Exelon Generation Company, LLC
Quad Cities Nuclear Power Station
22710 206th Avenue North
Cordova, IL 61242-9740

www.exeloncorp.com

Exelon Nuclear

SVP-12-057

June 6, 2012

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

Quad Cities Nuclear Power Station, Units 1 and 2
Renewed Facility Operating License Nos. DPR-29 and DPR-30
NRC Docket Nos. 50-254 and 50-265

Subject: Provisional Variance from National Pollutant Discharge Elimination System (NPDES) Permit No. IL0005037

Pursuant to Appendix B, Section 2.2 (Reporting Related to the NPDES Permits and State Certifications) of the Renewed Facility Operating Licenses for Quad Cities Nuclear Power Station, enclosed is the provisional variance requested from NPDES Permit IL0005037 on May 24, 2012, and the associated Illinois Environmental Protection Agency approval.

Should you have any questions concerning this letter, please contact Mr. Wally J. Beck at (309) 227-2800.

Respectfully,

Tim Hanley
Site Vice President
Quad Cities Nuclear Power Station

Enclosures: A – Provisional Variance Request from NPDES Permit No. IL0005037
B – Approval of Provisional Variance from NPDES Permit No. IL0005037

cc: Regional Administrator – NRC Region III
NRC Senior Resident Inspector – Quad Cities Nuclear Power Station

C001
NRR

Enclosure A

Provisional Variance Request

from

NPDES Permit No. IL0005037

Exelon Generation Company, LLC
Quad Cities Nuclear Power Station
22710 206th Avenue North
Cordova, IL 61242-9740

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Exelon Nuclear

SVP-12-053

May 24, 2012

Mr. Roger Callaway (CAS-19)
Wastewater Compliance Unit Manager
Illinois Environmental Protection Agency
Bureau of Water
Compliance Assurance Section #19
1021 North Grand Avenue East
P.O. Box 19276
Springfield, Illinois 62794-9274

Subject: Quad Cities Nuclear Power Station
NPDES Permit No. IL0005037
Provisional Variance Request – Emergency Application

Dear Mr. Callaway:

Exelon Generation Company, L.L.C. ("Exelon") hereby requests that the Illinois Environmental Protection Agency ("IEPA" or "Agency") grant a provisional variance for Quad Cities Nuclear Power Station ("Quad Cities", "Station", or "Facility"), pursuant to Section 35(b) of the Environmental Protection Act ("Act") 415 ILCS 5/35. Exelon submits this Application for a provisional variance consistent with IEPA procedures at 35 Illinois Administrate Code 104.300. The Station discharges wastewater pursuant to NPDES Permit No. IL0005037, which IEPA issued on August 26, 2010 with expiration date of August 31, 2015. Exelon requests that a provisional variance be issued to Quad Cities Station allowing the station to exceed the non-excursion hour temperature limit for May of 78°F stated in Special Condition 7(b) of NPDES Permit No. IL0005037 for the period of May 26, 2012 through May 29, 2012 by no more than 5°F (83°F for May) **or** 2°F above ambient river temperature, whichever is greater.

Background

Quad Cities Station is a base load nuclear-fueled steam electric generating facility located near Cordova, Illinois, on the Mississippi River at River Mile 506.8. The station operates two boiling water reactors which have a combined maximum generating capacity of 5,914 megawatts thermal. The station is currently operating at 100%

capacity. The station's capacity factor January 1, 2012 through April 31, 2012 was 86%. Quad Cities Station generation output is transmitted to the PJM Interconnection Grid. PJM Interconnection is a regional transmission organization (RTO) that coordinates the movement of wholesale electricity in all or parts of Delaware, Illinois, Indiana, Kentucky, Maryland, Michigan, New Jersey, North Carolina, Ohio, Pennsylvania, Tennessee, Virginia, West Virginia and the District of Columbia.

Circulating water used to cool and condense the steam from the generating process is withdrawn from, and discharged to, the Mississippi River (Receiving Stream Water ID-IL_M-02). The current Mississippi River flow is 68,000 cfs and the 7Q10 is 13,700 cfs. The incoming water is currently listed as impaired (2012 listing) due to Mercury, Polychlorinated biphenyls, and Manganese. These impaired waters have a designated use of public and food processing water as well as fish consumptions.

Quad Cities operates a condenser cooling water system in open cycle mode. In this mode, cooling water is drawn from the Mississippi River into an intake canal, passes through the plant systems, and is discharged through diffusers into the Mississippi River. The maximum design flow is 2,253 cfs or 1,011,000 gpm. The maximum temperature rise of the station from intake to effluent is 28°F at design flow of 2,253 cfs. Open cycle operation with the diffusers was initially permitted by the IEPA on December 22, 1983. Quad Cities Station effluent temperature rise downstream of the diffusers at the edge of the mixing zone is limited to 5°F per Special Condition 7(a) of NPDES Permit No. IL0005037.

The available temperature data shows that the Mississippi River water temperature at the station's intake is approaching and may exceed the non-excursion hour May temperature standard of 78°F based on latest weather forecasts. The upstream Mississippi River temperature was measured at 71°F on May 24, 2012, as a result of these conditions, Quad Cities Station expects to exceed the non-excursion hour temperature limit for May of 78°F on May 26, 2012. Based on current weather forecast of daily maximum air temperatures near 90°F four of the next five days, ambient Mississippi River water temperature may reach 80°F. Mississippi River flow is currently 65,000 cfs and forecast to decrease to 45,000 cfs by May 26, 2012. The maximum Mississippi River ambient temperature the station will be able to comply with during the provisional variance period without the use of excursion hours is 76°F.

As a consequence of the unusually warm weather, high ambient river temperatures, and the absence of cooling during the evening hours, the capacity of the Mississippi River to dissipate heat has been reduced beyond its normal capabilities. Even at current flow rates of 65,000 cfs, the river is not cooling off during the evening hours as is typical this time of year. Without nighttime cooling, the river retains the heat introduced to it during the daytime hours, both upstream and downstream of the station.

At *no time* has the difference between ambient river temperature and the temperature at the edge of the mixing zone exceeded 5 degree F. In fact, based on modeling, the difference between ambient river temperature and the temperature at the edge of the mixing zone has not exceeded 2 degrees F.

Relief Requested

A provisional variance is being requested from the restriction in Special Condition 7B of the NPDES Permit that limits the number of excursion hours to 1% (87.6 hours) of the hours in a 12-month period ending with any month. Specifically, Special Condition 7B provides that the Station shall not cause water temperatures in the Mississippi River (beyond the mixing zone) to exceed by more than 3°F the non-excursion hour temperature limit for May of 78°F.

Exelon requests that a provisional variance be issued to Quad Cities Station allowing the station to exceed the non-excursion hour temperature limit for May of 78°F stated in Special Condition 7(b) of NPDES Permit No. IL0005037 for the period of May 26, 2012 through May 29, 2012 by no more than 5°F (83°F for May) **or** 2°F above ambient river temperature, whichever is greater.

Necessity for Request

When the ambient river temperatures approach or exceed the non-excursion hour limits, the Station has no option other than to use excursion hours, and once its allotment of excursion hours is depleted, the Station must cease operating altogether to maintain compliance with the NPDES Permit. Partial deratings or adding cooling facilities (such as cooling towers) will not allow the Station to achieve compliance with a limit that already is exceeded even before any heat is added as a result of Station operations.

Special Condition 7B of NPDES Permit limits the temperature at the edge of the mixing zone to 78°F in May, except when the Station is using excursion hours, during which time the temperatures at the edge of the mixing zone may be 3°F warmer than these limits. As a rule, Quad Cities has been able to operate well within its permitted thermal limits due to the fact that the ambient temperatures of the River (measured upstream of the discharge) generally remain below the non-excursion hour limit. It is only during periods when the ambient river temperatures are very close to or exceed the non-excursion hour limits or during periods of extreme low flows that the Station is forced to use a significant number of its excursion hour allowance.

As you are aware, Illinois is experiencing unusually warm weather for this time of year which is resulting in high ambient river temperatures. In 2012 Quad Cities Station first began using excursion hours on Sunday, March 18th when upstream Mississippi River temperature matched the station's effluent limitation of 57.0°F. The permitted excursion hours were subsequently exhausted in March as a result of continued record breaking warm weather recorded throughout the mid-western states. Quad Cities Station submitted a request to IEPA on March 20, 2012 for relief from Special Condition 7(b) of

NPDES Permit No. IL0005037 for the period of March 21, 2012 to April 1, 2012. IEPA subsequently issued Provisional Variance IEPA 12-11 to Quad Cities Station on March 21, 2012 allowing the station to exceed the non-excursion hour temperature limit for March of 57°F stated in Special Condition 7(b) of NPDES Permit No. IL0005037 for the period of March 21, 2012 to April 1, 2012 by no more than 5°F (62°F for March) **or** 2°F above ambient river temperature, whichever is greater. A total of 223.5 excursion hours were accumulated by Quad Cities Station during March of 2012. The stations rolling 12 month excursion hour total stands at 256.5 including the 33 hours accumulated in July of 2011. IEPA also issued Provisional Variances to Exelon's Braidwood Station (IEPA-12-12), Dresden Station (IEPA-12-14), and LaSalle Station (IEPA-12-15) for thermal effluent relief during the March 2012 heat wave.

With the current forecast, it is expected that Quad Cities Station will exceed the non-excursion hour temperature limit for May of 78°F starting May 26, 2012 through May 29, 2012 in order to continue to provide safe reliable power to the grid.

Based on current weather forecasts it is expected that the Mississippi River will approach or exceed Quad Cities Station's permitted effluent limitation. Therefore, unless relief is granted by way of this provisional variance request, it is likely that the Station will be forced to shut down for correspondingly significant durations.

Since derating the units will not ensure compliance with the effluent limitations shutting the units down may be the only alternative. Removing both units from operation will not only reduce the available power supply to the grid but will also result in the need for power from the grid to operate key nuclear safety systems. The time required to return nuclear generating units to full power can require 18-24 hours meaning the electricity generated from these systems will not be readily available in the event of an emergency. Furthermore, under normal conditions only one of the two reactors would be removed from service at any given time allowing the operating unit to be the primary backup power source for the non-operating unit. Removing both units from service will also eliminate this redundancy and will increase the stations' reliance on off-site power to support safety related systems. With both unit's offline, and unable to immediately return to service, the power that Quad Cities Station could generate as a result of the requested provisional variance would not be available to support the voltage requirements that could occur under changing grid conditions. PJM grid status does not currently have or project any alerts, warnings, or actions through the holiday weekend. However, a number of generating stations are performing load drops over the holiday weekend. If these units were to go offline, grid stability could be affected. PJM predicts an anticipated Peak Load >14, 000 MW on Tuesday 5/29/2012.

In cooperation with IEPA's request that Exelon explore long-term thermal relief options for Quad Cities, Exelon commissioned extensive studies of the Station's thermal output and impacts. Exelon has shared those studies and its draft long-term regulatory relief proposal with both Federal and State regulators. Additionally, Quad Cities Station submitted a draft of its 316(a) thermal report which demonstrates no harm to indigenous aquatic populations to the IEPA, obtained comments, revised the report and then

resubmitted the document for agencies final review and comment. A follow-up meeting with the Agency was held on May 9, 2012 in Springfield when the Agency committed to provide Exelon with any remaining feedback on the Quad Cities Station 316(a) Demonstration within a month of the May 9, 2012 meeting. The Agency asked that we review and address any additional Agency comments prior to it being submitted to the Illinois Pollution Control Board in support of long term relief.

Assessment of Environmental Impacts

The biological structure and condition of the receiving water has been well documented due to the ongoing Quad Cities Station Long-term Monitoring Program which began in 1971. This data is annually presented to ILEPA as well as other stakeholders throughout the state. No adverse effects to the local fish or mussel populations have been observed from similar requests in the past. Therefore, no adverse effects are anticipated with this thermal discharge provisional variance. The station recently completed a draft 316(a) demonstration that the agency has in its possession.

Because Quad Cities Station is not proposing to increase cooling water flows or increase the temperature of cooling water discharges, there will be no increase in impingement or entrainment as a result of the issuance of the requested Provisional Variance. Additionally, because the ambient river temperature increase has been gradual, resident fish species have either acclimated to the higher temperature or have found thermal refuge. In addition, the current flows afford a delta T of approximate 2°F between the upstream and downstream temperatures. Therefore, resident fish species will not be subject to any heat shock as a result of increasing the allotment of excursion hours for Quad Cities Station.

The biological studies undertaken as part of Exelon's above-mentioned investigation of long-term, permanent relief options considered the effects on species of fish and shellfish that could result from increasing the number of excursion hours available to the plant. These studies support the conclusion that granting the requested Provisional Variance will not cause significant or unacceptable adverse effects to these species. Species of fish that are likely to suffer from being exposed to temperatures in the excursion zone (i.e. up to 5°F above the monthly standard) will already have taken refuge from the higher than normal ambient river temperatures. In 2006, a species specific die-off occurred in the incoming and receiving water during an elevated water temperature period. Those temperatures were approximately 10 degrees F higher than those currently anticipated with this request. That specific incident continued for several weeks after QC Station first captured it in its dataset. The die-off was a result of temperatures increasing at a rate in excess of the mooneyes adaption capabilities. No fish kills have occurred as a result of the station discharge. Therefore, no fish mortality should result from operations authorized by the Provisional Variance.

This provisional variance request is due to the elevated temperature of the incoming water, not temperature differential; therefore, avoidance behavior outside the mixing

zone is not anticipated because adequate flows are occurring for a minimal temperature differential.

Shellfish do not have similar thermal avoidance capabilities. However, the recently conducted biological studies show that the mussel (unionid) species in beds that are closest to the plant's discharge are generally more temperature tolerant, and are capable of surviving relatively short-term elevated thermal exposures. Species thought to be less thermally-tolerant inhabit beds located further downstream, in the Cordova Bed, located about 1 mile downstream from the plant. However, because the considerable distance between the plant to the Cordova and the flow characteristics of the River (that cause much of the plant's thermal discharge to avoid the Cordova Bed) the Provisional Variance should not cause any appreciable harm to mussel species downstream of the plant.

If the variance is granted, the station will monitor the waters upstream, near the intake, and downstream for detrimental effects to the fishery as noted in previous provisional variances. Visual inspections will take place 3 times during the day and if necessary, a complete visual and water quality assessment will take place in the late afternoon of each day at prescribed areas up and downstream of the plant. This will only take place if any evidence of fish mortality is currently occurring or has occurred. The station fishery biologist will be responsible for this assessment with consultation with the local governing agencies, if necessary. Late afternoon is when the potential effects would be most noticeable, but assessments will occur at the first sign of an issue. Our current biological program will capture and short-term and long-term effects of a provisional variance.

Alternatives to Requested Relief

Historically, Quad Cities Station has used excursion hours during periods of extreme heat and low-river flows. Due in part to the mixing capacity provided by the Mississippi River, and the fact that ambient river temperatures rarely exceed the non-excursion hour NPDES Permit limits, only a relatively small percentage of the permitted excursion hours typically are used to cover any one of these periods. Unless a provisional variance is issued, when the Station runs out of hours, it will have to shut down during all times that the ambient river temperatures are at or above the non-excursion hour limit. Based on river temperatures recorded so far this spring and long range weather projections for the balance of the season, it is likely that there will be a number of extended periods during which ambient river temperatures will be at or above these limits. As previously explained, neither the option of derating the units nor of obtaining additional temporary cooling capacity will allow the Station to maintain compliance if the ambient river temperatures exceed the applicable temperature limits. The only option is for the Station to shut down once the ambient River temperatures are at or exceed the NPDES permit monthly limit.

In 2006, the station investigated the feasibility of installing cooling towers. Based on analytical evaluation of historical plant, river, and meteorological data, the proposed

towers performance and the resulting reduction in downstream river temperature could be quantified. When the actual days when excursion hours occurred in the last six year period (2000-2005) were evaluated, there was no appreciable reduction in the number of days when excursion hours would have occurred with the cooling towers in operation. The reason for this is the high upstream river temperatures experienced on most of the days when actual excursion hours were recorded. For ~80% of the days when excursion hours were recorded, the plant intake temperature was at the permit limited temperature or above (≥86°F), and for the remaining 20% of the days, the intake temperature was within half a degree of the permit limits. For most of these occurrences, even if adequate cooling tower capacity was in operation to achieve a zero thermal impact on the river (i.e., the plant discharge temperature equaled the intake temperature), excursion hours nonetheless would have been recorded. Estimated cost in 2006 for installation of cooling towers ranged from $48 to $61 million.

Mitigative Actions to be Taken During the Variance Period

During the period when the Station uses any additional excursion hours authorized by the requested provisional variance, Quad Cities Station will do the following: (1) continuously monitor the intake and discharge temperatures and assess water temperatures at the edge of the mixing zone using the NPDES Permit temperature monitoring curve or field measurements; (2) on a daily basis, inspect the intake and discharge areas to assess any mortalities to aquatic life, and report the results of these monitoring activities to the Agency within 30 days of the expiration of the provisional variance (or such other time as agreed upon by the Agency); and (3) notify the Agency of any significant adverse environmental conditions observed that might be caused by operations authorized by the provisional variance, including mortalities to fish or other aquatic life, investigate the cause of such conditions, provide the Agency updates regarding the situation, including when normal conditions return, and submit a report to the Agency regarding these matters within 30 days of the expiration of the provisional variance period (or such other time as agreed upon by the Agency).

Summary

Exelon requests that a provisional variance be issued to Quad Cities Station allowing the station to exceed the non-excursion hour temperature limit for May of 78°F stated in Special Condition 7(b) of NPDES Permit No. IL0005037 for the period of May 26, 2012 through May 29, 2012 by no more than 5°F (83°F for May) **or** 2°F above ambient river temperature, whichever is greater.

If you should have any questions regarding these matters, please feel free to contact Vicki Neels at (309) 227-3200 or Mark Stuhlman at (309) 227-2765 from Quad Cities or John Petro, Principal Environmental Analyst, Exelon Generation at (630) 657-3209.

Very Truly Yours,

Scott Davis for 5-24-12

Tim Hanley
Site Vice President
Quad Cities Station

TH/MS/sjo

CC: Mark Stuhlman
John Petro
Letterbook

Enclosure B

Approval of Provisional Variance

from

NPDES Permit No. IL0005037

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

May 25, 2012

Exelon Generation Company, L.L.C. Quad Cities Nuclear Power Station Petitioner, v. ILLINOIS ENVIRONMENTAL PROTECTION AGENCY, Respondent.	)))))))))))	IEPA – 12-17 (Provisional Variance-Water)

Re: Provisional Variance From Discharge Limits Contained in NPDES Permit IL0005037

Dear Mr. Hanley:

The Illinois Environmental Protection Agency (Agency) has completed its technical review of the attached provisional variance request, dated May 24, (Attachment A), for Exelon Generation Company, L.L.C.'s Quad Cities Nuclear Power Station (Quad Cities). Quad Cities is seeking a provisional variance from May 26, 2012 through May 29, 2012, that would allow it to exceed the maximum temperature limit in Special Condition 7B of NPDES Permit IL0005037 by no more than 5° (83° for May), or 2° above ambient river temperature, whichever is greater.

Based on its review, the Agency GRANTS Quad Cities a provisional variance subject to the specific conditions set forth below.

Background

Quad Cities Station is a base load nuclear-fueled steam electric generating facility located near Cordova, Illinois, on the Mississippi River at River Mile 506.8. The station operates two boiling water reactors which have a combined maximum generating capacity of 5,914 megawatts thermal. The station is currently operating at 100% capacity. The station's capacity factor January 1, 2012 through April 31, 2012 was 86%. Quad Cities Station generation output is transmitted to the PJM Interconnection Grid. PJM Interconnection is a regional transmission organization (RTO) that coordinates the movement of wholesale electricity in all or parts of Delaware, Illinois, Indiana, Kentucky, Maryland, Michigan, New Jersey, North Carolina, Ohio, Pennsylvania, Tennessee, Virginia, West Virginia and the District of Columbia.

Circulating water used to cool and condense the steam from the generating process is withdrawn from, and discharged to, the Mississippi River (Receiving Stream Water ID- IL_M-02). The Mississippi River flow on May 24, 2012, was 68,000 cfs and the 7Q10 was 13,700 cfs. The incoming water is currently listed as impaired (2012 listing) due to Mercury, Polychlorinated biphenyls, and Manganese. These impaired waters have a designated use of public and food processing water as well as fish consumptions.

Quad Cities operates a condenser cooling water system in open cycle mode. In this mode, cooling water is drawn from the Mississippi River into an intake canal, passes through the plant systems, and is discharged through diffusers into the Mississippi River. The maximum design flow is 2,253 cfs or 1,011,000 gpm. The maximum temperature rise of the station from intake to effluent is 28°F at design flow of 2,253 cfs. Open cycle operation with the diffusers was initially permitted by the IEPA on December 22, 1983.

Special Condition 7B of NPDES Permit IL00005037 (Attachment B) limits the temperature at the edge of the mixing zone to 78°F in May, except when Quad Cities is using excursion hours, during which time the temperatures at the edge of the mixing zone may be 3°F warmer than these limits.

The available temperature data shows that the Mississippi River water temperature at the station's intake is approaching and may exceed the non-excursion hour May temperature standard of 78°F based on latest weather forecasts. The upstream Mississippi River temperature was measured at 72°F on May 23, 2012. As a result of these conditions, Quad Cities expects to exceed the non-excursion hour temperature limit for May of 78°F on May 26, 2012. Based on current weather forecast of daily maximum air temperatures near 90°F four of the next five days, ambient Mississippi River water temperature may reach 80°F. Mississippi River flow is currently 68,000 cfs and will be reduced by the Corps of Engineers to 40,000 cfs by May 29, 2012. The maximum Mississippi River ambient temperature the station will be able to comply with during the provisional variance period without the use of excursion hours is 76°F.

As a consequence of the unusually warm weather, high ambient river temperatures, and the absence of cooling during the evening hours, the capacity of the Mississippi River to dissipate heat has been reduced beyond its normal capabilities. Even at current flow rates of 68,000 cfs, the river is not cooling off during the evening hours as is typical this time of year. Without nighttime cooling, the river retains the heat introduced to it during the daytime hours, both upstream and downstream of the station.

In cooperation with the Agency's request that Exelon explore long-term thermal relief options for Quad Cities, Exelon commissioned studies of the station's thermal output and impacts. Exelon has shared those studies and its draft long-term regulatory relief proposal with Federal and State regulators, with whom related discussions are currently underway. Additionally, Quad Cities submitted a draft of its 316(a) thermal report for Agency review prior to it being submitted to the Illinois Pollution Control Board.

Relief Requested

Condition 7B of the NPDES Permit limits the number of excursion hours to 1% (87.6 hours) of the hours in a 12-month period ending with any month. Specifically, Special Condition 7B provides that the Station shall not cause water temperatures in the Mississippi River (beyond the mixing zone) to exceed by more than 3°F the non-excursion hour temperature limit for May of 78°F.

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
F°	45	45	57	68	78	85	86	86	85	75	65	52

Quad Cities is requesting a provisional variance that allows it to exceed the non-excursion hour temperature limit for May of 78°F stated in Special Condition 7B of NPDES Permit No. IL0005037, for the period of May 26, 2012 through May 29, 2012, by no more than 5°F *(83°F for May)* **or** 2°F above ambient river temperature, whichever is greater.

Quad Cities has exhausted its excursion hours.

Necessity for Request

In its request, Exelon states that when the ambient river temperatures approach or exceed the non-excursion hour limits, Quad Cities has no option other than to use excursion hours, and once its allotment of excursion hours is depleted, Quad Cities must cease operating altogether to maintain compliance with the NPDES Permit. According to Exelon, partial deratings or adding cooling facilities (such as cooling towers) will not allow Quad Cities to achieve compliance with a limit that already is exceeded even before any heat is added as a result of Station operations.

Special Condition 7B of NPDES Permit limits the temperature at the edge of the mixing zone to 78°F in May, except when Quad Cities is using excursion hours, during which time the temperatures at the edge of the mixing zone may be 3°F warmer than these limits. As a rule, Quad Cities has been able to operate within its permitted thermal limits due to the fact that the ambient temperatures of the River (measured upstream of the discharge) generally remain below the non-excursion hour limit. It is only during periods when the ambient river temperatures are very close to or exceed the non-excursion hour limits or during periods of extreme low flows that Quad Cities uses its excursion hour allowance.

Illinois is experiencing unusually warm weather for this time of year which is resulting in high ambient river temperatures. In 2012 Quad Cities first began using excursion hours on Sunday, March 18th when upstream Mississippi River temperature matched the station's effluent limitation of 57.0°F. The permitted excursion hours were subsequently exhausted in March as a result of continued record breaking warm weather recorded throughout the mid-western states. Quad Cities submitted a request to the Agency on March 20, 2012, for relief from Special Condition 7B of NPDES Permit No. IL0005037 for the period of March 21, 2012, to April 1, 2012. The Agency subsequently issued Provisional Variance IEPA 12-11 to Quad Cities on March 21, 2012 allowing the station to exceed the non-excursion hour temperature limit for March of 57°F stated in Special Condition 7B of NPDES Permit No. IL0005037 for the period of

March 21, 2012 to April 1, 2012, by no more than 5°F (62°F for March) **or** 2°F above ambient river temperature, whichever is greater. A total of 223.5 excursion hours was accumulated by Quad Cities during March of 2012. The stations rolling 12-month excursion hour total stands at 256.5 including the 33 hours accumulated in July of 2011. The Agency also issued provisional variances to Exelon's Braidwood Station (IEPA-12-12), Dresden Station (IEPA-12-14), and LaSalle Station (IEPA-12-15) for thermal effluent relief during the March 2012 heat wave.

With the current forecast, Quad Cities predicts it will exceed the non-excursion hour temperature limit for May of 78°F starting May 26, 2012, through May 29, 2012.

Given the current forecast, Quad Cities also predicts that the Mississippi River will approach or exceed Quad Cities' permitted effluent limitation. Therefore, unless relief is granted by way of this provisional variance request, Exelon states that it is likely the station will be forced to shut down for correspondingly significant durations.

Because derating the units may not ensure compliance with the effluent limitations, Exelon states that shutting the units down may be the only alternative. Removing both units from operation will not only reduce the available power supply to the grid but will also result in the need for power from the grid to operate key nuclear safety systems. The time required to return nuclear generating units to full power can require 18-24 hours meaning the electricity generated from these systems will not be readily available in the event of an emergency.

Exelon states that under normal conditions only one of the two reactors would be removed from service at any given time allowing the operating unit to be the primary backup power source for the non-operating unit. Removing both units from service will also eliminate this redundancy and will increase the station's reliance on off-site power to support safety-related systems.

With both units offline, and unable to return to service immediately, the power that Quad Cities could generate would not be available to support the voltage requirements that could occur under changing grid conditions. PJM grid status does not currently have or project any alerts, warnings, or actions through the holiday weekend. According to Exelon, however, a number of generating stations are performing load drops over the holiday weekend. If these units were to go offline, grid stability could be affected. PJM predicts an anticipated Peak Load >14, 000 MW on Tuesday 5/29/2012.

Assessment of Environmental Impacts

Exelon has provided details on the environmental impact during the requested variance period from May 26, 2012, through May 29, 2012. Exelon has determined that there should not be any significant environmental impact during the course of this three-day variance.

Alternatives to Requested Relief

Based on river temperatures recorded so far this spring and long range weather projections for the balance of the season, it is likely that there will be a number of extended periods during which ambient river temperatures will be at or above these limits. As previously explained,

neither the option of derating the units nor of obtaining additional temporary cooling capacity will allow Quad Cities to maintain compliance if the ambient river temperatures exceed the applicable temperature limits. The only option is for Quad Cities to shut down once the ambient river temperatures are at or exceed the NPDES permit monthly limit.

In 2006, Quad Cities investigated the feasibility of installing cooling towers. Exelon states that based on analytical evaluation of historical plant, river, and meteorological data, the proposed towers performance and the resulting reduction in downstream river temperature could be quantified. When Exelon evaluated the actual days when excursion hours occurred in the last six year period (2000-2005), it found there was no appreciable reduction in the number of days when excursion hours would have occurred with the cooling towers in operation. According to Exelon, the reason for this is the high upstream river temperatures experienced on most of the days when actual excursion hours were recorded. For ~80% of the days when excursion hours were recorded, the plant intake temperature was at the permit limited temperature or above ($\geq$86°F), and for the remaining 20% of the days, the intake temperature was within half a degree of the permit limits. For most of these occurrences, even if adequate cooling tower capacity was in operation to achieve a zero thermal impact on the river (i.e., the plant discharge temperature equaled the intake temperature), excursion hours nonetheless would have been recorded. Estimated cost in 2006 for installation of cooling towers ranged from $48 to $61 million.

Agency Determinations

The Agency has reviewed the requested provisional variance and has concluded the following:

1. Any environmental impact from the requested relief shall be closely monitored and the Agency shall be immediately notified of any adverse impacts.

2. No reasonable alternatives appear available;

3. No public water supplies should be affected;

4. No federal regulations will preclude the granting of this request; and

5. Quad Cities will face an arbitrary and unreasonable hardship if the request is not granted.

Conditions

The Agency hereby GRANTS Quad Cities a provisional variance from Special Condition 7B of NPDES Permit No. IL0005037, subject to the following conditions:

A. The provisional variance shall begin on May 26, 2012, and shall run through May 29, 2012.

B. Quad Cities shall provide the best operation of its station to produce the best effluent possible at all times. At no time, during the variance period, shall Quad Cities cause

water temperature in the Mississippi River (beyond the mixing zone) to exceed 83° or 2° F above ambient river temperature, whatever is greater.

C. During the variance period, Quad Cities must continuously monitor intake, discharge and receiving water temperatures and visually inspect intake and discharge areas at least three times daily to assess any mortalities to fish and other aquatic life.

D. Quad Cities shall document environmental conditions during the term of the provisional variance, including the activities described in C. above of this Section, and submit the documentation to the Agency and the Department of Natural Resources within 30 days after the provisional variance expires.

E. Quad Cities shall immediately notify the Agency and the Department of Natural Resources of any unusual conditions, including mortalities to fish or other aquatic life; immediately take action to remedy the problem; investigate and document the cause and seriousness of the unusual conditions while providing updates to the Agency and the Department of Natural Resources as changes occur until normal conditions return; notify the Agency and the Department of Natural Resources when normal conditions return; and submit the documentation to the Agency and the Department of Natural Resources within 30 days after normal conditions return.

F. Quad Cities shall develop and implement a response and recovery plan to address any adverse environmental impact due to thermal conditions resulting from the provisional variance, including loss and damage to aquatic life.

G. Quad Cities shall notify Roger Callaway of the Agency by telephone at 217/782-9720 when Quad Cities' discharge first causes or contributes to an exceedance of the applicable permitted excursion hour temperature limit of 78°F in May. Written confirmation of each notice shall be sent within five days to the following address:

Illinois Environmental Protection Agency
Bureau of Water - Water Pollution Control
Attention: Roger Callaway
1021 North Grand Avenue East, MC #19
Springfield, Illinois 62794-9276

H. Quad Cities shall sign a certificate of acceptance of this provisional variance and forward that certificate to Roger Callaway at the address indicated above within one day of the date of this order. The certification should take the following form:

I (We)_____, hereby accept and agree to be bound by all terms and conditions of the provisional variance granted by the Agency in _____dated _____.

_____

Petitioner

_____
Authorized Agent

_____
Title

_____
Date

Quad Cities shall continue to monitor and maintain compliance with all other parameters and conditions specified in its NPDES Permit No. IL0005037

Conclusion

The Agency grants this provisional variance in accordance with its authority contained in Sections 35(b), 36 (c), and 37(b) of the Illinois Environmental Protection Act (415 ILCS 5/35(b), 36(c), and 37(b) (2004). The decision to grant this provisional variance is not intended to address compliance with any other applicable laws or regulations.

Sincerely,

Julie Armitage by CA

Julie Armitage
Acting Chief Legal Counsel

cc: Marcia Willhite
Roger Callaway
Vera Herst

Exelon Generation Company, LLC
Quad Cities Nuclear Power Station
22710 206th Avenue North
Cordova, IL 61242-9740

www.exeloncorp.com

Exelon Nuclear

SVP-12-054

May 25, 2012

Mr. Roger Callaway (CAS-19)
Wastewater Compliance Unit Manager
Illinois Environmental Protection Agency
Bureau of Water
Compliance Assurance Section #19
1021 North Grand Avenue East
P.O. Box 19276
Springfield, Illinois 62794-9274

Re: Quad Cities Nuclear Power Station NPDES Permit No. IL0005037
Provisional Variance Request – Emergency Application – IEPA 12-17

Dear Mr. Callaway:

Thank you for the time, consideration and attention IEPA dedicated to Exelon's provisional variance request. We sincerely appreciate all of your efforts. Below is Quad Cities Station's Certificate of Acceptance of the Provisional Variance Order issued by IEPA in this matter.

Very Truly Yours,

for

Tim Hanley
Site Vice President
Quad Cities Station

TH/MS/sjo

CC: Mark Stuhlman
John Petro
Letterbook

Certificate of Acceptance

I(We), Tim Hanley, hereby accept and agree to be bound by all terms and conditions of the provisional variance granted by the Agency in matter IEPA 12-17 dated March 25, 2012.

Exelon Generation Co. L.L.C/Quad Cities Station
Petitioner

Scott Dam for
Authorized Agent

Site Vice President
Title

05/25/2012
Date