# AFFORDABILITY AND THE ENERGY SYSTEM TRANSITION


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# Affordability is a key tenet of service SoCalGas provides today, offering a suite of programs to provide economic relief to those most vulnerable

CARE Program:

As of Jan 2022, 32% of SoCalGas Residential customers (1.8 million households)

Energy Services Assistance Program (ESAP)

2020: treated over 126,000 homes with weatherization and energy efficiency measures; 2021: ~122,000 homes

Arrearage Management Plan (AMP)

Forgives past due arrearages for LI participants in return for on-time payment of current monthly bills: ~70,000 customers enrolled to date, ~41,000 currently enrolled as of 2/14

Percent of Income Payment Plan (PIPP)

Participants receive a monthly bill cap for current charges set at 4% of their household's monthly income. The cap for gas is 1% of annual income.

- In 2021, SoCalGas's average residential gas bill amount was ~$30.00/month for CARE customers and ~$45.00/month for non-CARE customers
- CPUC's Affordability report shows an average affordability ratio (AR) for gas at 4.7%; whereas electric IOUs AR is above 7%

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# Clean Fuels Study[1] highlights the value and role of clean fuels in meeting net zero even under high electrification scenarios; further analysis is needed to ensure transition is equitable and affordable

| Key Learnings | | Remaining Questions for Ongoing Examination |
|---|---|---|
| Clean fuels are critical for affordability, resiliency, reliability and decarbonizing hard to abate sectors | System Planning Impacts | Integrated system planning framework |
| | | Clean fuels network; Non-Pipe Alternative (NPA); Strategic electrification/ Decommissioning feasibility |
| Customer conversion challenges create uncertainty around pace and penetration of electrification | Demand & Customer Forecasting | Electrification under current/planned policies |
| | | Impact of customer count – full vs. partial electrification |
| Declining throughput and impact on gas rates | Cost Allocation & Rate Design | Alignment with value-based cost principles/ beneficiary pays |
| | | Equity impacts of electrification/rate pressure |
| | | Fixed charges |

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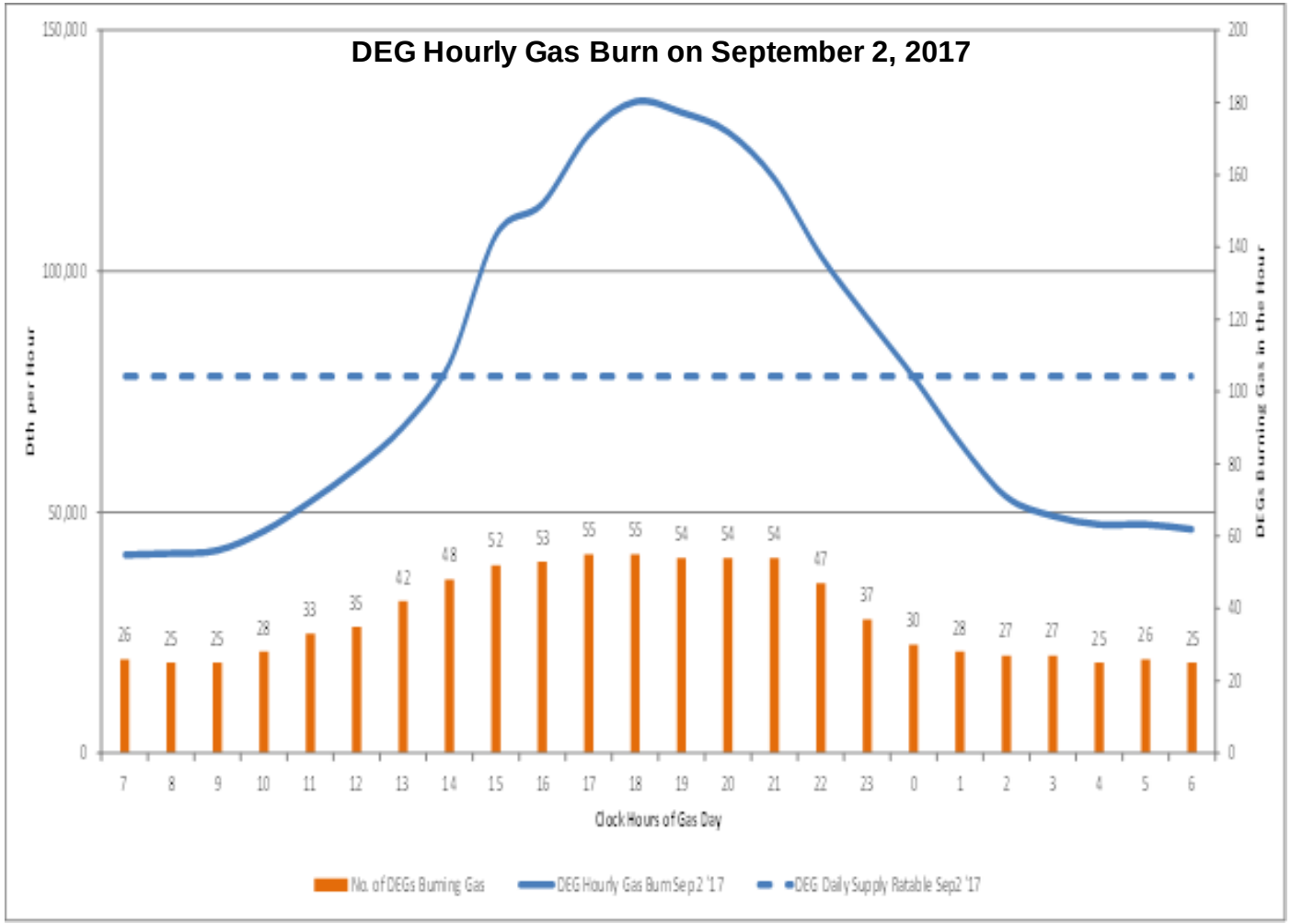
1. Roles_Clean_Fuels_Full_Report.pdf (socalgas.com)

# Renewable Balancing Service (RBS) Concept – Cost allocation and rate structure to equitably align with cost causation and beneficiary pays




- The Dth per Hour ratable supply is what should have been delivered to the SoCal Citygate to meet total day demand
- Jump from 35 to 55 generators from noon to 5 PM, followed by a drop from 54 to 30 from 9 PM to midnight
- 14 DEG generators did not burn gas that day, but could have burned/requested gas

- Gas and electric systems are becoming more interdependent due to reliability (intraday balancing) and resiliency (dispatchable long duration storage)
- The dispatchable electric generator (DEG) hourly burn demonstrates the disconnect between the level way supply is brought to SoCalGas compared to variable and increasingly unpredictable gas “takes” occurring in practice
- Similar in concept to time of use (TOU) pricing in that you apply appropriate price signals to delineate the hours of greater service (ramp up/ramp down); expressing the system cost and value of peakier intraday DEG output and takes from SoCalGas system to enable renewable integration
- An RBS tariff concept is a first step in addressing the evolving operations and market dynamics of a gas grid in an increasingly decarbonized energy future

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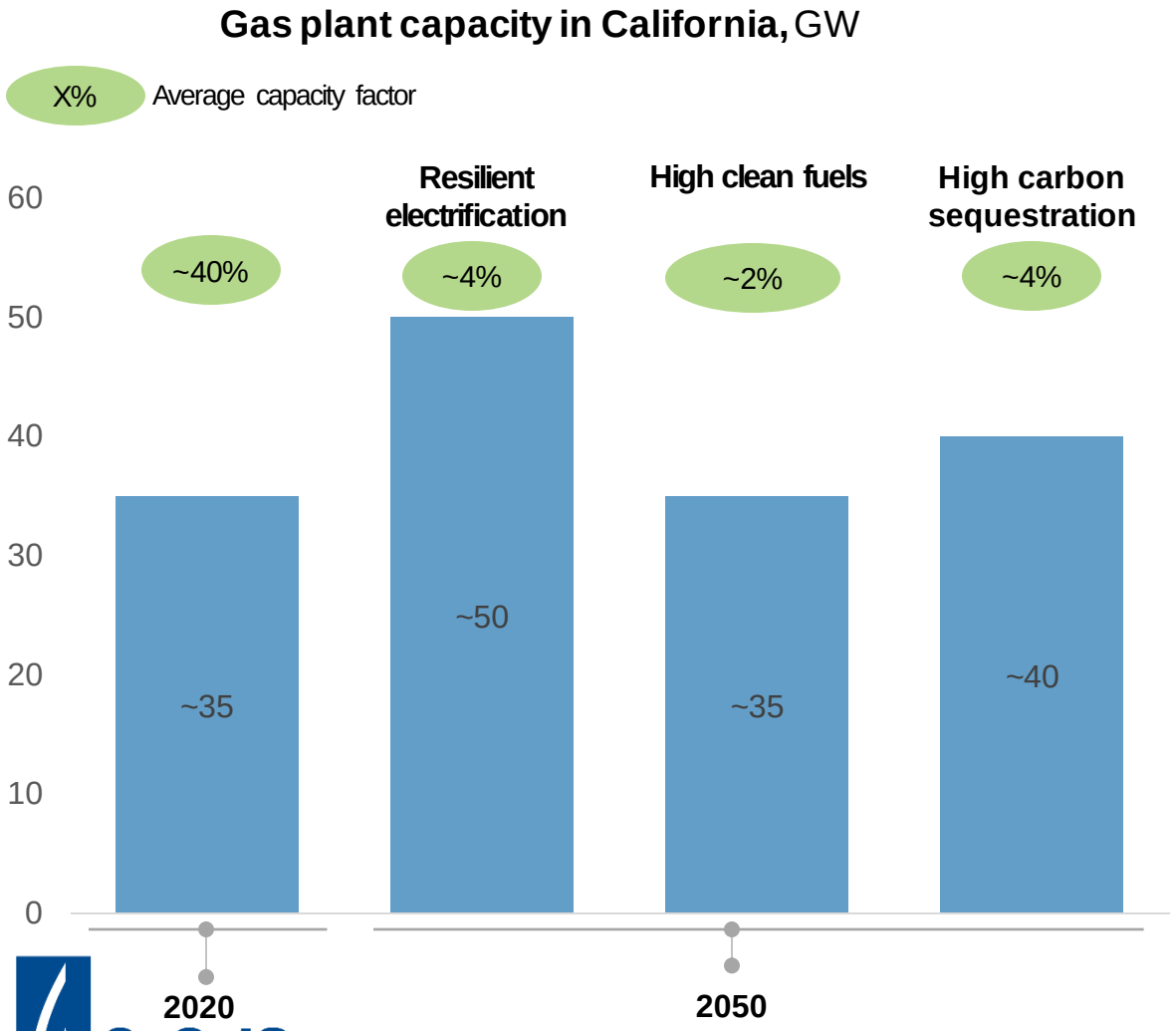
# Higher levels of economy-wide electrification signal greater dependency of gas system, despite decline in annual throughput, presenting affordability challenges under current cost allocation and rate design construct




- Clean Fuels Study shows more thermal generation capacity is needed in higher electrification cases
- Modeling results show a min of ~35 GW of gas capacity needed in 2050 to provide system reliability
- Despite low-capacity factors, capacity needs increase raising challenges around equity and scalability in the ability to recover costs associated with this critical service
- Cost allocation and rate structure will need to evolve building from the RBS concept to a more comprehensive cost allocation and rate construct that spreads the necessary infrastructure costs to support electric grid reliability and resiliency via a fixed charge paid by the beneficiaries – customers who electrify

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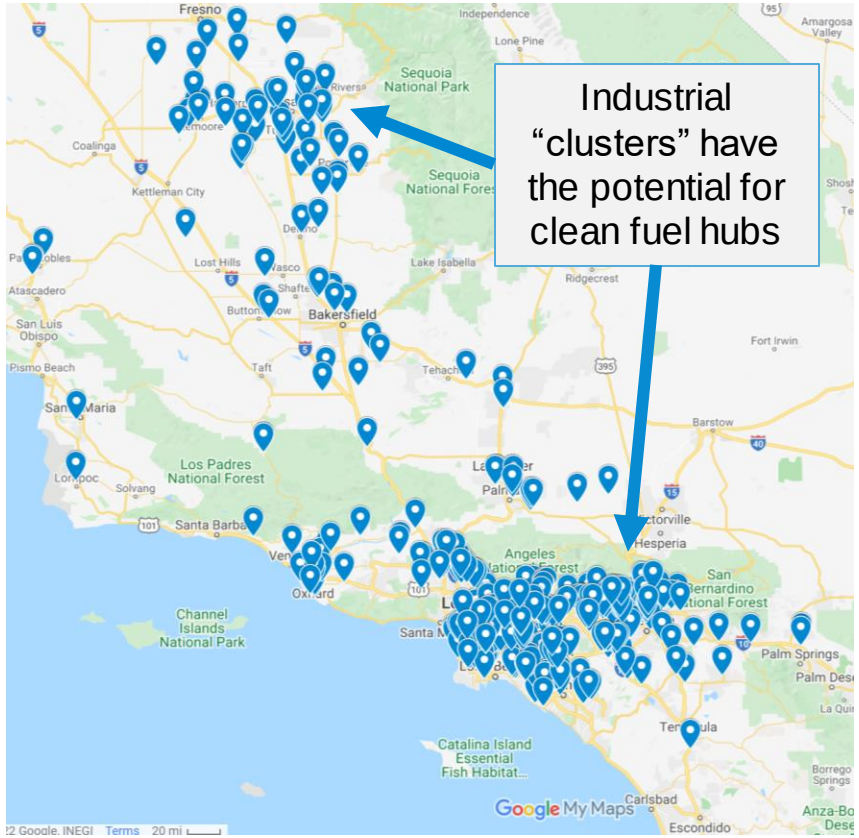
# System planning for a future clean fuels network will include an analysis of all decarbonization options, including the feasibility of strategic electrification and decommissioning to ensure energy transition is equitable and affordable

**Hard to abate customers SoCalGas service territory[1]**




1. Illustrative – only a subset of industrial high heat applications are shown. Does not include electric generators located on transmission, cogeneration, or refineries.

- Economy-wide decarbonization studies that project significant building electrification are not designed to assess customer barriers, including location of hard to electrify end uses, consumer preference, system topography, electric capacity constraints or resiliency needs
- System planning for the energy transition will require development and optimization of a suite of decarbonization solutions, including a clean fuels network, development of a NPA framework, an examination around the feasibility of strategic electrification and decommissioning
- Analysis of the SoCalGas system is underway to provide clarity on where electrification is cost effective and feasible, and where the fuels network will continue to be relied upon (with clean molecules) for critical resiliency and customer affordability (CEC pilot with RAND and GTI). Pilot programs will provide critical learnings to inform system planning

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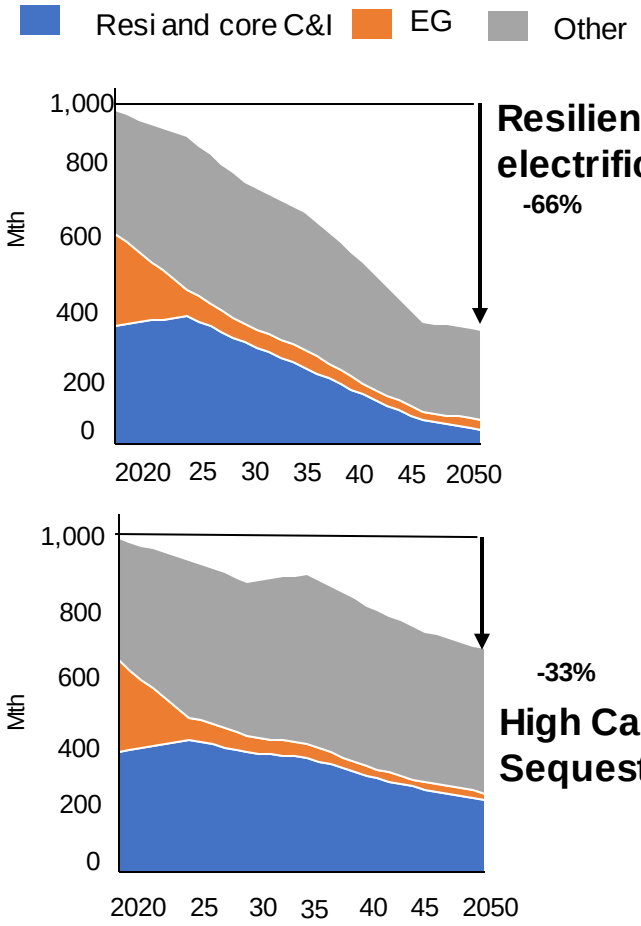
# Uncertainty around fuel switching necessitates more granular scenario analysis of demand and customer forecasting to test a range of cost allocation/rate mitigation strategies

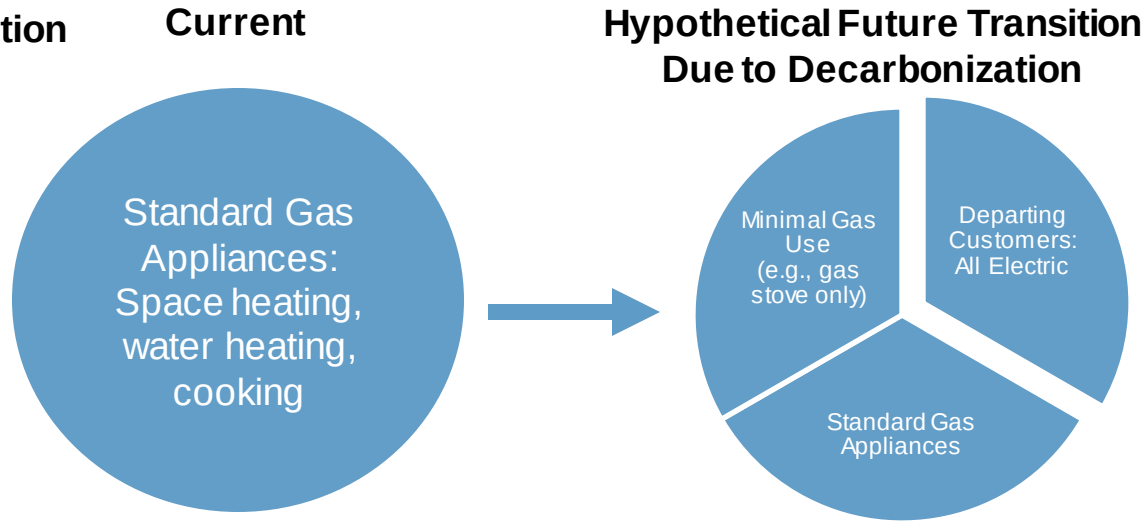
- The Clean Fuels white paper evaluated the impact of decarbonization and varying levels of electrification
- There is a gap in literature on the impact of fuel switching on utility customer count (i.e., full vs. partial electrification) – a key consideration when weighing rate strategies, including fixed charges
- Typical stock turnover models may not capture the relationship between declining load and departing customers
- Additional demand side analysis is needed to capture a range of building electrification projections

## Illustrative Gas Demand[1]




*1. Illustrative demand trajectories based on scenarios in the Clean Fuels White Paper, not a demand forecast*

## Gas Utilities' Residential Customer Base




Fixed charges can be an equitable tool to capture customer evolution where customers maintain minimal gas service - similar in concept to Power Charge Indifference Adjustment (PCIA) for electric customers

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# Potential levers to improve customer affordability and more directly link to the value of the gas system in a decarbonized future

| Themes | From | To |
|---|---|---|
| **Gas system cost allocation** | Majority of cost allocated based on **peak demand throughput to gas-system end-users** | Significant costs allocated based on metrics that reflect the **flexibility, resiliency, and reliability provided to the electric system,** and shared with **new users of a clean fuels system** |
| **Primary cost drivers and end-users** | **Cost-causation approach; residential/small customers** (who the original system was built for) drive most of the cost due to medium pressure distribution system | **Hybrid cost-causation and value-based approach; electric generators/large industrial customers** have become (and will increasingly be) the major beneficiaries of the reliability provided by the gas system while other users electrify |
| **Service contracts** | Long-term fixed contracts or gas spot market purchases of **"ratable take provisions"** which assume constant flow over a day | **Shaped flow service**, allowing for **"non-ratable provisions"** (i.e., variable flow over a day), accounting for the value of just-in-time delivery to customers |
| **Fixed Costs** | Nominal fixed charge in place today ($5) tied to customer related fixed costs | **Increase fixed charge** to recover additional fixed costs, including costs associated with T&D. |

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Source: Based on assessment of current cost allocation and overall rates / market design in light of system evolution captured in decarbonization scenarios modeling

# Maintaining affordability through the energy system transition

As California decarbonizes, the way we produce, deliver and consume energy will fundamentally change

Gas utilities, as prudent owners and operators of the system, must thoughtfully examine the effects of decarbonization on system planning, operations, and customer affordability

Integrated energy system planning is essential to capturing critical interdependencies and feasibility risks to ensure California pursues the most affordable, resilient and feasible approach to decarbonization

Sophisticated scenario analysis examining multiple approaches to decarbonization is needed to 1) account for modeling uncertainty; 2) identify critical signposts for change; and 3) assess feasibility and risk mitigant strategies

Current cost allocation and ratemaking principles will scale poorly and inequitably during the energy transition – new cost allocation and rate designs and perhaps financial restructuring should target equity and sustainability for all stakeholders

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