Penelec / GPU

RRPP
I.D. 28

KNOPES

Pennsylvania Electric Company
1001 Broad Street
Johnstown Pennsylvania 15907
814 533-8111

Writer's Direct Dial Number

September 18, 1995

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SEP 18 1995

Regulatory Reinvention Pilot Projects
FRL-5197-9
Water Docket
Mail Code 4101
U.S. Environmental Protection Agency
401 M Street, S.W.
Washington, D.C. 20460

Re: Homer City Station XL Demonstration Project Proposal Supplement

New York State Electric & Gas Corporation and Pennsylvania Electric Company are pleased to submit this supplement to their August 7, 1995 XL Demonstration Project Proposal for the Homer City Station located in Indiana County, Pennsylvania. As described in the August 7th proposal and this supplement, approval of the proposed project would demonstrate that a single-quality coal produced from locally-available coal supplies using an on-site coal cleaning facility would constitute the most cost-effective and environmentally beneficial way to generate electric energy at the station -- an approach that could be used at other coal-fired steam electric generating stations in Pennsylvania and across the country.

This supplement was developed to respond to questions raised during a meeting with EPA representatives on August 15, 1995 and to further explain the benefits of the Homer City Station XL Demonstration Project. Further reference to the August 7th submittal is unnecessary.

Finally, I have included for the Docket a copy of a September 18, 1995 letter to Christopher Knopes explaining the effects of the proposed project on sulfur dioxide emissions from the Homer City Station.

Sincerely,

R.P. Lantzy by John Pope

R. P. Lantzy
Generation Technical Services Director

Encl.

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HOMER CITY STATION
XL DEMONSTRATION PROJECT
PROPOSAL
SUPPLEMENT

INTRODUCTION

On May 23, 1995, the U.S. Environmental Protection Agency (EPA) published a Federal Register notice inviting the submittal of proposals to participate in the XL Project Program. 60 Fed. Reg. 27282. The notice described the XL Project Program's objective as providing companies an opportunity to develop alternative approaches to complying with environmental requirements in exchange for achieving greater environmental benefits and cost savings. It also described the criteria for selecting XL Projects.

This is the proposal of New York State Electric & Gas Corporation (NYSEG) and Pennsylvania Electric Company (Penelec) (hereinafter Owners) to conduct the Homer City Station XL Demonstration Project (Project) at the Homer City Station (Station) located in Center Township, Indiana County, Pennsylvania. The Station is an 1,890 megawatt (MW) coal-fired steam electric generating station. Units 1 and 2 (620 MW net each) began operations in 1969 and Unit 3 (650 MW net) began operation in 1977. NYSEG and Penelec each own 50 percent of the Station, and Penelec operates the Station. The Owners believe that approval of their Project would represent the most cost-effective and environmentally beneficial approach to generating electric energy at the Homer City Station.

The Project would utilize an innovative regulatory approach for demonstrating the environmental and economic benefits of sulfur dioxide (SO_2) emissions trading between "existing" (Units 1 and 2) and "new" (Unit 3) units at the Station. Once SO_2 trading between the units is in place, through the establishment of a single SO_2 emission limitation for all three units, the Owners would be able to significantly shorten (i.e. localize) the coal supply line distance by using local coals cleaned on-site to produce a single quality coal to fuel all three units. Specifically, the fuel source for Homer City Unit 3 would shift from more distant and expensive low sulfur coal to less costly higher sulfur local coals that would be processed on-site by a former EPA-approved innovative technology coal cleaning facility.

Major multi-media environmental and economic benefits would result from having a single fuel

supply for all three units -- rather than the two separate supplies as required presently for the existing and new units at the Station. For example, annual reductions in air contaminant emissions associated with eliminating the need to import more distant coal and consolidating to a one-product coal pile are estimated to be at least:

1,340 tons of NO_x,
303 tons of fugitive dust emissions,
278 tons of PM_{10},
109 tons of VOCs,
105 tons of SO_2,
94 tons of particulate matter

These reductions would be permanent. Importantly, the Owners would not propose to use EPA's Open-Market Trading Rule to seek discrete emissions reductions status for such estimated emissions reductions.

In summary, the Project would result in significant permanent reductions in air contaminant emissions, solid waste generation and contaminated runoff with a cost savings of $18 million annually. In addition, SO_2 emissions from Units 1, 2, and 3 are projected to be 22,131 tons lower than necessary for attainment of the National Ambient Air Quality Standards (NAAQS) for SO_2. The Project also would demonstrate compliance with the SO_2 allowance requirements established in accordance with Title IV of the Clean Air Act Amendments of 1990. All this would be consistent with EPA's recent policies supporting market-based innovative environmental compliance programs and EPA's criteria for XL Projects. As shown below, the Homer City proposal satisfies all the relevant criteria for approval as an XL Project.

1. ENVIRONMENTAL RESULTS

a. Background

Penelec operates four major coal-fired steam electric generating stations in the Chestnut/Laurel Ridge Region of southwestern Pennsylvania. Conemaugh Station (1,986 MW gross), Keystone Station (1,983 MW gross), Homer City Station (1,944 MW gross) and Seward Station (214 MW gross) are all

located within 25 miles of each other. In 1993, the Chestnut/Laurel Ridge Power Plant Owners formed a committee to develop an allocation strategy for the SO_2 emissions from each unit in order to demonstrate attainment of the NAAQS for SO_2. The strategy was based on the results of an ambient air quality dispersion modeling analysis of the region. The dispersion modeling protocol that delineates the ambient air quality attainment and maintenance strategy for the region, the Chestnut/Laurel Ridge SO_2 Attainment Demonstration Plan (Attainment Plan), has been submitted to the Pennsylvania Department of Environmental Protection (PaDEP) for approval. As relevant here, the Attainment Plan would limit SO_2 emissions from the Homer City Station as follows:

	Pennsylvania Present SIP Limits lbs. of SO_2/mmBtu	Chestnut/Laurel Ridge Attainment Plan lbs. of SO_2/mmBtu
Units 1&2	4.0*	3.10**
Unit 3	1.2**	1.2**

* Daily SO_2 limit with a 30-day running limit of 3.7 lbs. of SO_2/mmBtu.
** 3-hour block average.

With the advent of the 1990 Acid Rain Amendments, a major new regulatory program under Title IV was established for the control of SO_2 emissions. The centerpiece of Title IV is a market-based program encompassing emissions allowance and trading provisions for SO_2 control. Affected units are allocated SO_2 allowances under a formula prescribed in the statute. A unit's annual SO_2 emissions are not allowed to exceed the number of allowances the unit holds for use at the time of surrender. The allowances can be received from EPA or purchased and/or transferred from other affected units.

Even with the enactment of the 1990 Clean Air Act Amendments, emissions trading at a stationary source consisting of a combination of "existing sources" and "new sources" cannot be used for compliance with the "command and control limits" (i.e., New Source Performance Standards (NSPS) and/or State Implementation Plan (SIP) emissions limitations) applicable to individual emission units. Prior attempts by the Owners to obtain approval for this type of emissions trading, known as "bubbling", were unsuccessful due to EPA's position on the development of NSPS (see Exhibit 1). As discussed below, the establishment of a single SO_2 emission limitation for the units at the Station --- by means of

the XL Project Program --- would prove the environmental and economic benefits of an alternative method to establish and implement SIP emissions limitations and NSPS.

Under the Project, the Owners propose that Units 1, 2 and 3 each be subject to a 3-hour limit of 2.40 lbs. of SO_2/mmBtu. Projected annualized emissions would be 22,131 tons less than necessary to demonstrate attainment of the NAAQS for SO_2, as shown below:

		Annual SO_2 Emissions (Tons) At 89% Capacity Factor	
	Chestnut/Laurel Ridge Attainment Plan Allowable Emissions (Tons)	Chestnut/Laurel Ridge Attainment Plan Annualized Emissions[1/] (Tons)	XL Demonstration Project Annualized Emissions (Tons)
Unit 1	82,078	73,050	56,560
Unit 2	82,078	73,050	56,560
Unit 3	37,048	32,973	65,953
	201,204	179,073	179,073

For many years, the Owners anticipated that Units 1 and 2 would be subject to a 2.5 lbs. of SO_2/mmBtu emissions limitation based on SO_2 ambient air quality modeling studies conducted in the Chestnut/Laurel Ridge region. As a result of the Homer City Station Innovative Technology Waiver that EPA granted in 1981 (46 Fed. Reg. 55975), the Owners were able to develop a coal cleaning facility capable of producing a coal to achieve the NSPS of 1.2 lbs. of SO_2/mmBtu applicable to Unit 3 as well as a co-product coal capable of fueling Units 1 and 2 that produced an emissions rate of 2.5 lbs. of SO_2/mmBtu. In 1990-91, due to rising organic sulfur levels in the local coals which prevented the facility from producing adequate quantities of compliance coal for Unit 3, the coal cleaning facility was converted to a single-quality coal facility. This necessitated the importation of more distant coal to maintain compliance with the NSPS limitation for Unit 3. The Owners, however, have continued to use the coal cleaning facility to process local coals to burn in Units 1 and 2.

1/ Projected station emissions were calculated using EPA's acid rain annualization factor of .89 for 3-hour averages using a capacity factor of 89%, the maximum capacity factor anticipated by the Owners.

Based on the anticipated 2.5 lbs. of SO_2/mmBtu limit, the ability of the coal cleaning facility to achieve this level, and the Owners' general commitment to maintaining environmental quality, the Owners voluntarily continued Unit 1 and 2 emissions at the 2.5 lbs. of SO_2/mmBtu level. New information became available in 1994. Specifically, the Owners determined that attainment is demonstrated at an allowable emission limitation of 3.1 lbs. of SO_2/mmBtu (3-hour limit) for Units 1 and 2; not 2.5 lbs. of SO_2/mmBtu as thought previously. Put another way, in 1994 it was clear that emissions at the Station had been maintained at artificially low levels for many years. As a result, the Owners now propose to utilize the permissible increase from actual to attainment allowable emissions to achieve and demonstrate the spectrum of multi-media environmental and economic benefits that will result from approval of their proposed Project. Importantly, such benefits would not be economically feasible without approval of the Project.

b. Environmental Benefits

In addition to maintaining SO_2 emissions from Units 1, 2 and 3 consistent with the levels projected under the Attainment Plan, the Owners propose to achieve significant environmental benefits and realize $18 million in annual cost savings by using local coals cleaned on-site to produce a single-quality coal to burn in Units 1, 2, and 3. On-site, off-site and resource conservation/pollution prevention benefits are described in more detail below. Importantly, the Owners do not propose to seek discrete emissions reductions status for the permanent emissions reductions. The Owners also anticipate that emissions avoided by eliminating the need to import more distant coal will increase over time (well into Phase II of the Acid Rain Program) as compared to the levels discussed below because sources of compliance coal are expected to become even more remote.

b1. On-Site Environmental Benefits

- Reduction of on-site coal handling fugitive dust emissions of 223 tons per year, and PM_{10} emissions of 135 tons per year by minimizing truck travel on paved and unpaved roads (see Exhibit 2).
- Reduction of on-site vehicular emissions from reduced truck idling time to unload coal and improved inventory management with a one-product coal stockpile; not two different coal piles. The preliminary estimate of these reductions is 44 tons per year of SO_2, 810 tons per year of NO_x, 57 tons per year of particulate matter, 57 tons per year of PM_{10} and 66 tons per

year of VOCs (see Exhibit 2).

- Reduction in particulate emissions from Unit 3 since increased sulfur levels would improve electrostatic precipitator performance.
- Reduction in NO_x emissions from Unit 3 by using coal with a higher volatile content.
- Reduction in hazardous air pollutant emissions as a result of the coal cleaning process. The coal cleaning process can provide substantial reductions in the concentration of many trace elements that when released into the atmosphere potentially may be hazardous (see Exhibits 3 and 4).
- Reduction in contaminated liquid runoff from the coal storage area as a result of the improved management practices available with a single coal storage pile.
- Reduction in environmental effects associated with ash disposal by virtue of the higher pH ash produced from local coals.

b2. Off-Site Environmental Benefits

- Reduction of vehicular emissions by elimination of 5,150,000 truck miles per year, a reduction of 1.3 truck miles per ton of coal delivered. This results from the sources of raw coal for the coal cleaning facility being closer to the Station than the sources of NSPS compliance coal available for Unit 3. The preliminary estimate of these reductions is 61 tons per year of SO_2, 530 tons per year of NO_x, 37 tons per year of particulate matter, 37 tons per year of PM_{10} and 43 tons per year of VOCs (see Exhibit 2).
- A reduction in damage to the state highway system with the elimination of 5,150,000 truck miles per year, thereby reducing emissions from equipment and material used for repairing and/or replacing the highway system.
- Elimination of approximately 1,300 truck tires from solid waste disposal annually and avoidance of the environmental effects associated with their manufacture (see Exhibit 2).
- Elimination of various small widespread coal refuse disposal areas resulting from the replacement of low sulfur coal production at multiple off-site coal cleaning facilities.
- Elimination of 80 tons per year of fugitive dust emissions, and 49 tons per year of PM_{10} emissions from off-site blending facilities and associated truck traffic (see Exhibit 2).
- Avoidance of future impacts due to increased vehicular emissions, damage to the highway

system, production and disposal of truck tires, fugitive dust emissions -- by continuing to use locally-available coal supplies for Units 1 and 2.

b3. Resource Conservation/Pollution Prevention

Approval of the Homer City Station XL Demonstration Project Proposal would reduce the likelihood of needing an SO_2 scrubber to address escalating fuel costs for Unit 3; under the terms of the proposed Project the single emission limitation will be achieved without the use of a scrubber. As a result, the following environmental benefits also would be derived:

- Conservation of raw materials and avoidance of the environmental effects, including land-related construction impacts, associated with fabricating and installing an SO_2 scrubber system.
- Avoidance of the need to construct additional wastewater treatment facilities to prevent the discharge of additional dissolved solids into local streams.
- Avoidance of limestone mining activities, preserving limestone resources, and avoidance of contamination associated with mining.
- Avoidance of additional truck miles to haul limestone and gypsum to and from the Station.
- Conservation of local water resources.
- Avoidance of energy consumption associated with the operation of an SO_2 scrubber system and contaminants from the generation of the additional electricity to replace the power necessary to operate the scrubber system.
- Avoidance of CO_2 emissions from the operation of an SO_2 scrubber system.

2. COST SAVINGS AND PAPERWORK REDUCTION

Approval of the Homer City Station XL Demonstration Project Proposal would demonstrate that market incentives may be used effectively to minimize the costs of meeting SIP limitations and NSPS. It also would enhance economic opportunities locally. In contrast, continuation of the "command and control" approach would preclude the use of lower cost environmental compliance strategies, and would not provide incentives for the Owners to use their own expertise to advance pollution control techniques and technology. Finally, the Owners would investigate and document the environmental and economic

benefits from expanding EPA's existing emissions trading policy and market incentive programs to include trading between "new" and "existing" sources.

The Project would document the following savings, economic opportunities and reductions in paperwork:

- Reduce fuel cost by $18 million per year; additional fuel cost savings also should be achieved during Phase II of the Acid Rain Program. Based on the anticipated cost of SO_2 allowances and fuel, cost savings are expected to be as high as $25 million annually by 2005.
- Maintain and possibly increase the number of local coal mining jobs.
- Expand the use of a coal cleaning facility to allow the continued use of local coals from the central Pennsylvania high sulfur region.
- Reduce and/or eliminate small and dispersed multiple off-site facilities currently used to blend compliance coal for Unit 3.
- Elimination of the permits and reports necessary for multiple off-site facilities currently used to blend compliance coal for Unit 3.

3. STAKEHOLDER SUPPORT

The Owners have obtained substantial support for previous demonstration projects at the Station and anticipate continued support for the Project. For example, on November 13, 1981, at 46 Fed. Reg. 55975, EPA granted an innovative technology waiver, pursuant to Section 111 (j) of the 1977 Clean Air Act, for the Station (see 40 C.F.R. § 60.47). The deep cleaned coal portion of the Multi-Stream Coal Cleaning System (MCCS) --- the innovative technological system --- was not producing enough coal to comply with the NSPS applicable to SO_2 emissions from Unit 3; additional time was required to complete modifications to the MCCS to produce sufficient quantities of deep cleaned coal to meet the NSPS. The waiver allowed SO_2 emissions from Unit 3 to exceed the NSPS for a limited period of time and under specific conditions, including a "combined" tonnage limitation for SO_2 emissions from the Station. Under the Innovative Technology Waiver total combined annual SO_2 emissions (262,258 tons) were lower than if each unit met its individually applicable SIP emission limitation or NSPS (276,150 tons).

EPA, PaDEP, the Pennsylvania legislative delegation, industry-wide organizations and local groups were supportive of the Owners' efforts during the innovative technology waiver process. EPA, PaDEP, and EPRI continue to be supportive of recent environmentally-beneficial projects at Homer City Station, such as the Unit 1 and 2 Low NO_x Burners Demonstration Project. The Owners believe that all these organizations would support the Project and the Owners will reconfirm that continued support during the EPA screening process.

4. INNOVATION/MULTI-MEDIA POLLUTION PREVENTION

As explained above, under "Environmental Results", the multi-media environmental benefits of the Project would be significant. This would be consistent with EPA's goals for a holistic approach to environmental protection. Specifically, the Project will demonstrate and document how an innovative control strategy for SO_2 emissions can control other air contaminants at the same source and/or prevent the generation of other pollutants in different environmental media.

5. TRANSFERABILITY

A successful Project would provide the basis for authorizing the use of alternative NSPS or alternative methods of measuring NSPS compliance at all types of facilities subject to NSPS, whether those facilities are comprised of "existing" and "new" sources or only "new" sources. In addition, the environmental benefits associated with reducing the number and types of coals used could be realized at any coal-fired electric generating station that currently uses more than one type of coal to achieve compliance. Finally, the Project will establish a record that a facility can demonstrate compliance with NSPS more flexibly, provided that overall facility emissions would be no greater than if current NSPS and SIP limitations were required for each individual unit.

6. FEASIBILITY

On-site operational experience and ambient air quality modeling at the Station during the

innovative technology waiver has shown that trading of SO_2 tons between "existing" and "new" sources does not affect regional NAAQS attainment and protects local coal mining jobs. The proposed Project has been designed to achieve all the environmental and economic benefits discussed above.

The Owners have successfully completed other demonstration projects during the past 25 years, including the Unit 1 and 2 Low NO_x Burners Demonstration Project and the MCCS Demonstration Project, in which EPA invested approximately six million dollars. The Owners have provided financial resources for the completion of many demonstration projects. They also have the resources necessary to successfully complete this Project.

7. MONITORING, REPORTING AND EVALUATION

The Owners will work with EPA and other stakeholders to develop clear objectives, requirements and methods for monitoring of the Project. This would include sampling and analysis of the coal cleaning facility product and continuous measurement of boiler emissions in accordance with 40 C.F.R. Part 75 (Acid Rain Continuous Emission Monitoring Requirements). Additionally, the multi-media environmental benefits and cost savings that will result from the Project will be evaluated and quantified.

8. SHIFTING OF RISK BURDEN

Consistent with Executive Order 12898, the Project will not result in any disproportionate shift of adverse human health or environmental effects to minority or low-income populations. Any change in environmental burden would result from a geographical shift of energy production to the Station. The additional energy produced by the Station as a result of the Project will replace electricity generated by other more costly facilities within the Owner's respective power pools. Put another way, implementation of the Project would result in less pollution per unit of energy produced. This shift of electrical generation to the Station will be from less efficient facilities typically located closer to metropolitan areas that have a larger minority or low-income population segment than Indiana County, Pennsylvania. As a result of the Project, energy production at such facilities would be decreased or eliminated, resulting

in environmental benefits to their surrounding areas, while still protecting the NAAQS for SO_2 in Indiana and Cambria Counties.

In addition, approval of the Project would have a positive economic effect on low-income populations. The Project will provide lower cost electricity to the consumer, with a net decrease in environmental effects. Electricity has become a basic human need, and as such, the cost of electricity has a substantial bearing on the disposable income of low-income populations. The substantial cost savings from the Project should result in a net positive effect on the quality of life of lower wage earners by raising their disposable incomes.

9. LEGAL MECHANISMS FOR IMPLEMENTING THE PROJECT

Three alternative legal mechanisms for implementing the proposed Project are outlined below. The conditions of each alternative would be similar, but the method of implementation would be different. First, a consent decree among the Owners, EPA and PaDEP could be developed and used to prescribe the terms and conditions for the Project. A condition of the consent decree would be that Units 1, 2 and 3 individually comply with a 3-hour average emissions limitation of 2.40 lbs. of SO_2/mmBtu. A failure to comply with the terms of the consent decree would be grounds for enforcement action.

A second alternative would be to establish a different methodology for determining Unit 3's compliance with the NSPS. This would be accomplished by authorizing, as part of the Final Project Agreement, a "compliance bubble" for the Station. Compliance with the NSPS would be measured by establishing a Station-wide emissions limitation. Specifically, the Final Project Agreement would require that all three units individually comply with a 3-hour average emissions limitation of 2.40 lbs. of SO_2/mmBtu. EPA previously used this type of approach when it authorized a bubble to determine the Central Illinois Public Service Company Newton Power Station's compliance with NSPS. See 40 C.F.R. §§ 60.43(e), 60.46(h), and Part 60, App. G.

As a third alternative, EPA could establish, as part of the Final Project Agreement, an alternative NSPS for the Station pursuant to 40 C.F.R. Part 60. This standard, which would be a 3-hour average emissions limitation of 2.40 lbs. of SO_2/mmBtu, would be applied to each unit individually for the term of the proposed Project. EPA used this approach when it granted the innovative technology waiver to

the Owners. The terms and conditions of that innovative technology waiver, which are set forth at 40 C.F.R. § 60.47, could provide a model for the terms and conditions of the Final Project Agreement.

10. CONCLUSION

The Homer City Station XL Demonstration Project will prove the environmental and economic benefits of applying a single emission limitation to existing and new units at the Station. This approach is consistent with the 1990 amendments to the Clean Air Act, by further demonstrating the benefits of a market-based approach to air pollution control. Additionally, the Project will provide the opportunity to document and quantify the multi-media environmental benefits of using a single quality coal produced from locally-available coal supplies at a coal-fired electric generating station. Specifically, in addition to saving $18 million annually, the proposed Project would provide permanent annual air contaminant emissions reductions estimated to be at least 1,340 tons of NO_x, 303 tons of fugitive emissions, 278 tons of PM_{10}, 109 tons of VOCs, 105 tons of SO_2, and 94 tons of particulate matter. Additionally, the Project will result in lower emissions of hazardous air pollutants, the production of less acidic ash, less solid waste, less runoff from coal storage areas, and increased administrative efficiency. Stated simply, the proposed Project represents the most cost-effective and environmentally beneficial approach to generating electricity at the Homer City Station.