



Philadelphia Gas Works' Response to the 2014 PAPUC Winter Reliability Data Request

The following is Philadelphia Gas Works' response to the 2014 Pennsylvania Public Utility Commission's Winter Reliability Data Request. The text of the Commission's Data Request is below. It is followed by PGW's response.

1. Winter Readiness

Provide a summary of your company's winter preventative maintenance program(s) which directly facilitate safe and reliable service over the heating season. Provide a description of any potential best practices including any new leak detection programs.

2. Employee Safety/Readiness

Provide a description of any procedures and/or training protocols your company uses to ensure personnel are adequately prepared and staffed for the heating season.

3. Communications Outreach

Provide a summary of the communications procedures your company has in place to effectively manage potential crisis events during the heating season.

4. Gas Supply and Planning

Describe the methods and protocols your company uses to ensure reliable gas delivery at least cost during the heating season. Include how your company plans to manage peak demand days, capacity planning, interstate supply coordination, storage, curtailment, and weather forecasting. Include a description of any best practices.

5. Natural Gas Demand from Electric Generators

Provide your company's view on any potential concerns about fuel availability over the winter heating season given the increased demand for natural gas as an electric generation



fuel source and possible increased use of firm gas transportation service. Include any new protocols or plans your company may have in place to manage this new dynamic.

6. Polar Vortex Analysis

Provide a summary of any outages or pressure issues due to the extreme cold that affected your system from January 1st through January 31st, 2014. Describe any measures or changes that have been implemented since this occurrence to improve reliability and prevent similar disruptions of service this coming winter.

1. Winter Readiness

PGW submits the following summary of its winter preventive maintenance programs in response to the 2014 PUC Winter Reliability Data Request. The programs summarized directly facilitate safe and reliable service during the heating season.

- The PGW Gas Processing Department's, Preventative Maintenance Program (PMP) uses a Work Management System to insure that all process heaters, boilers, vaporizers, valves, safeties and auxiliary systems are inspected, calibrated and tested before being put into service for winter operations at the Gas Plants. Using the PMP, PGW manages resources to assure that they will provide safe reliable service during the winter months.
- The Gas Processing Department maintains an Emergency Snow Plan. Gas Processing Department's Snow Emergency Plan coordinates decision making and personnel for the Richmond and Passyunk plants under the direction of a Snow Emergency Coordinator. Its purpose is to minimize the effects of a heavy snowfall on plant operations.



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- The Gas Processing Department conducts readiness testing on the vaporizers at Richmond and Passyunk plants in preparation for winter operations.
- The Winter Load Operating Group (WLOG) meets periodically throughout the year to review design hour load requirements for the high pressure distribution system. The WLOG reviews plans for various operating scenarios including maximum load or system failure scenarios. The WLOG makes contingency plans to meet customer load requirement for the various system failure scenarios. The WLOG also reviews and discusses any changes made during the year to the distribution system
- With respect to winter weather and forecasting, PGW receives a 5 week forecast that is updated weekly and a 7 day forecast that is updated 3 times a day.
- PGW's Winter Manpower Management is a five phase Emergency Response and Manpower Allocation program which directs allocation of resources and crew assignments to maximize the efficient use of all of these resources to meet the 24-hour, 7 day a week distribution system demands.
- PGW has a robust, in-house, fully staffed damage prevention program that continues its operation through the winter.
- PGW has an industry best leak survey program in place that is supplemented by additional survey programs during the winter months (See attached Distribution Department Bulletin #127). Starting on December 1st and continuing through March 31st of each year, PGW performs a general winter patrol by conducting an Optical Methane Detection (OMD) mobile survey of all areas in which there is a high concentration of cast iron main. PGW also performs a prudent winter Frost Patrol by surveying the 600 blocks ranked by the Main Replacement and Prioritization (MRP) model every two weeks. Additionally, all 12" cast iron mains operating at 10-35 psig throughout the city undergo a leak survey by OMD once every two months during the winter period.



- PGW's Fleet Operations Department activates its protocol for installing snow chains/cables on specified emergency response and other vehicles once snow is predicted to accumulate to four or more inches.
- PGW's Fleet Operations Department has a mandatory winter detail schedule for our Fleet mechanics that goes into effect December 3rd through March 31st, which provides for coverage 24/7 to support all PGW departments that use PGW vehicles.

2. Employee Safety/Readiness

Below is a brief description of procedures and training that PGW uses to ensure that personnel are adequately prepared and the enterprise is adequately staffed for the heating season.

- **Field Personnel Safety** - Prior to the heating season PGW conducts all-day annual training and safety schools focusing on worker and public safety policies and procedures.
- **Emergency Dispatch** - PGW has a five phase Emergency Response and Manpower Allocation program which assures proper allocation of resources, staff and work crews to meet the 24-hour, 7 day a week distribution system demands.
- **Gas Processing Department Personnel are Trained** - initially upon hire and given refresher training annually for PGW safety protocols. There also is training throughout the year to comply with the CFR 192 and 193.
- **Customer Service Representative (CSR) Refresher Training** – Annually PGW's Customer Affairs Department conducts the following initial and refresher training for its frontline staff who operate the PGW Call Center:



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- **Emergency Training** - This annual refresher training reviews the proper procedure for managing leak and emergency calls and how and when to issue a trouble order to Field Operations.
- **Customer Responsibility Program (CRP)** - This training entails staff being refreshed on when and how to enroll a customer into PGW's low income program, the Customer Responsibility Program (CRP). CRP provides customers with a consistent, discounted bill each month to help them better afford their bills and keep gas service on.
- **High Bill Refresher Training**- To prepare for the heating season, CSRs are refreshed on how to properly review usage patterns and explain customer billing.
- **Payment Arrangement Refresher Training**- This annual training will refresh CSRs on how to determine the most appropriate restoration and payment arrangement terms for customers.

3. Communications Outreach

Following is a summary of the communications procedures that PGW has in place to effectively manage potential crisis events during the heating season.

- **In the event of an emergency** - PGW makes communication a priority and activates its Crisis Communications plan, which includes:
 - Notifying key personnel that a potential crisis is in effect, assigning short-term tasks and setting up an initial briefing session;
 - Assigning trained personnel to gather and share relevant information with employees, customers and additional audiences via the appropriate internal and external communications channels;



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- Corporate Communications Department and Operations working collaboratively and effectively via well-defined roles and responsibilities to identify available and needed resources, and utilize same;
 - Assigning personnel to communicate the variety of communication options through which internal and external audiences can gather information from PGW, share information with PGW and report their concerns to PGW;
 - The communications team monitoring the coordination and content of all communications activities with internal and external audiences;
 - Sharing information with audiences on how PGW is responding to the potential crisis, as warranted;
 - Utilizing relationships with local officials, community groups and other entities to share information at the community level;
 - Postponing planned communications activities to ensure our communications channels are devoted to the potential crisis and available to audiences.
- **Additional Emergency Communications** - communications staff available 24-hours a day to respond to media inquiries. Each state legislator and city council member in our distribution area receives regular personal correspondence along with email follow-up in the event of an emergency. The company's Community Partnership Manager meets with elected officials and attends community events throughout the city to share outreach messages on a routine basis.
 - **Customer Communications** - Every PGW customer receives our monthly informational bill newsletter *The Good Gas News* which shares important safety information and contact numbers. *The Good Gas News* is posted on the company website www.pgworks.com each month. Our website also features gas leak safety



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information, weatherization tools and instructions on how to contact PGW in the event of an emergency. The home page of the website can also post important customer messages, when necessary.

- **Philadelphia Resident Emergency Communications** - In the event of an emergency, PGW makes communication a priority by offering a variety of communication options to customers and Philadelphia residents. Customers can contact the Customer Call Center and the automated Interactive Voice Response phone system to report an odor or suspicion of a gas leak 24 hours a day, 7 days a week.
- **Employee Communications** - PGW uses a computer based notification system which allows PGW to contact all employees quickly and efficiently with a consistent message. This notification system can contact employees at home, work, by text message, cell phone or through email.
- **First Responder Communications** - PGW works with and communicates closely with the Philadelphia Fire Department on training and response procedures surrounding the response to water main breaks, Carbon Monoxide, Fire and Foreign Odor reports.
- **PUC's Cold Weather Survey** – In October PGW began conducting its annual Cold Weather Survey. The annual Cold Weather Survey consists of PGW surveying all of its residential customers who were terminated during the year and the service is still off. As part of the survey PGW makes four attempts (one in person) to provide terminated customers with information on how they can restore service. PGW also surveys how the customer plans on heating their home during the winter season. The survey results are then submitted to the Commission by no later than December 15th. A resurvey is also conducted in January.
- **LIHEAP and CRISIS Outreach** - Each year PGW conducts various forms of outreach to customers who may qualify to receive LIHEAP and/or CRISIS grants. PGW also has



staff available in our district offices to provide customers with assistance with completing their LIHEAP applications.

4. Gas Supply and Planning

Below is a description of methods and protocols that PGW uses to ensure reliable natural gas delivery at least cost during the heating season. Descriptions of methods to manage peak demand days, capacity planning and interstate supply coordination, storage, curtailment and weather forecasting are included.

- **Peak Design Day Evaluation** - PGW models project customer gas requirements for a design (coldest) hour, design day and design winter. These gas requirements form the basis for capacity commitments for pipeline supply, storage, and transportation contracting.
- **System Supply Requirement Review** - PGW's supply portfolio is split into three distinct categories. First, the Company enters into winter-only supply contracts. These winter-only supply arrangements provide gas supply that fills approximately forty-seven percent (47%) of PGW's daily firm transportation entitlements. Second, an additional twenty-six percent (26 %) of PGW's gas supply portfolio is purchased on a one hundred percent gas daily pricing basis that allows for daily volumetric changes. Third the company utilizes three (3) pipeline storage services along with our LNG facilities, as an additional source of supply.
- **Interstate Supply and Capacity Arrangements** - Spectra Energy and Williams pipelines represent the only interstate pipeline facilities with physical connections to the PGW service territory. These supply contracts also recognize pipeline receipt and delivery rights. By sourcing supply in this manner, PGW not only ensures security of supply from the pipelines, but also can take advantage of varying basis differentiated pricing in the market.



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- **Utility and Contract Storage Inventory Delivery Plans** - PGW utilizes bundled storage and LNG to meet operational requirements and to accomplish other cost saving initiatives.
- **Emergency Curtailment Plans** - PGW utilizes a three phase Emergency Curtailment Plan, first Contractual Load Shedding, next Voluntary Usage Reductions and last Mandatory Usage Reductions.
- **Weather and Forecasting** - PGW receives a 5 week forecast that is updated weekly and a 7 day forecast that is updated 3 times a day.

5. Natural Gas Demand from Electric Generators

Following is PGW's response to the PUC question on Natural Gas Demand from Electric Generators.

Currently within the Philadelphia Gas Work service territory there is one electric generation facility that generates electricity for sale that uses natural gas as its fuel source. This facility nominates purchases and transports gas to the city gate using its own contracts. PGW takes the gas at the city gate and transports this gas to the electric generation facility on PGW's gas distribution system. This customer's natural gas nominations and purchases are independent of the PGW contracts for natural gas purchases for its other customers and will have no effect on PGW's fuel availability or PGW's ability to deliver gas to our firm customers even under design conditions.

6. Polar Vortex Analysis

Following is PGW's response to the PUC question on system outages and pressure issues caused by the extreme cold from January 1 to January 31, 2014.



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PGW manages a robust, integrated distribution system with a dedicated group of technicians that assure that prescribed flows pressures are maintained within the system. This group works closely with distribution network analysis technicians and the gas acquisition group to meet the pressure and flow demands of our network. The actions of those persons and other supporting departments resulted in PGW experiencing no outages or pressure issues due to the extreme cold last year.



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DISTRIBUTION DEPARTMENT

LEAK SURVEYS

Effective Date: March 21, 2014

Bulletin Number #127
Supersedes: DD Bulletin # 127
dated 8/2/13

I. Purpose

A leak survey is an industry standard preventive maintenance methodology which allows the operator to identify leaks before they become hazardous.

To comply with 49 CFR§ 192.723 which states in part “Each operator of a distribution system shall conduct periodic leakage surveys in accordance with this section”

To comply with Pennsylvania Utility Commission (PUC) request for surveys due to cold weather conditions, especially ORDER Docket No. M-2011-2271982, December 2011.

II. Definitions

Available Openings – Any ground opening that permits a sample of underground atmosphere. Examples are manholes, water boxes, curb boxes, vent boxes, cracks in paving, etc.

Frost Degree Days (FDD) – Measure of average temperatures below 27^oF. Beginning in November of each year, the average daily temperature is tracked and the difference of each degree below 27^oF is added to the cumulative degree tracker in order to calculate FDD.

Frost Event –3” or greater of frost reported in greater than 50 % of AIMS reports for five or more consecutive days.

GDI – Gas Detection Instrument

Gas Facilities - PGW mains, services, valves, street regulators, etc.

Main Replacement Prioritization (MRP) – GIS-based computer risk model that establishes a main replacement priority ranking for PGW gas pipes.

Mobile Surveys - a gas leak survey conducted by trained personnel traveling by vehicle using either Optical Methane or Flame Ionization Equipment, set to detect 50 PPM.

Optical Methane Detection – Technology combining sensitivity, selectivity and speed through the combined use of optics and electronics. The OMD consists of an IR light source directed at an IR optical detector. When passing through a plume of natural gas, methane in the plume will absorb some of the IR light, resulting in a sudden decrease in IR light at the detector. This will result in a reading in PPM on the display.

PGW Fiscal Year – September 1st to August 31st



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Reading - A repeatable deviation on a Gas Detection Instrument (GDI) or equivalent instrument, expressed in Lower Explosive Level (LEL) or % gas. Where the reading is in an unvented confined space, consideration should be given to the rate of dissipation when the space is ventilated and the rate of accumulation when the space is resealed.

NOTE: Any reading inside a structure qualifies as a reading and requires physical action. Any OUTSIDE reading of 2% LEL or higher is required in order to qualify as a recordable reading.

Walking Survey - a gas leak survey conducted by trained personnel traveling on foot using a gas detection instrument capable of detecting 50 PPM.

III. General Leak Surveys Procedure

Leak Survey Description	Method	Frequency
Roadway	Mobile	Annually – Not to Exceed 15 Months
Footway	Walking	3 Years – Not to Exceed 39 Months
Center City	Walking	Semi-annually (FSD and Distribution alternately) Not to Exceed 7 Months
Business District	Walking/Mobile	Annually – Not to Exceed 15 Months
Transmission	Walking/Mobile	Quarterly – Not to Exceed 4 Months
Franklin Mills	Walking	Quarterly – Not to Exceed 4 Months
Plants and Gate Stations	Walking	Annually – Not to Exceed 15 Months
Master Meter (By Agreement)	Walking	3 Years – Not to Exceed 39 months
Major Parades, Major Public Events, and Bike Race Routes	Mobile	2 – 4 Weeks Prior
Buried Bridge Mains	Walking	Annually – Not to Exceed 15 Months
Blasting & Implosion	Walking/Mobile	When notified by Fire Marshall or PA One Call
Winter Surveys	Mobile	December 1 through March 31 (see section IV)
12" Cast Iron (10-35psig) mains	Mobile	Every Two Months – Not to Exceed 75 days
All Cast Iron (10-35 psig) mains	Mobile	Semi-annually – Not to Exceed 7 months
30" Cast Iron (10-35psig) main from Richmond Plant to Passyunk Plant	Mobile	Quarterly – Not to Exceed 4 Months until replaced



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Note: All PGW Leak Survey schedules follow PGW Fiscal Year

Roadway

A mobile survey will be conducted using an Optical Methane Detector (OMD). This equipment shall be used to survey gas facilities under city streets. All OMD readings shall be confirmed with a GDI and reported in % LEL and/or % gas scale.

Footway

A footway survey shall be conducted by a walking survey and cover all available openings and adjacent areas near or over gas facilities from the curb, to the outside foundation wall and up to the meter on outside sets. The gas detection instruments shall be set for use at 50 PPM. In addition, PGW personnel will continue to visually detect the possible effects of leaking gas on vegetation and to detect underground street trouble conditions such as water, sewer and other underground or surface defects, that create cavities and depressions which could affect gas distribution facilities. Outside meter sets and above ground pipelines shall be checked for atmospheric corrosion defects and reported on maintenance order Form 537.

Center City

Center City will be surveyed two times per year. Distribution will perform footway and OMD roadway surveys in November; FSD will perform the walking survey in May.

Business District

FSD will perform walking Business District Surveys annually in two areas opposite of Distribution footway surveys. The mobile OMD roadway survey will supplement this survey.

Transmission Line

TP-1 line shall be walking surveyed quarterly. In addition, this line will be patrolled on a monthly basis.

30" Cast Iron Line (10-35 psig – Richmond Plant to Passyunk Plant)

The 30" CI Main with operating pressure 10- 35 psig that runs from Richmond Plant to Passyunk Plant shall be mobile OMD – Surveyed quarterly.



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12" Cast Iron Mains (10-35 psig)

All 12" Cast Iron HP (10-35 psig) mains shall be surveyed, using mobile OMD, every two months (total of 6 times a year).

All Cast Iron Mains (10-35 psig)

All Cast Iron HP (10-35 psig) mains – all sizes – shall be surveyed, using mobile OMD, every six months (twice a year).

Franklin Mills

In addition to leak survey, the inspection shall include the visual observation of pipe support and expansion joints and report of safe and satisfactory conditions of the system. Outside meter sets and above ground pipelines shall be checked for atmospheric corrosion defects and reported on a maintenance order. Distribution shall inspect and survey this line quarterly.

Plants and Gate Stations

The Plants and Gate stations will be surveyed annually by walking survey.

Master Meter

Premises being fed by master meter that have agreement with PGW for leak survey will be surveyed as required. Most are on a 3 year schedule regardless of system material (unprotected steel or plastic) to be surveyed within the survey area. The survey supervisor will maintain the listing of these areas.

Major Parades, Major Public Events and Bike Race Routes

Major parades, major public events, and bike race routes will be OMD surveyed two to three weeks prior to the event. So that repairs to PGW facilities and resurfacing can be completed prior to the event.

A Superintendent or above shall determine the need for these Surveys.

Buried Bridge Mains

Survey crews shall conduct an annual walking survey on all buried bridge mains. The crew shall include a visual observation of the condition of the bridge to determine the existence of obvious



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structural defects of the bridge and report any conditions which may appear hazardous to PGW structures.

Blasting and Implosion

Survey crews shall conduct a walking and mobile survey of the affected area. Surveys shall be conducted approximately one week prior to and immediately following the activity. A Superintendent or above shall determine the area affected, taking consideration, distance, age, size and material of PGW gas facilities and the scope of the work.

Note:

Additional surveys, not included in this policy, can be added upon the request of a Superintendent or above.

IV. Winter Survey Programs

Winter Leak Survey Type	Method	Frequency
General Winter Patrol	Mobile	December 1 through March 31
Prudent Winter Patrol	Mobile	Based on frost events (see definition)

General Winter Frost Patrol

Starting on December 1st and continuing through March 31st of each year, OMD mobile survey will be conducted in areas of high concentration of cast iron mains from 7:00 am to 3:30 pm during normal workdays. Survey time will change to 10:00 pm to 6:30 am during frost events and continuing for 7 days after the end of the event.

Prudent Winter Frost Patrol

Mobile OMD leak survey of the top 600 blocks slated for replacement through the Main Replacement Prioritization (MRP) model ranking will be initiated during all frost events or frost degree day criteria (see definitions). This survey will start when there is measurable amount of frost reported for a period of five days and continue until the 600 blocks are surveyed. After initiated, the survey must be completed within 20 working days. The prudent survey will continue after the 600 blocks are surveyed until 7 days after the end of a frost event. The list of top 600 blocks will be extracted from MRP by Distribution Planning Section and updated on a yearly basis.



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Recordkeeping for Winter Surveys

All new leaks discovered as result of winter surveys will be recorded and tracked by leak classification type. The survey leak tracking will include the following:

- Day the leak was discovered
- Type of survey during which the leak was found
- Type of pipe (cast iron, unprotected bare steel, etc.)
- Classification either “Work Immediate” or “Repair or Recheck Schedule”.
- In the case of “Work Immediate”, the date of the repair and what was found.
- In the case of Repair or Recheck Schedule, the next required visit date and principal reading.

Frost Event Tracking

PGW’s Distribution crews measure and report ground frost on a daily basis using the AIMS system. This will be a primary method of determining a frost event. It will be tracked by the Distribution Maintenance Section. See “**Frost Event**” definitions above.

The PUC requests that in order to better identify frost events, Frost Degree Days (which measure average temperatures below 27^oF) will be tracked and recorded by the Distribution Maintenance section starting on November 1st. This will be done in addition to PGW’s normal frost-tracking procedures. See “**Frost Degree Day (FDD)**” definitions above.

V. General Requirements for All Surveys

Investigation and repair of all detected leaks shall be in accordance with the following requirements:

- a) Distribution Department Bulletin #126 –Investigation and Repair of Underground Leaks (Work Initiation Schedule)
- b) Distribution Department Bulletin #212 – Leak Response and Investigation Procedure

VI. Associated Documentation

A. Relevant Code

CFR Part 49, 192.705 and 192.723
PUC ORDER-Docket No. M-2011-2271982 (on December 22nd, 2011)



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B. Associated Bulletins

DD Bulletin #126 - Investigation and Repair of Underground Leaks (Work Initiation Schedule)

DD Bulletin #212 - Leak Response and Investigation Procedure

OMD Survey procedure (With Superintendent Operations and Maintenance)

Leak Survey and Winter Patrol Survey Handbooks (With Superintendent Operations and Maintenance)

Blasting Procedure

DD Bulletin #241 - Atmospheric Corrosion Procedure

C. Attachments

N/A

VII. Handbooks

Field Operations Supervisors Handbook Section V

VIII. Transaction Listing

TR 2009-01

Approved by:

Raymond J. Welte
Director, Field Operations & Planning

Michael H. Jones
Vice President, Technical Compliance