

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

EXELON GENERATION LLC,)	
)	
Petitioner,)	
)	
v.)	PCB
)	(Variance- Air)
ILLINOIS ENVIRONMENTAL)	
PROTECTION AGENCY,)	
)	
Respondent.)	

NOTICE OF FILING

TO: Office of the Clerk of the
Illinois Pollution Control Board
James R. Thompson Center
100 West Randolph Street, Suite 11-500
Chicago, Illinois 60601

Division of Legal Counsel
Illinois Environmental Protection Agency
1021 North Grand Avenue East
P.O. Box 19276
Springfield, Illinois 62794-9276

PLEASE TAKE NOTICE that on the 18th day of May, 2016, on behalf of Exelon Generation LLC, a **Petition for Variance**, an **Appearance of Byron F. Taylor** and an **Appearance of Katharine Newman**, were filed with the Office of the Clerk of the Illinois Pollution Control Board.

Respectfully submitted,

EXELON GENERATION LLC

By: /s/ Katharine F. Newman

One of its attorneys

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PETITION FOR VARIANCE

Pursuant to Section 35(a) of the Illinois Environmental Protection Act (“Act”), 415 ILCS 5/35(a), and Part 104 of Title 35 of the Illinois Administrative Code, 35 Ill. Admin. Code § 104.100 *et seq.*, Exelon Generation LLC (“Exelon Generation”), by and through its attorneys, Sidley Austin LLP, hereby petitions the Illinois Pollution Control Board (“Board”) for a variance from Section 161(b)(2) of Title 35 of the Illinois Administrative Code, 35 Ill. Admin. Code § 214.161(b)(2), which sets a January 1, 2017 deadline for use of 15 ppm or less distillate fuel oil by fuel combustion emission sources (“Sulfur Content Rule”). Exelon Generation respectfully requests that the Board grant this variance for four nuclear generation stations: the Byron, Clinton, Dresden, and LaSalle stations (collectively, the “Facilities”). Because of the January 1, 2017 compliance deadline, the Board’s processing of this variance petition is time-sensitive. Exelon Generation respectfully requests a decision from the Board as soon as possible and in a manner consistent with the Board’s rules and regulations.

I. SUMMARY

Exelon Generation seeks a variance from the January 1, 2017 Sulfur Content Rule compliance deadline because compliance with the use requirement of the Sulfur Content Rule

results in an arbitrary and unreasonable hardship for the Facilities.¹ Exelon Generation has been purchasing Ultra Low Sulfur Diesel (“ULSD”), which contains sulfur at 15 ppm or less, for many years and possesses records to demonstrate this fact. The Facilities are required to maintain relatively large volumes of diesel fuel to power emergency generators, auxiliary boilers² and fire pumps (the “Emergency Equipment”).³ Nuclear Regulatory Commission (“NRC”) rules, and the environmental permits and regulations governing the Emergency Equipment, cause the fuel in the tanks to be used sparingly. Thus, many tanks at the Facilities contain diesel fuel in excess of 15 ppm even after years of dilution with ULSD.

There are three potential options to come into compliance with the Sulfur Content Rule: (1) combust all of the higher sulfur fuel onsite at the Facilities prior to January 1, 2017; (2) dilute the higher sulfur fuel onsite at the Facilities prior to January 1, 2017; or (3) drain and clean the diesel fuel storage tanks and refill them with ULSD prior to January 1, 2017. All three of these options impose an arbitrary and unreasonable hardship on Exelon Generation. As described in more detail below, the fuel in the tanks cannot be consumed or diluted by the deadline, and given the location of the tanks within secured areas of nuclear power facilities, it is logistically very difficult and potentially unsafe to drain and replace the contents of the tanks in the short time frame necessary to meet the January 2017 deadline. Finally, the environmental impact of the requested variance is inconsequential. The worst-case emissions associated with this variance

¹ This petition covers the four stations identified above as the Facilities. Two additional Exelon Generation nuclear facilities, the Braidwood and Quad Cities stations, do not require a variance and will be in compliance with the Sulfur Content Rule by January 1, 2017.

² Only Byron and Dresden have auxiliary boilers.

³ The auxiliary boilers are used to provide supplemental heat to the Facilities during winter months and during outages. The Dresden boilers are fired with natural gas with diesel as backup while the Byron boilers use diesel exclusively. While not necessarily considered “emergency” equipment, the boilers do not consume much of the stored diesel fuel. Exelon Generation has defined “Emergency Equipment” to include the auxiliary boilers for purposes of convenience to the reader, and will draw distinctions between the diesel generators and the auxiliary boilers where necessary in the remainder of the text.

request are less than two tons of sulfur dioxide per year. The variance likely will result in actual emissions of approximately one-tenth of a ton per year at all Facilities combined. These emissions will also be counterbalanced, in part, by reductions achieved by Dresden Station, which switched the primary fuel for its auxiliary boilers from diesel to natural gas on October 26, 2015. Accordingly, as described below, Exelon Generation seeks additional time to comply with the Sulfur Content Rule.

II. INTRODUCTION

Exelon Generation maintains a series of diesel fuel storage tanks that store fuel for the Emergency Equipment at the Facilities in the event of a loss of external power or other emergency event. The equipment operates pursuant to air permits issued by the Illinois Environmental Protection Agency (“IEPA”). Because the Emergency Equipment is critical for nuclear safety, the Facilities are required to store a supply of diesel fuel sufficient to fuel the Emergency Equipment for up to seven days in the event of an emergency. At the same time, actual usage of the Emergency Equipment is quite limited because the equipment is only used for emergencies and during readiness testing and similar limited operations. In fact, use of the Emergency Equipment for purposes other than “emergencies” is severely restricted by federal and state air emission rules and permits. This combination of factors results in the diesel fuel being stored for extended periods before use.

The Facilities have been purchasing and replenishing the diesel fuel storage tanks only with ULSD for years. There is no lower ppm level of diesel fuel available to expedite dilution of the tanks. Prior to the availability of ULSD, however, commercially available diesel fuel contained up to 500 ppm sulfur. While the sulfur concentrations in the diesel fuel storage tanks have fallen over the years through dilution, recent sampling data shows that the Facilities store

diesel fuel with more than 15 ppm sulfur in many tanks. For example, all diesel fuel purchased for the LaSalle Facility since June 2007 has been ULSD. Yet, the LaSalle diesel fuel storage tanks contain sulfur concentrations ranging as high as 211 ppm, after nine years of dilution. This is due to the limited fuel throughput and limited usage of the Emergency Equipment.

Because neither consumption nor dilution of all the onsite diesel fuel prior to January 1, 2017 is a feasible compliance plan for all affected tanks, the only remaining option is to drain and replace the diesel fuel in those storage tanks in order to comply with the Sulfur Content Rule. However, the timing and scheduling of tank cleaning and equipment preventative maintenance at nuclear generating stations are atypical. The actions are comprehensively planned, pre-scheduled events for which the logistics, security and safety aspects of temporarily reducing the immediately available fuel source for the Emergency Equipment are strategically and carefully designed to ensure compliance with NRC licensing requirements⁴ and public safety. Logistically, it is very complicated for the Facilities to immediately drain and replace all of the diesel fuel stored onsite, and requiring them to do so presents serious safety and logistical challenges and may compromise nuclear safety readiness.

Accordingly, Exelon Generation is requesting a variance allowing additional time for each Facility to comply with the Sulfur Content Rule. Based upon the varying amounts of affected diesel fuel in the storage tanks and the varying sulfur contents of the fuel, Exelon Generation is requesting the following:

- (1) **Byron Station** – a three-year variance from the Sulfur Content Rule, extending the deadline for compliance to January 1, 2020;

⁴ The NRC is the regulatory agency responsible for licensing and overseeing the operation of nuclear power plants within the United States. In this role, the NRC issues licenses under Title 10 of the Code of Federal Regulations. As part of the licensing process, each applicant must submit technical specifications describing how the nuclear plant will comply with NRC regulations, including safety limitations, operating conditions, surveillance, design and decommissioning. The Facilities requesting this variance all have licenses issued by the NRC that incorporate technical specifications, examples of which are discussed throughout this petition.

- (2) **Clinton Station** – a four-year variance from the Sulfur Content Rule, extending the deadline for compliance to January 1, 2021;
- (3) **Dresden Station** – a three-year variance from the Sulfur Content Rule, extending the deadline for compliance to January 1, 2020; and
- (4) **LaSalle Station** – a five-year variance from the Sulfur Content Rule, extending the deadline for compliance to January 1, 2022.

Exelon Generation believes that the compliance deadlines requested above will permit the company to achieve the 15 ppm use requirement in the Sulfur Content Rule through: (1) diluting the fuel contained in many of the diesel fuel storage tanks that currently contain relatively low sulfur ppm fuel; and (2) draining and replenishing the diesel fuel in the tanks that contain higher sulfur ppm content fuel in connection with a coordinated program of tank cleaning and equipment preventative maintenance designed to minimize potential spills and consistent with the safety and availability requirements for nuclear generating stations.

The environmental impact of this variance request is negligible. The Facilities have remarkably low sulfur dioxide emissions generally, and extending the compliance deadline will result in minimal additional emissions. Exelon Generation estimates that the emissions differential between using ULSD and the current fuel sulfur content for the duration of the variance most likely will total less than one-tenth of one ton (0.1 tons) of sulfur dioxide per year for all Facilities combined. Even under a worst-case scenario, assuming all of the fuel currently contained in the tanks is burned without any dilution at some point prior to the implementation of the necessary compliance work and that the sulfur content of all such fuel is at the requested variance limit of 250 ppm, less than two additional tons of total sulfur dioxide emissions would be emitted from all Facilities combined.

In sum, a variance is necessary to avoid an arbitrary and unreasonable hardship. The variance will allow the Facilities to reach the 15 ppm sulfur content requirement safely and securely while still maintaining compliance with NRC regulatory requirements. Granting the

variance will have a negligible environmental impact. Exelon Generation has already been purchasing ULSD for years, and will continue to do so. The company also will comply with the recordkeeping requirement to demonstrate the purchase of ULSD. This variance request relates solely to the obligation to use (*i.e.*, combust) ULSD beginning January 1, 2017.

III. REGULATIONS FROM WHICH THE VARIANCE IS SOUGHT

On December 7, 2015, the Board amended 35 Ill. Admin. Code § 214 to, among other things, require the use of ULSD. More specifically, amendments to Section 214.161(b)(2) require that, by January 1, 2017, the sulfur content of all distillate fuel oil used by any fuel combustion emission source, such as the Emergency Equipment at the Facilities, must not exceed 15 ppm. IEPA drafted the Sulfur Content Rule to be included in Illinois's State Implementation Plan ("SIP") to address the requirements under 42 U.S.C. §§ 7502, 7514, and 7514a of the Clean Air Act (CAA) generally requiring the States to submit to the U.S. Environmental Protection Agency ("USEPA") plans that implement, maintain and enforce standards in areas designated as nonattainment with respect to the SO₂ National Ambient Air Quality Standard ("NAAQS"). (IEPA, *Matter of Amendments to Ill. Admin. Code Part 214, Sulfur Limitations*, Statement of Reasons, Section III.A, p. 6, (Apr. 28, 2015), attached as Exhibit A ("Statement of Reasons").) IEPA has stated that the Sulfur Content Rule primarily was designed to reduce emissions in the Lemont and Pekin SO₂ Nonattainment Areas ("NAAs").⁵ (Statement of Reasons, Ex. A, Section III.A, p. 6-7.) Rather than imposing fuel sulfur content limitations in piecemeal fashion as USEPA potentially designates additional "nonattainment" areas in the future, and because ULSD is widely used and commercially available in Illinois, IEPA decided upon statewide regulation. (Statement of Reasons, Ex. A, Section III.A, p. 7.)

⁵ The Lemont NAA includes portions of Cook County and Will County. The Pekin NAA includes portions of Tazewell County and Peoria County. (40 C.F.R. § 81.314.)

Accordingly, the application of the Sulfur Content Rule to units not currently impacting the Lemont and Pekin NAAs, such as the Facilities, was intended by IEPA “to aid attainment planning efforts regarding [any] future attainment designations” for the SO₂ standard, which USEPA promulgated on June 22, 2010.⁶ (Statement of Reasons, Ex. A, Section III.A, p. 7.)

IV. NRC AND ENVIRONMENTAL REGULATORY RESTRICTIONS ON REQUIRED COMPLIANCE ACTIVITIES

NRC regulations require each Facility to maintain Emergency Equipment on-site, to be used in the event of loss of power or another emergency event. (10 C.F.R. § 50.63; LaSalle Tech. Spec. 3.8.3, attached as Exhibit B.) In addition, the installed Emergency Equipment must be maintained in a condition that will ensure they will startup and provide emergency power when called upon at a high degree of readiness (greater than 97.5% of the time over a rolling two-year period). (10 C.F.R. §§ 50.63, 50.65; NRC Regulatory Guide 1.160 (May 2012), attached as Exhibit C; NRC Regulatory Guide 1.155 (August 1988), attached as Exhibit D.) This requirement is called “Availability” and the Facilities are required to track and provide evidence of “Availability.” This requirement significantly limits the amount of time each Facility can devote to performing preventative maintenance on the Emergency Equipment and their support systems such as the fuel tanks. Removing supporting equipment or the fuel from the supply tanks would render the Emergency Equipment “Inoperable” or “Unavailable,” which is why preventative maintenance is only performed every two years. Relatedly, NRC regulations also require the Facilities, at all times, to store and maintain, on-site, a volume of fuel sufficient to power the Emergency Equipment for up to seven days. (*See e.g.*, LaSalle Tech. Spec. 3.8.3, Ex. B.) The Facilities run the Emergency Equipment as infrequently as possible in order to preserve

⁶ On June 22, 2010, USEPA finalized revisions to the primary SO₂ NAAQS, replacing a 24-hour (and annual) standard with a one-hour standard of 75 parts per billion. (75 Fed. Reg. 35520 (June 22, 2010).)

them for emergency use and not subject the equipment to unnecessary challenges. The Emergency Equipment is periodically tested for readiness. During readiness tests, which range from 30 minutes to 24 hours, the Facilities consume a portion of the fuels contained in the diesel fuel storage tanks. Prior to or following testing, the Facilities replenish the tanks to ensure that the minimum fuel storage requirements are met. Over time, as the purchased ULSD mixed with the higher sulfur fuel contained in the tanks, the overall ppm content declined in each of the diesel fuel storage tanks. However, as shown in Appendix B, the sulfur content of the diesel fuel at the Facilities still exceeds 15 ppm.

The Facilities historically have emitted only small amounts of SO₂. Table 1 shows annual emissions in tons per year for each Facility from 2011 through 2015.

Table 1
Annual SO₂ Emissions
Auxiliary Boilers & Emergency Diesel Engines

Facility	Facility Wide SO ₂ FESOP Limit in Tons Per Year (tpy)	Actual SO ₂ Emissions (tpy)				
		2015	2014	2013	2012	2011
Byron	4.46 ⁷	0.03	0.1	0.04	0.02	0.02
Clinton	4.89	0.061	0.121	0.058	0.05	0.04
Dresden	44.58	0.063	0.100	0.090	0.08	0.574
LaSalle	1.05	0.057	0.0027	0.0016	0.0023	0.0019

The emissions from each Facility are low not only due to NRC regulations affecting use of the equipment, but also because of USEPA and IEPA permits and regulations. The Facilities' federally enforceable state operating permits ("FESOPs") restrict the usage of the Emergency Equipment and the associated emissions. In addition, some of the Emergency Equipment is

⁷ This limit does not include any SO₂ emissions associated with the rad waste processing equipment.

subject to New Source Performance Standards for Stationary Compression Ignition Internal Combustion Engines (“NSPS III”) based on the date of installation. (40 C.F.R. § 60.4200 *et seq.*) All of the Emergency Equipment, with the exception of the auxiliary boilers, is subject to the National Emission Standard for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (“MACT ZZZZ”). (40 C.F.R. § 63.6580 *et seq.*) Emergency engines under these regulations are subject to a complicated set of rules which, in pertinent part, prohibit operation of the emergency engines in non-emergency situations for more than 50 hours per year (not including maintenance, testing, and emergency demand response). (*See, e.g.*, 40 C.F.R. § 63.6640(f)(1).) There is no time limit on the use of emergency engines in emergency situations. (*Id.*) However, even maintenance checks and readiness testing are limited to 100 hours per year. (*Id.*) Due to these restrictions, use and dilution of the fuel in the tanks, which are maintained near capacity at all times, will not occur quickly enough to meet the compliance date.

Alternatively, it is logistically very difficult and potentially unsafe to drain and replace the contents of all of the diesel fuel storage tanks in the short time frame necessary to meet the January 2017 deadline. As noted above, the NRC requires a seven-day fuel supply for emergency diesel generators. (*See e.g.*, LaSalle Tech. Spec. 3.8.3, Ex. B.) If the minimum inventory is not immediately available, the plant enters a Limiting Condition for Operation (“LCO”) for the associated emergency engines which threatens the Facility’s ability to meet its Availability and operability requirements. If this occurs, the required inventory must be restored within seven days or the Facility will be required to begin a controlled shutdown of the affected nuclear reactor. Therefore, any work that adversely impacts the supply of fuel affects the nuclear safety margin.

Given the number and size of the tanks involved, draining the tanks requires thoughtful planning and is a labor and time intensive process. Security procedures for entering the fenced, restricted area where the tanks are located also require extensive inspections and monitoring. For example, prior to entry into the restricted area, each truck is thoroughly inspected by station security. This process can take up to two hours. The number of trucks allowed to enter the protected area at any one time is also limited. For some of the larger diesel fuel storage tanks, up to 20 trucks may be needed in order to drain and refill a single tank. Significant labor resources, in addition to security, are required to support a tank fuel change out, including operations, chemistry, radiation protection, supply, maintenance, planning and management oversight.

V. DESCRIPTION OF FACILITIES SUBJECT TO THIS VARIANCE

A. Byron Station

The Byron Generating Station (“Byron Station”), is a two-unit pressurized water reactor nuclear power facility. Byron Station is owned and operated by Exelon Generation. Byron Station’s Unit 1 began commercial operation on September 16, 1985, and Unit 2 began commercial operation on August 2, 1987. Byron Station is capable of generating approximately 2,347 net megawatts, and currently employs 860 people. Byron is located in Ogle County, Illinois, near to Byron, Illinois, approximately 90 miles west of Chicago. Byron is located 71 miles north of IEPA’s Oglesby SO₂ monitoring station.

The Byron Station maintains four 760 hp diesel-powered emergency generators, two 1500 hp diesel-powered emergency generators, and 24 small diesel-fired emergency electric generators and pumps (each less than 1,500 hp). This Emergency Equipment is fueled by a series of interconnected diesel fuel storage tanks and dedicated small tanks. The station also maintains two 93 MMBtu/hr diesel-fired auxiliary boilers. The boilers are also fueled by a series of

interconnected diesel fuel storage tanks. None of the Emergency Equipment at Byron Station is fitted with add-on SO₂ emission reduction controls.

Prior to 2007, the diesel fuel storage tanks were filled with commercially available diesel fuel, which contained up to 500 ppm sulfur. On August 21, 2007, Byron Station began purchasing ULSD to replenish any fuel depleted from the diesel fuel storage tanks during engine and boiler operation. Use of ULSD has resulted in the dilution of the sulfur content of each diesel fuel storage tank at Byron Station. However, based on Exelon Generation's recent sampling of a representative number of tanks at the station, there is fuel in the system that currently remains above 15 ppm. Please see Appendix B, Table 5 for additional information.

IEPA issued FESOP #78090018 to Byron Station on November 24, 2015. This FESOP expires on August 21, 2025. While the FESOP covers the six total diesel-powered emergency generators, the 24 small diesel-fired emergency electric generators and pumps, and the auxiliary boilers, the tanks themselves are exempt from coverage by the FESOP pursuant to 35 Ill. Admin. Code §201.146(n)(3).

In 2015, the most recent year for which Byron Station has use and emission rate information, the six larger diesel fuel generators ran a total of 331 hours. The 2015 SO₂ emission rate for these six large diesel fuel generators was 0.08 lbs/hr. In 2015, the smaller diesel fuel generators operated 103 hours with an SO₂ emission rate of 0.36 lbs/hr. Total SO₂ emissions from Byron Station during 2015 were 0.03 tons.

B. Clinton Station

The Clinton Generating Station ("Clinton Station"), is a nuclear-fired steam electric generating facility with one boiling water reactor located in DeWitt County, Illinois, approximately six (6) miles east of Clinton, Illinois, and 60 miles northeast of Springfield,

Illinois. Clinton Station is owned and operated by Exelon Generation. Clinton Station began commercial operation on April 24, 1987. Clinton Station is capable of generating 1,069 net megawatts, and currently employs 693 people. In relation to IEPA's SO₂ monitoring stations, Clinton Station is located 94 miles south of the Oglesby station, 30 miles north of the Decatur station, 52 miles northeast of the Springfield station, and 72 miles southeast of both the Peoria and Pekin stations.

The Clinton Station maintains one 2,305 hp diesel-powered emergency generating unit, one 3,070 hp diesel-powered emergency generating unit, one 3,070 hp diesel-powered generator set, one 755 hp diesel-powered generator set, one 380 hp diesel-powered fire pump, one 240 hp diesel-powered fire pump, one 340 hp diesel-powered fire pump, and one 68 hp diesel-powered generator set. The large emergency diesel generators are each fueled by a dedicated diesel storage tank and accompanying day tank. All other Emergency Equipment is fueled directly from a vendor supplied fuel delivery truck. In addition, there are numerous small portable emergency diesel generators and pumps at the site. None of the Emergency Equipment at Clinton Station is fitted with add-on SO₂ emission reduction controls.

Prior to 2010, the diesel fuel storage tanks were filled with commercially available diesel fuel, which contained up to 500 ppm sulfur. In 2010, Clinton Station began purchasing ULSD to replenish any fuel depleted from the diesel fuel storage tanks during engine operation. Use of ULSD, beginning in 2010, has resulted in the dilution of the sulfur content of each diesel fuel storage tank at Clinton Station. However, based on Exelon Generation's recent sampling of a representative number of tanks at the station, there is fuel in the system that currently remains above 15 ppm. Please see Appendix B, Table 6 for additional information.

IEPA issued FESOP #07100046 to Clinton Station on April 18, 2014. This FESOP expires on April 18, 2024. While the FESOP covers the two diesel-powered emergency generating units, the three diesel-powered generator sets, and the three diesel-powered fire pumps, the tanks themselves are exempt from coverage by the FESOP pursuant to 35 Ill. Admin. Code §201.146(n)(3).

In 2015, the most recent year for which Clinton has use and emission rate information, the three larger diesel fuel generators ran a total of 169 hours. The 2015 SO₂ emission rate for these three large diesel fuel generators was 0.41 lbs/hr. In 2015, the smaller diesel fuel generators operated 223 hours with an SO₂ emission rate of 0.45 lbs/hr. Total SO₂ emissions from Clinton during 2015 were 0.061 tons.

C. Dresden Station

The Dresden Generating Station (“Dresden Station”), is a nuclear-fueled steam electric generating facility with two boiling water reactors. Dresden Station is owned and operated by Exelon Generation. Dresden Station’s Unit 2 began commercial operation in June 1970, and Unit 3 began commercial operation in November 1971. Dresden Station has a maximum generating capacity of 1845 net megawatts, and currently employs 900 people. Dresden Station is located in Grundy County, Illinois, near Morris, Illinois, at the confluence of the Des Plaines and Kankakee River, where they join to form the Illinois River. Dresden Station is located 53 miles east of the IEPA Oglesby SO₂ monitoring station, and 41 miles south of IEPA’s Lemont SO₂ monitoring station.

The Dresden Station maintains two 5,800 hp diesel-powered emergency generators, three 3,600 hp diesel-powered emergency generators and numerous smaller diesel-powered emergency generators and pumps (each less than 600 hp), as well as two auxiliary natural gas-fired boilers with the capability to use diesel fuel as a backup. This Emergency Equipment is fueled by a

series of interconnected diesel fuel storage tanks and smaller dedicated tanks. None of the Emergency Equipment at Dresden Station is fitted with add-on SO₂ emission reduction controls.

Prior to 2007, the diesel fuel storage tanks were filled with commercially available diesel fuel, which contained up to 500 ppm sulfur. On April 5, 2007, Dresden Station began purchasing ULSD to replenish any fuel depleted from the diesel fuel storage tanks during engine operation. Use of ULSD has resulted in the dilution of the sulfur content of each diesel fuel storage tank at the Dresden Station. However, based on Exelon Generation's recent sampling of a representative number of tanks at the station, there is fuel in the system that currently remains above 15 ppm. Please see Appendix B, Table 7 for additional information.

IEPA issued FESOP #73020783 to Dresden Station on March 31, 2014. This FESOP expires on March 31, 2024. While FESOP #73020783 covers the five diesel-powered emergency generators, the small diesel-powered emergency generators and pumps and the auxiliary boilers, the tanks themselves are exempt from coverage by the FESOP pursuant to 35 Ill. Admin. Code §201.146(n)(3).

In 2015, the most recent year for which Dresden Station has use and emission rate information, the five larger diesel generators ran a total of 141 hours combined. The 2015 SO₂ emission rate for these five large diesel fuel generators was 0.00001 lbs/hr. In 2015, the smaller diesel generators and pumps operated for 203 hours with an SO₂ emission rate of 0.275 lbs/hr. Total SO₂ emissions from Dresden during 2015 were 0.063 tons.

D. LaSalle Station

The LaSalle Generating Station ("LaSalle Station"), is a base load nuclear-fueled steam electric generating station with two boiling water reactors. LaSalle Station is owned and operated by Exelon Generation. LaSalle Unit 1 began commercial operation in January 1984 and Unit 2

began commercial operation in October 1984. LaSalle Station is capable of generating 2,286 net megawatts, and currently employs 800 people. LaSalle Station is located in the southeastern part of LaSalle County, six miles southeast of Marseilles, Illinois, three miles west of State Highway 170, and one-half mile north of the Grand Ridge-Mazon Road (LaSalle County Highway 6), and is 26 miles east of IEPA's Oglesby SO₂ monitoring station.

LaSalle Station maintains five 3,489 hp diesel-powered emergency generating units, and eighteen diesel-fired emergency electric generators and pumps all less than 1,500 hp. This Emergency Equipment is fueled by a series of interconnected diesel fuel storage tanks and small dedicated tanks. None of the Emergency Equipment at LaSalle Station is fitted with add-on SO₂ emission reduction controls.

Prior to 2007, the diesel fuel storage tanks were filled with commercially available diesel fuel, which contained up to 500 ppm sulfur. In June 2007, LaSalle Station began purchasing ULSD to replenish any fuel depleted from the diesel fuel storage tanks during engine operation. Use of ULSD has resulted in the dilution of the sulfur content of each diesel fuel storage tank at LaSalle Station. However, based on Exelon Generation's recent sampling of a representative number of tanks at the station, there is fuel in the system that currently remains above 15 ppm. Please see Appendix B, Table 8 for additional information.

IEPA issued FESOP # 75040086 to LaSalle on August 12, 2015. This FESOP expires on August 12, 2025. While the FESOP covers the five diesel-powered emergency generating units, and the 18 diesel-fired emergency electric generators and pumps, the diesel fuel storage tanks themselves are exempt from coverage by the FESOP pursuant to 35 Ill. Admin. Code §201.146(n)(3).

In 2015, the most recent year for which LaSalle Station has use and emission rate information, the five larger diesel fuel emergency generators ran a total of 156 hours. The 2015 SO₂ emission rate for these five large diesel fuel emergency generators was 0.02 lbs/hr. In 2015, the smaller diesel fuel generators and pumps operated 170 hours with an SO₂ emission rate of 0.66 lbs/hr. Total SO₂ emissions from LaSalle during 2015 were 0.057 tons.

VI. PRIOR VARIANCE RELIEF

Exelon Generation does not currently have any active petitions for variance for the Facilities. However, the Facilities previously received the following provisional variances:

Byron Station

- 1) Case # IEPA-07-10A-MW, provisional variance in relation to a request for distillate fuel oil usage in its two auxiliary boilers in excess of the usage authorized by its FESOP, starting 10/23/07-10/31/07.

Clinton Station

- 1) Case # IEPA 08-003, provisional variance associated with Special Condition 4 of its NPDES Permit #IL 00369919, starting 9/13/07 for 20 days.

Dresden Station

- 1) Case # IEPA 12-14, provisional variance from Special Condition 3B of NPDES Permit #IL 0002224, starting 3/21/12-3/31/12.
- 2) Case # IEPA 12-23, provisional variance from Special Condition 3C of NPDES Permit #IL 0002224, starting 7/17/12 - 8/1/12, with extension from 8/3/12-8/16/12.
- 3) Case # IEPA 12-5, provisional variance from Special Conditions 4A, 4D and 4G of NPDES Permit #IL 0002224, starting 10/22/11-11/4/11.
- 4) Case # IEPA 12-4, provisional variance from Special Condition 4D of NPDES Permit #IL 0002224, starting 8/6/11-8/16/11.
- 5) Case # IEPA 07-009, provisional variance from Special Conditions 4A, 4D and 4G of NPDES #IL 0002224, starting 11/17/06-11/22/06.
- 6) Case # IEPA 07-008, provisional variance from Special Conditions 4A, 4D and 4G of NPDES #IL 0002224, starting 11/7/06-11/12/06.
- 7) Case # PCB 2003-40, provisional variance from Special Conditions 4A, 4D and 4G of NPDES Permit #IL 0002224, starting 10/12/02-10/21/02.
- 8) Case # PCB 2002-17, provisional variance from Special Condition 4C of NPDES Permit #IL 0002224, starting 8/7/01 for 45 days.

LaSalle Station

- 1) Case # IEPA 13-8, provisional variance from Special Condition 3B of NPDES Permit #IL 0048151, beginning July 19, 2012 through August 1, 2012.
- 2) Case # IEPA 13-12, provisional variance from Special Condition 3B of NPDES Permit #IL 0048151, beginning August 2, 2012 through August 15, 2012.

VII. VARIANCE RELIEF REQUESTED AND COST OF COMPLIANCE

Exelon Generation seeks relief from the Sulfur Content Rule requirement that it use (*i.e.*, consume) diesel fuel containing no more than 15 ppm sulfur at the Facilities by January 1, 2017.

The following specific relief is requested:

A. Byron Station

Exelon Generation requests a three-year variance for Byron Station, until January 1, 2020. Exelon Generation has determined that Byron Station can meet the sulfur content use requirement of 35 Ill. Admin. Code § 214.161(b)(2) by such date through (1) diluting the sulfur content of diesel fuel currently contained within the fuel storage tanks with purchased ULSD and (2) emptying and replenishing certain diesel fuel storage tanks with ULSD in conjunction with a coordinated tank cleaning and equipment preventative maintenance program designed to maintain compliance with NRC technical specifications and licensing requirements and protect public safety.

B. Clinton Station

Exelon Generation requests a four-year variance for Clinton Station, until January 1, 2021. Exelon Generation has determined that Clinton Station can meet the sulfur content use requirement of 35 Ill. Admin. Code § 214.161(b)(2) by such date through (1) diluting the sulfur content of diesel fuel currently contained within the fuel storage tanks with purchased ULSD and (2) emptying and replenishing certain diesel fuel storage tanks with ULSD in conjunction with a coordinated tank cleaning and equipment preventative maintenance program designed to

maintain compliance with NRC technical specifications and licensing requirements and protect public safety.

C. Dresden Station

Exelon Generation requests a three-year variance for Dresden Station, until January 1, 2020. Exelon Generation has determined that Dresden Station can meet the sulfur content use requirement of 35 Ill. Admin. Code § 214.161(b)(2) by such date through (1) diluting the sulfur content of diesel fuel currently contained within the fuel storage tanks with purchased ULSD and (2) emptying and replenishing certain diesel fuel storage tanks with ULSD in conjunction with a coordinated tank cleaning and equipment preventative maintenance program designed to maintain compliance with NRC technical specifications and licensing requirements and protect public safety.

D. LaSalle Station

Exelon Generation requests a five-year variance for LaSalle Station, until January 1, 2022. Exelon Generation has determined that LaSalle Station can meet the sulfur content use requirement of 35 Ill. Admin. Code § 214.161(b)(2) by such date through (1) diluting the sulfur content of diesel fuel currently contained within the fuel storage tanks with purchased ULSD and (2) emptying and replenishing certain diesel fuel storage tanks with ULSD in conjunction with a coordinated tank cleaning and equipment preventative maintenance program designed to maintain compliance with NRC technical specifications and licensing requirements and protect public safety.

Exelon Generation estimates that it will not incur any additional costs to come into compliance with the Sulfur Content Rule under the terms of the requested variance. This variance request does not involve alternative control equipment or associated capital costs. With respect to operations and maintenance costs, Exelon Generation already replenishes consumed

fuel with ULSD and performs tank maintenance and cleaning, and will continue to do so at its Facilities until compliance is achieved by the requested variance dates. Please see Section VII.A. and Appendix C for additional information, generally, on costs.

VIII. DETAILED DESCRIPTION OF COMPLIANCE PLAN

Exelon Generation suggests the following requirements as a compliance plan to meet the requirements in the Sulfur Content Rule by the proposed variance dates:

- i. Beginning immediately upon issuance of this variance, the sulfur content of all diesel fuel purchased for use by the Emergency Equipment at the Facilities must not exceed 15 ppm.
- ii. From January 1, 2017 through December 31, 2019, the sulfur content of all diesel fuel used by the Emergency Equipment at Byron and Dresden stations must not exceed 250 ppm.⁸
- iii. From January 1, 2017 through December 31, 2020, the sulfur content of all diesel fuel used by the Emergency Equipment at Clinton station must not exceed 250 ppm.
- iv. From January 1, 2017 through December 31, 2021, the sulfur content of all diesel fuel used by the Emergency Equipment at LaSalle stations must not exceed 250 ppm.
- v. On and after January 1, 2020, the sulfur content of all diesel fuel used by the Emergency Equipment at Byron and Dresden stations must not exceed 15 ppm.
- vi. On and after January 1, 2021, the sulfur content of all diesel fuel used by the Emergency Equipment at Clinton station must not exceed 15 ppm.
- vii. On and after January 1, 2022, the sulfur content of all diesel fuel used by the Emergency Equipment at LaSalle station must not exceed 15 ppm.
- viii. The owner or operator must:
 - a. Maintain records demonstrating the conditions described in VI(i)-(vii);
 - b. Retain all records required by this subsection (viii) for at least five years and provide copies of the records to IEPA within 30 days after receipt of a request by IEPA; and

⁸ The tanks at each Facility currently contain diesel with varying sulfur concentrations. Not all tanks have been sampled and the available sulfur data has been collected by taking grab samples. Exelon Generation selected 250 ppm as a maximum concentration for this variance in order to be conservative and provide a compliance margin. Because all diesel fuel purchased will be ULSD, the actual sulfur concentrations in the tanks will be reduced as time passes during the variance period.

- c. Notify IEPA within 30 days after discovery of deviations from any of the requirements in subsections (i)-(vii), above. At a minimum, and in addition to any permitting obligations, the notification must include a description of the deviations, a discussion of the possible cause(s) of the deviations, any corrective actions taken, and any preventative measures taken.

IX. ENVIRONMENTAL IMPACT OF VARIANCE REQUEST

The projected environmental impact of this variance request is negligible. As described above, the emission units at issue are used minimally, limited by NRC requirements, air permit limits and the nature of their purpose. Nevertheless, even assuming that all of the tanks are full and that at some time after January 1, 2017, and before the end of the variance periods, the company would have to consume all of the currently stored fuel continuously until it is depleted, SO₂ emissions would total less than two tons over what would be emitted using 15 ppm fuel. We provide the following Tables 2 and 3 to reflect this most unlikely scenario:

Table 2⁹
Emissions Based on Current Sulfur Concentrations

Facility	Diesel Fuel Storage Capacity (Full Tanks)		Sulfur Mass Concentration		Mass of Sulfur Dioxide Emissions						
			Facility	Rule	Facility	Rule	Difference	Facility	Rule	Difference	
	(gal)	(lb)	(ppm)		(lb)			(tons)			
Byron	255,500	1,773,937	26	15	92.17	53.18	39.00	0.046	0.027	0.019	
Clinton	137,193	952,531	160		304.57	28.55	276.02	0.152	0.014	0.138	
Dresden	All Other Tanks	47,775	331,702		21	13.92	9.94	3.98	0.007	0.005	0.002
	Aux Boiler Tank	150,000	1,041,450		150	312.19	31.22	280.97	0.156	0.016	0.140
	Total	197,775	1,373,152		--	326.11	41.16	284.95	0.163	0.021	0.142
LaSalle	197,200	1,369,160	147		402.22	41.04	361.18	0.201	0.021	0.181	
					Total =		1246.09 lb	Total =		0.622 tons	

⁹ Please see Appendix A, Tables 2 and 3 for additional detail regarding these calculations.

Table 3
Emissions Based on Compliance Plan Sulfur Concentration

Facility	Diesel Fuel Storage Capacity (Full Tanks)		Sulfur Mass Concentration		Mass of Sulfur Dioxide Emissions						
			Facility	Rule	Facility	Rule	Difference	Facility	Rule	Difference	
	(gal)	(lb)	(ppm)		(lb)			(tons)			
Byron	255,500	1,773,937	250	15	886.28	53.18	833.10	0.443	0.027	0.417	
Clinton	137,193	952,531	250		475.89	28.55	447.34	0.238	0.014	0.224	
Dresden	Small Tanks	47,775	331,702		250	165.72	9.94	155.78	0.083	0.005	0.078
	Large Tank	150,000	1,041,450		250	520.32	31.22	489.10	0.260	0.016	0.245
	Total	197,775	1,373,152		--	686.04	41.16	644.88	0.343	0.021	0.322
LaSalle	197,200	1,369,160	250		684.05	41.04	643.00	0.342	0.021	0.322	
					Totals :		3,213.20 lbs	Totals :		1.607 tons	

Table 2 is based on the highest measured sulfur content fuel in the larger tanks at Byron, Clinton and Dresden¹⁰ stations and an average at LaSalle Station. Exelon Generation believes that Table 2 represents an unlikely worst-case scenario. In Table 3 we assume that all of the tanks contain 250 ppm sulfur diesel fuel to reflect the maximum concentration allowed by the requested variance compliance plan. *See* Section VIII, above. The emissions in Table 3 are not possible and are included for illustration purposes only. The tanks do not contain 250 ppm sulfur diesel fuel and cannot be refilled with it either. Both Tables 2 and 3 assume use, at one time, of the maximum capacity of fuel containing more than 15 ppm sulfur at the Facilities.

Table 4, below, represents the calculation of expected emissions based on a realistic projection, which uses the five-year average annual fuel usage at each Facility. Using this data, Exelon Generation anticipates that the variance would result in excess emissions on a yearly basis totaling less than one-tenth of one ton for all Facilities combined:¹¹

¹⁰ Exelon Generation used 21 ppm for Dresden Station's sulfur concentration. This figure excludes the estimated sulfur concentration of the auxiliary boiler tank because it has a limited history of sampling and the exact concentration is unknown. The other tanks fall in the 16-18 ppm range, so 21 ppm is a conservative estimate.

¹¹ Even this estimate may be high. As the tanks are depleted, they will continue to be replenished with ULSD, resulting in continuously lower concentrations of sulfur on a yearly basis.

Table 4¹²

Facility	Years Averaged	Historic Diesel Fuel Burned Annual Averages		Sulfur Mass Concentration		Mass of Sulfur Dioxide Emissions					
				Facility	Rule	Facility	Rule	Difference	Facility	Rule	Difference
		(gal)	(lb)	(ppm)		(lb)			(tons)		
Byron	11-15	107,094	743,556	26	15	38.63	22.29	16.35	0.019	0.011	0.008
Clinton	11-15	27,218	188,973	160		60.42	5.66	54.76	0.030	0.003	0.027
Dresden	11-15	33,211	230,584	21		9.68	6.91	2.76	0.005	0.003	0.001
LaSalle	11-15	32,814	227,830	147		66.93	6.83	60.10	0.033	0.003	0.030
						Total =		133.97 lb	Total =		0.067 tons

The emissions reflected in Table 4 will be offset, in part, by the recent change to fuel the Dresden auxiliary boilers primarily with natural gas. This switch was implemented on October 26, 2015 and directionally will reduce SO₂ emissions at Dresden Station.

Of course, by asserting that there would be “excess” SO₂ emissions, the above calculations assume the currently stored fuel will not be combusted if the company were to immediately remove it from the tanks. However, once removed from the tanks, the fuel would be sold to someone who could lawfully use it (either directly or through blending). Thus, the resulting SO₂ emissions in reality would simply be transferred from one stationary source to another.

Furthermore, if Exelon Generation is required to immediately drain and replace the contents of all the tanks, off-setting mobile source emissions associated with transporting the fuel and replenishing the tanks are estimated to be 1.25 lbs of SO₂, 759.54 lbs NO_x and 19.31 lb PM₁₀. Please see Appendix D, Table 10 for additional detail regarding these calculations.

¹² Please see Appendix A, Table 4 for additional detail regarding these calculations.

X. ARBITRARY OR UNREASONABLE HARDSHIP

Denying this variance would impose an arbitrary and unreasonable hardship on Exelon Generation for the following reasons: (1) the compliance alternatives for meeting the January 1, 2017 deadline are either impractical, infeasible or could present a threat to nuclear safety at the Facilities; and (2) the requested variance will have negligible environmental impacts.

A. Alternative Compliance Options Are Infeasible and Unreasonable.

If Exelon Generation is not granted relief, there are only three alternatives to meet the January 1, 2017 compliance deadline, and these options are illegal, infeasible or potentially unsafe: (1) combust all of the higher sulfur fuel onsite at the Facilities prior to January 1, 2017; (2) dilute the higher sulfur fuel onsite at the Facilities prior to January 1, 2017; or (3) drain and clean the diesel fuel storage tanks and refill them with ULSD prior to January 1, 2017.

Dilution is impractical. The tanks are near capacity at all times because of the seven-day emergency supply requirement. Recall that Exelon Generation has been diluting the sulfur content of the fuel in these tanks since 2007 at Byron, Dresden and LaSalle and since 2010 at Clinton and sulfur concentrations remain above 15 ppm. Thus, dilution will not work.

Exelon Generation is legally prohibited from combusting the fuel in the diesel fuel storage tanks by January 1, 2017 because operating the Emergency Equipment at the Facilities in excess of 100 hours in non-emergency situations is prohibited. There is a minimum of 168 hours (*i.e.* seven days) of fuel onsite at each Facility. In order to use all of the fuel currently contained in the diesel fuel storage tanks before January 1, 2017, the Facilities would be required to operate far in excess of the legal hourly limits provided in the FESOPs and applicable state and federal law. And, as the fuel is depleted, Exelon Generation will be obligated to replenish the tanks to maintain the required seven-day supply, which will result in burning compliant fuel, as well as non-compliant fuel, in an effort to drive down the sulfur concentrations in the tanks. In addition,

the energy generated from the equipment in the absence of an emergency is not needed. Accordingly, it will be wasted. Because using the fuel is not a realistic option and dilution will not occur quickly enough to meet the compliance deadline, the only other alternative is to drain the contents of the storage tanks and clean and refill them.

Complete removal and replacement of the higher sulfur diesel fuel with ULSD to bring the fuel into compliance with the 15 ppm limit has been reviewed by the Facilities. Diesel fuel tank cleanings and inspections typically are completed every 10 years per NRC licensing requirements so the schedule and resources needed for such projects are well understood by management. As discussed above, one consequence of removing the fuel is that it places the related Emergency Equipment in a LCO requiring compensatory actions. In addition, emptying the tanks is an extremely challenging project due to the location of the tanks within the Facilities' security fences (protected area); it requires extensive planning and commitment of a number of station and contractor resources to ensure a fuel change out is completed in a safe and secure manner. Inadequate and rushed planning would increase the likelihood of performance errors (*e.g.* spills, worker injuries) and could adversely affect nuclear safety.

The costs to immediately drain and replace the fuel in all of the diesel fuel storage tanks at the Facilities also significantly outweigh the benefit to the environment. Exelon Generation estimates that immediate removal and replacement of the currently stored fuel would total \$3.95 million. This estimate includes labor and fuel replacement costs,¹³ and takes into account any resale value for the current fuel. Please see Appendix C, Table 9 for additional detail.

¹³ It also includes demurrage and fuel sampling costs.

B. Immediate Compliance Will Achieve Minimal Environmental Benefit

The potential environmental benefits of immediate compliance are minimal. As detailed in Section IX above, the estimated worst case environmental impact of the requested variance totals less than two tons of SO₂ emissions. Additionally, the environmental impact of removing and recycling the higher sulfur diesel fuel will likely exceed the air emissions that would be incurred by allowing the fuel to be used at the Facilities over an extended period of time. The recycled higher sulfur fuel will not simply disappear—it will likely be sold and burned at a facility authorized to combust it, in effect, simply transferring SO₂ emissions from one stationary source to another. In addition, replacing over 707,000 gallons of fuel with ULSD will generate emissions that are completely unnecessary. Fuel replacement will require approximately 260 tanker trucks to remove the currently stored fuel and deliver ULSD. At an estimated round trip of 150 miles, a total of 40,000 miles will be traveled on highways burning approximately 6,000 gallons of fuel alone in the tanker trucks generating 1.25 lbs of SO₂, 759.54 lbs NO_x and 19.31 lb PM₁₀.

Moving over 707,000 gallons of fuel also greatly increases the risk of a fuel spill. Additional preventive measures, such as temporary containment for truck loading and unloading, will need to be put in place to ensure compliance with our Spill Prevention, Control and Countermeasure (SPCC) Plan and protect storm and surface waters.

Because granting the variance will have little environmental impact, it is arbitrary and unreasonable to force Exelon Generation to incur \$3.95 million in costs, while simultaneously jeopardizing nuclear safety readiness. Requiring compliance by January 1, 2017 converts to a

cost of approximately \$2.5-\$6.4 million/ton of SO₂ reduced,¹⁴ excluding additional mobile source emissions associated with the compliance effort.

XI. CONSISTENCY WITH FEDERAL LAW

The requested variance is consistent with federal law. IEPA's authority to regulate SO₂ in the atmosphere is associated with the requirement under the CAA that States submit to USEPA plans that implement, maintain and enforce standards in areas designated as nonattainment with respect to the SO₂ NAAQS. (*See* 42 U.S.C. §§ 7502, 7514, and 7514a.) None of the Facilities are located in or near existing SO₂ nonattainment areas.

As discussed above, some of the Emergency Equipment at the Facilities is subject to NSPS IIII and all of the diesel fuel engines are subject to MACT ZZZZ. These regulations require the use of fuel that is less than 15 ppm sulfur after October 1, 2010 but allow for use of existing fuel above that threshold. (*See* 40 C.F.R. § 60.4207(b) ("Beginning October 1, 2010, owners and operators... must use diesel fuel that meets the requirements of 40 C.F.R. § 80.510(b) for nonroad diesel fuel, except that any existing diesel fuel purchased (or otherwise obtained) prior to October 1, 2010, may be used until depleted."); 40 C.F.R. § 63.6604 ("[Y]ou must use diesel fuel that meets the requirements in 40 C.F.R. § 80.510(b) for nonroad diesel fuel, except that any existing diesel fuel purchased (or otherwise obtained) prior to January 1, 2015, may be used until depleted.")). Section 80.510, applicable to refiners and importers of diesel fuel, limits sulfur content to 15 ppm beginning on June 1, 2010. (40 C.F.R. § 80.510(b).)

The requested variance will, therefore, not conflict with existing federal law and, in fact, is consistent with federal requirements.

¹⁴ This range is based on the emissions estimates found in Table 2 (\$3.95 M/.622 tons) and Table 3 (\$3.95 M/1.607 tons).

XII. AFFIDAVIT(S) VERIFYING FACTS

As required by Section 104.202(m), the Affidavit of Roland Beem is attached as Exhibit E to verify the facts submitted in this petition.

XIII. HEARING

Pursuant to 35 Ill. Admin Code § 104.204(n), Exelon Generation waives its right to a hearing on this Petition.

WHEREFORE, For the reasons set forth above, and pursuant to Section 35(a) of the Act and Section 104.210 of the Board rules, Petitioner Exelon Generation LLC respectfully requests that the Board grant this variance from the January 1, 2017 deadline under 35 Ill. Admin. Code § 214.161(b)(2).

Respectfully submitted,

EXELON GENERATION LLC

By: /s/ Byron F. Taylor

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