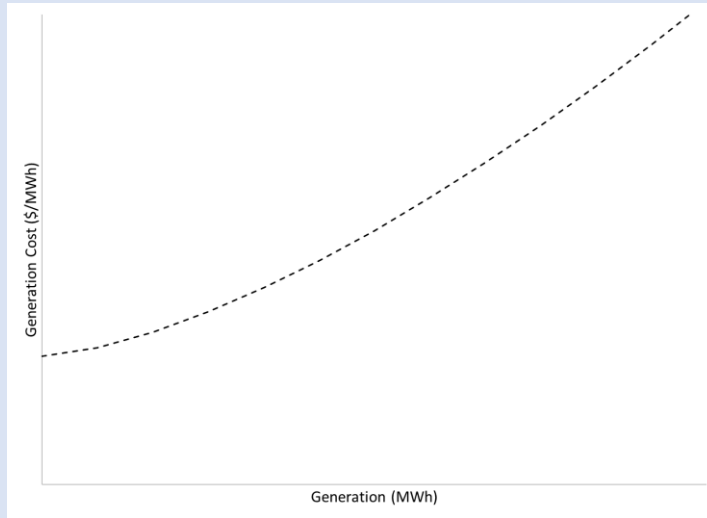- PG&E Service Area EG forecast
  (Avg. and 1-in-10 Cold Year)

**Form 1.5**
- PG&E City Gate price
- Combined Backbone (BB) and Local Transmission (LT or D/T) transport price

*All EG data derived from 2020 CGR tables and workpapers.*
- *Description begins on document page 46.*
- *Tables begin on document page 86.*

# Electric Generation Methodology and Assumptions

## Methodology



- Production cost calculation

- Western Energy Coordination Council geography

| Major assumptions | Source |
|---|---|
| **Electric Load** | California Energy Commission Integrated Energy Policy Report + Building Electrification |
| **Natural Gas Price Forecast** | 2020 California Gas Report |
| **Renewable Portfolio Standard** | 60% by 2030: CPUC Reference System Portfolio (RSP) |
| **Storage (Battery & Pump Hydro)** | CPUC RSP |
| **Hydroelectric Generation** | 20-year average |
| **Gas-fired OTC[1] Plants** | California State Water Resources Control Board & CPUC |
| **CO2 Price Forecast** | 2020 California Gas Report |
| **Electric Transmission Import Capacity** | Western Energy Coordination Council |

1. OTC represents *once-through cooling* plants regulated by the California SWRCB and CPUC Decision R.16-02-007 and Decision 19-11-016

# Critical Electric Generation Assumptions

Critical assumptions and topics for further consideration:

- **Hydroelectric generation:** assumptions beyond a historical average to assess climate change impact

- **Demand forecast:** impacts of electrification and climate change on the magnitude and variability (hourly, daily, seasonal) of electric loads

- **Imports:** availability of imports during future high-load conditions

- **Future resource additions/retirements:** impacts of changes in resource mix to support the state's environmental goals

- **Fuel prices:** differences between PG&E and SCG Citygate gas prices
    - Difference can result in favorable pricing conditions for thermal generators in one region over another

# Thank you!