

Gallagher, Carol

Subject: FW: Comments regarding Draft NUREG-1437 Supplement 55 for the Braidwood Station License Renewal
Attachments: RS-15-146_signed w-Encl_15May2015.PDF; BRW_DSEIS_consolidated_minor_cmts_15may2015.pdf

From: Ranek, Nancy L.:(GenCo-Nuc) [<mailto:Nancy.Ranek@exeloncorp.com>]
Sent: Friday, May 15, 2015 5:40 PM
To: Baum, Richard
Cc: Tran, Tam; Gallagher, Michael P:(GenCo-Nuc); Hufnagel Jr, John G:(GenCo-Nuc); Karpa, Zigmund A:(GenCo-Nuc); Beem, Roland Duane:(GenCo-Nuc); Hersey, Kevin K:(GenCo-Nuc); Petro, John R:(GenCo-Nuc); Gorga, Michael J.:(GenCo-Nuc)
Subject: Comments regarding Draft NUREG-1437 Supplement 55 for the Braidwood Station License Renewal

Hi Rick --
As you know, by letters dated Tuesday, May 12, 2015 and Friday, May 15, 2015, Exelon Generation submitted comments for the record regarding the Draft NUREG-1437 Supplement 55 for the Braidwood Station License Renewal (Braidwood DSEIS). On May 12, I provided a copy of Exelon's May 12 letter, and I am attaching the May 15 letter (RS-15-146 w/ enclosure) to this message for your information. **Exelon filed the May 15 letter electronically through the NRC Document Control Desk.**

To this message, I am also attaching a list of additional minor updates, corrections, and clarifications with respect to the Braidwood DSEIS that were not covered by Exelon's May 12 and 15 letters and that NRC may want to consider in the process of finalizing NUREG-1437, Supplement 55.

Please call if there are questions.
Thanks.
Nancy

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**Exelon Generation Company, LLC
Updates, Corrections, and Clarifications on Draft Generic Environmental Impact
Statement for License Renewal of Nuclear Plants, Supplement 55 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 ~~font~~.

Item #	Section #	Page #	Line #	Comment
1	Executive Summary	xxi	11	In line 11 on page xxi of the Executive Summary, consider revising the text as follows to improve clarity: "... (<i>GEIS</i>) for License Renewal of Nuclear Plants, <i>Rev. 1</i> "
2	Executive Summary	xxii	28	Because Chapter 4 is quite large, consider changing the sentence in lines 28 to 29 on page xxii as follows: Chapter 4 Section 4.14 of this SEIS presents the process for identifying new and significant information.
3	Acronyms	xxvii	25 & 26	Two acronyms for "APE." Consider using different acronyms for each term to avoid confusion.
4	Acronyms	xxix	30 to 31	Two acronyms for "DMS." Consider using different acronyms for each term to avoid confusion.
5	Acronyms	xxxi	12 & 19	Second acronym listing for "fps" is redundant. Consider deleting the line 19 entry.
6	Acronyms	xxxi	27 & 28	Two acronyms for "GI." Consider using different acronyms for each term to avoid confusion.
7	Acronyms	xxxiii	19 & 20	Two acronyms for "ISO". Consider using different acronyms for each term to avoid confusion. It appears that the line 20 entry should be "IOS."
8	Acronyms	xxxviii	6 & 7	Two acronyms for "RHR." Consider using different acronyms for each term to avoid confusion.
9	1.4	1-3	10	In line 10 on page 1-5, delete the word "generic" as follows: "Of these issues, the NRC staff determined that some generic issues are generic to all plants"
10	1.8	1-6	5 to 10	Consider adding the Native American Graves Protection and Repatriation Act to the Federal laws listed in lines 5 to 10 on page 1-6 that direct Federal agencies to consult with one another regarding proposed agency actions.

				Otherwise, it is not clear why only Native American tribes were consulted – “based on historic cultural ties” could include non-Native Americans who settled the land centuries ago, but there is no requirement to consult with their descendants.
11	1.10	1-6	33	In line 33 on page 1-6, add the word “applicable” as follows: “Exelon is responsible for complying with all applicable NRC regulations”
12	1.10	1-6	34	In line 34 on page 1-6, replace “Appendix F,” which contains NRC Staff’s evaluation of Severe Accident Mitigation Alternatives, with “Appendix B,” which lists applicable laws, regulations, and agreements.
13	1.11	1-7	4	Consider adding a sentence about state activities to Section 1.11 on page 1-7 because, as written, the section does not include a discussion of state activities, although it is titled “Related Federal and State Activities”.
14	2.1.1	2-1	39	In line 39 on page 2-1, add “s” after “follow”: “[The GEIS] summarizes the general types of activities that are carried out during the operation of a nuclear power plant such as Braidwood, as follows.”
15	2.1.2	2-2	21 to 22	In lines 21 to 22 on page 2-2, correct the text as follows for consistency with Section 4.6.1.2 (page 4-32) and the Applicant’s ER Section 3.2 (page 3-18): “However, Exelon identified two hypothetical refurbishment activities that may occur during prior to the period of continued operation: . . .”
16	2.2.2	2-3	Text box	Consider adding “Supercritical pulverized coal (SCPC)” to the list in the text box on page 2-3 of “Other Alternatives Considered But Dismissed” because SCPC is identified in Sections 2.2.2.2 and 2.3 as such a technology.
17	2.2.2	2-7	Table 2-1	For completeness, consider adding a column in Table 2-1 on page 2-7 for “Purchased Power.” Although the characteristics of purchased power are different than those of the technology alternatives, the exclusion of purchased power from Table 2-1 could lead the reader to believe it was not analyzed in detail. Identifying the key characteristics of purchased power, although different in nature from those of the technologies, could be informative.
18	2.2.2.1	2-10	42 to 43	The discussion of the New Nuclear Alternative appears to contain an inconsistency in lines 42 to 43 on page 2-10. If the Illinois moratorium on new nuclear construction remains in place, such that the new nuclear alternative would be

				located elsewhere in the ROI, outside Illinois, then how could the existing transmission lines leaving the Braidwood site be expected to serve the replacement reactor with few modifications? Consider clarifying this section.
19	2.2.2.2	2-11	45 to 46	Consider inserting text in lines 45 to 46 on page 2-11, as follows: "The IGCC plant will reduce carbon emissions per MWh by nearly half compared to conventional coal-fired power plants (Duke Energy 2013)."
20	2.2.2.4	2-15	47	In the phrase "Distance separation ensures that the two wind farms will not simultaneously experience the same climate" in line 47 on page 2-15, "climate" does not appear to be the correct word. Consider using "weather conditions" instead.
21	2.4	2-25	Table 2-2	Consider adding a column in Table 2-2 on page 2-25 for "Special Status Species and Habitats," which is discussed as a separate resource in Chapter 4 of the Draft SEIS.
22	3.1.3	3-4	22 to 25	Blowdown is released (not "rinsed") continuously (not periodically) from the cooling pond to reduce concentrations of dissolved solids (not "remove impurities and sediment.") Consider revising the sentence in lines 23 to 24 on page 3-4 as follows: "Water that is not lost to evaporation is either recirculated through the system as cooling water or discharged as blowdown (i.e., water that is periodically rinsed removed from the cooling pond system to remove avoid the buildup of dissolved solids and other impurities and sediment that may degrade plant performance) to a secondary receiving water body.
23	3.1.3	3-5	4 to 5	Consider revising the sentence in lines 4 to 5 on page 3-5 as follows: Braidwood's cooling pond was created in 1980 and 1981 by pumping water from the Kankakee River into the site's former strip mine spoils into a diked area, which surrounds portions of a former strip mine, inundating deep pits, borrow areas, and depressions.
24	3.1.3	3-7 and 3-8	Figs 3-4 and 3-5	Consider marking the makeup water pipeline on Figures 3-4 and 3-5.
25	3.1.3	3-9	3 to 5	The sentence in lines 4 to 5 on page 3-9 states that the Braidwood NPDES permit "limits blowdown discharges to the river to a 30-day average of 54 million liters per day

				<p>(Lpd) or 14.3 million gallons per day (mgd).” This statement was based on the NPDES permit issued by IEPA to Braidwood Station in 1997. In 2014, IEPA issued a renewed NPDES permit requiring blowdown flow to be monitored and reported, but places no limit on the flow volume. Consider revising the two sentences in lines 3 to 5 on page 3-9 as follows:</p> <p>Water enters the river through a submerged multi-port diffuser at mid-river, which is regulated under Braidwood’s NPDES permit (IEPA 19972014) as Outfall 001. The permit limits blowdown discharges to the river to a 30-day average of 54 million liters per day (Lpd) or 14.3 million gallons per day (mgd). The permit indicates that the daily average blowdown flow from Outfall 001 is estimated to be 43.2 million gallons per day (mgd).</p>
26	3.1.6.4	3-17	14 to 15	<p>To reflect current railway ownership, consider revising the sentence in lines 14 to 15 on page 3-17 as follows:</p> <p>“The Canadian National Railway (formerly Illinois Central Gulf Railroad) maintains a railroad spur on site that connects to the Braidwood Station with the Illinois Central Gulf Railroad.</p>
27	3.2.1	3-18	9 to 10	<p>In lines 9 to 10 on page 3-18, the DEIS states:</p> <p>“...strip mined spoils on the site were flooded to create a 2,540 ac (1,028-ha) artificial cooling pond, which provides Braidwood with a source of cooling water.”</p> <p>Consider replacing the above-quoted phrase with the following text:</p> <p>“... cooling pond, which has a total surface area of 1,028 ha (2,540 ac), was created by flooding portions of a former strip mine and provides Braidwood with a source of cooling water. Spoil piles/spoil areas associated with the former strip mine became islands, berms, wetlands, and uplands within the cooling pond.”</p>
28	3.2.1	3-18	24 to 25	<p>To reflect current railway ownership, consider revising the sentence in lines 24 to 25 on page 3-18 as follows:</p> <p>“The site also includes a railroad spur, which connects to the Illinois Gulf Railroad Canadian National Railway (formerly Illinois Central Gulf Railroad).”</p>

29	3.5.1.1	3-28	4 to 5	Consider revising the sentence in lines 4 to 5 on page 3-28 as follows to clarify that only a portion of the cooling pond is open to the public: The <i>A portion of the</i> cooling pond is available for public access for fishing, waterfowl hunting, and fossil collecting as a result of an agreement between Exelon and the IDNR.
30	3.5.1.2	3-28	24 to 26	Correct the typographical error in line 25 on page 25 as follows: "... withdrawing water from the river when the flow rate falls below 422442 cfs (189,394198,383 gpm or 1212.5 m ³ /s)
31	3.5.1.2	3-31	Table 3-6	Although the sum of the individual "Approximate Flow" rates for the contributing discharges that comprise the "001 Cooling Pond Blowdown Line" outfall in the current NPDES permit issued by IEPA on July 31, 2014 is 14.638 mgd, which is consistent with the information in Table 3-6 of the draft SEIS on page 3-31, the NPDES permit also reports the daily average flow (DAF) from Outfall 001 as 30,000 gpm or 43.2 mgd. Because Table 3-5 on page 3-28 reports that the average actual return discharge to the Kankakee River during the period from 2008 to 2012 was 23 mgd, consider whether the entry in Table 3-6 for Outfall 001 Average Flow Rate should be changed.
32	3.5.1.2	3-31	Table 3-6	Delete "IEPA 1995" from the list of "Sources" for Table 3-6 on page 3-31 because there is no corresponding entry in Section 3.14 (References). Also delete the second "2014c" from the list of "Sources" because it appears to be a duplication of the previously listed "Exelon 2014c."
33	3.5.2	3-33 thru 3-36	All lines	"Exelon 2013j" is cited throughout Section 3.5.2 on pages 3-33 through 3-36 as a source document for information about groundwater conditions and groundwater use, but Section 3.14 (References) describes this reference as "letter from Plant Manager to Wildlife Habitat Council," which is an unlikely reference document for such information.
34	3.6.3.1	3-44	46	In line 46 on page 3-44, change the text to correct spelling as follows: "... spikerush (<i>Eleocharis ovateovata</i>), ..."
35	3.6.3.1	3-45	4	In line 4 on page 3-45, consider revising the text as follows to improve accuracy "During Braidwood construction, creation of the cooling pond inundated abandoned mine pits and borrow areas associated with strip-mining 36on the property in the 1940s the strip-mine spoils were flooded to create the cooling pond.

36	3.6.3.2	3-47	16 to 17	In lines 16 to 17 on page 3-45, consider revising the text as follows to improve accuracy: "It is possible that the creation of the cooling pond, which flooded most of the strip-mine spoils abandoned mine pits and borrow areas associated with strip-mining on the property in the 1940s , affected the diversity of mammals on the site."
37	3.6.3.2	3-47	18 and 42	Exelon's <i>Wildlife Management Plan for Braidwood</i> is cited as "Exelon 2013j" in line 18 on page 3-47, but it is designated in Section 3.14 (References) as "Exelon 2013f."
38	3.6.3.2	3-48	3	In line 3 on page 3-48, correct the spelling of the scientific name for "common snapping turtle" as follows: "... common snapping turtle (Chloydra Chelydra serpentine)," ...
39		3-48	5	In line 5 on page 3-48, correct the spelling of the scientific name for "ornate box turtle" as follows: "The ornate box turtle (Terrapene ornate ornata), ..."
40	3.7.1	3-50	22 to 34	In lines 26 to 31 on page 3-50, it is unclear whether the sentence "Silted pools separated by solid bedrock...(Page et al. 1991)" refers to (1) the Kankakee River in the vicinity of the Braidwood intake/discharge, or (2) the reach of river that has been designated "Biologically Significant," or (3) the Kankakee River generally. As a result, the paragraph in lines 22 to 34 on page 3-50 leaves the impression that all of these sensitive species occur in the vicinity of the Braidwood intake and discharge. With regard to these species and the two extirpated species discussed in the sentence in lines 31 to 33, the information source is cited as a 24-year-old report and is based on 30-year-old surveys and studies. To the extent that they are available, consider updating the information using more recent studies and surveys.
41	3.7.1.2	3-50	36 to 37	In lines 36 to 37 on page 3-50, revise the sentence as follows: Braidwood's 2,540 ac (1,030 ha) cooling pond was created in 1980 and 1981 by pumping water from the Kankakee River into the site's former strip-mine spoils a diked area, which surrounds portions of a former strip mine, inundating deep pits, borrow areas, and depressions.
42	3.7.1.2	3-50	37 to 40	The sentence in lines 37 to 40 on page 3-50 contains an error in the year during which the lease agreement between ComEd and IDNR was first signed, and it also would be more accurate if modified to explain that not all of

				<p>the cooling pond is accessible to the public. Consider modifying the sentence in lines 37 to 40 on page 3-50, as follows:</p> <p>In the fall of 19841991, the Illinois Department of Conservation (now the IDNR) entered into a long-term lease agreement with ComEd (the constructor and original operator of Braidwood) to allow general public access to a portion of the cooling pond for fishing, waterfowl hunting, and fossil collecting (IDNR 2014d).</p>
43	3.7.2.1	3-53	1 to 3	<p>In lines 1 to 3 on page 3-53, revise the sentence as follows to address a typographical error:</p> <p>In 2008, Exelon commissioned two studies (ESI 2009; HDR 2008) to determine the presence of State-listed fish and mussel species near the Braidwood makeup water discharge channel on the Kankakee River.</p>
44	3.7.3.2	3-69	Table 3-14	<p>In the first column in Table 3-15 on page 3-69, the scientific name of largemouth bass should be <i>Micropterus salmoides</i>, not "sahnoides."</p>
45	3.7.3.2	3-72	Table 3-15	<p>In the first column in Table 3-14 on page 3-72, the scientific name of largemouth bass should be <i>Micropterus salmoides</i>, not "sahnoides."</p>
46	3.7.5.2	3-76	32 to 33	<p>In lines 32 to 33 on page 3-76, revise the sentence as follows to correct errors in the description of the location of the Kankakee River State Park:</p> <p>The northern boundary of the Kankakee River State Park lies approximately 403 465 mi (465 465 km) southeast and downstreamupstream from the Braidwood siteriver screen house.</p> <p>Because the Kankakee River State Park is several miles upstream from the river screen house, Braidwood operations are not likely to have any effect on aquatic habitats in the vicinity of the Kankakee River State Park or in the reach of river adjacent to the park.</p>
47	3.8	3-77	38	<p>In line 38 on page 3-77, revise the sentence as follows to improve its clarity:</p> <p>Listed plants located on private land are not protected from take, although collecting or maliciously harming them on Federal land is illegal.</p>
48	3.8.2	3-79	Table 3-17	<p>Consider updating Table 3-17 on page 3-79 based on publication of the Final Rule listing the Northern longeared bat, which occurred April 2, 2015 (80 FR 63, p 17974), after the DSEIS was completed. This change in status is effective May 4, 2015.</p>

49	3.8.2	3-83	27 to 29	Consider updating the text in lines 27 to 29 on page 3-83 based on publication of the Final Rule listing the Northern longeared bat, which occurred April 2, 2015 (80 FR 63, p 17974), after the DSEIS was completed. This change in status is effective May 4, 2015.
50	3.10.5	3-102	Table 3-32	Revise Table 3-32 on page 3-102 by deleting the last row in the table regarding "Braidwood Park District" because it duplicates the same information provided five rows above it.
51	4.2.2.1	4-2	17	The definition of the No-Action Alternative that is assumed in Section 4.2.2.1 on page 4-2 is inconsistent with the assumed definition for the No-Action Alternative in Section 4.3.2.1 on pages 4-6 to 4-7. As an example, the impacts for land use under "no-action" in Section 4.2.2.1 acknowledge that impacts could occur if new generation capacity is constructed to replace the lost generation of Braidwood. However, on air quality (Section 4.3.2.1) the "no-action" analysis is based on an assumption of no replacement power.
52	4.3.3.1	4-8	39	In line 39 on page 4-8, nitrogen oxide (NOx) emissions from Braidwood are reported as 28 tons per year, while the Applicant's Environmental Report identifies NOx emissions as 27.11 tons per year. Because emissions reported for all other pollutants in lines 38 to 42 on page 4-8 are in agreement with the Applicant's Environmental Report, consider replacing "28" with "27.11" in line 39. This comment also applies to the NOx entry for the "Proposed Action" in Table 4-3 on page 4-20.
53	4.4.6	4-23	19	In line 19 on page 4-23, the amount of land, 8,009 ha, indicated for the solar PV and wind farm components of the "combination" alternative is inconsistent with the amount of land listed for these components in Section 4.2.6.1 (Land Use) on page 4-4: 4,098 ha for wind and 2,731 for solar.
54	4.5.1	4-26	1	For consistency with Section 3.5.1.2, which reports that the average consumptive use rate for the period from 2008 to 2012 was 35 cfs, the sentence in line 1 on page 4-26 should be corrected as follows: "As described in Section 3.5.1.2, the average annual consumption [of water] for the Braidwood site from the Kankakee River is 4135 4135 cfs (1.140.99 1.140.99 m ³ /s)."
55	4.5.1	4-26	4 to 8	The sentence in lines 4 to 8 on page 4-26 states that an IDOT/IDNR permit "requires Exelon to stop withdrawing water from the Kankakee River when the flow rate falls below 422 cfs." As noted in an earlier comment regarding

				DSEIS Section 3.5.1.2, the correct flow rate below which Exelon must stop withdrawing water from the Kankakee River is 442 cfs.
56	4.6.1.2	4-32	3 to 5	<p>The text in lines 3 to 5 on page 4-32, referring to Section 3.6, states that “approximately 1,280 ac of the Braidwood site (37%) remains as natural areas that are either leased for agricultural use, leased to IDNR for recreational use, or are unmanaged. Section 3.6 actually states that 1,653 acres are maintained as natural areas, 67 acres of which are leased to private individuals for agricultural use, and 1,280 acres of which are leased to IDNR for recreational use. The remaining 306 acres are presumably the unmanaged natural areas.</p> <p>The former value (1,280 ac) would equal 29 percent of the total site acreage of 4,457 acres. The latter value (1,653 ac) would equal 37 percent of the total acreage of 4,457 ac. Consider revising lines 3 to 5 on page 4-32 to harmonize the numbers with Section 3.6.</p>
57	4.6.1.2	4-32	28 to 36	<p>As was discussed in Section 3.2 (Refurbishment Activities) of the Applicant’s ER for Braidwood, although there are no plans for refurbishment or replacement activities at Braidwood, for the purposes of the License Renewal Environmental Report, Exelon Generation hypothetically assumed that replacement of the <u>Unit 2</u> steam generators may occur prior to the end of the 40-year initial license term. Accordingly, in lines 28 to 36 on page 4-32, the following revisions are needed to correct inaccuracies.</p> <p>“Other operations and maintenance activities that could occur in the future include the replacement of the Unit 1Unit 2 steam generators. While Exelon has previously replaced the Unit 2Unit 1 steam generators, Exelon has not replaced the Unit 1Unit 2 steam generators. Exelon has no plans to replace the Unit 1Unit 2 steam generators at this time, but Exelon may choose to replace them prior to the end of the 40-year initial license term. Because steam generator replacement is not necessary for safe operation during license renewal, the NRC does not consider it part of the proposed action. As such, the impacts of Unit 1Unit 2 steam generator replacement on terrestrial resources are discussed in Section 4.15.4 (cumulative impacts) rather than in this section. Exelon (2014g) is planning no other land-disturbing activities or construction unrelated to possible Unit 1Unit 2 steam generator replacement.</p> <p>As needed, harmonizing changes should also be made in Section 4.15.4 (cumulative impacts) of the DSEIS.</p>

58	4.7.1.2	4-41	11	In line 11 on page 4-41, "Clupids" should be "clupeids."
59	4.7.1.2	4-54	2 to 10	Delete the paragraph in lines 1 to 10 on page 4-54 because it appears verbatim two pages earlier (on page 4-52, lines 12 to 20) and, thus, appears to have been inadvertently repeated here.
60	4.7.1.3	4-65	14	Delete the words "on March 19, 2012" at the beginning of line 14 on page 4-65 because they are repeated at the beginning of the sentence in line 13 on page 4-65.
61	4.7.1.3	4-65	22 to 23	Insert the word "not" as follows in the sentence in lines 22 to 23 on page 4-65: "Braidwood thermal effluent is limited by the IAC and the Braidwood NPDES permit to ensure that it does not create adverse effects on the aquatic communities in the Kankakee River."
62	4.9.1	4-79	35 to 36	In lines 33 to 36 on page 4-79, revise the text as follows to improve accuracy: The remaining acres are heavily disturbed due to power plant construction (e.g., power block, blowdown pipeline) and operation; are former strip mine land which has been repurposed or revegetated; or are part of the man-made cooling pond created in 1980 and 1981 by pumping water from the Kankakee River into a diked area, which surrounds portions of a former strip mine, inundating deep pits, borrow areas, and depressions excavated by ComEd (Exelon 2014b).
63	4.11.1.3	4-100	25 to 27	Consider revising the sentence in lines 25 to 27 on page 4-100 as follows (or in a similar manner): "Exelon stated in the ER that the 26 SAMAs determined to be cost-beneficial in the ER baseline and uncertainty evaluations have been submitted to the Braidwood Plant Health Committee for further implementation consideration in accordance with current Braidwood processes and procedures for evaluating possible plant modifications (Exelon 2013c).
64	4.15.1	4-118	33 to 34	In lines 33 to 34 on page 4-118, correct the typographical error as follows: "This section describes the environmental impacts associate associated with the fuel cycles of the proposed action and replacement power alternatives.
65	4.15.3	4-122	14 to 17	In lines 14 to 17 on page 4-122, revise the text as follows to avoid suggesting that Braidwood's GHG emissions and climate change are significantly linked in some way:

				<p>"The following sections discuss: (a) GHG emissions released from operation of Braidwood and alternatives and (b) <i>the</i> environmental impacts that could <i>generally</i> occur from changes in climate conditions, <i>although the significant contributory effects would come from other sources independent of Braidwood.</i>"</p>
66	4.16	General		<p>Although Section 4.8 describes impacts to threatened and endangered species, Section 4.16 (cumulative impacts) does not include a summary discussion of threatened and endangered species. This omission is inconsistent with the treatment in Section 4.16 of other resource areas.</p>
67	4.16.3.1	4-135	22 to 23	<p>In lines 22 to 23 on page 4-135, correct the typographical error as follows: Dresden Nuclear Power Station, Units 2 and 3 (listed in Appendix E) are currently operating and withdraw withdraw water from the Kankakee River.</p>
68	4.16.3.2	4-138 and 4-139	5 to 6 and 1 to 2.	<p>In lines 5 to 6 on page 4-138, the DSEIS acknowledges that "consumptive [groundwater] use would continue to be SMALL" Then, in lines 1 to 2 on page 4-139, the DSEIS states: "However, for cumulative impacts, when combined with groundwater consumption by the Chicago Metropolitan Region, the impact to consumptive groundwater use is MODERATE to LARGE." This latter statement should be modified to more clearly communicate that the impact of groundwater consumption by the Chicago Metropolitan Region is MODERATE to LARGE, and the use by Braidwood Station does not alter that conclusion. The change would be consistent with treatment of site-specific versus cumulative impacts elsewhere in the DSEIS. For example, in the discussion of cumulative impacts of Climate Change (page 4-150), the DSEIS states: "... climate change is projected to occur with or without present and future GHG emissions from Braidwood."</p>
69	4.16.7	4-145	17 to 18	<p>In lines 17 to 18 on page 4-145, the text should be corrected as follows: "Exelon indicated that the Unit 2 steam generator replacement wouldmay occur duringprior to the license renewal term."</p>
70	4.16.7	4-145	32	<p>In line 32 on page 4-145, the text should be corrected as follows: "Exelon indicated that the reactor vessel heads wouldmay be replaced before the license renewal term."</p>

71	4.16.11	4-150	28 to 29	<p>Consider clarifying the conclusion in lines 28 to 29 on page 4-150 as follows:</p> <p>“The NRC staff concludes that the cumulative impacts from the proposed license renewal and other past, present, and reasonably foreseeable projects would be MODERATE, <u>although the impacts will be overwhelmingly due to other projects around the world, independent of Braidwood.</u>”</p>
72	5.2	5-1	22	<p>The list of alternatives considered is not consistent with the alternatives considered or considered and dismissed in Chapter 2. Coal-IGCC was evaluated but is not included in the list in Section 5.2. Super critical pulverized coal was not evaluated but is included in the list in Section 5.2.</p>
73	5.2	5-1	20 to 24	<p>Purchased power was an alternative considered though it is not included on the list in Section 5.2. Consider adding “purchased power” to the bulleted list in lines 20 through 24 on page 5-1.</p>
74	5.2	5-1	32	<p>Correct the typographical error in line 32 on page 5-1 as follows:</p> <p>“...impacts for Aquatic Resources, and SMALL impacts is<i>in</i> all other areas.”</p>
75	F.1	F-1	22 to 24	<p>In lines 22 to 24 on page F-1, consider revising the sentence as follows (or in a similar manner):</p> <p>“Exelon has submitted all 26 potentially cost-beneficial SAMAs to the Braidwood Plant Health Committee for further implementation consideration <i>in accordance with current Braidwood processes and procedures for evaluating possible plant modifications.</i>”</p>
76	F.2.1	F-2	2 to 6	<p>In lines 2 to 6 on page F-2, the wording of the first sentence is confusing, particularly the meaning and purpose of the phrase “effective change majority”. Consider revising as follows:</p> <p>“Exelon combined two distinct analyses to form the basis for the risk estimates used in the SAMA analysis: (1) the Braidwood Levels 1 and 2 PRA models, (both, are essentially effective change majority new models developed since the IPE models), and (2) a supplemental analysis of offsite consequences and economic impacts (essentially a Level 3 PRA model), developed specifically for the SAMA analysis.”</p>
77	F.2.2	F-7	12	<p>In line 12 on page F-7, replace the phrase “the LER analysis” to “<i>the large, early release (LER) analysis.</i>”</p>

78	F.2.2.2	F-8	36 to 37	<p>In lines 36 to 37 on page F-8, consider adding text as follows:</p> <p>“The Braidwood IPEEE was submitted in June 1997 (ComEd 1997b), in response to Supplement 4 of GL 88-20 (NRC 1991a), <i>which requested that each power reactor licensee identify and report to the NRC plant-specific vulnerabilities to severe accidents caused by external events.</i>”</p>
79	F.2.2.2	F-9	20 to 23	<p>In lines 20 to 23 on page F-9, consider revising the first two sentences as follows:</p> <p>“The majority of the outliers involved seismic interaction concerns that were resolved through <i>some appropriate licensee</i> corrective actions. Others were resolved either by conservative deterministic failure margin capacity analysis <i>that</i> to showed <i>that</i> the seismic capacity <i>substantially exceeded the well beyond</i> review-level earthquake demand, or by maintenance/ modifications.”</p>
80	F.2.2.3	F-14 to F-15	48 and 1 to 2	<p>In lines 13 to 16 on pages F-14 to F-15, consider revising the text as follows:</p> <p>“In response to an NRC staff RAI, Exelon stated that the input for the MAAP cases specified the fission product masses (<i>as opposed to radionuclide activity values</i>), as recommended by the MAAP Users Group Bulletin, “MAAP-FLASH #68” (Exelon 2014).”</p>
81	F.2.2.4	F-18	41 to 47	<p>In lines 41 to 47 on page F-18, consider revising the text as follows:</p> <p>Generic <i>Certain standardized economic data parameter input values that may be</i> applied to the region as a whole (<i>e.g., for parameters describing the cost of evacuating and relocating people, land decontamination, and property condemnation</i>) were <i>obtained from NUREG-1150 (NRC 1990) revised from the (and a related MACCS2 User’s Guide sample problem). Those values were adjusted</i> input to account for cost escalation since 1986 (the year that input values were first specified). Taking into account <i>using</i> the U.S. Consumer Price Index (CPI) <i>method. Specifically,</i> a factor of 2.09 (CPI of 229.1 divided by CPI of 109.6), representing cost escalation from 1986 (CPI index of 109.6) to July 2012 (CPI index of 229.1), was applied to <i>the NUREG-1150/MACCS2 sample problem values.</i> parameters describing cost of evacuating and</p>

				relocating people, land decontamination, and property condemnation.
82	F.3.2	F-21	13 to 15	In lines 13 to 15 on page F-21, consider revising the text as follows: "Exelon also provided in the ER tabular listings of the Level 2 PRA basic events for the combined LERF categories and the combined Late Release categories, which in total contribute account for approximately 95 percent of the estimated population dose risk and OECR."
83	F.3.2	F-22	14	In line 14 on page F-22, change the phrase "the NRC staff finds acceptable" as follows: "... the NRC staff finds Exelon's explanation to be acceptable "
84	F.3.2	F-20	13 to 14	Consider inserting the following sentence after the first sentence in lines 13-14 on page F-20: "Exelon provided in the ER a tabular listing of the Level 1 PRA basic events sorted according to their RRW (Exelon 2013a). The RRW is the factor by which the risk would decrease if the component, train, system, function, initiating event, or HEP is assumed to be perfectly reliable (i.e., if its probability of failure were zero). "
85	F.7	F-40	35 to 37	Consider adding underlined language (or something similar) in lines 35 to 37 on page F-40 as follows: "Exelon has indicated that all 26 potentially cost-beneficial SAMAs will be submitted to the Braidwood Plant Health Committee for further implementation consideration <i>in accordance with current Braidwood processes and procedures for evaluating possible plant modifications.</i> "