



STATE OF NEW JERSEY
Board of Public Utilities
Two Gateway Center
Newark, NJ 07102
www.nj.gov/bpu/

RELIABILITY & SECURITY

IN THE MATTER OF THE PETITION OF PUBLIC)
SERVICE ELECTRIC AND GAS COMPANY FOR)
AUTHORIZATION AND APPROVAL OF A WAIVER)
FROM NATURAL GAS PIPELINE SAFETY)
STANDARDS 49 C.F.R. §192.121 and 49 C.F.R.)
§192.123 TO PERMIT THE USE OF POLYETHYLENE)
(PE) PIPE MATERIALS IN ITS NATURAL GAS)
DISTRIBUTION SYSTEM DESIGNED IN)
ACCORDANCE WITH THE DESIGN FORMULA)
PRESCRIBED UNDER 49 C.F.R. §192.121 USING A)
DESIGN FACTOR OF 0.40 INSTEAD OF 0.32)
SUBJECT TO THE LIMITATIONS WITHIN 49 C.F.R.)
§192.123.)

DECISION AND ORDER

DOCKET NO. EO08050308

(SERVICE LIST ATTACHED)

BY THE BOARD:

Pursuant to N.J.S.A. 48:10-1, et seq., the New Jersey Board of Public Utilities (“Board”) has general jurisdiction over natural gas pipeline utilities, N.J.S.A. 48:10- 4, and is authorized to “prescribe reasonable rules and regulations for the safe construction, operation and maintenance by natural gas pipeline utilities of pipelines within or through the State of New Jersey.” N.J.S.A. 48:10-5. On April 8, 2008, President Jeanne Fox signed and submitted a certification regarding the Board’s authority to oversee and enforce federal safety standards on behalf of the Board pursuant to 49 U.S.C. 60105. Pursuant to 49 U.S.C. 60118(d), the Board, as a state agency that has submitted a certification pursuant to 49 U.S.C. 60105 may waive any part of an applicable standard, subject to the objection of the Administrator of Transportation, United States Department of Transportation (USDOT), upon 60 days notice, prior to the effective date of the waiver. Pursuant to 49 U.S.C. 60118(d), the waiver is effective if no reply or objection is received within 60 days.

On February 28, 2008, Public Service Electric and Gas Company (“Petitioner” or “PSE&G”) filed a petition with the Board for authorization and approval of a waiver from Natural Gas Pipeline Safety Standards 49 C.F.R. §192.121 and 49 C.F.R. §192.123 to permit the use of polyethylene (PE) pipe materials in its natural gas distribution system designed in accordance with the design formula prescribed under 49 C.F.R. §192.121 using a design factor of 0.40 instead of 0.32 subject to the limitations within 49 C.F.R. §192.123.

PSEG submits the following:

1. Petitioner is a public utility authorized to do business in New Jersey. It is engaged among other things, in rendering natural gas service to approximately 1.7 million customers in portions of New Jersey as a public utility subject to the jurisdiction of the Board.
2. Petitioner's office in New Jersey is 80 Park Plaza, Newark, NJ 07102-4194. Communications with respect to this matter should be sent to:

Willard S. Carey, Regulatory Leader – Federal
Public Service Electric and Gas
80 Park Plaza, T-14
Newark, NJ 07102-4194

3. Petitioner requests the Board grant a waiver from 49 C.F.R. §192.121 to allow the use of PE pipe designed using a higher design factor of 0.40 instead of 0.32 in the design formula for plastic pipe at not more than six (6) specific project sites in order to provide gas service in a safe and more cost efficient manner, while providing additional pipeline capacity. Final selection will be subject to approval of the Bureau of Pipeline Safety (BPS). Petitioner specifically requests that the Board grant a waiver from section 49 C.F.R. §192.121 to allow the use of a 0.40 design factor used in determining the maximum design pressure, thus resulting in greater flow capacity for a given pipe diameter. The provisions of the waiver would be subject to the self-imposed limitation(s) within 49 C.F.R. §192.123 up to a maximum design pressure no greater than 125 psig which is currently permitted under the current regulations. The following discourse sets forth the specific changes and the technical justification for why 49 C.F.R. §192.121 should be waived by the Board and approved by the Department of Transportation Pipeline and Hazardous Materials Safety Administration (DOT - PHMSA).
4. Petitioner proposes to install PE piping systems after the effective date of this waiver at not more than six (6) specific project sites, yet to be determined. Petitioner further requests that the BPS permit the continued operations of these systems at the installed pressures. If DOT - PHMSA takes any action limiting the continued operations of these systems, the Petitioner will work with BPS to determine any necessary changes to the system to meet such DOT – PHMSA requirements.
5. Petitioner proposes that the design factor of 0.32 in the design formula in 49 C.F.R. §192.121 be increased to 0.40 for new service and main installations using higher performance PE materials limited to a maximum design pressure of 125 psig. This design pressure is currently permitted under current regulations. Petitioner proposes to utilize PE2708, PE3710, and PE4710, which have higher performance characteristics and meet the requirements of ASTM D3350 and are listed in PPI TR-4/2006. The existing design factor of 0.32 was adopted from the United States of America Standards (USAS) code (now American Society of Mechanical Engineers Code B31.8). 49 C.F.R. §192.121 was initially published over 25 years ago and has been unchanged since that time. Recent revisions to various industry documents have demonstrated the industry's commitment towards increasing the overall quality of the PE materials by strengthening process controls to minimize the potential for contamination. In addition, results of

comprehensive testing and evaluation, at test pressures two times greater than the maximum operating pressures determined using a 0.40 design factor, have demonstrated that the pipe, fittings, and joints will perform safely over their intended 50-year design life. In short, the results of comprehensive laboratory testing at a 0.80 design factor confirm the viability to safely operate PE pipeline systems at a 0.40 design factor. The resulting change would eventually provide the following overall benefits to the general public:

- The increase in the design factor would permit PSE&G to effectively design their gas distribution network to satisfy the increased capacity needs resulting from increased urbanization. Increasing the design factor to 0.40 provides an additional 11% increase in PE pipeline system capacity. This would ensure the maximum use of its capital budgets from an overall asset management and planning perspective.
 - The increase in design factor would potentially lead to targeted cost savings based on project site details.
 - The increase in design factor would permit the use of plastic piping materials which have performance characteristics that significantly exceed the minimum requirements currently referenced in 49 C.F.R. Part 192. Specifically, the intended plastic piping materials will meet the following performance criteria:
 - a. Technical data to substantiate 50-year performance.
 - b. The materials shall have an increased 90% lower confidence limit on the long-term hydrostatic strength as compared to the current 85% limit specified in ASTM D2513 and its referenced standards.
 - c. The materials shall have a minimum 500 hour time-to-failure under the PENT test as compared to the current 100 hour requirement specified in ASTM D2513 and its referenced standards.
6. Petitioner proposes to incorporate additional self-imposed limitations within 49 C.F.R. §192.123 for PE piping systems which exceed current requirements in order to effectively bound the design criteria and ensure safe long-term performance in conjunction with the use of a 0.40 design factor. At present, 49 C.F.R. §192.123 permits the use of any pipe size and wall thickness at the operating pressures determined using the design formula contained within 49 C.F.R. §192.123 provided that the minimum wall thickness is greater than 0.063. In order to provide additional assurances of safe operations, the petitioner proposes to increase the minimum wall thickness requirements to 0.090". Furthermore, the petitioner proposes to utilize the following minimum wall thickness (SDR values) for distribution piping sizes up to 125 psig operating pressures as currently permitted in the regulations in conjunction with the use of the design formula contained within 49 C.F.R. §192.121 using a 0.40 design factor.

<u>Nominal Pipe Size</u> <u>in inches</u>	<u>Minimum Wall Thickness in</u> <u>inches</u>	<u>Corresponding SDR</u> <u>Values</u>
2-inch	0.216 in.	11
3-inch	0.259 in.	13.5
4-inch	0.264 in.	17
6-inch	0.390 in.	17
8-inch	0.410 in.	21
10-inch	0.511 in.	21
12-inch	0.608 in.	21

7. Petitioner proposes to design, construct, maintain, and operate the PE systems in accordance with PSE&G approved installation and quality assurance procedures. The following records will be maintained to monitor the performance of the installed gas pipelines systems subject to 49 C.F.R. §192.613 and 49 C.F.R. §192.617 requirements, including: type of material, location, cover (depth) of installation, length, pressure, pipe size, wall thickness, environmental conditions, and class location.

8. In compliance with the Board's requirements, this waiver would permit PSE&G to install plastic piping designed using a 0.40 design factor on a limited basis to permit operational field testing and evaluation of such piping systems. The field testing would be subject to the following conditions:
 - a. Project review and approval by BPS Staff prior to design and installation, including:
 1. Prior to final selection, BPS must approve the project site, design and installation procedure;
 2. BPS shall be notified at least 15 business days prior to the installation of a previously approved project site;
 3. 100 percent nondestructive testing of fusion joints during construction, in conjunction with the BPS project approval process;
 4. PSE&G shall report any and all faulty fusions during construction to the BPS on a project by project basis, and any and all subsequent failures on an ongoing basis;
 5. PSE&G shall maintain specific documentation, as detailed above, in PSE&G's distribution system records indicating pertinent information related to installations approved through this waiver process; and
 6. PSE&G shall specify all pipe fusion, pipe joining, pipe handling, pipe installation and backfill requirements for each project to be considered for design and installation.

 - b. On an ongoing basis after each installation, PSE&G shall provide documented oversight on any and all third party excavation activity in the vicinity of the plastic piping installed on projects approved for the plastic pipe waiver. A report shall be submitted to the BPS on an annual basis documenting the third party excavation activity.

 - c. During the first three years after installation, the plastic piping shall be monitored on a periodic basis of at least every six months as follows:
 1. Perform and document leakage survey, which shall be submitted to BPS on a bi-annual basis. This leakage survey reporting shall be separate from other leakage survey reporting.

 - d. Starting with the fourth year after installation, the plastic piping shall be monitored annually, subject to the approval of the BPS based on pipe performance results during the first three years after installation, as follows:
 1. Perform and document leakage survey, which shall be submitted to BPS on an annual basis. This leakage survey reporting shall be separate from other leakage survey reporting.

The intent of this waiver is to select several specific projects as test environments that would benefit from the improved carrying capacity of plastic piping systems designed using 0.40 instead of 0.32 as the design factor.

9. The technical basis for this waiver has been studied for several years and adequate tests have been conducted to verify that this waiver is justified. The results of comprehensive testing performed by the Gas Technology Institute at two times the operating pressures using a 0.40 design factor (effectively a 0.80 design factor) demonstrate that higher performance PE pipe materials, fittings, and joints perform safely over their intended 50-year theoretical design life. In addition, international experience using a 0.40 design factor has been positive. Specifically, since 1996, Canadian regulations (CSA Z-662) have permitted the use of a 0.40 design factor without any maximum pressure limitation. The supporting documents and the supplemental information with their respective attachments show the adequacy of these proposed changes in ensuring both safety and integrity of the overall gas distribution network. DOT-PHMSA has encouraged examination of 0.40 design factor for PE pipe in consideration of a possible rule change regarding the PE pipe design factor based on its use and performance in pilot projects conducted in New Jersey and other States.

The BPS has reviewed the filing and record in this matter and believes that approval of this waiver is appropriate and consistent with pipeline safety. The BPS believes that this limited test of PE piping with a .40 design factor will allow for a review of its potential for future use. Therefore, the BPS recommends approval of the waiver requested subject to the following additional requirements:

1. The waiver, if approved, shall be granted for not more than six (6) specific project sites only on properties owned by the Petitioner;
2. All pipe fusion and mechanical joints shall be made in accordance with qualified joining procedures specified by PSE&G. The joining procedures shall be made available to the BPS prior to the approval of any installation and a copy shall be at the job site for review during BPS inspections.
3. All piping to be installed under this waiver shall be pressure tested to a minimum of 150 percent of the maximum allowable operating pressure. The BPS shall be notified at least 3 business days prior to pressure testing and all pressure testing documentation shall be submitted to the BPS within 15 business days after the pressure testing.
4. The Petitioner shall promptly notify the BPS of any and all third party damages, failures, and leaks that are detected on the pipeline segments that are installed in accordance with this waiver.

After review of the entire record in this matter, the Board HEREBY FINDS that Petitioner's use of PE piping with a .40 design factor at six specific test locations as requested in this petition, subject to the restrictions proposed by Petitioner and recommendations of the BPS, will be conducive to the supply of reliable utility service and will not increase the risk to the utility customers or to the general public. Therefore, based upon the foregoing, the Board HEREBY APPROVES and AUTHORIZES the waiver by Petitioner with Natural Gas Pipeline Safety Standards 49 C.F.R. §192.121 and 49 C.F.R. §192.123 to permit the use of PE pipe materials in its natural gas distribution system designed in accordance with the design formula prescribed under 49 C.F.R. §192.121 using a design factor of 0.40 instead of 0.32 subject to the limitations within 49 C.F.R. §192.123.

Accordingly, the Board HEREBY ORDERS:

1. The Secretary of the Board shall forthwith give the Administrator of Transportation, USDOT, written notice of the waiver action herein taken at least sixty (60) days prior to the effective date of February 1, 2009 of the waiver provided for herein, pursuant to 49 U.S.C. §60118(d);
2. The waiver by the Petitioner as set forth herein, shall be effective on February 1, 2009 if no written objections are received from the Administrator of the USDOT prior to the effective date of February 1, 2009. In the event of a written objection prior to the waiver effective date, the waiver is stayed;
3. The Petitioner shall comply with all restrictions as set forth herein, including its voluntary agreements and recommendations of BPS;
4. The Petitioner shall comply with all reporting and other requirements as herein set forth by BPS; and
5. The Petitioner shall comply with all applicable State and Federal Codes, and inspections performed by personnel of BPS.

DATED: 11/7/08

BOARD OF PUBLIC UTILITIES
BY:


JEANNE M. FOX
PRESIDENT


FREDERICK F. BUTLER
COMMISSIONER


NICHOLAS ASSELTA
COMMISSIONER

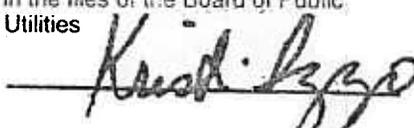

JOSEPH L. FIORDALISO
COMMISSIONER


ELIZABETH RANDALL
COMMISSIONER

ATTEST:

KRISTI IZZO
SECRETARY

I HEREBY CERTIFY that the within document is a true copy of the original in the files of the Board of Public Utilities



IN THE MATTER OF THE PETITION OF PUBLIC SERVICE ELECTRIC AND GAS COMPANY FOR AUTHORIZATION AND APPROVAL OF A WAIVER FROM NATURAL GAS PIPELINE SAFETY STANDARDS 49 C.F.R. §192.121 AND 49 C.F.R. §192.123 TO PERMIT THE USE OF POLYETHYLENE (PE) PIPE MATERIALS IN ITS NATURAL GAS DISTRIBUTION SYSTEM DESIGNED IN ACCORDANCE WITH THE DESIGN FORMULA PRESCRIBED UNDER 49 C.F.R. §192.121 USING A DESIGN FACTOR OF 0.40 INSTEAD OF 0.32 SUBJECT TO THE LIMITATIONS WITHIN 49 C.F.R. §192.123. -BPU DOCKET NO. EO08050308

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