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CITY OF PALO ALTO
Climate Action and Sustainability Committee
Friday, June 13, 2025

Agenda Item

2. Discussion of Gas Utility Transition Study Scoping; CEQA Status - Not a Project



Climate Action and Sustainability Committee Staff Report

From: City Manager
Report Type: ACTION ITEMS
Lead Department: Utilities

Meeting Date: June 13, 2025
Report #:2505-4658

TITLE

Discussion of Gas Utility Transition Study Scoping; CEQA Status - Not a Project

RECOMMENDATION

This is a discussion item and no action is requested by the Climate Action and Sustainability Committee (CASC) at this time. Staff is seeking CASC feedback on the scope for a study of the financial and operational impacts of electrification on the gas utility.

EXECUTIVE SUMMARY

Achieving the community's greenhouse gas emissions reductions goals requires deep reductions in building emissions. Regardless of how quickly the community reaches these goals, impacts on the gas utility's financial structure and physical operations are expected. Staff is beginning a study of those impacts and is seeking feedback on its approach.

The study will simulate different patterns of electrification throughout Palo Alto, identify opportunities for gas main and service abandonment and operational efficiencies, and estimate abandonment costs, changes in operational costs, and customer class cost allocations. It will prioritize gas system safety and identify parts of the gas system that may need to be retained for operational reasons even after substantial parts of the system have electrified.

BACKGROUND

Gas utilities throughout California are planning for the possible impacts of widespread building electrification. The California Public Utilities Commission (CPUC) has a gas transition proceeding for the investor-owned utilities (IOUs), but many of the issues they face differ from Palo Alto. IOUs have a different capital structure, service territories with different characteristics, and different system designs. City staff follows this proceeding to learn potential lessons and participated in an early workshop that led to the proceeding, but analysis specific to Palo Alto is also needed.

The Utilities Advisory Commission (UAC) received preliminary staff analyses of the cost of abandonment, staffing impacts, and rate impacts on November 4, 2020¹ and January 2021,² but a more rigorous study is needed. Abandonment costs are likely significantly higher than the prior studies showed, and those studies also did not sufficiently account for the physical system constraints or the difference in rate impacts by customer classes.

ANALYSIS

The objective of the Gas Transition Study is to assess the potential financial and physical impacts of large-scale building electrification on the gas system and identify strategies to manage those impacts. The study will be conducted primarily in-house, with consultants assisting in physical gas system modeling and rate modeling.

Staff will simulate four electrification scenarios for single-family, multi-family, and non-residential sectors, targeting 20%, 40%, 60%, and 80% reductions in gas sales (see Attachment A for full scenario definition). Gas usage will be modeled down to the meter level. For each scenario, staff will estimate the number of gas main segments that could be retired and the resulting abandonment costs and changes in operational costs. Staff will then estimate rate impacts by customer class.

Safety will remain the top priority throughout the hypothetical transition, and the study will analyze resulting cost impacts. Due to the complexity of electrification for some commercial customers (e.g. restaurants), and for larger industrial and medical users, a core network of gas lines is projected to be preserved to serve these users. The analysis will assume that retiring entire blocks of gas mains is more cost-effective than retiring individual services.

Abandoning gas infrastructure at the block level is more efficient than retiring individual services, primarily because it reduces the number of excavation events. Block-level abandonment involves digging into the street to cut and cap the main at each end of a block and removing all associated meters in one operation. This contrasts with the more labor-intensive process of retiring services one at a time, which also requires much more digging in the street to abandon each customer service lateral. The study will look at the cost of both block-level and service-level abandonment as strategies and estimate the total associated costs.

¹ Staff Report ID#11639, November 4, 2020, Discussion of Electrification Cost and Staffing Impacts on the City of Palo Alto's Electric and Gas Distribution Systems, <http://cityofpaloalto.org/civicax/filebank/blobdload.aspx?BlobID=78897>

² Staff Report ID#11751, January 6, 2021, Discussion of Projected Electrification Impacts on Gas Utility System Average Rates, <https://www.cityofpaloalto.org/files/assets/public/agendas-minutes-reports/agendas-minutes/utilities-advisory-commission/archived-agenda-and-minutes/agendas-and-minutes-2021/01-06-2021-special/01-06-21-uac-item-1.pdf>

Operational costs that may vary during the transition will also be evaluated, such as customer service, leak monitoring and repair, meter reading, and overhead allocations. Many of these functions are shared across utilities, and their costs are allocated based on factors such as the number of meters served or total revenues. As gas sales decline and parts of the system are retired, both actual workload and allocation factors will shift—though not always simultaneously. Operational costs may decrease in steps as work reductions reach critical thresholds. The study will analyze these patterns, assess impacts on other utilities, and identify strategies to optimize cost management and secondary impacts on other utilities.

Key output metrics will include:

- Number of gas mains with low or no usage
- Estimated abandonment costs
- Changes in operational costs
- Financial impacts on other utilities
- Effect of reduced natural gas on cap-and-trade revenues
- Effects on General Fund revenues

The study will model different likelihoods of residential customers disconnecting gas service after electrifying space and water heating. This will help assess the influence of disconnection rates on system outcomes. Staff will also evaluate strategies including potential funding needed to encourage disconnection, including incentive programs, rate design, and block-level electrification initiatives. Commercial buildings will be assumed to retain gas service to preserve leasing flexibility.

The study will also examine the physical layout of the gas network under various electrification scenarios. Unlike many regional systems, the City's gas infrastructure is highly networked, allowing for more flexible block-level disconnections. However, not all unused mains can be removed without affecting system functionality. For example, a medium-diameter main with no active services might still be needed to maintain pressure or flow. The study will analyze these constraints and explore targeted investments to enable additional main retirements.

FISCAL/RESOURCE IMPACT

The study is expected to require about \$150,000 in consulting costs (\$60,000 for building a gas model and \$90,000 for rate analysis and scenario simulation) and about 0.3 FTE in staff time (0.15 FTE from Utilities Water-Gas-Wastewater Engineering and 0.15 FTE from the Utilities Resource Management Division and the Climate Action Team combined).

The gas utility fiscal and resource impact of widespread electrification on the gas utility and the costs of gas system abandonment will be assessed in this study.

STAKEHOLDER ENGAGEMENT

This topic was discussed by the UAC at its November 2020 and January 2021 meetings, as noted above, and since then the need to more carefully assess the costs of transitioning the gas utility has been raised in several meetings of the UAC, S/CAP climate stakeholders, the Council subcommittees focused on climate contexts, and at City Council. Staff also discussed this topic with the Climate Action and Sustainability Working Group prior to this meeting and will verbally report the results.

ENVIRONMENTAL REVIEW

The CASC's discussion of this topic does not meet the California Environmental Quality Act's definition of a project, pursuant to Public Resources Code Section 21065, and no environmental review is required.

ATTACHMENTS

Attachment A: Draft Scenario Design for Gas Transition Study

APPROVED BY:

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Draft Scenario Design for Gas Transition Study

Scenario	Gas Sales Reduction	Residential Space and Water Heating Electrification	Small and Medium Non-Residential Space and Water Heating Electrification	Medical and Industrial Electrification*
1	20%	25%	25%	0%
2	40%	50%	50%	0%
3	60%	75%	75%	0%
4	80%	100%	100%	0%
* In practice, some electrification will occur in this sector, but staff does not have good visibility on the potential for electrification in this space due to the prevalence of unique / process loads				

Methodology:

- For each scenario staff will run a large number of random iterations assigning space and water heating electrification to different meters / gas mains. A sensitivity will be run for each scenario varying the likelihood of resident gas meter disconnection.
- For each scenario staff will calculate the range of gas mains with low or no gas usage resulting from all the iterations for that scenario.
- Staff or the City's consultant will add one or two sample iterations for each scenario to its gas system model and identify how many mains noted for removal by the simulation could not actually be physically removed. Scenario results will be adjusted accordingly.
- Staff will estimate the average abandonment costs for each scenario including sensitivity analyses between higher costs of individual services abandonment versus larger block abandonment costs.
- Staff will estimate changes in operational costs, allocations between utilities, and reductions in General Fund revenues resulting from the decreased gas sales and gas main abandonment.
- Staff and the City's consultant will estimate the customer class average rates for each scenario based on the estimated abandonment costs, reduced gas sales by customer class, and changes in operational costs.

Based on these results staff will identify physical and financial issues and develop strategies to mitigate them.