

PUBLIC VERSION

**STATE OF NEW JERSEY
BOARD OF PUBLIC UTILITIES**

**IN THE MATTER OF THE PETITION OF
PUBLIC SERVICE ELECTRIC AND GAS COMPANY
FOR APPROVAL OF THE NEXT PHASE OF
THE GAS SYSTEM MODERNIZATION PROGRAM
AND ASSOCIATED COST RECOVERY MECHANISM
("GSMP II")**

BPU Docket No. GR17070776

**PUBLIC SERVICE ELECTRIC AND GAS COMPANY
REBUTTAL TESTIMONY
OF
WADE E. MILLER
DIRECTOR – GAS TRANSMISSION AND
DISTRIBUTION ENGINEERING**

February 15, 2018

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1 **II. IDENTIFICATION OF ATTACHMENTS**

2 **Q. Do you sponsor any exhibits in support of your testimony?**

3 A. Yes, I have attached the following 6 exhibits:

4 1. Confidential Attachment WEM-GSMPII-1R is the Company's 2016
5 Distribution Integrity Management Plan ("DIMP") provided in response to Rate
6 Counsel's Discovery Request RCR-POL-2.

7 2. Confidential Attachment WEM-GSMPII-2R is a pertinent portion of the
8 Company's response to Rate Counsel's Discovery Request RCR-POL-46.

9 3. Attachment WEM-GSMPII-3R is the Company's response to Rate
10 Counsel's Discovery Requests RCR-ENG-7 and RCR-POL-85.

11 4. Attachment WEM-GSMPII-4R is the Company's response to Rate Counsel's
12 Discovery

13 Requests RCR-ENG-19, RCR-POL-31 and a pertinent portion of confidential
14 attachment RCR-POL-49.

15 5. Confidential Attachment WEM-GSMPII-5R Chart 2 – Cast Iron
16 Replacements and Break History from 1971-2015.

17 6. Attachment WEM-GSMPII-6R is the Company's 2003 supplemental
18 PHMSA annual report.

1 **III. SUMMARY**

2 **Q. Please summarize your key conclusions regarding the Direct Testimony of Rate**
3 **Counsel Witnesses McGee and Dismukes, and EDF Witness Palacios.**

4 A. Based upon my review of the testimony submitted by Witnesses McGee, Dismukes
5 and Palacios, my conclusions are as follows:

6 1. Although Witnesses McGee and Dismukes claim that GSMP II should be denied as
7 unnecessary, the BPU's recent action in formalizing the Infrastructure Investment and
8 Recovery Rule ("IIR") signals otherwise.

9 2. The attempts of Witnesses McGee and Dismukes to measure the prudence of GSMP
10 II by the terms agreed to in the settlement of GSMP I are improper.

11 3. The work proposed in GSMP II is consistent with the types of projects the BPU noted
12 as eligible under the IIR, and with the federal "Call to Action."

13 4. The regional and local utility leak metric comparisons made by Witness Dismukes are
14 biased and flawed, as the companies compared to PSE&G do not share similar system
15 profiles.

16 5. While there may be some additional benefit to utilizing certain leak prioritization and
17 leak quantification methods, the Company's existing replacement prioritization and
18 leak classification methods serve to address the environmental concern of greenhouse
19 gas emissions.

1 **IV. THE PROPOSED GSMP II PROJECTS SHOULD BE APPROVED AS**
2 **NECESSARY AND PRUDENT IN THIS PROCEEDING**

3 **Q. Rate Counsel Witnesses McGee and Dismukes have summarily argued that the**
4 **Board should not approve GSMP II in this proceeding as the projects proposed**
5 **are unnecessary. Do you agree with their assertion?**

6 A. No. The current proceeding represents the second phase of the Company's gas
7 system modernization efforts. While the Company has made great strides in modernizing its
8 aging gas infrastructure through its work in GSMP I, much work remains to eliminate high
9 risk pipe from its system.

10 GSMP II continues a proactive approach, which is gaining increasing traction
11 nationwide, to replace high risk pipe, thus enhancing system safety. The investment
12 proposed in GSMP II is not only consistent with the national focus on improving the safety
13 of gas infrastructure, but is consistent with the recent BPU rulings wherein the Board
14 approved several infrastructure improvement programs, including the initial phase of the
15 Company's gas system modernization program or GSMP I. The Program is also consistent
16 with the regulation adopted by the BPU that expressly authorizes and encourages utility
17 companies to implement infrastructure replacement programs such as GSMP II.

18 **Q. Please describe the BPU's recent infrastructure program initiative and its**
19 **purpose.**

20 A. On December 19, 2017, the BPU approved the IIR, which incents utilities to
21 implement infrastructure programs. This regulatory initiative is intended to "provide a rate
22 recovery mechanism that encourages and supports necessary accelerated construction,
23 installation, and rehabilitation of certain utility plants and equipment. ...[S]uch investment
24 would occur in a systematic and sustained way to advance construction, installation, and

1 rehabilitation of utility infrastructure needed for continued system safety, reliability, and
2 resiliency, and sustained economic growth in the State of New Jersey.”¹

3 **Q. Does GSMP II fall within the confines of this regulation?**

4 A. Yes. GSMP II aligns with the parameters of the BPU’s Infrastructure Investment
5 Program regulation and, in fact, it mirrors examples as outlined under 14:3-2A.2(b),
6 specifically items 1 and 2. For example, the Board’s regulation contemplates a program up
7 to five years. The term of GSMP II is five years. The Board’s regulation looks to promote
8 projects related to safety, reliability and/or resiliency. The projects proposed in GSMP II
9 target replacement of high risk or aging infrastructure and/or remediation/replacement of
10 facilities identified as high risk in the Company’s DIMP.² The IIR sets a minimum 10% of
11 Program threshold spending level for annual capital expenditures, and PSE&G has proposed
12 to meet or exceed this investment level on capital projects similar to those in GSMP II.

13 **Q. Witness Dismukes claims that the Program “does not entirely” comply with the**
14 **IIR. Is this true?**

15 A. No. As Witness Dismukes notes in his testimony, the GSMP II filing was made prior
16 to implementation of the IIR. Nonetheless the Company has provided testimony in support
17 of the Program, explaining each replacement or rehabilitation project category (i.e., elevated
18 pressure cast iron, utilization pressure cast iron replacement, cast iron joint reinforcement) in
19 detail, including why each project category is being proposed, the costs associated with each
20 project category, how many miles or the number of replacements or reinforcements are to be

¹ *Infrastructure Investment and Recovery Rule*, N.J.A.C. 14:3-2A, issued January 16, 2018.

² A copy of the Company’s 2016 DIMP has been attached hereto as Attachment WEM-GSMP II-1R.

1 performed in each project category, and over what period of time³. Lastly, the Company also
2 provided details on the costs of the Program as compared to the benefits to customers in the
3 form of O&M savings. See Appendix 1 of my direct testimony for a listing of the IIR filing
4 requirements, which includes references to my testimony with the location of each specific
5 GSMP II filing detail.

6 **V. RESPONSE TO SPECIFIC ISSUES RAISED BY RATE COUNSEL**

7 **Q. Witnesses McGee and Dismukes attempt to measure the prudence of GSMP II**
8 **by the terms and composition of the first phase of the Gas System Modernization**
9 **Project (“GSMP I”). Is this proper?**

10 A. No. GSMP II is a new phase of the Company’s gas system modernization program.
11 So, while the main driver of the program remains consistent with local regulation and the
12 federal “Call to Action, the categories of replacements/reinforcements have been expanded to
13 address additional high risk facilities included in the Company’s DIMP. The question of
14 whether the inclusion of the expanded categories of replacements/reinforcements in the
15 Program is prudent must be examined and determined according to precedent and regulation.
16 GSMP I was resolved by way of settlement before the IIR, and has not established such a
17 precedent. Therefore, GSMP I cannot be used as the litmus test for all subsequent
18 accelerated infrastructure program filings as Witnesses McGee and Dismukes propose.

19 **Q. You mentioned that the main driver of GSMP II is consistent with the federal**
20 **“Call to Action.” How so?**

21 A. As I noted in my direct testimony, GSMP II represents a prudent response to the
22 Department Of Transportation’s “Call to Action,” which brought together federal, state and

³ See Discovery Request RCR-POL-0046 for additional detail on project categories, annual units and costs, attached hereto as AttachmentWEM-GSMPII-2R.

1 industry stakeholders seeking to improve the *safety and efficiency* of the nation’s pipeline
2 infrastructure. Despite Witnesses McGee and Dismukes’ assertions to the contrary, the
3 GSMP II projects proposed in this matter do just that. The Company has targeted several of
4 the categories PHMSA has designated as high-risk infrastructure for replacement, including
5 one of the main categories: cast iron. These proposed replacements will therefore serve to
6 increase the overall safety of the Company’s facilities as consistent with the “Call to Action.”
7 PSE&G has also proposed improvements that serve to modernize or increase efficiency of
8 the Company’s distribution system. Details of these replacements and improvements are
9 discussed more thoroughly below.

10 **Q. Can you please address the alleged Program deficiencies identified by Witnesses**
11 **McGee and Dismukes for each of the expanded project categories of GSMP II?**

12 A. Yes. One of the biggest areas of contention for Rate Counsel Witnesses McGee and
13 Dismukes is the expansion of the categories of the replacements/remediation of facilities
14 included in GSMP II, as compared to those agreed for inclusion in GSMP I. Particularly,
15 Witnesses Mc Gee and Dismukes object to the Company’s inclusion of the replacement of all
16 cast iron mains (including elevated pressure) and reinforcement of cast iron joints in the
17 Program. EPCI replacement projects were included in the stipulated base portion of GSMP I.
18 There is no doubt that these improvements serve to increase the safety of PSE&G’s system.
19 This is a proposition that Rate Counsel’s own witness reluctantly admits.

20 **a. Cast Iron Replacements**

21 By one account, Witness Dismukes states that the primary reason for the adoption of
22 accelerated replacement programs is to hasten replacement of priority facilities such as “**cast**

1 **iron** and unprotected steel mains and unprotected steel service lines.”⁴ Yet by the same
2 token, Witness Dismukes claims the Program is unnecessary as it contains “certain wholesale
3 replacement approaches, targeting certain mains (such as Elevated Pressure Cast Iron
4 (“EPCI”) mains) with a potential to leak or break, rather than a program targeted to mains
5 with prior breaks or to mains with major safety problems.”⁵ Priority facilities, as Witness
6 Dismukes himself defines them, are those that are comprised of “pipe materials that were
7 installed decades ago and are no longer being installed, **such as cast iron.**”⁶ Witness
8 Dismukes never qualifies this statement to limit prioritization of facilities to a certain
9 pressure of cast iron main. Likewise, the federal “Call to Action” does not limit the
10 definition of “high-risk” facilities to cast iron of a certain pressure. In fact, the “Call to
11 Action” explicitly states that cast iron mains should be targeted for replacement in **all**
12 **pressure systems** of gas utilities, not just in Utilization Pressure systems since higher-
13 pressure cast iron can carry higher safety risks. The Company recognizes that “high-risk”
14 pipeline infrastructure safety is the most important reason to justify an accelerated program,
15 and as such has included both elevated and utilization pressure cast iron replacements as
16 main components of the Program.

17 Witness McGee takes a different approach in his criticism of the inclusion of EPCI
18 main. He disagrees with the inclusion of EPCI replacements, not on the basis that EPCI is an
19 inappropriate class of pipe for inclusion in an accelerated infrastructure program. Rather,
20 Witness McGee argues EPCI replacement is not appropriate because “EPCI replacements are

⁴ Dismukes Testimony, at p. 14, lines 5-17 (emphasis added).

⁵ *Id.* at p. 3, lines 21-23 – p. 4, line 1.

⁶ *Id.* at p. 17, lines 14-16 (emphasis added).

1 not part of the map-grid mains selection process...and are targeted for replacement segment-
2 by-segment anywhere in the entire system.”⁷ According to Witness McGee, such targeted
3 replacement “do[es] not result in the contractor economies of scale that UPCI map-grid
4 replacements produce.” What Witness McGee fails to acknowledge however, is that EPCI
5 does not lend itself to the same method of replacement because such facilities are main trunk
6 lines that do not exist in the system in a grid like fashion. The fact remains however, that
7 EPCI is a high-risk class of pipe, and as such is properly included in the Program. In fact,
8 witness McGee in EAM 7, references the Philadelphia, Pennsylvania incident, cited by
9 PHMSA, as an incident involving EPCI.

10 **b. Cast Iron Joint Reinforcement**

11 In his testimony, Witness Dismukes also states that priority facilities in some
12 instances...**[include] certain types of equipment or couplings that create leak related**
13 **challenges.”**⁸ Cast iron joints, as I explain in detail in my direct testimony, are facilities that
14 can and have created leak-related challenges for the Company. In severe winters, the cast
15 iron system is subject to stress that produces significant joint leak rates. In fact, during the
16 severe winter of 2014, these joint leak rates accounted for 80% of the elevated pressure cast
17 iron main leaks. Since PSE&G is located in a region that is susceptible to severe winter
18 weather events, the Company is proactively seeking replacement of these facilities, which
19 have caused leak-related challenges in the recent past. Implementation of joint reinforcement
20 in GSMP II is also an appropriate measure to improve the system’s overall safety.

⁷ Direct Testimony of Edward A. McGee, at p. 15, lines 13-15.

⁸ Dismukes Testimony, at p. 14, lines 17-19 (emphasis added).

1 **c. Meter set relocations**

2 Both Witness McGee and Witness Dismukes attempt to challenge the inclusion of
3 meter set relocations in the Program, on the basis that this class of project is described by the
4 Company as a “modernizing activity,”⁹ and that “the Company has explicitly stated that the
5 goal of the program is modernization.”¹⁰ Witness Dismukes goes further to state that the
6 Company’s Program is misguided in that unlike other accelerated infrastructure programs
7 approved by the Board, in which safety was the primary driver, the Company’s focus is
8 modernization.¹¹

9 Meter set relocations were included in the stipulated base portion of GSMP I. While
10 the Company may refer to meter relocations as a means or method to modernize the system,
11 the Company always prefaces those references with the assertion that meter relocation
12 enhances safety. In my testimony I note that outside meter sets provide the added safety
13 benefits of: (1) easy shut off access in the event of an emergency, for both the Company and
14 emergency response personnel; and (2) reducing the potential for gas leaks occurring within
15 buildings, and (3) improved access for meter inspection and leak surveys. This sentiment is
16 echoed in the Company’s response to Rate Counsel Data Request ENG-0007, which was
17 referenced by the Company as part of its response to Rate Counsel Data Request POL-0085
18 (attached collectively hereto as Attachment WEM-GSMPII-3R—the data response quoted by
19 Witness Dismukes. Witness Dismukes conveniently omitted this part of the Company’s
20 response from his discussion of meter set relocations.

⁹ McGee Testimony at p. 15, line 10.
¹⁰ Dismukes Testimony at p. 25, lines 10-11.
¹¹ Dismukes Testimony at p. 25, lines 3-10.

1 Safety and modernization go hand in hand throughout this Program—as you replace
2 obsolete materials (i.e., cast iron) with new materials (i.e., plastic), the system undergoes an
3 upgrade or modernization. The same is true for other components of the Program such as the
4 relocation of meter sets and the installation of excess flow valves, which serve as both a
5 safety measure and a modernization measure that allows for the use of new energy
6 efficient/modern technology. Enhanced system design, and the use of modern technologies
7 provide for improved integrity, reliability and safety of gas distribution systems.

8 **d. Cathodically protected steel and plastic pipe**

9 Replacement of certain segments of cathodically protected steel and plastic pipe is
10 also appropriate because of the economic efficiencies achieved through coordinated
11 replacement. Rather than conducting a patchwork replacement and pressure upgrade of the
12 UP system, the Company is proposing replacement of pipe as part of a large grid conversion
13 to capitalize on project work and cost efficiencies. This represents a small portion of the
14 overall UP miles identified for replacement. Most of the existing utilization pressure
15 cathodically protected steel and plastic pipe in the identified grids will be updated.

16 **Q. Are the expanded components of GSMP II addressed by BPU regulation?**

17 A. Yes, the IIR specifically allows for the inclusion of projects that are identified in the
18 Company’s DIMP. **[BEGIN CONFIDENTIAL]**

19

20 **[END CONFIDENTIAL].** Since these facilities are noted in the
21 Company’s DIMP as “high risk” assets, they are properly included in the Program.

1 **Q. Witness McGee claims GSMP II deviates from the components of GSMP I, and**
2 **that a change in prioritization methods have shifted the Program from a main**
3 **replacement program, to a “service line replacement program.” Do you agree**
4 **with this statement?**

5 A. No. As I mentioned previously in this testimony, GSMP I is not the measure of
6 prudence for this Program. Nonetheless, GSMP II is a main replacement program, not a
7 service line program prioritized by joint and service-line leaks as claimed by Witness
8 McGee.¹² The Company proposes replacement of 870 UPCI miles, 130 EPCI miles and 200
9 miles of bare / unprotected steel main. For UPCI, these replacements are prioritized based
10 first and foremost on hazard index. Weighted joint and service leak history is a secondary
11 consideration. So while services are replaced in this Program, they are being replaced in
12 conjunction with, and based primarily on, the main that are being replaced. A driver of the
13 Program is the main replacement activity, not the service replacement projects. Furthermore,
14 Witnesses Dismukes and McGee fail to address the inclusion of bell joint leaks as part of the
15 sub prioritization.

16 **Q. While Witness McGee claims the Company has totally changed its prioritization**
17 **method for GSMP II, Witness Dismukes claims the prioritization method is**
18 **“similar, yet modified.” Do you agree with the latter classification by Witness**
19 **Dismukes?**

20 A. Yes, the main ranking factor the Company uses to prioritize its work for the Program
21 remains the same, but a sub-prioritization level was added to refine this process for UPCI.
22 The Company maintains step one of its prioritization process as a constant—that is, it
23 continues to look first to the hazard index as the primary method of prioritization of GSMP
24 II’s UPCI program. Additional consideration is then given to historical joint and service leak

¹² McGee Testimony at p. 10, lines 10-12.

1 rates not included in the hazard index. This is an **added step** (not a replacement) to the
2 prioritization of work process, which in no way affects or changes PSE&G's handling of top
3 tier, or Priority A, grid work. All of the Priority A grids are planned to be completed by the
4 Company within the first year. It is only when you get into the lower priority levels (B, C,
5 and D), that the Company adds an additional layer of prioritization by factoring in leak
6 history. See Attachment WEM-GSMPII-4R for additional details and an illustration of the
7 mechanics of the sub-prioritization method. The Company is utilizing the wealth of
8 information it has compiled from leak repair records to determine the likelihood of future
9 leaks or breaks based, in part, on this history. This is a proper and prudent use of historical
10 data that refines, and adds additional value when prioritizing work of a similar hazard level.

11 **Q. Later in his testimony, Witness Dismukes goes on to state that the Company has**
12 **added an “additional ranking measure in order to identify other mains and**
13 **infrastructure that may not necessarily be most at risk.”¹³ Do you agree with**
14 **this assertion?**

15 A. No. As just mentioned, the sub-prioritization step proposed for use in GSMP II UPCI
16 is secondary to the primary way—utilizing hazard index—that the Company ranks work to
17 be completed under the Program. Witness Dismukes does not elaborate on the mains and
18 infrastructure he is referring to, when he says the Company may be identifying mains and
19 infrastructure for replacement that “may not necessarily be most at risk.” Instead he speaks
20 of these replacements wholesale. Nevertheless, what Witness Dismukes totally ignores in
21 making such a bald assertion is the fact that the work at issue—EPCI, UPCI, bare and
22 unprotected steel and CI joints—all pertains to “high-risk” facilities, as identified in the

¹³ Dismukes Testimony at p. 31, lines 17-19.

1 Company's DIMP. So while he may argue that certain facilities within these classes may
2 show a greater propensity for breaks or leaks, Witness Dismukes cannot dispute the fact that
3 all of these types of facilities are high-risk by their very nature. Therefore, they are ripe for
4 accelerated replacement. For UPCI, what work, out of the already high-risk work proposed,
5 is to be performed first is determined primarily by the hazard index. The work schedule is
6 then later refined by the Company based on review of historical leak data that may suggest a
7 propensity for future leaks. Ultimately, all of these high-risk materials will be replaced. This
8 is simply a method by which the Company can distinguish grids with higher leaks rates but
9 with the same overall risk profile.

10 **Q. Witness McGee states in his testimony that "The Company is apparently**
11 **contending that breaks and leaks are becoming scarce in their system." Do you**
12 **agree with this statement?**

13 A. No. The Company is by no means contending that breaks and leaks are becoming
14 scarce. When looking at all grids that have an assigned hazard value, there are over 6,000
15 break repairs and over 40,000 bell joint and service leak repairs in the Company's GIS
16 system.

17 **Q. Witness Dismukes states the cost for a revised program proposed in his**
18 **testimony should be \$1.75M per mile. Was this cost per mile appropriately**
19 **calculated?**

20 A. No. After review of the calculation in "WP-NJ-PME2 Replacement Miles and Costs
21 Final.xlsx", witness Dismukes fails to account for inflation over the recommended program
22 term. It is unreasonable not to account for increases in labor and materials.

1 **Q. Witness McGee and Dismukes disagree with the Company’s proposal to reduce**
2 **the overall term of the total elimination strategy to 20 years. Do you believe**
3 **there is good reason to further accelerate the overall term of the program?**

4 A. Yes. The Company has the experience and means to further accelerate its Program.
5 This bodes well for both the customer and the environment overall. The customer will enjoy
6 increased system safety and modernization features sooner, and the environment will benefit
7 from the accelerated reduction of greenhouse emissions that will result from the quicker
8 removal of legacy/high-risk facilities. Furthermore, as noted in the testimony of Mr. Swetz,
9 now is a prudent time to accelerate investment since natural gas bills are down approximately
10 50% from 2010. And even with this proposed Program, total bills would still be about 30%
11 lower than the 2010 bill.

12 **Q. Witness McGee casts doubt on the Company’s ability to achieve this level of**
13 **replacements based on the fact that the Company has not replaced 250 miles of**
14 **pipe, “even when concurrent programs are considered.”¹⁴ What’s your**
15 **response?**

16 A. The Company proposes to replace approximately 250 miles of main per year to
17 achieve its 20 year total elimination strategy target. As of December 2017, the close of year
18 two of GSMP I, the Company replaced a total of 321 miles of high risk pipe through the
19 Program and through stipulated base work. Overall in 2017, the Company replaced a total of
20 221 miles of main. It is clear based on these replacement numbers that the Company has
21 demonstrated a strong foundation in the areas of project implementation and performance.

22 PSE&G has developed a highly skilled workforce pool that knows the many
23 intricacies of executing such infrastructure replacement programs in a quality manner. In
24 fact, a significant amount of full time jobs were created for the execution of this pipe

¹⁴ McGee Testimony at p. 12, lines 4-5.

1 replacement program. This workforce has been a crucial component to the success of GSMP
2 I, and the Company can only further benefit from this workforce in any following phases of
3 its infrastructure replacement programs. The Company is poised to achieve the additional
4 number of miles proposed in GSMP II.

5 **Q. What do you say to Witness McGee’s contention that “other utilities with similar**
6 **amounts of leak-prone metallic mains have not found it necessary to pursue this**
7 **unreasonable schedule?”**

8 A. It is not proper to measure PSE&G’s Program based upon what other utilities have or
9 have not done to address the issue of aging infrastructure. Even so, Attachment EAM-2 is an
10 over-simplified comparison. There are a number of additional factors to consider in
11 determining appropriate program size and pace such as the geographic make-up of the
12 jurisdiction in which the utility operates, whether urban or suburban/population density, and
13 cost per mile. Natural gas utilities across the United States that have cast iron and
14 unprotected steel infrastructure face many of the same challenges as PSE&G; however, the
15 bottom line is that the situation for each gas distribution company is specific and unique to its
16 system. It is interesting however to note that more than half of the utilities listed on EAM-2
17 for which time-frames of program completion are provided (7 out of 12) report estimated
18 completion times of 20 or fewer years. I’m not really sure how this attachment illustrates
19 that PSE&G’s 20 year completion date is “unreasonable.”

20 **Q. The Company’s leak performance metric has been challenged by Witnesses**
21 **McGee and Dismukes as being “insufficient.” Do you agree?**

22 A. No. Both Witness McGee and Dismukes criticize the Company’s open-leak
23 performance metric because it fails to include incremental, new, post-approval leaks. Since

1 Witnesses McGee and Dismukes are keen on making comparisons to GSMP I and other local
2 gas utilities, I'd like to point out that: (1) this metric was agreed upon by and between the
3 parties in GSMP I, and (2) the other local gas utilities replacement programs also fail to
4 include new post-approval leaks. So, if anything, the Company's proposed leak performance
5 metric is consistent with the metric used currently, and in other recent pipe replacement
6 programs.

7 **Q. So why does Rate Counsel advocate for a different leak performance standard**
8 **here?**

9 A. Witness Dismukes acknowledges that "New Jersey utilities have limited the leak
10 reduction target to exclude incremental new leaks after a set date."¹⁵ Although this metric is
11 seemingly appropriate for use currently in GSMP I, and recently for other utility replacement
12 programs, it is no longer sufficient as it relates to PSE&G. According to Witness Dismukes,
13 "the Company's leaks have been increasing over time, therefore a more stringent
14 performance standard appears to be necessary."¹⁶

15 **Q. How does Witness Dismukes measure and compare PSE&G's leak performance?**

16 A. Witness Dismukes has provided a number of comparisons of PSE&G's pipeline
17 inventory, pipeline replacement rates, and leak performance trends to those of a group of
18 regional and New Jersey natural gas utilities.

¹⁵ Dismukes Testimony at p. 33, lines 1-2.

¹⁶ *Id.* at p. 33, lines 8-9.

1 **Q. Are the comparisons made by Witness Dismukes appropriate?**

2 A. No. Witness Dismukes introduces a number of charts that compares PSE&G's leak
3 inventory performance relative to regional utilities. However, the regional utilities used by
4 Witness Dismukes in his comparison of known system leaks at year end, Schedule DED-7, is
5 extremely flawed. Witness Dismukes includes utilities in his comparison with drastically
6 different system profiles—many with very little to almost no leak prone pipe in their
7 inventory (see Schedule DED-5 and DED-6).

8 Witness Dismukes also attempts to compare year end system leaks of other NJ gas
9 utilities with that of PSE&G (see Schedule DED-8), but again these utilities also have
10 drastically different profiles. None of these utilities even come close to having the same
11 amount of leak-prone facilities that PSE&G has in the ground. So the comparison is
12 distorted from the start. Consideration must also be given to the additional factors that may
13 impact leaks such as the geographic make-up of the jurisdiction in which the utility operates,
14 whether urban or suburban, and population density. The other New Jersey gas utilities
15 operate their systems mainly in a suburban environment, as opposed to the urban areas where
16 the Company operates its system. So while other New Jersey utilities may experience some
17 of the same challenges as PSE&G, those challenges, as they relate to aging facilities, pale in
18 comparison to those faced by the Company.

19 Even if compared to other distribution companies that have significant amounts of
20 cast iron in their distribution pipe inventory, no utility, as indicated by PHMSA operator, has
21 more miles of cast iron main than PSE&G. Additionally, in terms of miles of unprotected
22 steel mains and services as a percent of its total system, PSE&G ranks eighth highest in the

1 U.S. A more appropriate peer group against which to compare the Company's cast iron main
2 inventory and replacement levels would therefore be utilities with similar inventories of leak-
3 prone pipe that would employ similar approaches to replacement, such as a system
4 management approach. Instead, Witness Dismukes attempts to draw parallels to utilities that
5 generally have small inventories of cast iron main. This is an "apples to oranges"
6 comparison that produces skewed results.

7 **Q. What are your thoughts on the use of "Open/Known Leaks at year end" metric?**

8 A. The use of "Open/Known Leaks at year end" is an inappropriate metric to use when
9 determining how well a company is managing its leak-prone inventory. The decline in total
10 leaks over the long term is really the measure by which a company's success in managing
11 leak prone inventory should be determined. Further, comparing open leaks for a company
12 with little to no cast iron facilities versus one with 3800 miles results in a very
13 disproportionate parallel, as no consideration is given to the havoc weather can wreak on
14 PSE&G's vast cast iron inventory—causing deterioration of cast iron bell joints and cast iron
15 main leaks/breaks.

16 This metric is also inappropriate because there is insufficient information as to how
17 other utilities interpret and report "Open/Known Leaks at year end." According to PHMSA
18 F7100.1-1 Annual Report Form Part C, the "number of known system leaks at the end of the
19 year scheduled for repair"¹⁷ is the total number pipeline system leaks being monitored and
20 scheduled for repair at the end of the calendar year. Monitored leaks also include those leaks

¹⁷ <https://www.phmsa.dot.gov/sites/phmsa.dot.gov/files/docs/forms/12486/gdannualformphmsa-f-71001-1cy-2017-and-beyond.pdf>.

1 which have been made safe and monitored until a permanent repair can be performed. These
2 leaks are non-hazardous unless reclassified following the operator's operation and
3 maintenance procedures.

4 PSE&G's practice has been to report all open leaks at the end of the year—including
5 those that simply need to be monitored. Other utilities may not report open leaks in the same
6 manner. For example, other utilities may only count those leaks identified and slated for
7 repair at year's end but not those that are only being monitored. There is no way of knowing
8 how other utilities interpret or report on this metric. Accordingly, the comparison is flawed.

9 **Q. Witness Dismukes seeks to analyze the Company's miles of cast iron inventory**
10 **and cast iron breaks from 2012-2016 in his Confidential Schedule DED-10.**
11 **What, if anything, does this analysis serve to show?**

12 A. Witness Dismukes seeks to show historic trends in the total cast iron breaks and miles
13 of cast iron pipe in his Confidential Schedule DED-10. However the use of such a short
14 timespan (a five year period) does not establish proof of a "historic trend." The 2013-14 and
15 2014-15 winters were severe and led to significant cast iron break and leak activity. Rather
16 than illustrating a trend, Schedule DED-10 merely shows the impact of these two severe
17 winters as compared to the relatively more mild winters experienced by the Company in the
18 year prior thereto and after. The results are highly biased based on the short time frame
19 captured. A more appropriate comparison would be a longer term history that also accounts
20 for change in inventory (breaks per mile) and weather variations. The Company provided

1 this as a part of response POL-0005 attachment “Chart 2 CI REPL + Break History 1971-
2 2015.xls”¹⁸

3 **Q. In Schedules DED-7, and DED-8, to his testimony, Witness Dismukes states that**
4 **“leak data for Public Service Electric & Gas was not reported in 2003.” Is this correct?**

5 A. No. The Company submitted leak data to PHMSA in 2003 on a supplemental annual
6 report. PSE&G cannot explain why it is not included in the data available for download from
7 PHMSA. A copy of the Company’s 2003 supplemental annual report is attached as
8 Attachment WEM-GSMPII-6R.

9 **VI. RESPONSE TO SPECIFIC ISSUES RAISED BY INTERVENOR**
10 **TESTIMONY**

11 **Q. EDF Witness Palacios advocates for the use of advanced leak detection**
12 **technology and quantification as part of GSMP II. Do you believe that the use of**
13 **this technology is necessary?**

14 A. No. While there may be some additional benefit to utilizing certain leak prioritization
15 and leak quantification methods, the Company’s proposed replacement prioritization
16 methods appropriately serve to address the environmental concern of greenhouse gas
17 emissions. In fact, the Company proposes the use of a sub-prioritization method that
18 accounts for these environmental concerns by incorporating leak history into the ranking of
19 project work.

20 The leak detection and quantification methods that EDF is proposing to be used here
21 is still a developing technology that needs to be further evaluated to determine what, if any
22 additional benefits, can be attained. In addition, the quantification only accounts for a single

¹⁸ Attached hereto as Attachment WEM-GSMPII-5R.

1 moment in time and does not account for repairs made prior to the replacement of the
2 facilities, nor does it account for additional leaks that may occur after the survey.

3 **Q. Does this complete your testimony at this time?**

4 A. Yes, it does.

Public Service Electric and Gas Company
Case Name: GSMP II
Docket No(s): GR17070776

Response to Discovery Request: RCR-POL-0002
Date of Response: 10/17/2017
Witness: N/A
Distribution Integrity Management Plan (DIMP)

Question:

Please provide the Company's most recent Distribution Integrity Management Plan ("DIMP").

Attachments Provided Herewith: 1

RCR-POL_0002_2016 PSEG DIMP-CONFIDENTIAL.pdf

Response:

Please refer to the attached file "2016 PSEG DIMP.pdf".

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ATTACHMENT**

WEM-GSMPII-2R

RCR-POL-0046 - OVERALL COST WORKPAPER

Public Service Electric and Gas Company

Case Name: GSMP II

Docket No(s): GR17070776

Response to Discovery Request: RCR-POL-0046

Date of Response: 10/17/2017

Witness: Miller, Wade

Cost Per Foot of Replacements for GSMP I and GSMP II

Question:

For the purpose of this request please refer to page 59 of the Direct Testimony of Wade E. Miller where he discusses the cost per foot of replacements under the GSMP I and proposed GSMP II.

- a. Please provide the Company's cost per mile that has been incurred to date under each of the following programs: GSMP I, CIP I, CIP II, and Energy Strong.
- b. Please provide the projected cost per mile that the Company will incur under the GSMP II program.
- c. Please provide any and all documents and workpapers in electronic form, with all spreadsheet links and formulas intact, source data used, and explain all assumptions and calculations used. To the extent the data requested is not available in the form requested, please provide the information in the form that most closely matches what has been requested.

Attachments Provided Herewith: 1

RCR-POL_0046_GSMP II Overall Cost Workpaper-CONFIDENTIAL.xlsx

Response:

- a. Cost per mile incurred to date under each program is as follows:

	<u>Cost/Mile</u>
CIP I	\$1.13M
CIP II	\$1.22M
Energy Strong	\$1.54M
GSMP I	\$1.73M

Note: Cost per mile for each infrastructure program differs base on the work selected and location. Energy Strong and GSMP I include significant amounts of main and service uprating and installation of excess flow valves.

- b. The projected cost per mile under the GSMP II program is as follows:

	<u>Cost/Mile</u>
GSMP II	\$2.09M*

*Includes EPCI main replacement (larger average diameter not included in Energy Strong and GSMP I) and also includes inside meter set relocations. Does not include EPCI Joint Reinforcements.

- c. Refer to RCR-POL-0057 attachment and see attached file, "GSMP II Overall Cost Workpaper.xlsx". Please note that the attached file is an electronic workpaper with all formulae intact that is not formatted for printing and will be provided electronically only.

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WEM-GSMPII-2R

RCR-POL-0046 - OVERALL COST WORKPAPER

Public Service Electric and Gas Company
Case Name: GSMP II
Docket No(s): GR17070776

Response to Discovery Request: RCR-ENG-0007
Date of Response: 10/13/2017
Witness: Miller, Wade
Moving Meters to Outside

Question:

Moving Meters to Outside

Exhibit 1.13 in Mr. Miller's Direct Testimony indicates the Company is proposing to include in GSMP-II the moving of 70,900 customer meter sets to the outside of the building, at an estimated cost of \$101 Million (not including the cost of the meters) (see page 53 of Mr. Miller's Direct Testimony). However, in the prior accelerated replacement program (GSMP-I) these costs were also proposed, but permitted only in the base program by the final settlement.

c. Since meter set relocation is not a necessary portion of main and/or service line replacement, please explain why the Company now intends to include these costs in the accelerated portion of the GSMP-II program.

d. Since meter set relocation has certain benefits for the Company - rather than for the customer - such as: lower-cost meter reading and lower theft of service, and in-fact was rejected by many customers during the prior replacement program (GSMP-I), primarily for aesthetic reasons (see page 79 of Mr. Miller's testimony), please explain why the Company now intends to include these costs in the accelerated portion of the GSMP-II program.

Attachments Provided Herewith: 0

Response:

a. Unlike the low-pressure system, an elevated pressure meter set will have a pressure regulator with overpressure relief installed before the meter. An inside pressure meter set will require the over pressure relief to be vented to the outside in accordance with PHMSA 49 CFR Part 192 requirements. With many of the tasks required to relocate a meter set from inside to outside being common to upgrading an inside meter set to higher pressure (e.g.- disconnect meter set from existing service, install new pressure regulator; install piping through building wall; reconnect meter set to service and to customer piping) and the benefits described below, PSE&G feels that it enhances safety and meets the modernization goal of the program.

b. Relocation of inside meter sets to the outside, where possible, will provide benefits to the customer. Relocation of gas meters from inside to outside will allow for enhanced safety due to better access to gas shut offs in the event of an emergency, for both Company and emergency response personnel. In addition, relocation of meter sets to outside will reduce potential points of leakage inside the building moving them outside where they can more safely vent to the atmosphere.

In an outside location, the meter, regulator, and shutoff valve are more readily accessible for safety inspections, meter reading and leak surveys and does not require customers to be present to grant access to the inside of the building. Relocation of meter sets will also decrease estimated billing in the case of a meter not being accessible for meter reading, which will provide customers with more accurate monthly bills and can reduce the potential theft of gas due to visibility of the meter and piping.

Public Service Electric and Gas Company
Case Name: GSMP II
Docket No(s): GR17070776

Response to Discovery Request: RCR-POL-0085
Date of Response: 12/29/2017
Witness: Miller, Wade; Miller, Wade
Relocation of Meter Sets from Inside to Outside

Question:

Please explain why the Company has included the relocation of meter sets from inside to outside as part of its GSMP II program investments subject to accelerated cost recovery and not part of its baseline capital spending to be recovered in base rates in a future rate proceeding

Attachments Provided Herewith: 0

Response:

The Company has included the relocation of meter sets from inside to outside as part of its GSMP II program investments because this is a modernizing activity consistent with a Gas System Modernization Program (GSMP). Relocating meter sets from inside to outside replaces and eliminates the below grade transition of gas carrying pipe as it penetrates the foundation of the building. By proposing these relocations, the Company takes into account the schedules and privacy of customers who often are inaccessible during normal working hours and cannot make accommodations to allow access to their homes for the purpose of conducting safety inspections and regular maintenance. An outside meter set is an upgrade to the system that ensures the gas shut-off is accessible to the Company at all times.

Also refer to response RCR-ENG-0007.

Public Service Electric and Gas Company
Case Name: GSMP II
Docket No(s): GR17070776

Response to Discovery Request: RCR-ENG-0019
Date of Response: 11/30/2017
Witness: Miller, Wade
Work Prioritization

Question:

Please refer to page 6 lines 8-10 of Wade E. Miller's Direct Testimony where he states: "GSMP II targets all UPCI main diameters, and work prioritization will be based on grid hazard index calculations." This is identical to the prioritization technique that the Board approved for GSMP-I. Yet, on page 50, lines 19-22, he states: "The top 10 Priority A grids will be ranked based strictly on hazard value. The remaining Priority A grids are a similar hazard value and will be prioritized by joint and service leak history. All subsequent grids within a priority level (B, C, and D) will be ranked based on joint and leak history."

- a. Please explain this change in prioritization..
- b. Please furnish a list of all remaining grids indicating their hazard index values, the number of breaks and leaks in each grid, and the calculation of the hazard index for each grid.
- c. Please explain if this change in prioritization technique to one based on service line and joint leakage indicates that the Company is in-effect changing from an accelerated mains replacement program to an accelerated service-line and joint replacement program.

Attachments Provided Herewith: 0

Response:

- a) The proposed GSMP II UPCI program still focuses on the highest hazard grids identified as priority levels A, B, C, and D in descending order. Sub-prioritization by joint and service leak history is done within priority levels and recognizes the additional elements of system leakage that are not accounted for in the hazard ranking, and advances those grids within a hazard priority level exhibiting higher historical rates of bell joint and service leaks ahead of grids of similar hazard values with lower historical rates of bell joint and service leaks. This accomplishes the dual purpose of reducing the hazard associated with these grids while also lowering the potential for future leaks. Please also see response to RCR-POL-0031.
- b) Please see attachment "RCR-POL_0049_GSMP II Grids (GSMP I removed) – CONFIDENTIAL.xlsx" and attachment "RCR-POL_0049_2017 UP Hazard Index - CONFIDENTIAL.xlsx" provided as part of discovery response RCR-POL-0049.
- c) The Company will continue to prioritize work under the GSMP II program based upon grid hazard index calculations that rank work according to grid priority levels A, B, C, and D—based on main hazard index per mile of UP cast iron main. Sub-prioritization is then done

Public Service Electric and Gas Company
Case Name: GSMP II
Docket No(s): GR17070776

Response to Discovery Request: RCR-POL-0031
Date of Response: 10/13/2017
Witness: Miller, Wade
Sub-Prioritization Method

Question:

Please refer to page 47 lines 12-13 of the Direct Testimony of Wade E. Miller where he states “This sub-prioritization will be used for grids of similar hazard in the GSMP II extension.” Please provide a detailed explanation of the sub-prioritization method and how it will be implemented.

Attachments Provided Herewith: 0

Response:

A sub-prioritization will be used for grids of similar hazard in the GSMP II extension. The top 10 priority grids will be ranked based strictly on hazard value. The remaining priority A grids are a similar hazard value and will be prioritized by joint and service leak history. All subsequent grids within a priority level (B, C, and D) will be ranked based on joint and leak history. In other words, all Priority B grids are of a similar hazard and will be ranked based on joint and service leak history. The same ranking approach will apply for priority C and D grids. Joint and service leak values are calculated in a similar fashion to the hazard index. Each joint and service leak is weighted by its history where more recent leaks are scored higher than older leaks. Individual joint and service leaks are then summed by their weighted leak value to come up with a weighted leak value per mile score for the grid. Please note that only CI bell joints and unprotected steel service leaks are used in this calculation. Using the 2 grids below as an example:

GRID	MILES	Hazard Index/Mile	HAZARD RANK	PRIORITY	* Bell Joint and Service Leaks are Weighted History			FINAL RANK
					Bell Joint Weighted Leak Value	Service Weighted Leak Value	Grid Weighted Leak Value/Mile	
2E-52	9.3	11.304	73	B	398	126	56.085	28
2J-55	11.6	12.492	53	B	403	225	54.151	29

Although grid 2E-52 is a lower but similar rank in hazard index/mile, it is a higher final rank for prioritization due to its joint and service leaks per mile. Since both of these grids are priority B, grid 2E-52 will be prioritized first. The purpose of this methodology is to reduce the hazard associated with these grids while also maximizing reduction of future leaks.

Public Service Electric and Gas Company
Case Name: GSMP II
Docket No(s): GR17070776

Response to Discovery Request: RCR-POL-0049

Date of Response: 10/17/2017

Witness: Miller, Wade

GSMP I Safety, Resilience and Reliability Studies & Analyses

Question:

Please provide all studies and analyses that were undertaken by or on the behalf of the Company which examine the increase in safety, resilience and reliability of the Company's system as a result of the GSMP I program. Please provide any and all documents and workpapers in electronic form, with all spreadsheet links and formulas intact, source data used, and explain all assumptions and calculations used. To the extent the data requested is not available in the form requested, please provide the information in the form that most closely matches what has been requested.

Attachments Provided Herewith: 3

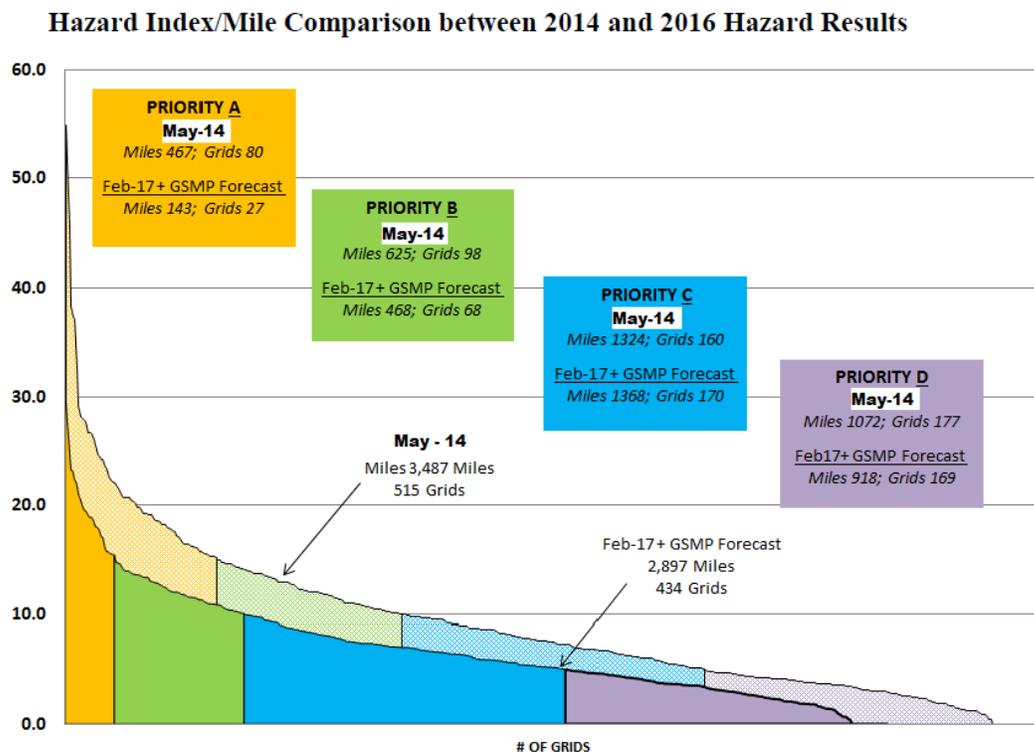
RCR-POL_0049_GSMP II Grids(GSMP1 removed) - CONFIDENTIAL.xlsx

RCR-POL_0049_GDS Hazard Index - CONFIDENTIAL.pdf

RCR-POL_0049_2017 UP Hazard Index - CONFIDENTIAL.xlsx

Response:

The graph below illustrates the reduction in hazard from just prior to the start of GSMP I (May-14 curve) and the expected hazard reduction as of Feb-2017 plus the elimination of remaining GSMP I grids (Feb-17 curve). The attached file, "GDS Hazard Index.pdf", is a section of the Company Gas Distribution Standards on Hazard Index methodology. The Hazard Index is a method for calculating risk associated with cast iron and unprotected steel. A reduction of overall hazard indicates an improvement to safety.



Refer to the attached confidential Excel spreadsheets for source data for the curve;

- 2017 UP Hazard Index.xlsx
- GSMP II Grids(GSMP1 removed).xlsx.

Please note that the file “2017 UP Hazard Index.xlsx” is a workpaper that is not designed for printing and will be provided electronically only.

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WEM-GSMPII-4R

RCR-POL-0049 GSMP II GRIDS (GSMP1REMOVED)

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ATTACHMENT

WEM-GSMPII-5R

CHART 2 – CAST IRON REPLACEMENTS

AND

BREAK HISTORY FROM 1971-2015

*Revised 12/7
11 miles from TAD*

NOTICE: This report is required by 49 CFR Part 191. Failure to report can result in a civil penalty not to exceed \$1,000 for each violation for each day that such violation persists except that the maximum civil penalty shall not exceed \$200,000 as provided in 49 USC 1678. Form Approved OMB No. 2137-0522



U.S. Department of Transportation
Research and Special Programs
Administration

ANNUAL REPORT FOR CALENDAR YEAR 2003
GAS DISTRIBUTION SYSTEM

INITIAL REPORT
SUPPLEMENTAL REPORT

PART A - OPERATOR INFORMATION

DOT USE ONLY

1. NAME OF COMPANY OR ESTABLISHMENT
Public Service Electric & Gas Company

2. LOCATION OF OFFICE WHERE ADDITIONAL INFORMATION MAY BE OBTAINED
80 Park Plaza
Number and Street
Newark Essex County
City and County
New Jersey 07102-4194
State and Zip Code

3. OPERATOR'S 5 DIGIT IDENTIFICATION NUMBER
(When Known) 1 / 5 / 9 / 5 / 2 /

4. HEADQUARTERS NAME & ADDRESS, IF DIFFERENT
Same
Number and Street
City and County
State and Zip Code

5. STATES IN WHICH SYSTEM OPERATES : _____

PART B - SYSTEM DESCRIPTION

Report miles of main and number of services in system at end of year.

1. GENERAL

	STEEL				PLASTIC	CAST/ WROUGHT IRON	DUCTILE IRON	COPPER	OTHER	OTHER
	UNPROTECTED		CATHODICALLY PROTECTED							
	BARE	COATED	BARE	COATED						
MILES OF MAIN	607	606	0	4,893	6,286	4,597				
NO. OF SERVICES	14,158		501	525,161	631,988	8		33,274		

2. MILES OF MAINS IN SYSTEM AT END OF YEAR **16,989**

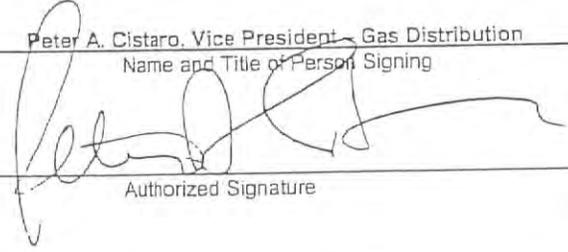
MATERIAL	UNKNOWN	2" OR LESS	OVER 2" THRU 4"	OVER 4" THRU 8"	OVER 8" THRU 12"	OVER 12"
STEEL		2,184	1,583	1,460	665	215
DUCTILE IRON						
COPPER						
CAST WROUGHT IRON			2,057	1,701	435	403
PLASTIC						
1. PVC						
2. PE		3,653	1,664	926	43	
3. ABS						
OTHER						
OTHER						
SYSTEM TOTALS		5,837	5,304	4,087	1,143	618

3. NUMBER OF SERVICES IN SYSTEM AT END OF YEAR **1,205,090** AVERAGE SERVICES LENGTH **71** FEET

MATERIAL	UNKNOWN	1" OR LESS	OVER 1" THRU 2"	OVER 2" THRU 4"	OVER 4" THRU 8"	OVER 8"
STEEL		535,723		3,817	438	
DUCTILE IRON						
COPPER		33,274				
CAST WROUGHT IRON					8	
PLASTIC						
1. PVC						
2. PE		576,350	49,601	5,353	515	11
3. ABS						
OTHER						
OTHER						
SYSTEM TOTALS		1,145,347	49,601	9,170	961	11

Form RSPA F 7100.1-1 (11-85)
(Supersedes DOT F 7100.1-1)

Reproduction of this form is permitted.

PART C - TOTAL LEAKS			PART D - TOTAL NUMBER OF LEAKS ON FEDERAL LAND REPAIRED OR SCHEDULED FOR REPAIR	
CAUSE	ELIMINATED/REPAIRED DURING YEAR		<u>0</u>	
	Mains	Services		
CORROSION	1,195	2,750		
THIRD PARTY	279	810		
OUTSIDE FORCE	427	58		
CONSTRUCTION DEFECT	74	97		
MATERIAL DEFECT	77	56		
OTHER	3,217	262		
NUMBER OF KNOWN SYSTEM LEAKS AT END OF YEAR SCHEDULED FOR REPAIR <u>3,286</u>			PART E - PERCENT OF UNACCOUNTED FOR GAS	
			Unaccounted for gas as a percent of total input for year ending 6/30 <u>1.65%</u>	
PART F - ADDITIONAL INFORMATION				
PART G - PREPARER AND AUTHORIZED SIGNATURE				
<u>Bernice Rivera</u> Prepared by (type/print)			<u>(973) 430-5340</u> Area Code/Telephone Number	
<u>Peter A. Cistaro, Vice President - Gas Distribution</u> Name and Title of Person Signing			<u>(973) 430-5100</u> Area Code/Telephone Number	
 Authorized Signature				