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Notice of Intent to Prepare an Environmental Impact Statement

**Comment On:** NRC-2013-0169-0003  
Exelon Generation Company, LLC; License Renewal Application for Braidwood Station, Units 1 and 2

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## General Comment

27 September, 2013

Cindy Bladey, Chief  
Rules, Announcements, and Directives Branch (RADB)  
Office of Administration  
Mail Stop: 3WFN-06-A44M  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

Comments on the Supplement to the NRC's "Generic Environmental Impact Statement (GEIS)  
for License Renewal for the Braidwood Nuclear Power Station  
Docket number NRC-2013-0169

Greetings:

**SUNSI Review Complete**  
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**Add= J. Hickman (Jbh)**  
*J. Tran (TXT1)*

Nuclear Energy Information Service is a 32 year old Illinois environmental organization based in Chicago. We submit the following comments on the above Docket, to be entered into the official record concerning the Braidwood Nuclear Power Station relicensing.

Thank you.

David A. Kraft  
Director

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## **Attachments**

Braidwood relicensing comments 9-27-13



# Nuclear Energy Information Service

*Illinois' Nuclear Power Watchdog since 1981*

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**Comments on the Supplement to the NRC's "Generic Environmental Impact Statement (GEIS)  
for License Renewal for the Braidwood Nuclear Power Station  
Docket number NRC-2013-0169**

September 27, 2013

Nuclear Energy Information Service is a 32 year old Illinois environmental organization based in Chicago. We wish to make the following comments on the above Docket, to be entered into the official record.

**Prefacing Remarks: a "Nuclear Safety Culture"**

In oral comments made at the public meeting held by NRC at the Braidwood Station on August 20, 2013, we made the following observation about NRC's expected role in the license renewal process.

For the better part of a year now, NRC has been admonishing utilities in Region III on their "lack of a safety culture." In September, 2012, at the Palisades reactor in Michigan, NRC presented a slide show, instructing utilities what it expects and illustrating the characteristics of an acceptable "nuclear safety culture":

*"Nuclear Safety Culture* is the core values and behaviors resulting from a collective commitment by leaders and individuals to emphasize safety over competing goals to ensure protection of people and the environment." [NRC side show, Palisades reactor presentation, 9/12/12]

In a Q&A session with then Region III director Chuck Casto, we asked what such "competing goals" might be, and suggested things like: schedules, procedures, how management and regulators listen to and act upon worker complaints. Mr. Casto stated,

"We're trying to go beyond what's required." (emphasis ours)

A REAL, AUTHENTIC nuclear safety culture will evidence behaviors that go beyond the mere letter of the requirements. Evaluations of all kinds will therefore be more than mere check-box exercises in compliance to the letter of the regulations. If NRC expects utilities to operate with that mindset, then NRC needs to lead by example, and regulate with that mindset as well.

If NRC is serious about establishing a nuclear safety culture, then we will be forced to evaluate NRC's role in this relicensing proceeding with those same standards: going beyond what's required, what's perfunctory. This will mean entertaining notions and requiring lines of investigation into matters that are "outside the box" of existing regulations in some cases. The regulations serve as the floor, not the ceiling, of compliance that will "ensure protection of people and the environment."

It is with this attitude that we will evaluate NRC's performance in this license renewal proceeding.

**Comment 1: The ER submitted by Exelon is incomplete in not providing evidence that it has examined the projected effects of predicted Illinois climate disruption on future operations. NRC regulations are inadequate for not requiring this examination.**

Consideration of climate disruption projections is not an extraordinary request. Many other sections of Exelon's applications require them to project into the future their analysis of how Braidwood will be operating at some future date. An issue that could well determine whether Braidwood has sufficient water to either operate or sufficiently cool safety-related functions at the plant should not be cavalierly dismissed; it should be at the top of the list for evaluation.

Current climate models suggest that Illinois will gradually assume a climate resembling that of East Texas or Mississippi by mid-Century (within the period of operational life extension of Braidwood), depending on whether one is running a low- or high- emissions model. Summer temperatures are expected to increase on average from 3.3° to 8.6° F. While total precipitation is expected to remain about the same, seasonal variation will increase, and frequency of heavy precipitation events—measured in terms of number of days per year with more than 2 inches of rain, and annual maximum 24-hr, 5-day and 7-day rainfall totals—is likely to continue to increase, particularly closer to the Great Lakes, a factor which will have implications in the Comments below.

The implications of these projections do not seem to be incorporated into the ER analysis provided by Exelon, which invariably result in the conclusion of "small" impact. The ER clearly states that the Kankakee River is a "small river" by definition. It is essential for the adequate functioning of the ultimate heat sink for the reactors – the cooling pond. Increased evaporation and less recharge in a climate disrupted Illinois will add stress to the pond, which according to the Exelon ER experienced 5 fish kills from 2001 to 2007. [Sec. 2.2.4.4., p. 2-15], as a result of high water temperatures and low dissolved oxygen levels in summer. These conditions are expected to worsen over time in stressed waterways.

Make-up water for the mechanical draft cooling tower system relies on the Kankakee River. Decreased volume and flow rates expected under projected climate disruption models for Illinois could have an adverse effect on cooling functions at Braidwood.

Exelon's historic penchant to request license variances on water use and thermal discharge from IEPA suggests the possibility for greater effect than is characterized in the Exelon ER document. The alternative would be curtailment of operation, which also does not appear factored into the Exelon ER in any manner.

**Recommendation:** *NRC should require a more thorough projection of water use at Braidwood, based on the best possible climate modeling for Illinois between now and mid-century. Because this variation in climate disruption and its effects are local/regional, it falls outside the scope of a generic analysis or regulation.*

**Comment 2: Analysis of socio-economic impacts are incomplete. No analysis of impacts of early or unexpected closure are considered or provided.**

The Exelon ER documents a significant local tax impact for the presence of the Braidwood Nuclear Station, yet only addresses the positive impacts. No mention or analysis of negative impacts resulting from abrupt, planned, or unexpected early closure of Braidwood is presented. This is a significant omission.

According to the Exelon ER Braidwood represents less than 2% of the Will County total tax base, roughly \$20 million annually for the years 2008 through 2010. However, it accounts for upwards of 78% of the Reed-Custer School District 255U's adjusted property tax levy. These are not insignificant amounts for the local communities around Braidwood, as opposed to the county as a whole. Their abrupt disappearance would wreak local economic havoc on the affected governmental and essential service entities' ability to operate; while leaving Will County as a whole largely unaffected.

The ER either fails to recognize or mention at all some of the possible events that could result in such a situation:

- Unexpected major accident, resulting in immediate and presumably premature closure
- NRC ordered shut down
- Exelon's unilateral decision to close the plant on economic or other grounds, as it did at Zion, resulting in an immediate loss of about 55% of Zion's tax base
- Devaluation through sale, as occurred at the Clinton station, resulting in enormous loss of tax base
- Eventual old-age, license expiration closure (the outcome most hoped for)

Exelon even provides a possible indication of the kinds of circumstances that would lead it to close Braidwood on economic grounds. Section 3.2 on Refurbishment indicates that Exelon is well aware that Braidwood Unit 2 may need a steam generator replacement during the extended operational lifetime. It is also tracking the potential for reactor vessel head replacements at its operating PWRs at both Byron and Braidwood. Should either or both of these conditions emerge at a time of deflated energy prices, or at a time Exelon acknowledges might occur as early as 2024 when renewables are much more cost competitive and approaching base load capabilities (Sec. 7.2, page 7-9), or as the result of multi-season drought curtailing water availability – Exelon being a business will certainly make the calculations it made when it closed Zion, and decide if Braidwood should continue to operate.

In this omission the ER makes the same mistake the U.S. Government made when it invaded Iraq – *it had no exit strategy*. To simply assume that the only socio-economic effects of Braidwood's presence will be positive ones is simply irrational.

Finally, the Exelon ER is somewhat dismissive of the effects that Braidwood seems to have on local property values. Exelon seems to focus primarily on "property value," as opposed to salability, which anecdotally seems to be of much greater concern in the communities directly surrounding the reactor site. It matters little what your property is "worth" if you are trying to sell it to move out of the area and can't. Such figures should be easy to obtain from local realtors, and should be included in the ER.

**Recommendation:** *Planning for some kind of eventual closure must be made long before it happens to minimize economic and service disruptions to the entities whose tax base will be affected. Debate about the license extension serves as a good reminder of this fact, and an opportunity to take action. We recommend that dependent governmental and taxing entities begin formal negotiations with Exelon to establish an escrowed "closure mitigation fund," based on some mutually agreeable assessment and payment structure, so that dependent entities will have some kind of temporary funds available to soften the economic blow of closure, and not radically disrupt essential services. Salability of property should be investigated and reported more directly, especially in the communities adjacent to the plant.*

### **Comment 3: Incomplete and faulty analysis in Section 7.0 - Alternatives to the Proposed Action**

In reviewing the scenarios Exelon examined to come up with its evaluations concerning the viability of options replacing the power output of Braidwood, we find that Exelon uses information that is perhaps not current, and leaves out significant other real world options for consideration and analysis:

- *Role of renewables too narrow, inaccurate, inappropriate:* Exelon tends to treat the renewable energy resources as if they are just some variant of traditional fossil and nuclear plants. They are not. As a result they analyze these renewables solely in ways amenable to their own narrow view of functioning, which is not necessarily the best or optimal use of the particular renewable energy resource. For example only centralized energy station use of both wind and solar are considered, with no consideration of "distributed generation" in any meaningful way. Pairing up one renewable with natural gas is the only permutation analyzed, when pairing up of solar with wind to compliment the strengths of both is ignored. Further, it is not clear the degree to which the operational efficiencies of these renewables either in the present or the future is accurately analyzed.

Improvements in technology, higher wind towers, increased solar panel efficiencies, etc. are all very real prospects even before the 2024/26 license expirations of the two Braidwood nuclear reactors. We believe that this section needs a serious revision, perhaps from an outside independent consultant to more accurately reflect both the real, and the realistically anticipated world of renewable energy contributions.

- *Anachronistic business model used exclusively:* The Exelon ER examines the contributions of all competitors to the Braidwood nuclear plant – not just the renewables – on the assumption that Braidwood can only be replaced by “baseload” power. While indeed that is the way things are structured at present, current trends and real world energy discussions are starting to envision the end of this business model and approach. The notion of “distributed power” has been around for over a decade. Recently FERC officials have seriously talked about “baseload” being a concept of the past, which technological developments in both generation and grid dispatching will render increasingly meaningless. Some major US utilities are even setting up exploration of a non-baseload oriented system in trial increments within their existing systems.

The purpose of the license extension proceeding for Braidwood is NOT to analyze its past performance and compare it to the present; it is to look at its present performance and extrapolate that out an additional 20 years (31 and 33 years from now), attempting to envision the energy world at that time to see if the “present” can compete or even function in that world. Insufficient attention has been paid to this analysis in the Exelon ER. Section 7 reads like a convenient cherry-picked self-fulfilling prophecy.

Even Exelon itself cannot think that the business model it uses today will be the one that Braidwood will operate in from 2024 to 2044. A way to prove that is to ask: does Exelon TODAY operate with the business model it had in 2002 (11 years AGO)? This was just a handful of years out from utility deregulation and unbundling of utilities here in Illinois. Exelon did not even exist. Its predecessor’s predecessor was just in the process of selling off its coal plants.

Before these critiques are summarily dismissed by NRC as out of the scope of this docket, we would remind you that a “nuclear safety culture” demands that kind of “out of the box” thinking and analysis to “...ensure protection of people and the environment.” You said so yourselves. Analyzing the functioning of Braidwood in the energy world of the future will have serious implications for Exelon’s analysis of socio-economic impacts. Until that analysis is done, their “small” conclusions must be held in serious doubt.

**Recommendation:** *Order Exelon to re-examine its Section 7 comparisons, incorporating: 1.) distributed generation and decline of the “baseload power” business model; 2.) better data on the capabilities of wind and solar, based on expected improvements in technology, or better and more optimal use decisions; 3.) expected upgrades, improvements and additions of grid and dispatching systems in the MISO and PJM Interconnection areas.*

**Comment 4: Sec. 5.0 - Assessment of New and Significant Information**

Since, “...The environmental report must contain any new and significant information regarding the environmental impacts of license renewal of which the applicant is aware.” [10 CFR 51.53(c)(3)(iv)], and Exelon and NRC have now been made of new information not previously analyzed, the law requires that this information be researched, and reported in a revised ER.

Since the climate disruption issues raised above are uniquely local in their manifestation and effects, a generic ruling on them is both inappropriate and would be inaccurate.

Since no apparent investigation has been done concerning either the effects of climate disruption, or the effects of abrupt closure on socio-economic factors, results would certainly “...lead to an impact finding that

presents a seriously different picture of the environmental impact of the proposed project in comparison with what was previously envisioned.” [Sec. 5.1, page 5-3]

We appreciate the opportunity to offer these observations. We look forward to NRC incorporating these recommendations in future license extension proceedings.