

U.S. Nuclear Regulatory Commission Staff's Evaluation of Request to Relocate the Duke Energy Consolidated Emergency Operations Facility

1.0 BACKGROUND

By letter dated December 14, 2021, as supplemented by letters dated May 13, 2022, and September 15, 2022 (Agencywide Documents Access and Management System (ADAMS) Accession Nos. ML21348A003, ML22133A218 and ML22258A295, respectively), Duke Energy Carolinas, LLC, and Duke Energy Progress, LLC (collectively referred to as Duke Energy) requested U.S. Nuclear Regulatory Commission (NRC, or the Commission) approval to relocate the existing Duke Energy consolidated Emergency Operations Facility (EOF) to a Duke Energy office building located at 9700 David Taylor Drive, Charlotte, NC. The existing Commission-approved EOF is located at 526 South Church Street, Charlotte, NC.

The current EOF serves the operating fleet of 11 reactors: Brunswick Steam Electric Plant, Unit Nos. 1 and 2 (BNP); Catawba Nuclear Station, Unit Nos. 1 and 2 (CNS); Shearon Harris Nuclear Power Plant, Unit No. 1 (HNP); McGuire Nuclear Station, Unit Nos. 1 and 2 (MNS); Oconee Nuclear Station, Unit Nos. 1, 2, and 3 (ONS); and H. B. Robinson Steam Electric Plant, Unit No. 2 (RNP); as well as the future William States Lee III Nuclear Station. The current EOF is located greater than 25 miles from the BNP, HNP, ONS, RNP, and the future William States Lee III Nuclear Station and, therefore, required prior Commission approval per paragraph IV.E.8.b of appendix E, "Emergency Planning and Preparedness for Production and Utilization Facilities," to Part 50, "Domestic Licensing of Production and Utilization Facilities," of Title 10 of the *Code of Federal Regulations* (10 CFR).

By letter dated January 10, 2006 (ADAMS Accession No. ML053220014), the ONS EOF was incorporated into the current EOF; previously, that EOF had been used only by CNS and MNS. The NRC's approval of use of the current EOF for William States Lee III Nuclear Station was included in the combined license, dated December 19, 2016 (ADAMS Accession No. ML16333A329). By letter dated August 21, 2017 (ADAMS Accession No. ML17188A387), the BNP, RNP and HNP EOFs were incorporated into the current EOF.

Duke Energy is proposing to relocate its consolidated EOF approximately 9 miles from the current location. Duke Energy does not propose to alter the facility functions, capabilities, and staffing as currently described in the Duke Energy Common Emergency Plan and annexes. The proposed change to the EOF's location results in the EOF being greater than 25 miles from 5 of the 6 operating Duke Energy nuclear sites.

2.0 REGULATORY REQUIREMENTS AND GUIDANCE

The NRC staff considered the following relevant regulations in its evaluation of Duke Energy's request to relocate its existing consolidated EOF.

- Paragraph 50.47(b)(1) of 10 CFR Part 50 states, in part: "Primary responsibilities for emergency response by the nuclear facility licensee...have been assigned. . . and each principal response organization has staff to respond and to augment its initial response on a continuing basis."
- Paragraph 50.47(b)(3) of 10 CFR Part 50 states, in part, that "...arrangements to accommodate State and local staff at the licensee's Emergency Operations Facility have been made. . . ."

- Paragraph 50.47(b)(8) of 10 CFR Part 50 states: "Adequate emergency facilities and equipment to support the emergency response are provided and maintained."
- Paragraph 50.47(b)(9) of 10 CFR Part 50 states: "Adequate methods, systems, and equipment for assessing and monitoring actual or potential offsite consequences of a radiological emergency condition are in use."
- Section E of Appendix E to 10 CFR Part 50 states, "Adequate provisions shall be made and described for emergency facilities and equipment, including: . . . 8.a.(1) . . . an emergency operations facility from which effective control can be exercised during an emergency. . . ."
- Paragraph IV.E.8.b of Appendix E to 10 CFR Part 50 states: "For a nuclear power reactor licensee's emergency operations facility required by paragraph 8.a of this section, either a facility located between 10 miles and 25 miles of the nuclear power reactor site(s), or a primary facility located less than 10 miles from the nuclear power reactor site(s) and a backup facility located between 10 miles and 25 miles of the nuclear power reactor site(s). An emergency operations facility may serve more than one nuclear power reactor site. A licensee desiring to locate an emergency operations facility more than 25 miles from a nuclear power reactor site shall request prior Commission approval by submitting an application for an amendment to its license. For an emergency operations facility located more than 25 miles from a nuclear power reactor site, provisions must be made for locating NRC and offsite responders closer to the nuclear power reactor site so that NRC and offsite responders can interact face-to-face with emergency response personnel entering and leaving the nuclear power reactor site."

As required by paragraph IV.E.8.b of Appendix E to 10 CFR Part 50, if the EOF is located more than 25 miles from a nuclear power reactor site, the near-site facility for NRC and offsite responders must meet the following requirements:

- Space for members of an NRC site team and Federal, State, and local responders;
- Additional space for conducting briefings with emergency response personnel;
- Communication with other licensee and offsite emergency response facilities;
- Access to plant data and radiological information; and
- Access to copying equipment and office supplies.

Paragraph IV.E.8.c to Appendix E of 10 CFR Part 50 further establishes the following minimum capabilities for an applicant or licensee EOF:

- The capability for obtaining and displaying plant data and radiological information for each reactor at a nuclear power reactor site and for each nuclear power reactor site that the facility serves;
- The capability to analyze plant technical information and provide technical briefings on event conditions and prognosis to licensee and offsite response organizations for each reactor at a nuclear power reactor site and for each nuclear power reactor site that the facility serves, and
- The capability to support response to events occurring simultaneously at more than one nuclear power reactor site if the emergency operations facility serves more than one site.

Revision 2 to NUREG-0654/Federal Emergency Management Agency (FEMA)-REP-1 (NUREG-0654), "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants" (ADAMS Accession No. ML19347D139), provides the following guidance that establishes evaluation criteria related to the EOF under 10 CFR 50.47(b)(3) and (b)(8):

- Section II.C, "Emergency Response Support and Resources," Evaluation Criterion 1, states that "Emergency response support and resources to the licensee's EOF, as agreed upon, are described."
- Section II.H, "Emergency Facilities and Equipment," Evaluation Criterion 3, states that "An EOF is established, using current Federal guidance, as the primary base of emergency operations for the licensee during a radiological incident. The EOF facilitates the management and coordination of the overall emergency response, including the sharing of information with Federal, State, local, and tribal government authorities."

The NRC's issuance of the guidance document, NUREG-0696, "Functional Criteria for Emergency Response Facilities" (ADAMS Accession No. ML051390358) in 1981, established criteria for the NRC staff to use in evaluating whether an applicant or licensee has met the requirements in paragraph IV.E.8 to Appendix E of 10 CFR Part 50. Section 4, "Emergency Operations Facility," of NUREG-0696 provides compliance criteria for the EOF in the following categories:

- Functions (section 4.1);
- Location, Structure, and Habitability (section 4.2);
- Staffing and Training (section 4.3);
- Size (section 4.4);
- Radiological Monitoring (section 4.5);
- Communications (section 4.6);
- Instrumentation, Data System Equipment, and Power Supplies (section 4.7);
- Technical Data and Data System (section 4.8); and
- Records Availability and Management (section 4.9).

Section VI.1 of the Office of Nuclear Security and Incident Response (NSIR)/Division of Preparedness and Response (DPR) Interim Staff Guidance (ISG) document, NSIR/DPR-ISG-01, "Emergency Planning for Nuclear Power Plants," dated November 2011 (ADAMS Accession No. ML113010523) provides guidance for a performance-based approach for evaluating changes to a consolidated EOF.

3.0 U.S. NUCLEAR REGULATORY COMMISSION STAFF EVALUATION

The NRC staff has reviewed the licensee's regulatory and technical analyses in support of the proposed changes to the Duke Energy Common Emergency Plan and site-specific annexes, as described in the application dated December 14, 2021, and supplemented by letter dated May 13, 2022. The NRC staff's technical evaluation for the relocation of the proposed consolidated EOF for the BNP, CNS, HNP, MNS, ONS, and RNP sites is detailed below.

3.1 Functions

The proposed consolidated EOF will provide a facility for Duke Energy's management of offsite emergency response, coordination of radiological assessment, and management of initial recovery operations, including notification of events, and protective action recommendations as assigned in the Duke Energy Common Emergency Plan. The technical support centers (TSCs) for all sites will continue to have the responsibility for event classification. Licensee emergency response organization staff in the proposed consolidated EOF will continue to perform the following functions that are currently performed in the existing facility:

- Coordinate field team activities to monitor radiological activity;
- Perform dose assessments, and develop and provide protective action recommendations (PAR) to offsite agencies based upon plant conditions or dose projections;
- Make emergency event notifications to designated State and local agencies for each of the Duke Energy sites, which include initial notifications, changes in emergency classification or PARs, and periodic updates; and
- Provide event, plant, and response information to public information staff for dissemination to the media and public through the respective sites' joint information centers.

Duke Energy states that the current EOF has functioned as a consolidated EOF for CNS, MNS, and ONS since 2006, and for BNP, HNP, and RNP commencing in 2017. The EOF staff has successfully demonstrated the ability to manage an emergency response for each of the sites in several evaluated exercises and numerous drills. Duke Energy has well-established procedures and practices in place for emergency management that will continue to be used with the proposed consolidated EOF. While revisions to some EOF-related procedures are anticipated (e.g., for address and telephone number changes), the relocation will not alter the overall approach to emergency response.

Based on its review of the licensee's submittal, the NRC staff has determined that there are no proposed changes to EOF functions and responsibilities. Because there are no proposed changes to EOF functions and responsibilities, management of the overall licensee emergency response would remain consistent with that currently described in section B, "Emergency Response Organization," and section H, "Emergency Facilities and Equipment," of the Duke Energy Common Emergency Plan.

Based on its review of the licensee's submittal, the NRC staff has determined that the proposed consolidated EOF provides equivalent or improved capabilities as compared to the existing facility, including equipment that monitors plant, and environmental conditions to provide information required for dose assessment and development of PARs. The proposed consolidated EOF will also provide working space for representatives from offsite response organizations, including State and Federal agencies. This will allow coordination of information, and deployment of emergency resources from State and Federal agencies. There is a dedicated conference room for NRC personnel and dedicated space for State representatives in the main EOF area, the dose assessment area, and the offsite field monitoring area. Similar to the current EOF, local agencies are not expected to respond to the proposed consolidated EOF. Because the proposed EOF will provide capabilities and functions during drills, exercises, and actual emergencies that are the same or improved as compared to the current EOF, the NRC

staff has determined that the proposed consolidated EOF location will not adversely impact the EOF's ability to perform its functions.

Section 4.1 of NUREG-0696 suggests that the licensee should use normal industrial security for the EOF. Access to the David Taylor building and parking lot is controlled by electronic card readers. Duke Energy states that access to the proposed consolidated EOF, within the building, is also controlled by electronic card readers that only allows entry for authorized personnel. Duke Energy states that during times when security personnel are not present at the David Taylor building, State, Federal Emergency Management Agency (FEMA), and NRC responders may use a call-box installed outside the main entrance. This will notify a nearby facility containing Duke Energy Security personnel, who will then allow access to the building for authorized individuals remotely. Additionally, emergency response organization (ERO) personnel will be available in the EOF to support access of state, FEMA, and NRC responders. The NRC staff reviewed the licensee's submittal and determined that the proposed consolidated EOF will provide the same capabilities as the current EOF and there are no proposed changes to EOF security capabilities.

Section IV.I of NSIR/DPR-ISG-01, which supplements the guidance in section 4.1 of NUREG-0696, states, in part, that the EOF will have facilities and capabilities for "Effectively responding to and coordinating response efforts for events occurring simultaneously at more than one site for a co-located or consolidated EOF." In section 3.1.11 to Enclosure 1 of its December 14, 2021, letter, Duke Energy states, in part:

The new EOF will maintain the current EOF ability to support events occurring simultaneously at up to two sites. The Duke Energy Common Emergency Plan includes a requirement to perform a multi-site event scenario within each eight-year exercise cycle. The new EOF will participate in the multi-site event and the participating sites will be varied. The new EOF will be equipped with facilities to monitor and analyze events at more than one site. A sufficient number of workstations will be available for data retrieval and the facility will have adequate display capability to simultaneously present this information to the EOF staff. In addition, the capability will be provided to support communications to offsite agencies for more than one event. If the new EOF must respond to an event at more than one site simultaneously, the normal EOF staff complement is augmented with additional personnel as needed.

As such, the NRC staff did not identify any licensee changes to the Duke Energy Common Emergency Plan that would negatively impact the ability of the EOF to effectively respond to and coordinate response efforts for events occurring simultaneously at more than one Duke Energy site.

While not required by regulation, the NRC staff observed a two-site-simultaneous demonstration drill on September 12, 2022, to further verify the ability of the proposed consolidated EOF to perform the functions designated in the Duke Energy Common Emergency Plan. Duke Energy provided notice and the opportunity for offsite response organizations to participate and for NRC and FEMA personnel to observe the drill at the new facility. Emergency management personnel from the States of North Carolina and South Carolina observed and participated in the drill. Duke Energy successfully performed this dual-site drill with the ONS and RNP sites. This drill demonstrated the ability of the proposed Duke Energy consolidated EOF to effectively function during simultaneous events at the nuclear power reactor sites.

Based on its review of the licensee's submittal, the NRC staff finds that the proposed consolidated EOF does not negatively alter the functions of the EOF as currently described in the Duke Energy Common Emergency Plan. The NRC staff used section 4.1 of NUREG-0696, as supplemented by NSIR/DPR-ISG-01, to evaluate the functions of the proposed consolidated EOF and found it acceptable. Therefore, the NRC staff has concluded that the proposed consolidated EOF meets the standards of 10 CFR 50.47(b) and requirements of paragraph IV.E.8 of Appendix E to 10 CFR Part 50.

3.2 Location, Structure, and Habitability

3.2.1 Location

Section 4.2, of NUREG-0696, as supplemented by section IV.I of NSIR/DPR-ISG-01, provides guidance on considerations of EOFs at a single location. Specifically, footnote 1 to Table 2, "Relation of EOF Location to Habitability Criteria," in section IV.I of NSIR/DPR-ISG-01 states, in part, "Specific Commission approval is required for EOF locations beyond 25 miles of the TSC." The proposed consolidated EOF is located at 9700 David Taylor Drive, Charlotte, NC , within a Duke Energy-owned building. The proposed change would relocate the EOF approximately 9 miles away from the current consolidated EOF.

The table below shows a comparison of approximate distances from the operating Duke Energy nuclear sites to the current EOF and proposed consolidated EOF.

Site	Distance to EOF	
	Current EOF (miles)	Proposed EOF (miles)
Brunswick	184	183
Catawba	18	26
Shearon Harris	110	104
McGuire	15	12
Oconee	120	126
H.B. Robinson	69	73

The current consolidated EOF was approved by the NRC as an EOF that was greater than 25 miles from the BNP, HNP, ONS, and RNP nuclear power reactor sites and has served as the EOF for those reactor sites. The current EOF was also used as the EOF (within 25 miles) for CNS and MNS. The NRC's approval of the current EOF was based, in part, on the EOF's capability to fulfill its required emergency response functions for all sites that the facility served; the facility's location and size; the anticipated staffing and training of licensee emergency response personnel at the facility; the facility's communications capabilities and data systems; the facility's capacity for accommodating a multi-site event; and its ability to accommodate personnel from the NRC and/or State and local response organizations. The NRC staff also considered prior Commission statements regarding previous consolidation approvals, and the licensee's provision of a near-site location for NRC and other responders at all affected sites for which the EOF was more than 25 miles from the facility site.

The NRC staff finds that relocation of the Duke Energy common EOF to its proposed location will continue to fulfill the necessary emergency response functions and will effectively support Duke Energy's emergency response at all the sites that the facility serves. This determination is based, in part, on the proposed EOF's capability to fulfill its required emergency response functions for all sites that the facility serves; the facility's location and size; the anticipated staffing and training of licensee emergency response personnel at the facility; the facility's communications capabilities and data systems; the facility's capacity for accommodating a multi-site event; and the facility's ability to accommodate personnel from the NRC and/or State and local response organizations. The NRC staff also considered prior Commission statements regarding other consolidated EOF approvals, and Duke Energy's provision of an acceptable near-site location for NRC and other responders at all its reactor sites that are more than 25 miles from the proposed EOF.

EOF Location change from within 25 miles of CNS to greater than 25 miles from CNS

The NRC staff finds that relocation of the Duke Energy common EOF from 18 miles from CNS to 26 miles from CNS will effectively support Duke Energy's emergency response at CNS. Duke Energy stated that the proposed EOF will not result in a change in ERO response time and will continue to use the current pool of EOF staff who already respond to the Common EOF that uses the same communication methods and equipment as the proposed Duke Energy Common EOF. Additionally, there are no proposed changes to the Duke Energy Common Emergency Plan descriptions for emergency response instrumentation or data system equipment. The NRC staff's determination of acceptability for relocating the common EOF to a facility that is 26 miles from the CNS site is also based on the proposed EOF's capability to fulfill its required emergency response functions for CNS; the facility's location and size; the anticipated staffing and training of licensee emergency response personnel at the facility; the facility's communications capabilities and data systems; the facility's capacity for accommodating a multi-site event; and the facility's ability to accommodate personnel from the NRC and/or State and local response organizations. Based on all these considerations, the NRC staff finds the EOF location change to greater than 25 miles from CNS acceptable.

Based on these findings, the NRC staff finds that the physical location of the proposed consolidated EOF meets the requirements of paragraph IV.E.8 of Appendix E to 10 CFR Part 50.

3.2.1.1 Offsite Agreement

The proposed consolidated EOF will provide working space for each of the responding representatives from North Carolina and South Carolina. Section 4.2 to NUREG-0696, as supplemented by section IV.1 of NSIR/DPR-ISG-01, states that "It is strongly recommended that the EOF location be coordinated with State and local authorities to improve the relationship between the licensee and offsite organizations." As such, in Enclosure 5, "Offsite Response Organization Concurrence," to its December 14, 2021, letter, Duke Energy provided signed letters of concurrence from the following State agencies, which currently respond to the existing Duke Energy consolidated EOF, indicating that they concur with the proposed facility relocation:

- North Carolina Emergency Management, and
- South Carolina Emergency Management Division.

The NRC staff finds that no changes are proposed to what is currently described in the Duke Energy Common Emergency Plan in regard to support of designated State representatives responding to the proposed consolidated EOF. In addition, per the “Memorandum of Understanding Between the Department of Homeland Security/FEMA and Nuclear Regulatory Commission Regarding Radiological Response, Planning and Preparedness,” dated December 7, 2015, (ADAMS Accession No. ML15344A371), the NRC requested that FEMA evaluate the impact of the proposed relocation of the Duke Energy consolidated EOF on offsite radiological emergency plans and preparedness, and provide its findings to the NRC. By letter dated April 12, 2022 (ADAMS Accession No. ML22102A316), FEMA stated:

Based upon offsite response organization concurrence received from the states of North Carolina and South Carolina, and review of the memorandum of understanding between FEMA and the NRC, FEMA concurs that the proposed Duke Energy EOF relocation does not have an unintended negative impact on offsite radiological emergency preparedness plans.

Based on these findings, the NRC staff has determined that the proposed consolidated EOF meets the requirements of 10 CFR 50.47(b)(3).

3.2.1.2 Impact on NRC’s Incident Response

CNS Near-site NRC and Offsite Responder Location

Paragraph IV.E.8.b of Appendix E to 10 CFR Part 50 requires that for an EOF located more than 25 miles from a nuclear reactor site, provisions be made for locating NRC, and offsite responders closer to the reactor site to facilitate face-to-face interaction with emergency personnel entering and leaving the site. Section IV of NSIR/DPR-ISG-01 states, in part, that the EOF will have facilities and capabilities for “Locating NRC and offsite agency staff closer to a site if the EOF is greater than 25 miles from the site,” and establishes guidance on minimum provisions at this location.

Duke Energy’s near-site response locations are described in the Duke Energy Common Emergency Plan annexes for each affected reactor site. Duke Energy states that BNP, HNP, ONS, and RNP have designated near-site facilities for NRC and offsite responders since the current EOF is located greater than 25 miles from those sites. Those near-site facilities will remain the same upon approval of the proposed common EOF and need not be evaluated further. CNS and MNS had not previously designated a near-site facility because the current consolidated EOF is between 10 and 25 miles from those sites; relocation of the central EOF to the proposed new location will require CNS to have a near-site facility for NRC and other offsite agency responders, since the proposed consolidated EOF is located 26 miles from the CNS site.

The current CNS site annex to the Duke Energy Common Emergency Plan does not designate a location near CNS for NRC and offsite responders to meet NUREG-0654 Revision 2, Element H.3.a. Since the proposed consolidated EOF will be located greater than 25 miles from CNS, the Duke Energy Corporate Headquarters, located in Uptown Charlotte, NC, will be designated as the near-site location for NRC and offsite responders; the Duke Energy Corporate Headquarters is located approximately 18 miles from CNS. At this location, Duke Energy will provide a functional working space for NRC and State representatives. Duke Energy will also continue to provide telecommunications and habitability provisions, including telephones, ERO telephone contact lists, standard office lighting, heating, ventilation, air conditioning, copiers,

office supplies, computers with internet access, conference area with whiteboards, separate areas suitable for briefing and debriefing response personnel, and radiation monitoring capability. The NRC staff finds this to be acceptable.

Therefore, the NRC staff finds that the CNS near-site facility, as identified in CNS Site Annex to the Duke Energy Common Emergency Plan, meets the requirements of 10 CFR 50.47(b)(8) and paragraph IV.E.8.b of Appendix E to 10 CFR Part 50.

CNS Alternate Emergency Response Facility (ERF)

Paragraph IV.E.8.d of Appendix E to 10 CFR Part 50, requires licensees to provide “. . . an alternative facility (or facilities) that would be accessible even if the site is under threat of or experiencing hostile action, to function as a staging area for augmentation of emergency response staff. . . .” In addition, guidance in NUREG-0654, Revision 2, Element H.4. states: “An alternative facility (or facilities) is established, using currently provided and/or endorsed guidance, which would be accessible even if the nuclear power plant (NPP) site is under threat of or experiencing hostile action.” Hostile action events warrant the timely activation of the ERO, supporting a rapid response to mitigate site damage as soon as the site is secured. To accomplish this, licensees must identify an alternative facility (or multiple facilities) to support response functions when ERFs are not accessible because of a hostile action. In addition, during a hostile action event, ERO members would likely not have access to the site, but these events still warrant timely ERO augmentation.

The current CNS Site Annex to the Duke Energy Common Emergency Plan designates the current EOF as the CNS alternate emergency facility to meet NUREG-0654 Revision 2, Element H.4. Element H.4 requires an alternate facility be established, using currently endorsed guidance, that could be accessed by site ERO personnel responding to a hostile action-based event. As shown in the table above, the proposed consolidated EOF is farther from CNS than the current EOF but is within 30 miles of CNS as allowed by NSIR/DPR-ISG-01 section IV.D. Since the proposed consolidated EOF distance from CNS is within 30 miles, it will be designated as the new CNS alternate emergency facility. The NRC staff finds this to be acceptable.

Therefore, the NRC staff finds that the CNS alternate emergency facility, as identified in proposed CNS Site Annex to the Duke Energy Common Emergency Plan, meets the requirements of 10 CFR 50.47(b)(8) and paragraph IV.E.8.d of Appendix E to 10 CFR Part 50.

MNS Alternate Emergency Response Facility

As stated above, Paragraph IV.E.8.d of Appendix E to 10 CFR Part 50, requires licensees to provide “. . .an alternative facility (or facilities) that would be accessible even if the site is under threat of or experiencing hostile action, to function as a staging area for augmentation of emergency response staff. . . .” In addition, guidance in NUREG-0654, Revision 2, Element H.4. states: “An alternative facility (or facilities) is established, using currently provided and/or endorsed guidance, which would be accessible even if the NPP site is under threat of or experiencing hostile action.” Hostile action events warrant the timely activation of the ERO, supporting a rapid response to mitigate site damage as soon as the site is secured. To accomplish this, licensees must identify an alternative facility (or multiple facilities) to support response functions when ERFs are not accessible because of a hostile action. In addition,

during a hostile action event, ERO members would likely not have access to the site, but these events still warrant timely ERO augmentation.

The current MNS Site Annex to the Duke Energy Common Emergency Plan designates the current EOF as the MNS alternate emergency facility to meet NUREG-0654 Revision 2, Element H.4. Element H.4 requires an alternate facility be established, using currently endorsed guidance, that could be accessed by site ERO personnel responding to a hostile action-based event. As shown in the table above, the proposed consolidated EOF is closer to MNS than the current EOF and will be designated as the new MNS alternate emergency facility. The NRC staff finds this to be acceptable.

Therefore, the NRC staff finds that the MNS alternate emergency facility, as identified in proposed MNS Site Annex to the Duke Energy Common Emergency Plan, meets the requirements of 10 CFR 50.47(b)(8) and paragraph IV.E.8.d of Appendix E to 10 CFR Part 50.

3.2.2 Structure

Section 4.2 of NUREG-0696, as supplemented by Table 2 to Section IV.1 of NSIR/DPR-ISG-01, provides guidance that, for an EOF located at or beyond 10 miles from a nuclear power reactor site, the structure be “Well engineered for design life of plant,” and provides the “Uniformed Building Code” as an example building code. In addition, the structure must be able to withstand adverse conditions of high winds (other than tornadoes) and floods. The guidance further provides that winds and floods with a 100-yr recurrence frequency are acceptable for a design basis. It should be noted that the Uniform Building Code was replaced by the International Building Code in 2000.

The current EOF was approved in 2016 by letter dated August 21, 2017 (ADAMS Accession No. ML17188A387). Duke Energy stated in its application dated April 29, 2016 (ADAMS Accession No. ML16120A076),

Phase 2 of the Energy Center is capable of withstanding wind loads and live loads equal to or greater than those specified in the current 2012 North Carolina State Building Code (which is based on the 2009 International Building Code).

Section 1609.3, “Basic wind speed” of the 2009 International Building Code states,

In non[-]hurricane-prone regions, when the basic wind speed is estimated from regional climatic data, the basic wind speed shall be not less than the wind speed associated with an annual probability of 0.02 (50-year mean recurrence interval). . . .

In its 2016 approval of the current Duke Energy Common EOF design, the NRC staff determined that the EOF (including its 50-year event wind design) met the structure criteria in Section 4 of NUREG-0696 and Section VI.1 of NSIR/DPR-ISG-01.

Duke Energy states that the proposed consolidated EOF meets the intent of the guidance in NUREG-0696 that the building be “well-engineered for the design life of the plant,” and that it is capable of withstanding wind loads and live loads equal to, or greater than, those contained in the 1978 North Carolina Building Code (most recent building code at time of construction). Specifically, in the supplement dated May 13, 2022, Duke Energy states that the David Taylor building was constructed to the 1978 North Carolina State Building Code and is designed to

withstand wind velocities of at least 80 miles per hour at the 50-year recurrence frequency. The 1978 North Carolina State Building Code provides wind load requirements in section 1205, "Wind Loads," and describes criteria for determining wind loads based on a recurrence frequency of 50 years.

There are several building codes in the United States. The North Carolina Building Codes are promulgated by the North Carolina Building Code Council and are interpreted and enforced by the Engineering Section. The North Carolina building code was the standard building code with North Carolina amendments, accepted statewide for general construction in 1978. The proposed consolidated EOF was built to this code. The 1978 North Carolina State Building Code provides wind load requirements in section 1205, "Wind Loads," and describes criteria for determining wind loads based on a recurrence frequency of 50 years. Additionally, the current 2018 North Carolina Building Code section 1609.3, "Ultimate Design Wind Speed," provides criteria of wind speeds correspond to approximately a 7% probability of exceedance in 50 years.

Although the guidance in NUREG-0696 describes criteria for determining wind loads based on a recurrence frequency of 100 years, both the North Carolina Building Code and International Building Code use a recurrence frequency of 50 years, which are events with a higher probability of occurring than a 100-year event. As discussed above, the NRC staff had found this to be acceptable for Duke Energy's current consolidated EOF. In addition, the NRC staff has approved the use of a 50-year wind design for other facilities, such as the Southern Nuclear Operating Company (SNC), dated July 26, 2018 (ADAMS Accession No. ML18183A073), approving the relocation of the SNC Common EOF. In this regard, SNC had stated in its application dated August 30, 2017 (ADAMS Accession No. ML17243A202),

The new EOF is built to withstand wind loads and live loads of the 2009 International Building Code as adopted by the State of Alabama.

The NRC staff finds the Duke Energy proposed Common EOF structure's design for wind loads acceptable, because 1) it is consistent with the design of the current NRC-approved EOF, 2) it meets the 1978 North Carolina State Building Code, as well as the current 2018 North Carolina Building Code, and 3) the design is consistent with other EOF structures' wind load design that the NRC has approved in the past. Therefore, the NRC staff finds the building structure's wind load design to be acceptable.

Duke Energy also states that the David Taylor EOF is not located within a FEMA flood hazard area, as it is outside the 0.2 percent annual chance (500-year recurrence) for flood hazards. Consequently, in accordance with the 1978 North Carolina Building Code, the proposed consolidated EOF is neither designed nor required to meet the flood plain construction standards described in Chapter 34 of the Code. The NRC staff finds this to be acceptable.

The NRC staff finds that the proposed consolidated EOF meets the intent of the guidance in NUREG-0696 that the building be "well-engineered for the design life of the plant," and be able to withstand adverse conditions of high winds (other than tornadoes) and floods. Therefore, the NRC staff finds the building structure to be acceptable.

As discussed above, the NRC staff used section 4.2 of NUREG-0696, as supplemented by NSIR/DPR-ISG-01, to evaluate the structure of the proposed consolidated EOF and found it acceptable. Therefore, the NRC staff finds that the physical structure of the proposed consolidated EOF meets the requirements of 10 CFR 50.47(b)(8).

3.2.3 Habitability

Section 4.2 to NUREG-0696, as supplemented by Table 2 of NSIR/DPR-ISG-01 provides guidance that would ensure radiological protection for EOF personnel by providing an adequate ventilation system and protection factor. Similar to the existing Duke Energy consolidated EOF, the proposed consolidated EOF will also be located beyond 10 miles from any of the Duke Energy plants that it serves or other nuclear power plants. EOF functions are unlikely to be impacted by a radiological release from any Duke Energy site due to the distance of the EOF from each respective site. Since the EOF is located at or beyond 10 miles from the TSC from each respective site, Table 2 of NSIR/DPR-ISG-01 states that no specialized ventilation system or protection factor is needed. Therefore, measures to assure the habitability for the proposed consolidated EOF, as described in NUREG-0696 and NSIR/DPR-ISG-01, are not needed, and the proposed consolidated EOF meets the requirements of 10 CFR 50.47(b)(8).

3.3 Staffing and Training

Duke Energy states that the ERO staff in the proposed consolidated EOF will remain the same as in the current EOF as described in the Duke Energy Common Emergency Plan. Also, the EOF roles, responsibilities, and augmentation times will not change, and the functions of the EOF remain the same.

Duke Energy states that since it has utilized a common EOF for many years, the ERO personnel assigned to the EOF are experienced in emergency response activities and coordination with offsite agencies. Therefore, an advantage of locating the proposed consolidated EOF within 9 miles of the current EOF is that the current pool of EOF ERO staff can continue to be utilized to fulfill ERO roles as required by the Duke Energy Common Emergency Plan. This includes experienced Duke Energy corporate personnel such as those in the corporate nuclear operations organization, nuclear engineering, emergency preparedness, regulatory affairs, and others. Duke Energy states that no revisions to the staffing and training requirements in the Duke Energy Common Emergency Plan are necessary due to the relocation of the EOF. Duke Energy states that specific lesson plans and training materials are not impacted, except for minor administrative changes (e.g., change of address, telephone numbers, etc.).

Duke Energy states that the roadway capacity and relatively close location of the proposed consolidated EOF to the current EOF results in little change for EOF responders staffing the proposed consolidated EOF. In addition, the response time for EOF activation, as described in the Duke Energy Common Emergency Plan, also remains unchanged (75 minutes from the time of the declaration of an alert or higher classification).

Based on its review of the licensee's submittal, the NRC staff has determined that the staffing and training of EOF staff, including ERO response times, and periodic drills and exercises, remains unchanged from that currently described in the Duke Energy Common Emergency Plan. Therefore, the NRC staff concludes that the staffing and training for the proposed consolidated EOF meets the requirements of 10 CFR 50.47(b)(8).

3.4 Size

Section 4.4 to NUREG-0696, as supplemented by section IV.1 to NSIR/DPR-ISG-01, provides guidance that the EOF building will be large enough to provide adequate workspace for personnel assigned to the EOF as specified in the licensee's emergency plan, at the maximum level of occupancy without crowding, as well as provide separate office space to accommodate NRC staff and other Federal personnel.

Duke Energy stated that the total usable space and working space of the proposed consolidated EOF is sized to meet the guidance of NUREG-0696 described above, to provide for the ERO staff as specified in the Duke Energy Common Emergency Plan, including State, FEMA, and NRC responders, at the expected full staffing of a two-site event without crowding. Consistent with the existing facility, space in the proposed consolidated EOF will be allocated for the functional activities of accident assessment, radiation assessment, offsite monitoring, offsite communications, command, and control, services, conferences, NRC personnel, and storage. Duke Energy states that the space is sufficient for service of equipment, displays, and instrumentation within the new facility. Phones and special communications equipment will be provided as needed throughout the new facility at personnel workstations. Individuals needing plant data will be provided workstations capable of accessing the information. Functional displays of EOF data will be made available through use of computer monitors and video display monitors. Duke Energy is not proposing to change the facilities and equipment of the EOF as currently described in the Duke Energy Common Emergency Plan. Attachment 1, "David Taylor EOF Floorplan," included in Enclosure 1, "Evaluation of the Proposed Change" to Duke Energy's December 14, 2021, letter provides the proposed layout for the proposed consolidated EOF.

Based on its review of the licensee's submittal, the NRC staff finds that the proposed consolidated EOF will be of sufficient size to accommodate and support Federal, State, and licensee ERO personnel, equipment, and documentation in the EOF. The NRC staff used section 4.4 of NUREG-0696, as supplemented by NSIR/DPR-ISG-01, to evaluate the size of the proposed consolidated EOF and found it acceptable. Therefore, the NRC staff concludes that the size of the proposed consolidated EOF meets the requirements of 10 CFR 50.47(b)(8) and paragraph IV.E.8.c to Appendix E of 10 CFR Part 50.

3.5 Radiological Monitoring

The guidance in section 4.5 to NUREG-0696 specifies that to ensure adequate radiological protection of EOF personnel, radiation monitoring systems should be provided in the EOF. Similar to the existing Duke Energy consolidated EOF, the proposed consolidated EOF will also be located beyond 10 miles from any of the Duke Energy plants that it serves. The NRC staff finds that based on the physical location of the proposed consolidated EOF, EOF personnel are unlikely to be impacted by a radiological release from any nuclear power plant site. Therefore, the radiological monitoring capabilities for EOF personnel, as described in NUREG-0696, are not needed, and the proposed consolidated EOF meets the requirements of 10 CFR 50.47(b)(8).

3.6 Communications

Section 4.6 of NUREG-0696 provides guidance to ensure that the EOF has reliable voice communication facilities for communication with the TSC, the control room, NRC, and State and

local emergency operations centers, and describes the primary functions of the EOF voice communications facilities.

The NRC staff confirmed that the description of the EOF facilities and equipment related to communications for the proposed consolidated EOF remains consistent with that which is currently described in section F, "Emergency Communications," of the Duke Energy Common Emergency Plan and is equivalent to the existing facility. The Duke Energy Emergency Management Network (DEMNET) is the primary means of communication for the EOF when contacting offsite response organizations (ORO). DEMNET consists of equipment and circuits linking Duke Energy nuclear sites with the offsite agencies involved in initial emergency notifications. This system can conference the offsite agencies for notifications. The supplement to the application dated May 13, 2022, states that Duke Energy will provide telephones in the David Taylor EOF's NRC work area dedicated for the NRC Management Counterpart Link, the Emergency Notification System, and Health Physics Network.

Duke Energy states that the Private Branch Exchange (PBX) is the primary means of communication between Duke Energy site ERFs and the EOF. PBX is also the alternate means of communication for the EOF when contacting OROs and the primary means of communication with the NRC with extensions designated for NRC communications located in the EOF. A PBX is a full-featured telephone system that provides internal calling services for one or more locations. The PBX terminates commercial phone lines from a carrier (AT&T, Verizon, CenturyLink, etc.) to provide inbound and outbound calling capabilities between Duke Energy and external parties. Duke Energy states that the PBX systems have several mechanisms which make them resistant to failure, including redundant power connections, redundant network connections, and server hardware installed in geographically diverse locations.

Duke Energy states that satellite phones are an alternate means of communication between the site ERFs and EOF, an alternate means of communication for the EOF when contacting OROs, and an alternate means of communication for the EOF when contacting field monitoring teams (FMTs). A satellite phone is any mobile telephone capable of sending and receiving phone calls through orbiting satellites.

Duke Energy further states that cellular phones are an alternate means of communication between the site ERFs and EOF, an alternate means of communication for the EOF when contacting OROs, and are the primary means of communication for the EOF when contacting FMTs. The testing of communications systems at the proposed consolidated EOF will continue to be performed as described in section F.3, "Communications Tests," to the Duke Energy Common Emergency Plan to ensure the reliable, timely flow of information between all parties having an emergency response role.

Based on its review of the licensee's submittal, the NRC staff finds that the proposed consolidated EOF has sufficient internal and external telecommunications capabilities to support EOF functions for simultaneous events involving multiple sites, based on the functions and staffing currently described in the Duke Energy Common Emergency Plan. The NRC staff used section 4.6 of NUREG-0696 to evaluate the communications of the proposed consolidated EOF and found it acceptable. The NRC staff has concluded that the proposed consolidated EOF will provide for reliable EOF voice and data communications and information collection and, therefore, it meets the requirements of 10 CFR 50.47(b)(8).

3.7 Instrumentation, Data System Equipment, and Power Supplies

Section 4.7 of NUREG-0696 provides guidance on equipment to gather, store, and display data needed in the EOF to analyze and exchange information on plant conditions, as well as criteria to perform these functions. Duke Energy states that data communication networks are installed to provide secure access to plant data and parameters for display in the proposed consolidated EOF in the same manner as the current EOF. The networks are installed in accordance with the requirements of sections 4.7 and 4.8 of NUREG-0696 and 10 CFR 73.54, "Protection of digital computer and communication systems and networks." Data acquisition will be achieved through a secure proxy server, which allows the proposed consolidated EOF to access to the same data points that are available to the operators in the main control room (MCR) and emergency responders in the TSC and operations support center (OSC), including the Safety Parameter Display System (SPDS), via the Duke Energy Wide and Local Area Networks (WAN and LAN). Duke Energy has established an availability goal for the LAN/WAN that exceeds the 0.01 unavailability goal identified in NUREG-0696. The proposed consolidated EOF video display system will display the plant data on screens in the main EOF area. Commercial broadband connections are provided at various locations to allow ORO and NRC responders to have access to the internet.

Duke Energy states that since the proposed consolidated EOF is located offsite, its electrical equipment loads will not affect any safety related power source at a site. Loss of primary commercial power would not cause loss of any stored data vital to EOF functions. Duke Energy states that historical data from the site will be accessible from a historical data base. This information could be accessed by the proposed consolidated EOF, as needed once power is restored to the LAN.

Duke Energy states that the primary commercial primary power to the David Taylor building is provided by a single feeder using commercial power from the Duke Energy Mineshaft Retail circuit to each of the building's switchgears. Backup power to the David Taylor building is achieved using two 100-percent capacity diesel generators that provide redundant power to both building's switchgears. Duke Energy states that each diesel generator can carry the electrical load of the entire David Taylor building, including the EOF and all electrical outlets, heating, ventilation and air conditioning, lighting fixtures, and the wiring closet that supports both the voice and data communications in the proposed consolidated EOF, and that there is enough fuel on site to operate at least one backup diesel generator for several days.

In addition, Duke Energy states that the voice and data communications equipment supporting the proposed consolidated EOF is connected to an uninterruptable power supply system, ensuring electrical power is supplied to the voice and data equipment after a loss of commercial power, but before the backup diesel generators begin carrying the electrical load of the building. Therefore, a loss of commercial power will not cause a loss of, or interruption in the voice or data communications equipment located in the proposed consolidated EOF.

Based on its review of the licensee's submittal, the NRC staff finds that the proposed consolidated EOF provides for reliable EOF instrumentation, data system equipment, and power supplies. The NRC staff used section 4.7 of NUREG-0696 to evaluate the instrumentation, data system equipment, and power supplies of the proposed consolidated EOF and found it acceptable. Therefore, the NRC staff concludes that the proposed consolidated EOF will provide for reliable equipment to gather, store, and display data needed in the EOF to analyze and exchange information on plant conditions and that it meets the requirements of 10 CFR 50.47(b)(8)-(9) and paragraph IV.E.8.c of Appendix E to 10 CFR Part 50.

3.8 Technical Data and Data Systems

Section 4.8 of NUREG-0696 provides guidance on the technical data system needed to receive, store, process, and display information sufficient to perform assessments of the actual, and potential onsite and offsite environmental consequences of an emergency condition. Based on its review of the licensee's submittal, the NRC staff confirmed that the description of the offsite dose assessment capabilities at the proposed consolidated EOF will continue to be performed using the existing dose assessment computer analysis program at Duke Energy's nuclear generating stations in the event of an actual or potential release of airborne radioactivity to the environment.

Duke Energy states in its submittal that the proposed consolidated EOF will provide data acquisition equipment that will allow display of key plant data, parameters, and radiological information from each plant, in near real time. This information will be displayed in the proposed consolidated EOF in a manner comparable to the current EOF. The proposed consolidated EOF will have the capability to receive, store, process, and display vital plant data and radiological information for each site and unit, in near real time, to be used by knowledgeable individuals responsible for providing technical briefings on plant conditions, event prognosis, and management of overall emergency response in the same manner as the current EOF.

Duke Energy states that the proposed consolidated EOF data system is unchanged from the current consolidated EOF and continues to comply with data display and data storage requirements discussed in section 4.8 of NUREG-0696. This capability will include sensor data of the Type A, B, C, D, and E variables as described in Regulatory Guide 1.97, "Criteria for Accident Monitoring Instrumentation for Nuclear Power Plants" (ADAMS Accession No. ML18136A762), and the meteorological variables required by both Regulatory Guide 1.23, "Meteorological Monitoring Programs for Nuclear Power Plants" (ADAMS Accession No. ML070350028), and NUREG-0654.

Duke Energy states that the meteorological variables required for dose assessment will be made available through the proxy server and that this data will also be accessible from a historical data base. Duke Energy states that there is no change to the Duke Energy Common Emergency Plan description of technical data or the data system and that the offsite dose assessment will continue to be performed in the proposed consolidated EOF, the same as the current EOF, for all operating Duke Energy sites using the Unified RASCAL Interface software. Duke Energy states there is no change to its Common Emergency Plan description of the methods, models, or performance of dose assessment. Duke Energy also states that the server will allow the proposed consolidated EOF to access the same data points that are available to the operators in the MCR and emergency responders in the TSC and OSC, including the SPDS, via the Duke Energy WAN, and LAN.

Based on its review of the licensee's submittal, the NRC staff finds that the proposed consolidated EOF provides for reliable EOF technical data and data systems. The NRC staff used section 4.8 of NUREG-0696 to evaluate the technical data and data systems of the proposed consolidated EOF and found it acceptable. Therefore, the NRC staff concludes that the proposed consolidated EOF will provide for the sufficient receipt, storage, processing, and display of information to perform assessments of the actual and potential onsite and offsite environmental consequences of an emergency condition and that it meets the requirements of 10 CFR 50.47(b)(8)-(9) and paragraph IV.E.8.c of Appendix E to 10 CFR Part 50.

3.9 Records Availability and Management

Section 4.9 of NUREG-0696, as supplemented by section IV.I of NSIR/DPR-ISG-01, provides guidance on the ready access to up-to-date plant records, procedures, and emergency plans needed to exercise overall management of licensee emergency response resources. The proposed consolidated EOF will have access to site reference materials that may be needed for supporting emergency response, in the same manner as the current EOF.

Duke Energy states that the proposed consolidated EOF will have access to site reference materials that may be needed for supporting emergency response, in the same manner as the current EOF. Typically, reference materials are accessed electronically and include:

- Plant technical specifications;
- Plant operating procedures;
- Emergency operating procedures;
- Emergency plan implementing procedures;
- Final safety analysis reports;
- Emergency plans – common plan, site annexes, and State emergency plans;
- Evacuation time estimate reports – contain offsite population data and evacuation plans;
- Licensee employee radiation exposure history; and
- Drawings, diagrams, and other design information for each site.

Duke Energy states that copies of reference materials and procedures required for the EOF to perform its function as described in the Duke Energy Common Emergency Plan will be available at the proposed consolidated EOF. Based on its review of the licensee's submittal, the NRC staff finds that the proposed consolidated EOF provides for adequate records availability and management. The NRC staff used section 4.9 of NUREG-0696 to evaluate the records availability and management of the proposed consolidated EOF and found it acceptable. Therefore, the NRC staff finds that the proposed consolidated EOF provides for records availability and management and meets the requirements of 10 CFR 50.47(b)(8).

3.10 Summary

The NRC staff finds that the use of a consolidated EOF at the new location and the use of that common EOF by the CNS will continue to fulfill necessary emergency response functions and effectively support Duke Energy's emergency response at all the sites that it supports. Therefore, the relocation of the current consolidated EOF to the new location and the use of that common EOF by the CNS (as well as ONS, MNS, BNP, RNP and HNP) is acceptable.

4.0 CONCLUSION

On the basis of its evaluation, the staff concludes that the proposed relocation of the existing Duke Energy common EOF to the Duke Energy building at 9700 David Taylor Drive, Charlotte, NC would fulfill necessary emergency response functions, meet applicable regulations in 10 CFR 50.47 and appendix E of 10 CFR Part 50, and the criteria set forth in applicable guidance. Given the technological capabilities of the new Duke Energy common EOF, its capacity to address multi-site events, and the staffing of emergency response organizations comprised of experienced and diverse personnel from the Duke Energy corporate offices, the relocation of the existing Duke Energy common EOF would not adversely impact the ability of the proposed

common EOF to continue to effectively support Duke Energy's emergency response at all the sites that the facility serves. Moreover, the staff concluded that the provisions made for locating NRC and offsite responders closer to the nuclear power reactor sites so that they can interact face-to-face with emergency response personnel entering and leaving the reactor sites are acceptable. As such, the NRC would have reasonable assurance that adequate protective measures can and will be implemented in the event of a radiological emergency at any of the sites that the Duke Energy common EOF serves.