PG&E's Methodology for Building Electrification Forecasting

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Together, Building a Better California

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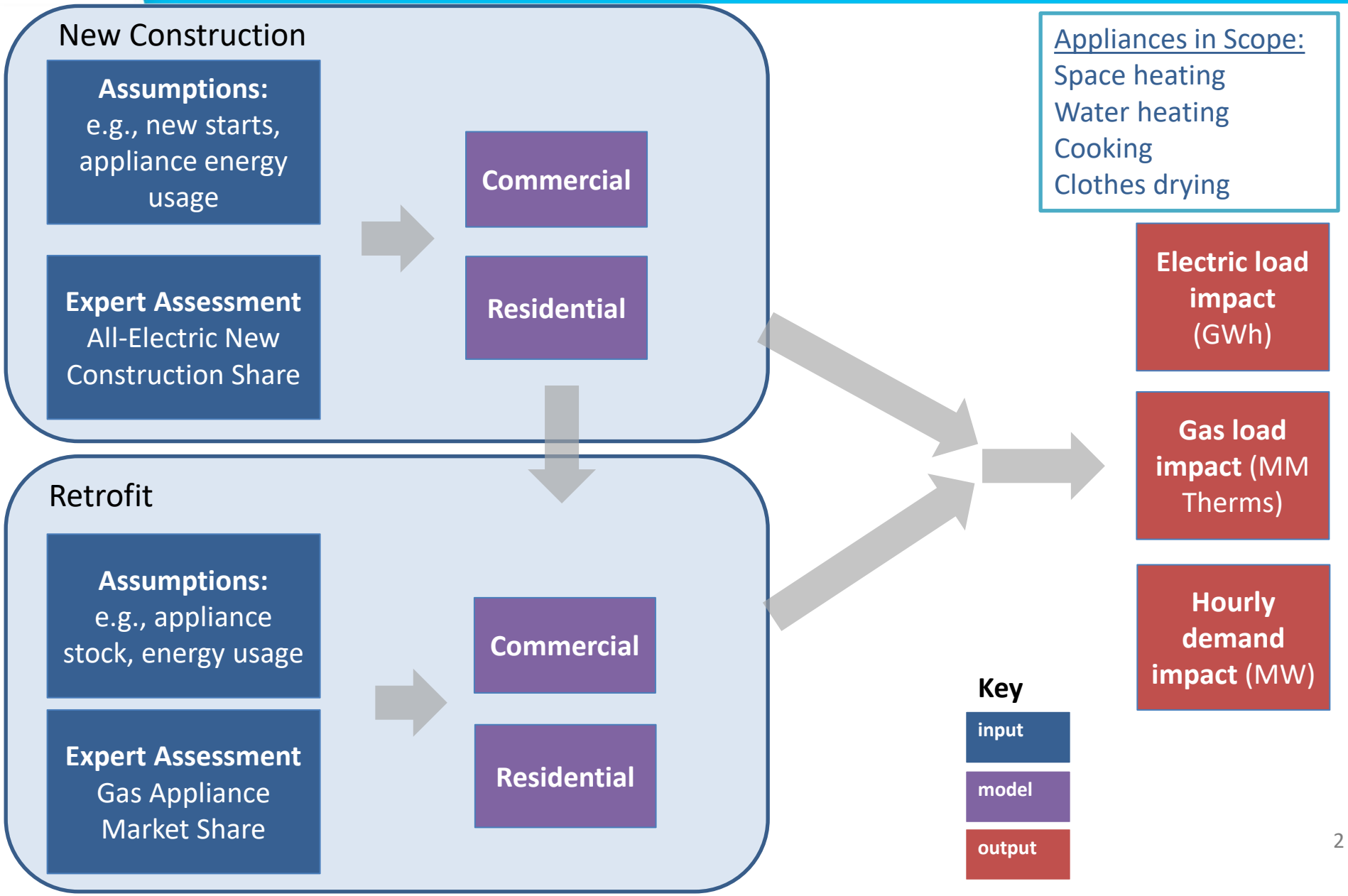
Forecast Scope & Methodology



Delphi Method Background

PG&E's BE forecasts uses a Delphi method to navigate key areas of uncertainty.

- Delphi Method was developed in 1950s to address shortcomings of traditional methods when forecasting phenomena without established scientific basis.
- Delphi Method relies on expert assessments to establish assumptions that are typically highly uncertain.
- Similar analytical frameworks are widely used across many fields.

General Delphi Method

Graphic Source: University of Phoenix

PG&E's Delphi Process

PG&E's Delphi method uses expert judgment to quantify the uncertainty of BE adoption rates.

- Building Electrification adoption rate is highly uncertain, including
  - Impacts of regional and state policies on zero emission appliances
  - Relatively low penetration of electric space and water heating in PG&E area
  - Limited data available describing observed adoption trends in PG&E area
- Our Delphi Process includes a panel of experts representing a range of functional areas in engineering, strategy, and programs.

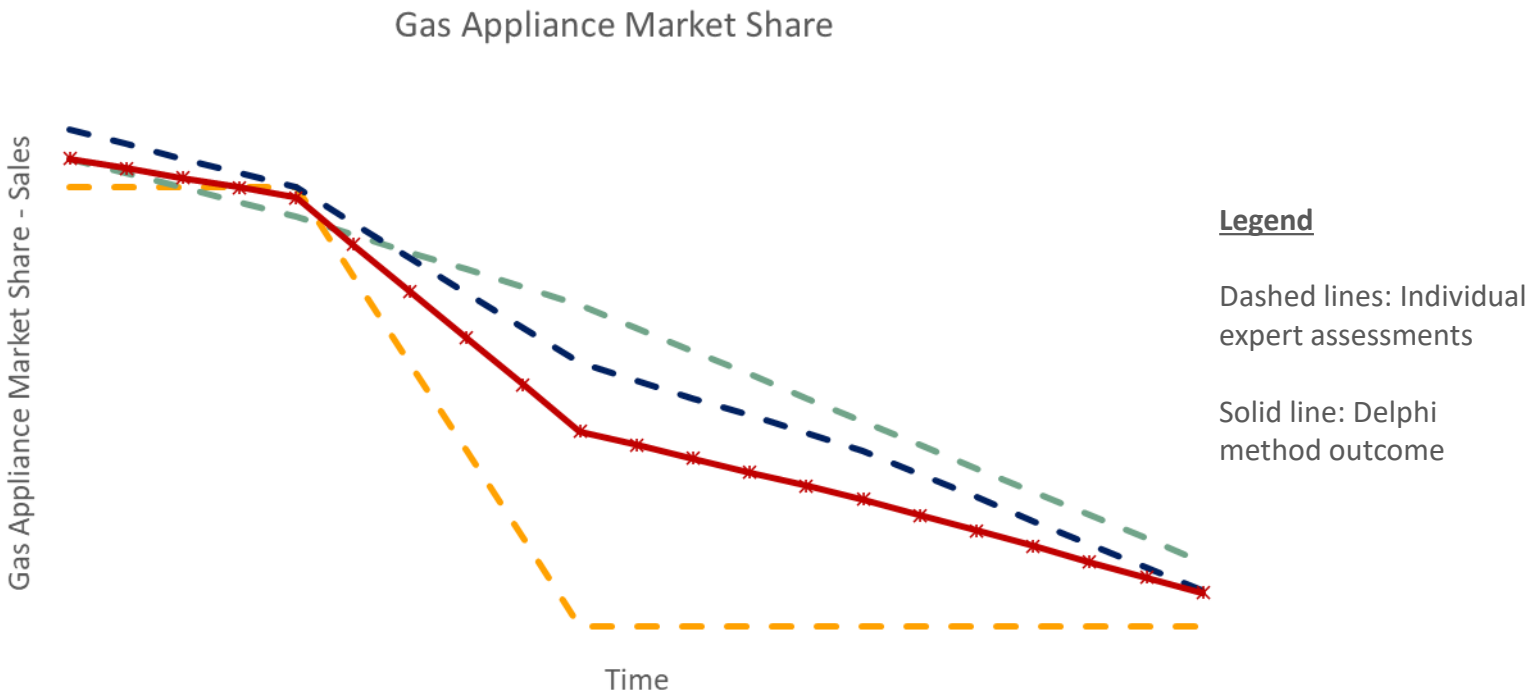
Policy Uncertainty

Upcoming policies are expected to have major impact on building electrification, but the extent of the impact is uncertain.

- BAAQMD and CARB will likely implement zero emission appliance standards on space and water heater sales starting late 2020s.
- CARB proposed zero all-electric new construction residential code beginning 2026.
- The impact of these policies is unclear. There could be legal challenges or other customer behaviors that dampen the policy impact.
- Our experts consider the uncertainty when providing their assessments on building electrification adoption rates.

Expert Assessment & Delphi Method Outcome: Illustrative Example

While individual experts have differing opinions, the Delphi method is used to develop a consensus opinion.



Experts agree in broader trend of electrification, but there is high uncertainty on timing and magnitude. Considerations include:

- Will there be impact of legal challenges to appliance standards?
- Will there be exemptions in appliance standards?
- Will customers elect to extend gas appliance lifetime rather than electrify?
- Will customers elect to install non-compliant appliances?