



PHILADELPHIA GAS WORKS

800 West Montgomery Avenue • Philadelphia, PA 19122

January 23, 2026

Ms. Gemela N. McClendon, Esquire
Executive Director
Philadelphia Gas Commission
One Parkway Building
1515 Arch Street, Ninth Floor
Philadelphia, PA 19102

RE: FY 2027 Capital Budget – Hearing Examiners Advocate Data Reponses

Dear Ms. McClendon:

Attached are PGW responses to the Hearing Examiners data requests for HE-1 through HE-16.

Sincerely,

A handwritten signature in blue ink, appearing to read "William J. Gallagher".

William J. Gallagher
VP Budget and Strategic Development

Attachments
cc: Service List

RESPONSE TO THE HEARING EXAMINER'S DATA REQUEST

FISCAL YEAR 2027 CAPITAL BUDGET

KB-HE-1:

With respect to the Gas Processing Department's project titled "Replace Liquefier-Richmond," what is the primary project driver (e.g., demand growth, peak shaving, emergency preparedness, or supply diversification)?

RESPONSE PROVIDED BY: Daniel J. Cassidy, P.E. - Vice President Technical Operations

RESPONSE:

The primary driver is reliability of gas supply to PGW's firm gas customers in the winter months, which is the critical component of peak-shaving. PGW is also concerned about emergency preparedness and supply diversification.

RESPONSE TO THE HEARING EXAMINER'S DATA REQUEST
FISCAL YEAR 2027 CAPITAL BUDGET

KB-HE-2:

How does the "Replace Liquefier- Richmond" project align with the following:

- a. PGW's long-term capital plan;**
- b. System reliability and resilience goals; and**
- c. Any applicable regulatory mandates?**

RESPONSE PROVIDED BY: William Gallagher - VP Budget & Strategic Development
Daniel J. Cassidy, P.E. - Vice President Technical Operations

RESPONSE:

- a. This project is aligned with PGW's long-term Capital Program. It was originally identified in the FY 2023 Capital Budget and Forecast with PGW seeking approval in FY 2027. The project was identified in future Capital Programs with approval consistently reflecting FY 2027.
- b. This liquefier will reliably produce LNG, which is a critical component of PGW's system reliability and resilience.
- c. There are no applicable regulatory mandates associated with this project.

RESPONSE TO THE HEARING EXAMINER'S DATA REQUEST

FISCAL YEAR 2027 CAPITAL BUDGET

KB-HE-3:

Did PGW evaluate any alternative solutions (e.g., contracting, third-party services, or expansion of existing facilities)? If so, please summarize the alternatives considered and the rationale for their rejection.

RESPONSE PROVIDED BY: Daniel J. Cassidy, P.E. - Vice President Technical Operations

RESPONSE:

PGW evaluated upgrading LNG trucking facilities, the spot purchase of pipeline gas, and increasing pipeline capacity. The feasibility of these options is summarized in the 2027 Capital Budget filing.

RESPONSE TO THE HEARING EXAMINER'S DATA REQUEST
FISCAL YEAR 2027 CAPITAL BUDGET

KB-HE-4:

On page 13 of the budget filing PGW states that “PGW is currently negotiating a Public Private Partnership (“3P”) opportunity related to the RFP for LNG Commercial and Asset Optimization posted on June 21, 2025. If an agreement is reached, PGW will no longer need the funding requested herein for this liquefier project. It is expected that PGW will know if this option is feasible by September of 2026.”

- a. Provide an update on the status of these negotiations.**
- b. If a partnership is finalized, would PGW's capital expenditures on this project be reduced? Please quantify.**

RESPONSE PROVIDED BY: Daniel J. Cassidy, P.E. - Vice President Technical Operations

RESPONSE:

- a. Please see response to PA-CB-6.**
- b. Please see response to PA-CB-7**

RESPONSE TO THE HEARING EXAMINER'S DATA REQUEST
FISCAL YEAR 2027 CAPITAL BUDGET

KB-HE-5:

PGW indicates that the existing liquefier is approaching end of life (industry-published service life of approximately 20 years, with 40–50 years potentially achievable). However, according to the CH-IV report, the liquefier was placed in service in 2002, making it 23 years old.

- a. Based upon PGW's internal reviews and the CH-IV analysis, when does PGW expect the existing liquefier to reach end of life?**
- b. What factors drive that assessment?**

RESPONSE PROVIDED BY: Daniel J. Cassidy, P.E. - Vice President Technical Operations

RESPONSE:

- a. Please refer to the response to PA-CB-5.**
- b. Factors include cost implications associated with a catastrophic failure of the cold box, uncertainties surrounding when that might occur, and lack of viable continuing support from the original equipment manufacturer (which also raises the risk of poor system performance with the replacement of only the cold box).**

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FISCAL YEAR 2027 CAPITAL BUDGET

KB-HE-6:

Has PGW experienced any reliability or performance issues with the existing liquefier? If so, please describe the nature, frequency, and operational impact of those issues.

RESPONSE PROVIDED BY: Ramon Leonardo Picado - Director - Gas Processing
Daniel J. Cassidy, P.E. - Vice President Technical Operations

RESPONSE:

The plant experiences numerous unexpected shutdowns each year due to operational issues (e.g., mechanical, electrical, and controls issues). Many of these lead to repair times that result in a full thermal cycling of the plant. Thermal cycling is discussed in the CH-IV report. Additionally, the plant has required extensive maintenance and overhauls of major plant components over the years it has operated, these include:

Issues	Frequency	Operational Impact
Failure of cold box temperature sensors	Replaced in 2013 and 2020	Loss of production
Gas Pretreatment Vessels (Temperature Swing Adsorption or "TSA" system)	Were repaired/modified in 2009, 2010, 2012, 2013, 2015, 2023, and will be in 2026	Loss of production
Companaders (Gas Compression and Expansion units)	Rebuilt in 2006, 2015, 2020, and will be in Summer 2026	Loss of production
Gas Pretreatment (TSA) Valves	Replace six (6) in FY 2025. Will replace one (1) in 2026	Loss of production

RESPONSE TO THE HEARING EXAMINER'S DATA REQUEST

FISCAL YEAR 2027 CAPITAL BUDGET

KB-HE-7:

Has an analysis been performed to quantify how failure of the liquefier would impact operating expenses? If so, please provide the estimated incremental costs.

RESPONSE PROVIDED BY: Daniel J. Cassidy, P.E. - Vice President Technical Operations
Erik Wickley-Olsen, P.E. - Principal Engineer

RESPONSE:

PGW has analyzed the operating expense impact of a liquefier failure. After a design winter, PGW would need to purchase a combination of trucked LNG and additional pipeline gas (blend of spot and future). PGW estimates the operating impact of this scenario to be approximately \$60 million for the first year. The operating cost impact for the subsequent years would depend upon the amount of LNG vaporized in the winter and the time it would take to install a new liquefier.

RESPONSE TO THE HEARING EXAMINER'S DATA REQUEST

FISCAL YEAR 2027 CAPITAL BUDGET

KB-HE-8:

Per the CH-IV engineering and consulting report, four of the eleven liquefiers reviewed in the market survey have plans to be replaced within the next five years, and three of the eleven have already been taken out of service. Does PGW have additional information regarding the average life span of those seven liquefiers or other relevant benchmarking data? If so, please provide.

RESPONSE PROVIDED BY: Daniel J. Cassidy, P.E. - Vice President Technical Operations
Erik Wickley-Olsen, P.E. - Principal Engineer

RESPONSE:

These seven liquefiers range from 51 to 58 years old; however, these units are much smaller in size than the PGW liquefier, averaging 5 MMSCFD (Million Standard Cubic Feet) capacity. Also, the thermal cycling experienced by these systems was/has been significantly less than the PGW system.

RESPONSE TO THE HEARING EXAMINER'S DATA REQUEST

FISCAL YEAR 2027 CAPITAL BUDGET

KB-HE-9:

The CH-IV report notes that PGW's cold box was designed with larger temperature gradients than industry standards, which can reduce life expectancy. Does PGW have records explaining why this design was chosen, i.e. oversight, evolving standards, or unique operational needs? If so, please provide.

RESPONSE PROVIDED BY: Daniel J. Cassidy, P.E. - Vice President Technical Operations

RESPONSE:

The PGW Expander Plant was the first such system designed by Air Products, Inc. At the time of design, construction and commissioning in the early 2000's, Air Products applied the best engineering practices and standards available for the PGW plant. It is reasonable to assume that these standards have evolved since the early 2000's.

RESPONSE TO THE HEARING EXAMINER'S DATA REQUEST

FISCAL YEAR 2027 CAPITAL BUDGET

KB-HE-10:

The CH-IV report states that “BAHX heat exchangers have operated well beyond 20 years when operated within industry guidelines,” and that prior to the analysis PGW operated the expander plant outside of those guidelines to meet Design Day and Failure Scenario LNG production needs. Since the issuance of the report, what, if any, specific operational changes have PGW implemented to minimize thermal excursions?

RESPONSE PROVIDED BY: Daniel J. Cassidy, P.E. - Vice President Technical Operations

RESPONSE:

PGW reduced the available operating modes of the LNG Expander plant. Specifically, the 33% operating rate was removed from normal operating procedure. As originally designed, the plant could operate at 33%, 50%, 70%, and 100% of its design production capacity. The 33% operating rate caused additional stress on the compressors and also resulted in more cold box thermal cycling. Additionally, PGW operators have reduced the rate of plant cooldown to better align with the recommendations in the Chart report (from 2021) to reduce thermal excursions.

RESPONSE TO THE HEARING EXAMINER'S DATA REQUEST

FISCAL YEAR 2027 CAPITAL BUDGET

KB-HE-11:

Given the CH-IV report's conclusions regarding the historical thermal cycling at approximately five times the recommended level, the criticality of the liquefier, and the estimated 2.5-year lead time in the event of failure:

- a. **Does PGW plan to execute the replacement project in phases?**
- b. **If so, can the FY 2027 Capital Request be phased, and what funding amount would be required specifically for the FY 2027 portion (Phase 1), with remaining amounts deferred to future budget years?**

RESPONSE PROVIDED BY: Daniel J. Cassidy, P.E. - Vice President Technical Operations

RESPONSE:

- a. No. Please see the response to PA-CB-12.
- b. See above.

RESPONSE TO THE HEARING EXAMINER'S DATA REQUEST

FISCAL YEAR 2027 CAPITAL BUDGET

KB-HE-12:

What controls (if any) are in place to ensure the Replace Liquefier–Richmond project is appropriately budgeted and to prevent out-of-scope or significant cost overruns?

RESPONSE PROVIDED BY: Daniel J. Cassidy, P.E. - Vice President Technical Operations

RESPONSE:

Considering the cost and complexity of this project, the Gas Processing and Engineering Departments will work closely with PGW's Enterprise Project Management Office to implement the appropriate governance and project controls. This will minimize deviations from the project's defined scope of work.

In addition to these internal controls, PGW is seeking a lump-sum, turnkey project from an EPC (Engineering Procurement Construction). Engineering will be performed to move the project from its current design to a level where a firm price can be provided by an EPC. This firm price will provide the accuracy needed to stay within the contingency amounts of the project.

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FISCAL YEAR 2027 CAPITAL BUDGET

KB-HE-13:

Does PGW's current capital request for the "Replace Liquefier-Richmond" project include funding for contingencies or unforeseen conditions? If so, how was the contingency amount determined?

RESPONSE PROVIDED BY: Daniel J. Cassidy, P.E. - Vice President Technical Operations

RESPONSE:

Yes. Two contingencies were added: a contractor's contingency of 10% to cover items the contractor may miss during bidding, and an estimate contingency of 20% to cover unforeseen issues such as labor availability and material costs. The contractor value was recommended by PGW's consultant CH-IV. The 20% contingency was developed using PGW's standard contingency analysis.

RESPONSE TO THE HEARING EXAMINER'S DATA REQUEST

FISCAL YEAR 2027 CAPITAL BUDGET

KB-HE-14:

During colder days in the winter months the liquefier can supply as much at 30% of send out requirements. Is there historical data showing exactly how much of the send out requirements the liquefier supplied over the past three heating season? If so please provide?

RESPONSE PROVIDED BY: Daniel J. Cassidy, P.E. - Vice President Technical Operations

RESPONSE:

Date	Sendout in MCF	LNG Used in MCF	Percentage LNG
1/16/2023	322,538	350	0.1%
1/18/2023	251,072	3,722	1.5%
1/23/2023	337,536	100	0.0%
1/24/2023	327,510	500	0.2%
2/3/2023	499,067	138,729	27.8%
2/4/2023	449,413	19,493	4.3%
2/6/2023	320,368	14	0.0%
2/13/2023	239,702	817	0.3%
3/8/2023	300,872	486	0.2%
11/28/2023	379,868	2,597	0.7%
11/29/2023	356,536	3,722	1.0%
11/30/2023	272,074	1,521	0.6%
12/5/2023	284,660	396	0.1%
12/6/2023	329,761	1,956	0.6%
12/7/2023	322,979	2,504	0.8%
12/12/2023	311,633	542	0.2%
12/13/2023	324,199	2,444	0.8%
12/14/2023	328,661	125	0.0%
12/18/2023	254,347	347	0.1%
12/19/2023	357,006	222	0.1%

Date	Sendout in MCF	LNG Used in MCF	Percentage LNG
1/3/2024	305,835	550	0.2%
1/4/2024	364,373	122	0.0%
1/10/2024	259,801	2,290	0.9%
1/15/2024	417,420	2,111	0.5%
1/16/2024	462,695	107,619	23.3%
1/17/2024	479,757	118,125	24.6%
1/18/2024	410,329	4,146	1.0%
1/19/2024	431,887	17,292	4.0%
1/20/2024	474,078	112,104	23.6%
1/21/2024	441,315	69,069	15.7%
1/26/2024	201,037	300	0.1%
2/28/2024	216,197	278	0.1%
3/19/2024	245,090	674	0.3%
11/19/2024	138,829	799	0.6%
11/20/2024	142,844	1,931	1.4%
11/27/2024	197,805	1,660	0.8%
12/3/2024	351,988	4,278	1.2%
12/4/2024	324,973	1,222	0.4%
12/10/2024	179,646	903	0.5%
12/21/2024	425,570	50,625	11.9%
12/22/2024	488,796	121,910	24.9%
12/23/2024	434,232	21,889	5.0%

Date	Sendout in MCF	LNG Used in MCF	Percentage LNG
1/6/2025	430,642	7,583	1.8%
1/7/2025	437,076	56,351	12.9%
1/8/2025	471,043	109,368	23.2%
1/9/2025	451,751	10,229	2.3%
1/10/2025	387,943	23,119	6.0%
1/14/2025	443,288	1,069	0.2%
1/15/2025	449,327	42,118	9.4%
1/16/2025	439,353	4,194	1.0%
1/19/2025	419,693	7,986	1.9%
1/20/2025	522,859	208,861	39.9%
1/21/2025	571,416	227,108	39.7%
1/22/2025	554,246	211,188	38.1%
1/23/2025	486,389	81,653	16.8%
1/24/2025	446,348	736	0.2%
2/18/2025	495,471	46,104	9.3%
2/19/2025	479,492	72,966	15.2%
2/20/2025	484,905	127,625	26.3%
2/21/2025	425,639	33,465	7.9%
2/25/2025	226,954	139	0.1%

RESPONSE TO THE HEARING EXAMINER'S DATA REQUEST

FISCAL YEAR 2027 CAPITAL BUDGET

KB-HE-15:

In the FY 2026 Proposed Budget the forecast showed the Liquefier would be approximately \$170,000,000. However the FY 2027 Proposed budget has the liquefier cost at \$181,992,000. Please explain the almost \$12,000,000 (\$11,992,000) increase from the FY 2026 Forecast to the FY 2027 Proposed Capital Budget?

RESPONSE PROVIDED BY: Daniel J. Cassidy, P.E. - Vice President Technical Operations
Erik Wickley-Olsen, P.E. - Principal Engineer

RESPONSE:

FY26 forecast did not include an inflation adjustment. FY27 includes a composite (FY27, FY28, FY29) escalation of 6.9% to cover the majority of expected project spend (50%) in FY29.

RESPONSE TO THE HEARING EXAMINER'S DATA REQUEST
FISCAL YEAR 2027 CAPITAL BUDGET

HE-16: In reference to the 800 Building Chiller Plant Sequencing /Optimization:

- a. Will this project save money on heating and/or cooling?
- b. Will the new system be more energy efficient?
- c. If so, please provide any analysis of the savings.
- d. Please explain the main issues with the current HVAC System?

RESPONSE PROVIDED BY: Arthur S. Hall, P.E. - Director of Special Projects and Facilities

RESPONSE:

- a. This is a cooling system upgrade. The reason for the improvement is due to limits in cooling capacity because the chillers are currently designed to work independently of each other. This becomes a problem on very hot days when the cooling capacity is not enough to meet demand. The plan is to convert to a complementary operation to achieve a safer and better operation to meet the needs of the building. The benefits include extending the life of the chillers, ensuring the piping operates at optimum flow and saving money from extensive repairs and maintenance.
- b. The new system will operate more efficiently than what is currently installed.
- c. There are some savings, but savings were not the main driver in planning this improvement which addresses a shortfall in cooling capacity during high heat periods.
- d. In the current setup the chillers are designed to work individually and this creates a limit of chilled water capacity. On very hot days the cooling is not sufficient to handle the demand. This project strives to determine the best strategy for transitioning to a complementary chiller operation and ensure meeting the building's cooling demands with minimal changes to the piping systems.