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10 CFR 50.90
10 CFR 50, Appendix E
10 CFR 50.4

RS-14-115
RA-14-032
TMI-14-046

May 30, 2014

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

Braidwood Station, Units 1 and 2
Facility Operating License Nos. NPF-72 and NPF-77
NRC Docket Nos. STN 50-456, 50-457, and 72-73

Byron Station, Units 1 and 2
Facility Operating License Nos. NPF-37 and NPF-66
NRC Docket Nos. 50-454, 50-455, and 72-68

Clinton Power Station, Unit 1
Facility Operating License No. NPF-62
NRC Docket No. 50-461

Dresden Nuclear Power Station, Units 1, 2 and 3
Facility Operating License No. DPR-2
Renewed Facility Operating License Nos. DPR-19 and DPR-25
NRC Docket Nos. 50-237, 50-249, and 72-37

LaSalle County Station, Units 1 and 2
Facility Operating License Nos. NPF-11 and NPF-18
NRC Docket Nos. 50-373, 50-374, 72-70

Limerick Generating Station, Units 1 and 2
Facility Operating License Nos. NPF-39 and NPF-85
NRC Docket Nos. 50-352, 50-353, and 72-65

Oyster Creek Nuclear Generating Station
Renewed Facility Operating License No. DPR-16
NRC Docket Nos. 50-219 and 72-15

Peach Bottom Atomic Power Station, Units 1, 2 and 3
Facility Operating License DPR-12
Renewed Facility Operating License Nos. DPR-44 and DPR-56
NRC Docket Nos. 50-171, 50-277, 50-278 and 72-29

AX45
FSME 20
NMSS26

Quad Cities Nuclear Power Station, Units 1 and 2
Renewed Facility Operating License Nos. DPR-29 and DPR-30
NRC Docket Nos. 50-254, 50-265, and 72-53

Three Mile Island Nuclear Station, Unit 1
Renewed Facility Operating License No. DPR-50
NRC Docket No. 50-289

Three Mile Island Nuclear Station, Unit 2
Facility Possession-Only No. DPR-73
NRC Docket No. 50-320

Subject: License Amendment Request to Adopt Emergency Action Level Schemes Pursuant to NEI 99-01, Revision 6, *"Development of Emergency Action Levels for Non-Passive Reactors"*

- References:
- 1) Letter from Mark Thaggard (U.S. Nuclear Regulatory Commission) to Susan Perkins-Grew (Nuclear Energy Institute) - *U.S. Nuclear Regulatory Commission Review and Endorsement of NEI 99-01, Revision 6, November 2012*, dated March 28, 2013
 - 2) NRC Regulatory Issue Summary (RIS) 2005-02, Revision 1, *"Clarifying the Process for Making Emergency Plan Changes,"* dated August 19, 2011

In accordance with 10 CFR 50.90, *"Application for amendment of license, construction permit, or early site permit,"* Exelon Generation Company, LLC (Exelon) requests amendments to the licenses for the facilities listed above.

Specifically, the proposed changes involve revising the Emergency Plans for the affected facilities to adopt the Nuclear Energy Institute's (NEI's) revised Emergency Action Level (EAL) schemes described in NEI 99-01, Revision 6, *"Development of Emergency Action Levels for Non-Passive Reactors,"* which have been endorsed by the NRC as documented in an NRC letter dated March 28, 2013 (Reference 1).

10 CFR 50, Appendix E, Section IV.B.2 stipulates that a licensee desiring to change its entire EAL scheme shall submit an application for an amendment to its license and receive NRC approval before implementing the change. Regulatory Issue Summary 2005-02, Revision 1 (Reference 2) also indicates that a revision to an entire EAL scheme, from NUREG-0654, *"Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants,"* to another NRC-endorsed EAL scheme, must be submitted for prior NRC approval as specified in Section IV.B of Appendix E to 10 CFR 50.

Therefore, pursuant to 10 CFR 50.90, Exelon hereby requests NRC review and approval of revisions to Emergency Plan EALs for the following facilities:

- Braidwood Station, Units 1 and 2
- Byron Station, Units 1 and 2
- Clinton Power Station, Unit 1
- Dresden Nuclear Power Station, Units 1, 2 and 3
- LaSalle County Station, Units 1 and 2
- Limerick Generating Station, Units 1 and 2
- Oyster Creek Nuclear Generating Station
- Peach Bottom Atomic Power Station, Units 1, 2 and 3
- Quad Cities Nuclear Power Station, Units 1 and 2
- Three Mile Island Nuclear Station, Units 1 and 2

Exelon's currently approved Emergency Plan EAL schemes are based on the guidance established in NEI 99-01, Revision 5, "*Methodology for Development of Emergency Action Levels.*" Exelon is proposing to adopt the EAL schemes based on the latest NRC-endorsed guidance, which are described in NEI 99-01, Revision 6.

Attachment 1 provides an evaluation of the proposed changes. Attachments 2 through 11 provide additional supporting information related to each site's Radiological Emergency Plan Annex. The information contained in Attachments 2 through 11 includes the following:

- EAL Comparison Matrix Document
- EAL Red-Line Basis Document
- EAL Basis Document

The proposed changes contained in this submittal have been reviewed by the Plant Operations Review Committee (PORC) at each of the affected stations and have been approved by the Nuclear Safety Review Board in accordance with the requirements of the Exelon Quality Assurance Program.

Exelon requests approval of the proposed changes by May 30, 2015, with a targeted implementation period for the plants within 90 days pending outage schedules and/or required training cycles.

There are no regulatory commitments contained in this submittal.

Pursuant to 10 CFR 50.91, "*Notice for public comment; State consultation,*" paragraph (b), Exelon is notifying the Commonwealth of Pennsylvania, the State of New Jersey, and the State of Illinois of this application for license amendments by transmitting a copy of this letter and its supporting attachments to the designated state officials.

If you have any questions concerning this submittal, please contact Richard Gropp at (610) 765-5557.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 30th day of May 2014.

Respectfully,



James Barstow
Director, Licensing and Regulatory Affairs
Exelon Generation Company, LLC

Attachments:

- Attachment 1 - Evaluation of Proposed Changes
- Attachment 2 - Discussion of Revision to the Radiological Emergency Plan Annex for Braidwood Station
 - Enclosure 2A - EAL Comparison Matrix Document
 - Enclosure 2B - EAL Red-Line Basis Document
 - Enclosure 2C - EAL Basis Document
- Attachment 3 - Discussion of Revision to the Radiological Emergency Plan Annex for Byron Station
 - Enclosure 3A - EAL Comparison Matrix Document
 - Enclosure 3B - EAL Red-Line Basis Document
 - Enclosure 3C - EAL Basis Document
- Attachment 4 - Discussion of Revision to the Radiological Emergency Plan Annex for Clinton Power Station
 - Enclosure 4A - EAL Comparison Matrix Document
 - Enclosure 4B - EAL Red-Line Basis Document
 - Enclosure 4C - EAL Basis Document
- Attachment 5 - Discussion of Revision to the Radiological Emergency Plan Annex for Dresden Station
 - Enclosure 5A - EAL Comparison Matrix Document
 - Enclosure 5B - EAL Red-Line Basis Document
 - Enclosure 5C - EAL Basis Document
- Attachment 6 - Discussion of Revision to the Radiological Emergency Plan Annex for LaSalle County Station
 - Enclosure 6A - EAL Comparison Matrix Document
 - Enclosure 6B - EAL Red-Line Basis Document
 - Enclosure 6C - EAL Basis Document

- Attachment 7 - Discussion of Revision to the Radiological Emergency Plan Annex for Limerick Generating Station
- Enclosure 7A - EAL Comparison Matrix Document
 - Enclosure 7B - EAL Red-Line Basis Document
 - Enclosure 7C - EAL Basis Document
- Attachment 8 - Discussion of Revision to the Radiological Emergency Plan Annex for Oyster Creek Nuclear Generating Station
- Enclosure 8A - EAL Comparison Matrix Document
 - Enclosure 8B - EAL Red-Line Basis Document
 - Enclosure 8C - EAL Basis Document
- Attachment 9 - Discussion of Revision to the Radiological Emergency Plan Annex for Peach Bottom Atomic Power Station
- Enclosure 9A - EAL Comparison Matrix Document
 - Enclosure 9B - EAL Red-Line Basis Document
 - Enclosure 9C - EAL Basis Document
- Attachment 10 - Discussion of Revision to the Radiological Emergency Plan Annex for Quad Cities Nuclear Station
- Enclosure 10A - EAL Comparison Matrix Document
 - Enclosure 10B - EAL Red-Line Basis Document
 - Enclosure 10C - EAL Basis Document
- Attachment 11 - Discussion of Revision to the Radiological Emergency Plan Annex for Three Mile Island Station
- Enclosure 11A - EAL Comparison Matrix Document
 - Enclosure 11B - EAL Red-Line Basis Document
 - Enclosure 11C - EAL Basis Document

cc: w/o Attachments (CD copy)

Regional Administrator – NRC Region I
Regional Administrator – NRC Region III
NRC Senior Resident Inspector – Braidwood
NRC Senior Resident Inspector – Byron
NRC Senior Resident Inspector – Clinton
NRC Senior Resident Inspector – Dresden
NRC Senior Resident Inspector – LaSalle
NRC Senior Resident Inspector – Limerick
NRC Senior Resident Inspector – Oyster Creek
NRC Senior Resident Inspector – Peach Bottom
NRC Senior Resident Inspector – Quad Cities
NRC Senior Resident Inspector – Three Mile Island
NRC Project Manager, NRR – Exelon Fleet
NRC Project Manager, NRR – Braidwood
NRC Project Manager, NRR – Byron
NRC Project Manager, NRR – Clinton
NRC Project Manager, NRR – Dresden

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cc: continued

NRC Project Manager, NRR – LaSalle
NRC Project Manager, NRR – Limerick
NRC Project Manager, NRR – Oyster Creek
NRC Project Manager, NRR – Peach Bottom
NRC Project Manager, NRR – Quad Cities
NRC Project Manager, NRR – Three Mile Island
R. R. Janati, Commonwealth of Pennsylvania
S. Gray, State of Maryland
Director, Bureau of Nuclear Engineering, New Jersey
Department of Environmental Protection
Illinois Emergency Management Agency
Division of Nuclear Safety

ATTACHMENT 1

EVALUATION OF PROPOSED CHANGES

Subject: License Amendment Request to Adopt Emergency Action Level Schemes Pursuant to NEI 99-01, Revision 6, *"Development of Emergency Action Levels for Non-Passive Reactors"*

- 1.0 SUMMARY DESCRIPTION
- 2.0 BACKGROUND
- 3.0 DETAILED DESCRIPTION
- 4.0 TECHNICAL EVALUATION
- 5.0 REGULATORY EVALUATION
 - 5.1 Applicable Regulatory Requirements/Criteria
 - 5.2 Precedent
 - 5.3 No Significant Hazards Consideration
 - 5.4 Conclusions
- 6.0 ENVIRONMENTAL CONSIDERATION
- 7.0 REFERENCES

1.0 SUMMARY DESCRIPTION

Exelon Generation Company, LLC, (Exelon) is requesting amendments to the Facility Operating Licenses for the following facilities:

- Braidwood Station, Units 1 and 2
Facility Operating License Nos. NPF-72 and NPF-77
- Byron Station, Units 1 and 2
Facility Operating License Nos. NPF-37 and NPF-66
- Clinton Power Station, Unit 1
Facility Operating License NPF-62
- Dresden Nuclear Power Station, Units 1, 2 and 3
Facility Operating License No. DPR-2
Renewed Facility Operating License Nos. DPR-19 and DPR-25
- LaSalle County Station, Units 1 and 2
Facility Operating Licenses Nos. NPF-11 and NPF-18
- Limerick Generating Station, Units 1 and 2
Facility Operating Licenses Nos. NPF-39 and NPF-85
- Oyster Creek Nuclear Generating Station
Renewed Facility Operating License No. DPR-16
- Peach Bottom Atomic Power Station, Units 1, 2 and 3
Facility Operating License DPR-12
Renewed Facility Operating License Nos. DPR-44 and DPR-56
- Quad Cities Nuclear Power Station, Units 1 and 2
Renewed Facility Operating License Nos. DPR-29 and DPR-30
- Three Mile Island Nuclear Station, Units 1 and 2
Renewed Facility Operating License No. DPR-50
Facility Possession-Only License No. DPR-73

The proposed changes involve revising Exelon's currently approved Emergency Plan (EP) Emergency Action Level (EAL) schemes which are based on the Nuclear Energy Institute's (NEI's) guidance established in NEI 99-01, Revision 5, "*Methodology for Development of Emergency Action Levels.*" Exelon is proposing to adopt the EAL schemes based on the guidance provided in NEI 99-01, Revision 6, "*Development of Emergency Action Levels for Non-Passive Reactors,*" which has been endorsed by the NRC (Reference 1).

The proposed EAL changes were reviewed considering the requirements of 10 CFR 50.54(q), paragraph (b) of 10 CFR 50.47, "*Emergency plans,*" 10 CFR 50 Appendix E, "*Emergency Planning and Preparedness for Production and Utilization Facilities,*" Regulatory Issue Summary (RIS) 2003-18, "*Use of NEI 99-01, Methodology for Development of Emergency Action Levels*" (including supporting supplements), and RIS 2005-02, Revision 1, "*Clarifying the Process for Making Emergency Plan Changes.*" The proposed changes to the EAL schemes contained in this submittal do not reduce the capability to meet the applicable emergency planning requirements established in 10 CFR 50.47 and 10 CFR 50, Appendix E. Adopting NEI 99-01, Revision 6 will continue to provide consistent emergency classifications internally and between the Exelon plants to the greatest extent possible, limited only by plant-specific design or location.

10 CFR 50, Appendix E, Section IV.B.2 requires prior NRC approval when a licensee is changing from one NRC-approved EAL scheme to another EAL scheme.

2.0 BACKGROUND

NEI 99-01, Revision 6 addresses lessons-learned since the implementation of NEI 99-01, Revision 5. In February 2008, NEI published NEI 99-01, Revision 5, in order to clarify the development guidance for numerous EALs, and enhance the guidance associated with the development of security-related EALs. In November 2012, NEI published NEI 99-01, Revision 6. The NRC formally endorsed the NEI 99-01, Revision 6, guidance as documented in a letter dated March 28, 2013 (Reference 1).

NEI 99-01, Revision 6, represents the most recently accepted EAL methodology endorsed by the NRC. The latest revision addresses changes recommended by the NRC in a letter to NEI on October 12, 2010, along with many enhancements identified by industry during implementation of Revision 5. These enhancements include:

1. Revising EAL Basis format (Sections 5.5 through 5.11) to separate Developer Notes from Technical Basis Information.
2. Revising EAL Basis (under proposed Developer Notes) to clarify how specific instrumentation, alarms, or readings should be developed.
3. Clarifying where site-specific definitions are required (e.g., CONTAINMENT CLOSURE).
4. Clarifying or proposing alternatives on the seismic and fire EALs for licensees where licensees may not have adequate instrumentation to ensure timely classification from within the Control Room.
5. Revising NEI 99-01 guidance information to include a section for development of EALs applicable to new "non-passive" designs (e.g., digital instrument and controls, etc.).
6. Revising front sections of the NEI 99-01 document to eliminate redundancy and inconsistency and to clearly differentiate between information that is useful for understanding how the document was put together and information that is expected to be carried over into a licensee's technical basis document.
7. Conducting a review of all Unusual Events (UEs) to determine if they should be revised/eliminated or added to include a discussion of any revision proposals for the corresponding Alerts. (Note: this is primarily for events that are based upon situations where emergency response organization activation is the goal rather than a precursor to escalated EALs.)

3.0 DETAILED DESCRIPTION

The proposed changes involve revising Exelon's EAL schemes that are currently based on NEI 99-01, Revision 5, to a scheme based on NEI 99-01, Revision 6, which has been endorsed by the

NRC (Reference 1). Enhancements over earlier revision guidance (i.e., NEI 99-01, Revision 5) include:

1. Clarifying numerous EALs that have been typically misinterpreted by the industry in the development of their site-specific EAL scheme.
2. Clarifying the intent of EALs that have been historically misclassified.
3. Incorporating lessons-learned from industry events (i.e., Fukushima and others) and NUREG/CR-7154, *"Risk Informing Emergency Preparedness Oversight: Evaluation of Emergency Action Levels – A Pilot Study of Peach Bottom, Surry and Sequoyah."*
4. Performing a detailed review of the guidance to re-validate that the EALs are appropriate and are at the necessary emergency classification level based upon 32 years of industry and NRC experience with EAL scheme development and implementation.

Comparison Matrix

A Comparison Matrix for each station has been developed that provides a tabular format of the Initiating Conditions (ICs), Mode Applicability, and EALs (Threshold Values) in NEI 99-01, Revision 6 along with the proposed EALs. The matrix provides a means of assessing the proposed EAL in terms of *"Differences"* and *"Deviations"* from the NRC-endorsed guidance provided in NEI 99-01, Revision 6. The Comparison Matrix for each station is included in the corresponding attachment, as noted below.

- Attachment 2, Enclosure 2A - Braidwood Station
- Attachment 3, Enclosure 3A - Byron Station
- Attachment 4, Enclosure 4A - Clinton Power Station
- Attachment 5, Enclosure 5A - Dresden Nuclear Power Station
- Attachment 6, Enclosure 6A - LaSalle County Station
- Attachment 7, Enclosure 7A - Limerick Generating Station
- Attachment 8, Enclosure 8A - Oyster Creek Nuclear Generating Station
- Attachment 9, Enclosure 9A - Peach Bottom Atomic Power Station
- Attachment 10, Enclosure 10A - Quad Cities Nuclear Power Station
- Attachment 11, Enclosure 11A - Three Mile Island Nuclear Station

The proposed EAL changes were evaluated in accordance with applicable regulatory requirements (e.g., 10 CFR 50.54(q) and Appendix E, Section IV.B.1). The evaluation assessed the conformance of the proposed EAL changes to those described in the NEI 99-01, Revision 6 guidance. The evaluation determined if the proposed EAL wording change resulted in *"No Change"* to the guidance, a *"Difference"* in the wording provided, or a *"Deviation"* from the NEI guidance contained in Revision 6.

Any items considered to be *"Differences"* or *"Deviations"* were based on the definitions provided in RIS 2003-18, *"Use of NEI 99-01, Methodology for Development of Emergency Action Levels,"*

and supporting supplements (References 4, 5, and 6). The RIS and supporting supplements were issued to clarify technical positions regarding the revision of EALs. Specifically, the RIS documentation provides clarification on the level of detail licensees need to provide to support proposed changes to EALs. The RIS documents suggest that specific information be included with the EAL revision submittal to help facilitate the review process. The RIS information defines an EAL "*Difference*" and "*Deviation*" as follows:

A "*Difference*" is an EAL change where the basis scheme guidance (e.g., NUREG, NUMARC, and NEI) differs in wording but agrees in meaning and intent, such that classification of an event would be the same, whether using the basis scheme guidance or the site-specific proposed EAL. Examples of "*Differences*" include the use of site-specific terminology or administrative reformatting of site-specific EALs.

A "*Deviation*" is an EAL change where the basis scheme guidance differs in wording and is altered in meaning or intent, such that classification of the event could be different between the basis scheme guidance and the site-specific proposed EAL. Examples of "*Deviations*" include the use of altered mode applicability, altering key words or time limits, or changing words of physical reference (protected area, safety-related equipment, etc.).

Any "*Differences*" identified between the NEI 99-01, Revision 6 EALs as approved by the NRC and the proposed EALs being developed by Exelon in accordance with NEI 99-01, Revision 6, have been identified and are listed in each stations' Comparison Matrix (refer to specific attachments) as well as the Global Differences listed below.

Global Differences

The following "*Differences*" apply throughout the set of EALs and are not specifically identified as "*Differences*" in the Comparison Matrix:

1. The NEI phrase "Notification of Unusual Event" has been changed to "Unusual Event" to sustain common Exelon terminology.
2. BWR Mode applicability identifiers (numbers/letter) modify the NEI mode applicability names as follows: 1 - Power Operation, 2 - Startup, 3 - Hot Shutdown, 4 - Cold Shutdown, 5 - Refueling, D - Defueled
3. To the extent possible, IC and EAL identification numbering has been retained from the applicable station's existing EALs.
4. The following phrases were changed in EAL threshold values for brevity:
 - Greater Than is presented symbolically as: >
 - Less Than is presented symbolically as: <
 - Greater Than or Equal To is presented symbolically as: ≥
 - Less Than or Equal To is presented symbolically as: ≤

5. Numerical values, signs, and key words of Threshold Values may be **bolded** for emphasis.
6. NEI ICs and EALs (Fission Product Barrier Threshold) which contain and/or connectors are separated into logic statements **AND, OR, or EITHER** where appropriate to be consistent with the applicable station's EAL presentation scheme.
7. NEI utilizes Notes related to EALs that contain a time qualifier:

Example:

Note: The Emergency Director should declare the Unusual Event promptly upon determining that 15 minutes has been exceeded, or will likely be exceeded.

The Notes used would apply to the various types of events (i.e., General Emergency, Site Area Emergency, Alert, or Unusual Event) and would delineate the time qualifier for the specific EALs.

The applicable Notes have been revised for clarity as follows:

Note: The Emergency Director should declare the event promptly upon determining that the applicable time has been exceeded, or will likely be exceeded.

The rewording for clarity did not alter or change the intent of the Note.

Exelon determined that these "*Differences*" do not result in a reduction in effectiveness or change the intent of the new NEI 99-01, Revision 6 EALs.

Any plant EAL (IC or Threshold Value) that does not meet the "intent" of the NEI 99-01, Revision 6 guidance, or may result in an event being classified differently from the guidance, would be identified as a "*Deviation*." The evaluation determined that there are no "*Deviations*" in converting from the existing EALs based on NEI 99-01, Revision 5 as currently approved, to an EAL scheme based on the NEI 99-01, Revision 6 guidance.

Each station's Emergency Plan Annex contains the station's EALs. The proposed EAL changes are discussed in the Attachments as indicated below.

- Attachment 2 - Braidwood Station
- Attachment 3 - Byron Station
- Attachment 4 - Clinton Power Station
- Attachment 5 - Dresden Nuclear Power Station
- Attachment 6 - LaSalle County Station
- Attachment 7 - Limerick Generating Station
- Attachment 8 - Oyster Creek Nuclear Generating Station
- Attachment 9 - Peach Bottom Atomic Power Station
- Attachment 10 - Quad Cities Nuclear Power Station
- Attachment 11 - Three Mile Island Nuclear Station

4.0 TECHNICAL EVALUATION

The proposed changes have been evaluated to determine whether applicable regulations and requirements continue to be met. NEI 99-01 guidance methodology includes many years of development along with use and implementation. The guidance has been subject to NRC reviews and approval. The Exelon EAL schemes currently in place for the ten referenced stations are based on the EAL methodology outlined in NEI 99-01, Revision 5. NEI 99-01, Revision 6 is the latest guidance endorsed by the NRC and provides guidance to nuclear power plant operators for the development of a site-specific emergency classification scheme.

10 CFR 50.47(b)(4) stipulates that Emergency Plans include a standard emergency classification and action level scheme. This scheme is a fundamental component of an Emergency Plan, in that it provides the defined thresholds that will allow site personnel to rapidly implement a range of pre-planned emergency response measures. An emergency classification scheme also facilitates timely decision-making by an Offsite Response Organization (ORO) concerning the implementation of precautionary or protective actions for the public.

NEI 99-01, Revision 6 contains a set of generic ICs, EALs, and fission product barrier status thresholds. It also includes supporting technical basis information, developer notes, and recommended classification instructions for users. The methodology described in this document is consistent with NRC requirements and guidance. In particular, this methodology was specifically endorsed by the NRC as documented in a March 28, 2013, letter (Reference 1) and determined to provide an acceptable approach in meeting the requirements of 10 CFR 50.47(b)(4), applicable requirements of 10 CFR 50, Appendix E, and the associated planning standard evaluation elements established in NUREG-0654/ FEMA-REP-1, Revision 1, "*Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants*," dated November 1980.

10 CFR 50, Appendix E, Section IV.B.2 stipulates that a licensee desiring to change its entire EAL scheme shall submit an application for an amendment to its license and receive NRC approval before implementing the change. RIS 2005-02, Revision 1 (Reference 2) also indicates that a revision to an entire EAL scheme, from NUREG-0654, "*Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants*," to another NRC-endorsed EAL scheme, must be submitted for prior NRC approval as specified in Section IV.B of Appendix E to 10 CFR 50.

The proposed changes to the EAL schemes for adopting the NEI 99-01, Revision 6 guidance do not reduce the capability to meet the applicable emergency planning requirements established in 10 CFR 50.47 and 10 CFR 50, Appendix E.

The proposed changes to adopt the NEI 99-01, Revision 6, EAL schemes will continue to provide consistent emergency classifications between the Exelon facilities to the greatest extent possible, limited only by plant-specific design or location. Changes to Exelon's Emergency Plan Plant Annexes, and procedures resulting from implementation of revised EALs will be evaluated in accordance with the requirements of 10CFR 50.54(q), subsequent to NRC approval.

Accordingly, pursuant to the requirements of 10 CFR 50, Appendix E, Section IV.B.2, Exelon requests NRC review and approval of the proposed changes to the EAL schemes as license

amendment requests for the above described stations and Facility Operating Licenses in accordance with 10 CFR 50.90.

5.0 REGULATORY EVALUATION

5.1 Applicable Regulatory Requirements/Criteria

The proposed changes have been evaluated to determine whether applicable regulations and requirements continue to be met.

The regulations in 10 CFR 50.54(q) provide direction to licensees seeking to revise their Emergency Plan. The requirements related to nuclear power plant Emergency Plans are given in the standards in 10 CFR 50.47, "*Emergency plans*," and the requirements of Appendix E, "*Emergency Planning and Preparedness for Production and Utilization Facilities*," to 10 CFR 50.

Paragraph (a)(1) to 10 CFR 50.47 states that no operating license for a nuclear power reactor will be issued unless a finding is made by the NRC that there is reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency. Section 50.47 establishes standards that onsite and offsite emergency response plans must meet for the NRC staff to make a positive finding that there is reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency. One of these standards, 10 CFR 50.47(b)(4), stipulates that Emergency Plans include a standard emergency classification and action level scheme.

Section IV.B, "*Assessment Actions*," to 10 CFR 50, Appendix E, "*Emergency Planning and Preparedness for Production and Utilization Facilities*," stipulates that Emergency Plans include EALs, which are to be used as criteria for determining the need for notification and participation of local and State agencies, and for determining when and what type of protective measures should be considered to protect the health and safety of individuals both onsite and offsite. EALs are to be based on plant conditions and instrumentation, as well as onsite and offsite radiological monitoring. Section IV.B of Appendix E provides that initial EALs shall be discussed and agreed on by the applicant and State and local authorities, be approved by the NRC, and reviewed annually thereafter with State and local authorities. Therefore, a revision will require NRC approval prior to implementation if it involves: 1) changing from one EAL scheme to another, such as from an EAL scheme based on NUREG-0654/FEMA-REP-1 to one based on NUMARC/NESP-007 or NEI 99-01; 2) the licensee is proposing an alternate method for complying with the regulations; or 3) the EAL revision proposed by the licensee decreases the effectiveness of the Emergency Plan.

NRC RIS 2005-02, Revision 1, "*Clarifying the Process for Making Emergency Plan Changes*," (Reference 2) issued in August 2009, also discusses that a change in an EAL scheme to incorporate the improvements provided in NUMARC/NESP-007 or NEI 99-01 would not decrease the overall effectiveness of the EP and would not expand a licensee's operating authority beyond that previously authorized by NRC. However, due to the potential safety significance of the change, the change needs prior NRC review and approval. This approval would be granted via an NRC letter and supporting Safety Evaluation Report (SER).

Exelon has determined that the proposed changes do not require any exemptions or relief from regulatory requirements and do not affect conformance with any General Design Criteria differently than described in the affected plants' Updated Final Safety Analysis Reports (UFSARs).

5.2 Precedent

There is no specific industry precedent for a licensee submitting a license amendment request for a full EAL scheme change to adopt NEI 99-01, Revision 6 guidance. However, there are licensees that have submitted license amendments to support transitioning and adopting NEI 99-01, Revision 5 guidance.

5.3 No Significant Hazards Consideration

In accordance with 10 CFR 50.90, "Application for amendment of license, construction permit, or early site permit," Exelon Generation Company, LLC (Exelon) requests amendments to the Facility Operating Licenses listed below to support the adoption of Emergency Action Level (EAL) schemes based on NEI 99-01, Revision 6, which has been endorsed by the NRC as documented in a letter dated March 28, 2013 (Reference 1).

- Braidwood Station, Units 1 and 2
Facility Operating License Nos. NPF-72 and NPF-77
- Byron Station, Units 1 and 2
Facility Operating License Nos. NPF-37 and NPF-66
- Clinton Power Station, Unit 1
Facility Operating License NPF-62
- Dresden Nuclear Power Station, Units 1, 2 and 3
Facility Operating License No. DPR-2
Renewed Facility Operating Licenses Nos. DPR-19 and DPR-25
- LaSalle County Station, Units 1 and 2
Facility Operating License Nos. NPF-11 and NPF-18
- Limerick Generating Station, Units 1 and 2
Facility Operating License Nos. NPF-39 and NPF-85
- Oyster Creek Nuclear Generating Station
Renewed Facility Operating License No. DPR-16
- Peach Bottom Atomic Power Station, Units 1, 2 and 3
Facility Operating License DPR-12
Renewed Facility Operating License Nos. DPR-44 and DPR-56
- Quad Cities Nuclear Power Station, Units 1 and 2
Renewed Facility Operating License Nos. DPR-29 and DPR-30
- Three Mile Island Nuclear Station, Units 1 and 2
Renewed Facility Operating License No. DPR-50
Facility Possession-Only License No. DPR-73

The proposed changes to Exelon's EAL schemes to adopt the guidance in NEI 99-01, Revision 6 do not reduce the capability to meet the emergency planning requirements established in 10 CFR 50.47 and 10 CFR 50, Appendix E. The proposed changes do not reduce the functionality, performance, or capability of Exelon's Emergency Response Organization (ERO)

to respond in mitigating the consequences of accidents. All Exelon ERO functions will continue to be performed as required.

The proposed changes have been reviewed considering the applicable requirements of 10 CFR 50.47, 10 CFR 50, Appendix E, and other applicable NRC documents. Exelon has evaluated the proposed changes to the affected sites' Emergency Plans and determined that the changes do not involve a Significant Hazards Consideration. In support of this determination, an evaluation of each of the three (3) standards, set forth in 10 CFR 50.92, "*Issuance of amendment*," is provided below.

1. Does the proposed amendment involve a significant increase in the probability or consequences of an accident previously evaluated?

Response: No.

The proposed changes to Exelon's EAL schemes to adopt the NRC-endorsed guidance in NEI 99-01, Revision 6, "*Development of Emergency Action Levels for Non-Passive Reactors*," do not reduce the capability to meet the emergency planning requirements established in 10 CFR 50.47 and 10 CFR 50, Appendix E. The proposed changes do not reduce the functionality, performance, or capability of Exelon's ERO to respond in mitigating the consequences of any design basis accident.

The probability of a reactor accident requiring implementation of Emergency Plan EALs has no relevance in determining whether the proposed changes to the EALs reduce the effectiveness of the Emergency Plans. As discussed in Section D, "*Planning Basis*," of NUREG-0654, Revision 1, "*Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants*,"

"...The overall objective of emergency response plans is to provide dose savings (and in some cases immediate life saving) for a spectrum of accidents that could produce offsite doses in excess of Protective Action Guides (PAGs). No single specific accident sequence should be isolated as the one for which to plan because each accident could have different consequences, both in nature and degree. Further, the range of possible selection for a planning basis is very large, starting with a zero point of requiring no planning at all because significant offsite radiological accident consequences are unlikely to occur, to planning for the worst possible accident, regardless of its extremely low likelihood...."

Therefore, Exelon did not consider the risk insights regarding any specific accident initiation or progression in evaluating the proposed changes.

The proposed changes do not involve any physical changes to plant equipment or systems, nor do they alter the assumptions of any accident analyses. The proposed changes do not adversely affect accident initiators or precursors nor do they alter the design assumptions, conditions, and configuration or the manner in which the plants are operated and maintained. The proposed changes do not adversely affect the ability of Structures, Systems, or Components (SSCs) to perform their intended safety functions

in mitigating the consequences of an initiating event within the assumed acceptance limits.

Therefore, the proposed changes do not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Does the proposed amendment create the possibility of a new or different kind of accident from any accident previously evaluated?

Response: No.

The proposed changes to Exelon's EAL schemes to adopt the NRC-endorsed guidance in NEI 99-01, Revision 6, do not involve any physical changes to plant systems or equipment. The proposed changes do not involve the addition of any new plant equipment. The proposed changes will not alter the design configuration, or method of operation of plant equipment beyond its normal functional capabilities. All Exelon ERO functions will continue to be performed as required. The proposed changes do not create any new credible failure mechanisms, malfunctions, or accident initiators.

Therefore, the proposed changes do not create the possibility of a new or different kind of accident from those that have been previously evaluated.

3. Does the proposed amendment involve a significant reduction in a margin of safety?

Response: No.

The proposed changes to Exelon's EAL schemes to adopt the NRC-endorsed guidance in NEI 99-01, Revision 6, do not alter or exceed a design basis or safety limit. There is no change being made to safety analysis assumptions, safety limits, or limiting safety system settings that would adversely affect plant safety as a result of the proposed changes. There are no changes to setpoints or environmental conditions of any SSC or the manner in which any SSC is operated. Margins of safety are unaffected by the proposed changes to adopt the NEI 99-01, Revision 6 EAL scheme guidance. The applicable requirements of 10 CFR 50.47 and 10 CFR 50, Appendix E will continue to be met.

Therefore, the proposed changes do not involve any reduction in a margin of safety.

5.4 Conclusions

In conclusion, and based on the considerations discussed above: (1) there is reasonable assurance that the health and safety of the public will not be endangered by the proposed changes to adopt the EAL schemes established in NEI 99-01, Revision 6, as endorsed by the U.S. Nuclear Regulatory Commission (NRC); (2) the changes will be in compliance with the NRC's regulations; and (3) the issuance of the amendments will not be inimical to the common defense and security or to the health and safety of the public.

6.0 ENVIRONMENTAL CONSIDERATION

The proposed changes are applicable to emergency planning requirements involving the proposed adoption of NRC-approved EAL guidance as described in NEI- 99-01, Revision 6 and do not reduce the capability to meet the emergency planning standards established in 10 CFR 50.47 and 10 CFR 50, Appendix E. The proposed changes do not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluent that may be released offsite, or (iii) a significant increase in the individual or cumulative occupational radiation exposure. Accordingly, the proposed changes meet the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed change.

7.0 REFERENCES

- 1) Letter from Mark Thaggard (U.S. Nuclear Regulatory Commission) to Susan Perkins-Grew (Nuclear Energy Institute) - *U.S. Nuclear Regulatory Commission Review and Endorsement of NEI 99-01, Revision 6, November 2012*, dated March 28, 2013
- 2) RIS 2005-02, Revision 1, *"Clarifying the Process for Making Emergency Plan Changes,"* dated August 19, 2011
- 3) NEI 99-01, Revision 6, *"Development of Emergency Action Levels for Non-Passive Reactors,"* dated November 2012
- 4) RIS 2003-18, *"Use of NEI 99-01, Methodology for Development of Emergency Action Levels,"* dated October 8, 2003
- 5) RIS 2003-18, Supplement 1, *"Use of Nuclear Energy Institute (NEI) 99-01, Methodology for Development of Emergency Action Levels,"* dated July 13, 2004
- 6) RIS 2003-18, Supplement 2, *"Use of Nuclear Energy Institute (NEI) 99-01, Methodology for Development of Emergency Action Levels,"* dated December 12, 2005

ATTACHMENT 2

**DISCUSSION OF REVISION
TO THE
RADIOLOGICAL EMERGENCY PLAN ANNEX
FOR
BRAIDWOOD STATION
EP-AA-1001**

Enclosures

- Enclosure 2A - EAL Comparison Matrix Document
- Enclosure 2B - EAL Red-Line Basis Document
- Enclosure 2C - EAL Basis Document

ATTACHMENT 3

DISCUSSION OF REVISION TO THE RADIOLOGICAL EMERGENCY PLAN ANNEX FOR BYRON STATION EP-AA-1002

Enclosures

- Enclosure 3A - EAL Comparison Matrix Document
- Enclosure 3B - EAL Red-Line Basis Document
- Enclosure 3C - EAL Basis Document

ATTACHMENT 4

DISCUSSION OF REVISION TO THE RADIOLOGICAL EMERGENCY PLAN ANNEX FOR CLINTON POWER STATION

EP-AA-1003

Enclosures

- Enclosure 4A - EAL Comparison Matrix Document
- Enclosure 4B - EAL Red-Line Basis Document
- Enclosure 4C - EAL Basis Document

ATTACHMENT 5

DISCUSSION OF REVISION TO THE RADIOLOGICAL EMERGENCY PLAN ANNEX FOR DRESDEN NUCLEAR POWER STATION

EP-AA-1004

Enclosures

- Enclosure 5A - EAL Comparison Matrix Document
- Enclosure 5B - EAL Red-Line Basis Document
- Enclosure 5C - EAL Basis Document

ATTACHMENT 6

DISCUSSION OF REVISION TO THE RADIOLOGICAL EMERGENCY PLAN ANNEX FOR LASALLE COUNTY STATION

EP-AA-1005

Enclosures

- Enclosure 6A - EAL Comparison Matrix Document
- Enclosure 6B - EAL Red-Line Basis Document
- Enclosure 6C - EAL Basis Document

ATTACHMENT 7

DISCUSSION OF REVISION TO THE RADIOLOGICAL EMERGENCY PLAN ANNEX FOR LIMERICK GENERATING STATION

EP-AA-1008

Enclosures

- Enclosure 7A - EAL Comparison Matrix Document
- Enclosure 7B - EAL Red-Line Basis Document
- Enclosure 7C - EAL Basis Document

ATTACHMENT 8

DISCUSSION OF REVISION

TO THE

RADIOLOGICAL EMERGENCY PLAN ANNEX

FOR

OYSTER CREEK NUCLEAR GENERATING STATION

EP-AA-1010

Enclosures

- Enclosure 8A - EAL Comparison Matrix Document
- Enclosure 8B - EAL Red-Line Basis Document
- Enclosure 8C - EAL Basis Document

ATTACHMENT 9

DISCUSSION OF REVISION TO THE RADIOLOGICAL EMERGENCY PLAN ANNEX FOR PEACH BOTTOM ATOMIC POWER STATION

EP-AA-1007

Enclosures

- Enclosure 9A - EAL Comparison Matrix Document
- Enclosure 9B - EAL Red-Line Basis Document
- Enclosure 9C - EAL Basis Document

ATTACHMENT 10

DISCUSSION OF REVISION TO THE RADIOLOGICAL EMERGENCY PLAN ANNEX FOR QUAD CITIES NUCLEAR POWER STATION EP-AA-1006

Enclosures

- Enclosure 10A - EAL Comparison Matrix Document
- Enclosure 10B - EAL Red-Line Basis Document
- Enclosure 10C - EAL Basis Document

ATTACHMENT 11

**DISCUSSION OF REVISION
TO THE
RADIOLOGICAL EMERGENCY PLAN ANNEX
FOR
THREE MILE ISLAND NUCLEAR STATION**

EP-AA-1009

Enclosures

- Enclosure 11A - EAL Comparison Matrix Document
- Enclosure 11B - EAL Red-Line Basis Document
- Enclosure 11C - EAL Basis Document