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May 15, 2015



U.S. Nuclear Regulatory Commission,  
 Attention: Cindy Bladey  
 Office of Administration, Mail Stop: OWFN-12-H08  
 Washington, DC 20555-0001.

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RULES AND DIRECTIVES  
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Braidwood Station, Units 1 and 2  
Facility Operating License Nos. NPF-72 and NPF-77  
NRC Docket Nos. STN 50-456 and STN 50-457

**Subject:** Additional Exelon Generation Company, LLC Comments on the Draft Generic Environmental Impact Statement for License Renewal of Nuclear Plants Supplement 55 Regarding Braidwood Station, Units 1 and 2  
 Docket ID: NRC-2013-0169

- References:**
- 1) Exelon Generation Company, LLC letter from Michael P. Gallagher to NRC Document Control Desk, "Application for Renewed Operating Licenses", dated May 29, 2013
  - 2) Letter from Brian D. Wittick (NRC) to Michael P. Gallagher (Exelon), "Notice of Availability of the Draft Plant-Specific Supplement 55 to the Generic Environmental Impact Statement for License Renewal of Nuclear Plants Regarding Braidwood Station, Units 1 and 2", dated March 18, 2015
  - 3) Letter from Michael P. Gallagher (Exelon) to NRC Document Control Desk, "Exelon Generation Company, LLC Comments on the Draft Generic Environmental Impact Statement for License Renewal of Nuclear Plants Supplement 55 Regarding Braidwood Station, Units 1 and 2," dated May 12, 2015

In the Reference 1 letter, Exelon Generation Company, LLC (Exelon) submitted the License Renewal Application (LRA) for the Byron and Braidwood Stations, Units 1 and 2, which contained combined technical information required by 10 CFR 54.21 for both stations and separate site-specific environmental information required by 10 CFR 54.23 for each station.

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In the Reference 2 letter, the U.S. Nuclear Regulatory Commission informed Exelon of the availability of the Draft Supplement 55 to the Generic Environmental Impact Statement for License Renewal of Nuclear Plants (GEIS) Regarding Braidwood Station, Units 1 and 2 and requested that comments be provided to the staff by May 12, 2015.

In the Reference 3 letter, Exelon provided written comments on two specific aspects of Draft Supplement 55 to the GEIS Regarding Braidwood Station, Units 1 and 2 and noted that additional comments would be filed by May 15, 2015.

The Enclosure to this letter provides the additional comments referred to in Reference 3.

There are no new or revised regulatory commitments contained in this letter.

If you have any questions, please contact Ms. Nancy Ranek, Exelon License Renewal Environmental Lead, at 610-765-5369.

Respectfully,



Michael P. Gallagher  
Vice President - License Renewal Projects  
Exelon Generation Company, LLC

Enclosure: Additional Exelon Generation Company, LLC Comments on Supplement 55 to the Draft Generic Environmental Impact Statement for License Renewal of Nuclear Plants Regarding Braidwood Station, Units 1 and 2

cc: Regional Administrator – NRC Region III  
NRC Project Manager (Environmental Review), NRR-DLR  
NRC Project Manager (Safety Review), NRR-DLR  
NRC Project Manager, NRR-DORL Braidwood Station  
NRC Senior Resident Inspector, Braidwood Station  
Illinois Emergency Management Agency – Division of Nuclear Safety

**Additional Exelon Generation Company, LLC Comments on Supplement 55  
 to the Draft Generic Environmental Impact Statement for License Renewal of Nuclear Plants  
 Regarding Braidwood Station, Units 1 and 2**

NOTE: Where changes to draft text are suggested, proposed inserts are in ***bolded italic*** font and proposed deletions are in ~~strikethrough~~ font.

Item #	Section #	Page #	Line #	Comment
1	3.6.3	3-43	19	<p>In line 19 on page 3-43, change the text as follows;            "... and eastern cottonwood (<del><i>Hibiscus tiliaceus</i></del><b><i>Populus deltoides</i></b>) trees ..."</p> <p>This change is needed because the correct scientific name for Eastern cottonwood is <i>Populus deltoides</i>. <i>Hibiscus tiliaceus</i> is the coastal cottonwood..</p>
2	3.7.3.1	3-57 to 3-58	Table 3-9	<p>There are many mistakes in Table 3-9 on pages 3-57 to 3-58 in terms of how species are classified and grouped, which means that the number of individuals collected (by family) and relative abundance values (by family) are also wrong. For example:</p> <ul style="list-style-type: none"> <li>• <i>Moxostoma</i> spp/redhorse are catastomids, not cyprinids</li> <li>• <i>Ambloplites rupestris</i>/rock bass is a centrarchid, not a catastomid</li> <li>• <i>Esox lucius</i> is an esocid, not a catastomid</li> <li>• <i>Noturus flavus</i> is an ictalurid, not a catastomid</li> <li>• <i>Lythrurus</i>/redfin shiner is a cyprinid, not a centrarchid</li> <li>• <i>M. dolomieu</i> is a centrarchid, not a percid</li> <li>• <i>Ameiurus natalis</i> is an ictalurid, not a moronid</li> <li>• <i>Catastomus commersoni</i> is catastomid, not a moronid</li> <li>• <i>Campostoma</i>/stoneroller is a cyprinid, not an ictalurid</li> </ul> <p>The implications of misclassifying species are quickly apparent. One example: because 100 smallmouth bass were misclassified, they were added to the perch family total. As a result, the relative abundance of perch is greatly inflated and the relative abundance of centrarchids is substantially reduced.</p> <p>Consider correcting the errors in classification and grouping of species in Table 3-9. Also consider revisiting and revising any analyses of impacts that are based on the erroneous classifications and groupings.</p>
3	3.7.3.1	3-58	1 to 7	<p>The comparisons between years/time periods in lines 1 to 7 on page 3-58 are based on the values in Table 3-9, which contain mostly wrong information. Consider revisiting and revising such comparisons after correcting the information.</p>
4	3.7.3.1	3-59 to	Table 3-10	<p>There are many mistakes in Table 3-10 on pages 3-59 to 3-60 in terms of how species are classified and grouped, which means that the number of</p>

Item #	Section #	Page #	Line #	Comment
		3-61		<p>individuals collected (by family) and percentages (by family) are also wrong. For example:</p> <ul style="list-style-type: none"> <li>• <i>Lepomis microlophus</i>/redeer sunfish is a centrarchid, not a cyprinid</li> <li>• <i>Minytrema melanops</i> is a catastomid, not a cyprinid</li> <li>• <i>Ictiobus bubalus</i> is a catastomid, not a centrarchid</li> <li>• Et cetera (9 more mis-classifications)</li> </ul> <p>One consequence: when rock bass and smallmouth bass (both misclassified) are placed (where they should be) in the centrarchid group, the number of centrarchids collected is increased by 588.</p> <p>Consider correcting the errors in classification and grouping of species in Table 3-10. Also consider revisiting and revising any analyses of impacts that are based on the erroneous classifications and groupings.</p>
5	3.7.3.1	3-62	Figure 3-16	<p>The comparisons in Figure 3-16 (histograms) are based on data in Table 3-10, which is fundamentally flawed: species were assigned to wrong families, thus aggregate number collected by family is wrong in almost every case. Consider revisiting and revising such comparisons after correcting the data.</p>
6	4.5.1.1	4-25	27	<p>As indicated in line 27 on page 4-25, Section 4.5.1.1 relies on data about surface water from the USGS gage located at Wilmington (miles below Braidwood) for water years 1934 to 2012. The analysis results in a rate of consumption by Braidwood of 0.9% to 2.9% of the Kankakee River's average and low-water flows, respectively. However, in the section on Water Use Conflicts with Terrestrial Resources (Section 4.6.1.3, on page 4-33), the DSEIS relies on data about surface water from the USGS gage located at Momence for water years 2002 to 2012. This results in a rate of consumption by Braidwood of 3.0% to 6.6% of the Kankakee River's average and low-water flows. For consistency and the reasons set forth in the comment designated as Item #7, below, consider using the Wilmington gaging station data set for both sections.</p>
7	4.6.1.3	4-33	18 to 19	<p>The nearest USGS gaging station to the Braidwood makeup water intake and blowdown is at Wilmington (8.3 mi downstream), not Momence (33.7 mi upstream). Using river flow values from Momence to calculate the percentage of river flow represented by Braidwood's makeup water withdrawal ignores the substantial contribution to river flow of the Iroquois River, a major tributary that enters the Kankakee at Aroma Park, approximately 23 miles upstream of the Braidwood makeup water intake. Consider using river flow data from the Wilmington USGS gaging station as a basis instead of the Momence gaging station.</p>
8	4.6.1.3	4-33	22 to 23	<p>In lines 22 to 23 on page 4-33, the DEIS states that 48,000 gpm is normally withdrawn from the Kankakee as cooling pond makeup, and compares this</p>

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				value to the conservative river discharge (flow) values from Momence to calculate consumptive losses as a percentage of river flow. However, Section 3.5.1.2 of the DEIS indicates that 46 mgd/71.2 cfs/32,000 gpm are withdrawn as makeup and 23 mgd/35.6 cfs/16,000 gpm are returned to the river as blowdown. Consider using Braidwood's net river water withdrawal rate (i.e., makeup pumping rate minus blowdown discharge rate), rather than its gross withdrawal rate, to calculate consumptive losses based on data from the Wilmington gaging station, rather than the Momence gaging station.
9	4.6.1.3	4-33	24	Because very conservative values (from Momence USGS station) were used to characterize base river flows and these base flows were compared to the makeup withdrawal rate (48,000 gpm) rather than the net river water withdrawal rate, 16,000 gpm (which represents the water lost to seepage and evaporation), the estimated percentages of river flow consumed (3 to 6.6 percent) are too high. Consider using Braidwood's net river water withdrawal rate (i.e., makeup pumping rate minus blowdown discharge rate), rather than its gross withdrawal rate, to calculate consumptive losses based on data from the Wilmington gaging station, rather than the Momence gaging station.
10	4.7.1.2	4-58	9 to 18	The analysis and discussion in lines 9 to 18 on page 4-58 are based on faulty data presented in Section 3.7.3.1 as indicated above in comments regarding that section.
11	4.7.1.2	4-59	1 to 18	The analysis and discussion in lines 1 to 18 on page 4-59 are based, in part, on faulty data presented in Section 3.7.3.1 as indicated above in comments regarding that section designated as Item #2 through Item #5.
12	4.7.1.2	4-60	4 to 10	The conclusion in lines 4 to 10 on page 4-60 (LOE 3 Conclusion) is based on erroneous information presented in Section 3.7.3.1, as indicated above in comments regarding that section.
13	4.7.1.2	4-62	35 to 43	In lines 35 to 43 on page 4-62, a summary of the NRC's conclusion that impingement and entrainment impacts in the Kankakee River from Braidwood license renewal would be SMALL to MODERATE is presented. Lines 38 to 43 state the following: "MODERATE impacts would primarily result from the following: <ul style="list-style-type: none"> <li>• impingement of the State-endangered pallid shiner (LOE 1) and clupids [sic] (LOE 3);</li> <li>• entrainment of common carp, cyprinids, and darter eggs (LOE 2, 3); and</li> <li>• entrainment of Percina, darter, pallid shiner, and other less common cyprinid larvae (LOE 2)."</li> </ul> Regarding the first bullet, Exelon submits that additional and more recent

Item #	Section #	Page #	Line #	Comment
				<p>aquatic resources information than were considered by NRC contradicts NRC's findings regarding the pallid shiner population in the lower Kankakee River and northern Illinois. The assertions that pallid shiner is susceptible to being extirpated from Illinois and that further impingement of pallid shiner at Braidwood could contribute to the loss of this species in Illinois suggests that the numbers of pallid shiner in the Kankakee River are decreasing and the range of pallid shiner is, at best, static. On the contrary, studies in the Kankakee and Des Plaines Rivers indicate that not only have pallid shiner numbers increased since 1998 but that its range has expanded as well during the past 15 years. Routine fish monitoring conducted in the vicinity of Dresden Nuclear Station on the Des Plaines, Kankakee, and Illinois Rivers shows an increase in the number of pallid shiner specimens observed. From 1991 through 2000, no pallid shiners were observed. Since 2001, pallid shiner captures have increased from 12 individuals to as many as 165 specimens in 2007 with an average of 82 specimens between 2001 and 2014 (EA 2015). The majority of these captures were observed in the Kankakee River between Grundy County Line Road bridge and the confluence with the Des Plaines River, approximately 12 river miles downstream of the Braidwood Station makeup water intake. In addition, as part of routine fish monitoring conducted since 1977 for NRG Midwest Generation, LLC. (formerly Commonwealth Edison), pallid shiner were first observed in the Des Plaines River, upstream of the confluence with the Kankakee River in 2000 (EA 2014). Pallid shiners have been observed during 12 of the 14 sampling years between 2000 and 2013. Despite the fact that these results were observed in areas well downstream of the Braidwood Station makeup water intake, the presence of pallid shiner in multiple new locations within the Kankakee River and Illinois River watersheds are contradictory to the assertion that the species is on the verge of extirpation from Illinois. Furthermore, the increased number of pallid shiners over more than a decade indicates that impingement and entrainment by the Braidwood Station makeup water intake are not having noticeable or adverse effects on the pallid shiner population in the Kankakee River or northern Illinois.</p> <p>Regarding the second and third bullets, common carp is not a species belonging to the taxonomic family Catostomidae. As such, entrainment of common carp eggs by Braidwood cannot result in the decline of catostomids. Furthermore, common carp are an invasive species that is excluded from all other Cyprinidae species that may be most likely impacted by entrainment because the abundance of common carp is disproportionately high in the entrainment samples. Therefore, the entrainment of common carp eggs and larvae is, at best, inconsequential with respect to any decline of cyprinids. Finally, While the number of fish eggs and larvae entrained at the Braidwood makeup water intake is a large number, relative to the 90.2 to 94.9 percent ichthyoplankton production within the Kankakee River in Illinois that is outside of the area of influence, the amount of Kankakee River ichthyoplankton potentially entrained is</p>

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				<p>comparatively very small.</p> <p><u>References</u>            EA Engineering, Science, &amp; Technology, Inc., PBC (EA). 2015. Draft Dresden Nuclear Station 316(a) Demonstration, Appendix B Information Supporting Representative Important Species Rationale: Biothermal Assessment – Predictive Demonstration. Exelon Corporation.</p> <p>_____. 2014. 2013 Upper Illinois Waterway Fisheries Investigation RM 274.4-296.0. NRG Midwest Generation, LLC.</p>
14	4.7.1.2	4-67	22 to 32	<p>The comments above designated as Item #7 through Item #9 regarding Section 4.6.1.3 (lines 18 through 24 on page 4-33) also apply to the paragraph in lines 22 to 32 on page 4-67, which repeats the information presented in Section 4.6.1.3.</p>
15	4.9.1	4-78	34 to 35	<p>In lines 34 to 35 on page 4-78, the DSEIS notes (in the context of its review of historic and cultural resources) that “the first substation is located <u>on-site at the 345-kV Braidwood Station</u> switchyard (emphasis added).” This statement is not consistent with DSEIS Section 3.11.4 (and possibly other DSEIS sections), which was not updated to account for the NRC’s 2013 Final Rule and GEIS. The 2013 GEIS changed the definition of “in-scope” transmission lines, and Exelon described the effect this would have for Braidwood “in-scope” transmission lines in its response to Request for Additional Information CR-7 (January 21, 2014, ADAMS Accession No. ML14030A264).</p> <p>Consider harmonizing all sections in the DSEIS that address impacts to resources from “in-scope” transmission lines with the 2013 Final Rule’s definition as applied to Braidwood Station.</p>
16	4.9.2	4-80	20 to 21	<p>Section 4.9.2 (lines 20 to 21 on page 4-80) states that a separate environmental review would be needed to assess decommissioning impacts on cultural resources for the No Action alternative to Braidwood license renewal. Exelon Generation notes that such an environmental review has been completed and recommends that Section 4.9.2 be revised to incorporate by reference the conclusions from NUREG-0586 (NRC 2002, GEIS on Decommissioning of Nuclear Facilities). NUREG-0586 concludes that for all nuclear plant sites at which decommissioning will not require disturbing lands beyond existing site boundaries, impacts to cultural resources would be SMALL. For nuclear plants where decommissioning would disturb land beyond existing site boundaries, impacts would have to be assessed on a case-by-case basis and might be SMALL, MODERATE or LARGE. Exelon Generation submits that the existing Braidwood site is sufficiently large that explicit justification is warranted before concluding in Section 4.9.2 that the generic finding in NUREG-0586 of SMALL impacts to cultural resources from decommissioning would not apply to Braidwood.</p>

Item #	Section #	Page #	Line #	Comment
17	4.9.4 and 4.9.5	4-81	1 to 43	<p>The IGCC impact to cultural resources is characterized in Section 4.9.4 as SMALL. The NGCC impact to cultural resources is characterized in Section 4.9.5 as SMALL to MODERATE. Each plant is assumed to be sited on the approximately 67 acres of undisturbed land on the Braidwood site, and the difference between the projects in impacts to cultural resources is attributed to the new gas pipeline that would need to be constructed for the NGCC. However, given that the IGCC alternative requires 2,000 acres and the NGCC alternative requires 94 acres including pipelines (see Table 2-1 on page 2-9), the conclusions are inconsistent. There is not that much difference in the uncertainty of the cultural resource richness of the new pipeline compared to undisturbed area of the existing site, and the IGCC would consume more undisturbed acres than the NGCC. Therefore, Exelon Generation recommends reconsideration of the impact findings in sections 4.9.4 and 4.9.5 for the IGCC and NGCC alternatives.</p>
18	4.9.7	4-82 to 4-83	39 to 47 and 1 to 8	<p>The impact from the Purchased Power alternative to cultural resources is described in Section 4.9.7 (pages 4-82 [lines 39 to 47] to 4-83 [lines 1 to 8]) as SMALL to LARGE. The description of the activities under this alternative is inconsistent with the description given in Section 2.2.2.5. According to section 2.2.2.5, "facilities from which power would be purchased would not likely be constructed solely to replace Braidwood" although "[p]urchased power may require new transmission lines." Section 2.2.2.5 further states, "Impacts to other resource areas [such as cultural resources] from the operation of existing power plant facilities would likely be less than those for new plants because existing facilities would not require new construction." Given that the New Nuclear alternative, which requires construction of new facilities, was evaluated to have SMALL impacts on cultural resources (see section 4.9.3, page 4-80), it is difficult to understand the basis for NRC's conclusion that Purchased Power, for which no construction is likely except possibly transmission lines, would have SMALL to LARGE impacts. Therefore, Exelon Generation recommends reconsideration of the impact findings in section 4.9.7 for the Purchased Power alternative taking into account the probability that new generating facilities would not be needed.</p>
19	4.10.7	4-89	25 to 27	<p>The description of the Purchased Power Alternative in Section 4.10.7 is different from that in Section 2.2.2.5. According to Section 2.2.2.5 (page 2-17, line 20 to 21), "facilities from which power would be purchased would not likely be constructed solely to replace Braidwood." Yet, Section 4.10.7 bases its conclusions about impacts to socioeconomics and transportation resources on the possibility that new electrical power generating facilities would be needed to supply purchased power. Therefore, Exelon Generation recommends reconsideration of the impact findings in section 4.10.7 for the Purchased Power alternative taking into account the probability that new generating facilities would not be needed.</p>