Getting to the Future: Infrastructure and the Energy Transition

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Gas: Future Goals vs. Present Needs

- California’s goals require a transition away from fossil gas
- Can't get to the future without getting through the present
- Today, California’s electric system depends on gas for reliability

Daily Ramp, CAISO 6/30/2020

Average ramp of ~11 GW from 5 to 8 PM
Gas: Future Goals vs. Present Needs

- Dunkelflaute refers to dark, windless periods in winter
- Low-solar, low-wind periods can last several days and occur at precisely the time when demand for residential heat is highest
Safe, Reliable Infrastructure + Just and Reasonable Rates

• The CPUC’s mandate is to provide safe, reliable service at just and reasonable rates

• That means gas infrastructure must be maintained and kept affordable for as long as it is needed

• The state’s gas infrastructure is old and in some cases in need of repair or replacement
Most high-pressure gas transmission pipelines were built ~50-70 years ago.

Older pipelines are more likely to have problems:
- 2010 PG&E San Bruno Pipeline Explosion (1956)
- 2017 SoCalGas Line 235-2 Pipeline Explosion (1957)

Aging pipelines: To act or not to act
Safe, Reliable Infrastructure + Just and Reasonable Rates

- The need to spend ratepayer funds to maintain safe and reliable infrastructure must be balanced with the need to avoid stranded costs.
- The CPUC has opened the Gas Long-Term Planning Rulemaking (R.20-01-007) to examine these and other gas transition issues.

Overview of Stranded Value

[Diagram showing the transition from gas to electricity, indicating the value to be recovered over time.]

Source: EDF: Managing the Transition
Transmission: Old but Necessary

• Overall gas demand: decreasing
• Summer peak demand: decreasing
• Winter peak demand: essentially flat between now and 2030
  • Less electricity available for import as neighboring states move away from coal and towards gas and renewables
• Gas infrastructure is designed to meet peak day demand
• Therefore, gas transmission infrastructure may need to be maintained at its current level
Prioritized Pruning

• Challenges to strategic electrification:
  • Obligation to serve
  • Jurisdictions with the most political will to electrify are not necessarily the places where old or problematic pipelines need to be replaced
Final Energy Demand by Fuel, Statewide

- Demand for electricity, hydrogen and biofuels varies by scenario
Key Scenario Metrics in 2045

Selected Resource Capacity (MW)

- High Elec
- High Biofuels
- High Hydrogen

- Gas
- Shed DR
- Pumped Storage
- Battery Storage
- Customer Solar
- Solar
- Offshore Wind
- Wind OOS New Tx
- Wind
- Geothermal
- Biomass
- Gas Capacity Not Retained