

Program Plan for the External Hazards Center of Expertise

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1.0 External Hazards Center of Expertise

The External Hazards Center of Expertise (EHCOE) will centralize functions and management of external hazard evaluations in support of licensing work in the New and Operating Reactor business lines within one part of the organization while ensuring effective and efficient use of agency resources in executing the mission. These evaluations include the review of a wide-range of natural hazards caused by the atmosphere, flood sources, and ground shaking; and the review of potential man-made hazards. EHCOE will also assume the Agency's Dam Safety Officer (DSO) responsibilities in accordance with SECY-91-193, "Dam Safety Program Plan" (Accession No. ML12255A651).

The purpose of this Program Plan is to establish the scope, coordination of work, and general resource management strategies for activities performed by the Center of Expertise (COE). Key sections of this Program Plan include:

- The objectives of the EHCOE, including the goals, objectives, and performance metrics that provide a link to the U.S. Nuclear Regulatory Commission's (NRC's) statutory mission of protecting public health and safety, promoting the common defense and security, and protecting the environment.
- The scope of the EHCOE, including the staffing, training, and qualification of the technical staff necessary to effectively perform reviews of external hazard information provided by licensees and applicants.
- The coordination of work activities, which involves the necessary communications regarding work planning. The project coordination activities also include project scope, schedule, level of effort and other products, which are critical to ensuring the timely planning, review, and completion of external hazard evaluations.
- The continued improvement and development of staff resources in EHCOE, and the associated measurement of EHCOE performance and continued self-assessment. This includes the sections discussing staff resources management, knowledge management and training, and professional development. In addition, the Performance Assessment section specifically addresses the Commission requirement to assess successes and lessons learned from implementation of EHCOE, and to issue associated agencywide communication within 1 year of implementing the COE.

2.0 Goals, Objectives, and Performance Metrics of the EHCOE

The purpose of EHCOE is to perform external hazards evaluations to assist the NRC in meeting its statutory mission to protect public health and safety, promote the common defense and security, and protect the environment.

To achieve this purpose, EHCOE established a set of six high-level and overarching goals targeting specific aspects of the organization. Next, four specific objectives were identified that incorporate these goals while also discussing specific planning and implementation, technical and problem solving, communications, and resource management aspects associated with the operation of EHCOE. Finally, this section discusses the development of annual performance metrics that will be developed and communicated with NRO and partner offices, and management, which are both aligned with EHCOE's objectives and provide a meaningful measure of EHCOE's performance.

EHCOE staff established the following goals for the organization that are aligned both with the NRC's mission statement and the EHCOE's purpose statement:

1. Technically-objective – technical decisions are based on the appropriate staff analysis necessary to support the regulatory requirements for the assessment, and are based on the most up-to-date information supported by scientific data.
2. Risk-informed – risk insights are considered to focus the external hazards evaluations on issues commensurate with their importance to safety.
3. Understandable – the evaluation process and final work products provide a clear basis for the regulatory decision; and are clear, concise, and written in plain English.
4. Predictable – staff evaluations adhere to regulatory requirements and staff guidance to assure review scope and regulatory decisions are disciplined and consistent.
5. Open – staff evaluations are transparent and stakeholders are appropriately informed and involved in the review.
6. Effective – staff evaluations are of high quality, efficient, safety-focused, and timely so as to enable the siting, licensing, construction, and operation of facilities under review.

EHCOE objectives were identified that incorporate these goals. The objectives of the EHCOE should all be completed in a timely manner to a sufficient quality and quantity, and independently. EHCOE objectives are also comprehensive, consistent with, and necessary to accomplish the organizational mission, and operating and strategic plan goals; are sufficiently coordinated with involved parties; are reasonably documented; are reasonably executed; and identify significant issues, activities, steps, and requisite resources. EHCOE objectives are generally consistent with established milestones and agreed upon schedules, and in support of the pertinent organizational operating plan. Priorities are regularly discussed and adjusted, as needed, in response to competing workload demands and changing priorities. These EHCOE objectives are:

EHCOE O-1 Plan and implement assigned activities in support of the EHCOE work

Identify organizational challenges facing EHCOE and formulate effective strategies to address them. Plan and implement organizational changes consistent with NRC's mission, vision, values, and pertinent operating and strategic plans. Balance program continuity with change and evolving programmatic priorities. This includes:

- coordinating, developing, and implementing ticket responses or work requests
- developing and maintaining EHCOE, office or division Operating Plan or budget
- planning and conducting technical and licensing reviews
- managing supporting contracts or projects
- conducting activities to ensure Operating Plan goals are met, as applicable, for activities within EHCOE's control or purview
- complying with agency policies and procedures, including control of classified and sensitive unclassified information to prevent improper disclosure

EHCOE O-2 Evaluate technical, licensing, policy, or other issues related to external hazards and produce technically competent work products

Examples of activities EHCOE staff will be involved with include: issues regarding safety implications in licensing reviews or improvements, site visits and audits, technical or regulatory

merit of reports and research, ticket responses, contracts, management of requested work and special tasks, as assigned. Acceptance memoranda, audit information requests, requests for additional information (RAIs), final work products, and other correspondence are completed in a timely manner consistent with established performance metrics. Ensure technical competency of work products and EHCOE staff—through staff participation in meetings with industry organizations, standards groups, professional societies, conferences, and workshops. Ensure technical sufficiency of ongoing review work by adjusting EHCOE review practices and expectations to reflect evolving technical understanding. Present recommendations for resolution of issues requiring management’s attention that consider the agency’s strategic mission, goals, and resources.

EHCOE O-3 Independently communicate with a variety of audiences both orally and in writing on routine and non-routine issues

Examples of oral communications may include: interactions with NRC staff and members of the public, licensees, and other external organizations; formal and informal management briefings and meetings; technical presentations; public presentations; and media presentations. Written examples may include: safety evaluations in support of new or operating reactor licensing, examination or inspection reports, written guidance and technical analyses, internal memos, correspondence with internal or external stakeholders, and allegation response letters. Respond to inquiries regarding assigned activities. Use effective communication skills to establish and maintain working relationships, particularly when working on team/group efforts, inside and outside the NRC.

EHCOE O-4 Ensure that the EHCOE staff and financial resources are adequately managed to successfully review the range of regulatory actions associated with external hazards

Assign work in a way that effectively utilizes staff, technology, and other resources to ensure organizational goals are met (e.g., basing decisions on prioritization, changing circumstances, add/shed decisions). Identifies targets for performance monitoring. Select and assign employees in ways that use their skills efficiently, and periodically assess employee training needs. Support continued development appropriate to each employee within the established guidelines and budget. Facilitate knowledge management and knowledge transfer to help develop and maintain expertise. Facilitate staff resolution of complex technical, licensing, safety, security, environmental, or policy issues in order to protect public health and safety. Present resolution or support presentation by staff of these issues, giving appropriate consideration to the Office of New Reactors’ (NRO’s) mission, values, and pertinent operating and strategic plans. The EHCOE work products add value to the organization and supports NRCs mission and strategic goals, and are delivered at the right quality and on time. Ensures that policy, licensing guidance, and procedures for which EHCOE is responsible are appropriately updated. Identifies EHCOE resource needs (full-time equivalent (FTE) and contract dollars) for budget development. Initiates development of key assumptions for major EHCOE activities. Develop a budget to ensure sufficient resources are available to achieve pertinent organizational goals. Appropriately adjusts EHCOE activities to reflect a proposed reallocation of resources due to emergent needs and fact-of-life changes. Effectively implement internal and external contractual resources to achieve organizational goals.

Where available, the EHCOE will use existing performance metrics. The EHCOE staff will produce annual performance metrics that are aligned with the EHCOE goals and objectives to assess program performance. In general, these metrics will help the EHCOE staff and managers to:

- identify performance issues and determine their significance
- adjust resources to focus on significant performance or quality issues
- take necessary actions for significant performance or quality issues
- effectively communicate results of evaluations to both internal and external stakeholders
- make program improvements based on stakeholder feedback and lessons learned

3.0 Organization

EHCOE is contained within the Division of Site Safety and Environmental Analysis (DSEA) in NRO. Technical staff within EHCOE have expertise in a number of engineering and scientific fields. EHCOE will be organized into several branches within this one division; however, the number of branches, and number of staff in each branch, is subject to change based on current staffing levels and forecasted work assignments.

Technical experts in EHCOE will be classified into one of the following position descriptions, as specified by the Office of Personnel Management:

- The Civil Engineering Series (Geotechnical or Hydrologic Engineering), GS-0810, covers positions managing, supervising, leading, and/or performing professional engineering and scientific work involving construction, renovation, inspection, decommissioning, and/or demolition of structures, infrastructures, and their environmental systems above or under the earth's surface; investigation and evaluation of the earth's physical, natural, and man-made features; and transportation, utilities, building and construction industries. More specifically, work in the geotechnical engineering field primarily involves evaluation of soil, rock properties, slope stability, dynamic and static bearing capacity, and seepage; seismic analysis of soil, rock properties, settlement analysis, and sub-surfaces; and evaluation and design of earth retaining systems, embankment dams, structure foundations, and ground improvement projects. Work in the hydrologic engineering field primarily involves applying the science of hydrology, including forecasting and analyzing flow characteristics and flood-related hazards; designing water-retaining and water-conveyance structures (e.g., dams, levees and culverts); and evaluating facility (e.g., reservoirs, canals, pipelines, pumping plants) capacities and operation.
- The Physical Scientist Series (Interdisciplinary), GS-1301, includes professional scientific positions requiring application of knowledge of the principles and techniques of accident dose analyses and evaluations of design basis and severe accidents at nuclear power plants. Performs and coordinates reviews and evaluations of power reactor standard design certification, combined license and early site permit applications to assure public health and safety and protection of the environment relating to the safety aspects of the analysis of accident source terms and the environmental impact of design basis and severe accidents. One of these positions covers review of information about the population distribution near a potential facility, and identification and evaluation of potential hazards in the site vicinity such as nearby industrial, transportation (such as aircraft) and military facilities.
- The Geophysics Series, GS-1313, includes professional scientific positions requiring application of knowledge of the principles and techniques of geophysics and related

sciences in the investigation, measurement, analysis, evaluation, and interpretation of geophysical phenomena.

- The Hydrologist Series, GS-1315, includes professional scientific positions requiring application of knowledge of the principles and techniques of hydrology, oceanography, and related sciences in the investigation of basic and applied research on water resources and flood-related hazards; the collection, measurement, analysis, and interpretation of information on water resources and flood-related hazards; the forecast of water supply and flood-related hazards.
- The Meteorology Series, GS-1340, includes positions that involve professional work in meteorology, the science concerned with the earth's atmospheric envelope and its processes. The work includes basic and applied research into the conditions and phenomena of the atmosphere; the collection, analysis, evaluation, and interpretation of meteorological data to predict weather and determine climatological conditions for specific geographical areas; the development of new or the improvement of existing meteorological theory; and the development or improvement of meteorological methods, techniques, and instruments.
- The Geologist Series, GS-1350, includes professional scientific positions applying a knowledge of the principles and theories of geology and related sciences in the collection, measurement, analysis, evaluation, and interpretation of geologic information concerning the structure, composition, and history of the earth. This includes the performance of basic research to establish fundamental principles and hypotheses to develop a fuller knowledge and understanding of geology, and the application of these principles and knowledge to a variety of scientific, engineering, and economic problems.

NRO currently has position descriptions for the previously listed series at the GG-13, GG-14, and GG-15 level.

4.0 Scope of Activities

The EHCOE staff conduct evaluations of applicant or licensee submissions related to nearby man-made hazards, meteorology, hydrologic engineering, geology, seismology, and geotechnical engineering as required by Title 10 of the *Code of Federal Regulations* (10 CFR) Parts 50, 52, and 100; and as outlined in the related sections of the staff's Standard Review Plan, NUREG-0800.

The EHCOE staff review applications for combined licenses, early site permits and design certifications submitted under 10 CFR Part 52. Additional licensing actions and other regulatory reviews pursuant to 10 CFR Parts 50 and 52 conducted by external hazards evaluations staff in NRO and the Office of Nuclear Reactor Regulation (NRR) are also included in the scope of the EHCOE. The EHCOE staff also provides technical support to other oversight and licensing activities (e.g., Technical Assistance Requests from Regions). EHCOE staff also work with the Office of Nuclear Regulatory Research (RES) to gather and evaluate new hazard information to assess its potential safety significance, and participates in the development of guidance associated with external hazards.

EHCOE will also assume the Agency's Dam Safety Officer (DSO) responsibilities. This includes the surveillance and evaluation of the agency's administrative and technical or regulatory practices related to dam safety concerning design and construction of new dams and operation, maintenance, and rehabilitation of existing dams; recommending improvements in the practices

when evaluation reveals safety-related deficiencies; and maintaining an inventory of agency dams. The DSO performs this work in accordance with SECY-91-193.

The following table lists the sections of the Standard Review Plan (SRP) that pertain to external hazards reviewed by the EHCOE. The table also references interim staff guidance (ISG) application to these external hazards. Each SRP section specifies acceptance criteria, including relevant Commission regulations, and associated NRC Regulatory Guides.

TOPIC	EXTERNAL HAZARD	APPLICABLE SRP SECTIONS or ISGs
Potential Man-Made Hazards	Nearby Industrial, Transportation, and Military Facilities	SRP 2.1.1, 2.1.2, 2.1.3, 2.2.1-2.2.2, 2.2.3, 3.5.1.5, 3.5.1.6
Meteorology and Physical Sciences	Climatology (severe weather)	SRP 2.3.1, 2.3.2, and 2.3.3 DC/COL-ISG-7 DC/COL-ISG-024
	Atmospheric Dispersion Estimates for Accident and Routine Releases	SRP 2.3.4 and 2.3.5
Hydrologic Engineering, Coastal Engineering, and Oceanography	Floods	SRP 2.4.2 and 2.4.3
	Dam Failures	SRP 2.4.4 JLD-ISG-13-01
	Surge and Seiche	SRP 2.4.5 JLD-ISG-12-06
	Tsunami	SRP 2.4.6 JLD-ISG-12-06
	Ice	SRP 2.4.7
	Cooling Water Canals and Reservoirs	SRP 2.4.8
	Channel Diversions	SRP 2.4.9
	Flood Protection	SRP 2.4.10
	Low Water	SRP 2.4.11
	Groundwater	SRP 2.4.12
	Accidental Releases of Radioactive Effluent in Ground and Surface Water	SRP 2.4.13
Geology, Seismology, and Geotechnical Engineering	Geologic Characterization Information	SRP 2.5.1
	Surface Faulting	SRP 2.5.3
	Vibratory Ground Motion	SRP 2.5.2
	Stability of Subsurface Materials and Foundations	SRP 2.5.4
	Stability of Slopes	SRP 2.5.5

5.0 Types of External Hazards and Evaluation Methodology

It is the responsibility of the EHCOE staff to review and evaluate the external hazards described below. The evaluation methodology may vary depending on the hazard and current state of practice. These review and evaluation responsibilities are separate from the mandated responsibilities of the Agency's DSO described in Section 4.0.

Potential Man-Made Hazards

The staff review includes evaluation of information on site location and characteristics such as population distribution in the site vicinity and identification and evaluation of potential hazards in the site vicinity. Potential man-made hazards posed by nearby industrial, military, and transportation facilities are identified and evaluated by the staff. Information regarding potential hazards in the site vicinity include: (1) locations of, and separation distances to, transportation facilities and routes, including airports and airways, roadways, railways, pipelines, and navigable bodies of water; and (2) presence of military and industrial facilities, such as fixed manufacturing, processing, and storage facilities including onsite storage of compressed or liquid hydrogen, liquid oxygen, and propane. The staff also reviews the nature and extent of offsite activities identified to determine whether any missiles resulting from such activities, including commercial or military aircraft operations, have the potential to adversely affect structures, systems, and components (SSCs) important to safety. In the event that an offsite activity has the potential for missile production (e.g., explosion) and is found to be a design-basis event, the staff evaluates missile effects on SSCs to determine whether the plant is adequately protected against the effects of postulated missiles. The staff conducts their reviews in accordance with SRP Sections 2.1, 2.2, 3.5.1.5, 3.5.1.6, and in support of 10 CFR Parts 50, 52, and 100.

Meteorology

The staff's review of meteorology includes evaluation of extreme climatic conditions and regional meteorological phenomena that could affect the safe design and siting of the plant. These meteorological conditions include site characteristics such as: (1) the ground-level weight of snowfall extremes for use in determining the weight of snow and ice on the roofs of safety-related structures, (2) meteorological conditions resulting in maximum evaporate and minimum water cooling for evaporative ultimate heat sinks, (3) the 100-year return period 3-second gust wind speed, (4) design-basis tornado and hurricane parameters, and (4) ambient temperature and humidity statistics for use in establishing heat and cooling loads for the design of normal plant heat sink systems, post-accident containment heat removal systems, and plant heating, ventilating, and air conditioning systems.

The staff's review of meteorology also includes the review of (1) atmospheric dispersion factor (χ/Q) estimates for postulated design-basis accidental radioactive airborne releases for both onsite and offsite receptors and (2) atmospheric dispersion (χ/Q) and deposition (D/Q) estimates for routine releases of radiological effluents to the atmosphere for offsite receptors. The review covers the atmospheric dispersion and deposition models used to calculate concentrations in air and amount of material deposited on the ground, including the meteorological data and other assumptions used as input to the atmospheric dispersion models. Staff conducts their review in accordance with SRP Sections 2.3.4 and 2.3.5 and in support of 10 CFR Parts 50, 52, and 100.

Hydrologic Engineering, Coastal Engineering, and Oceanography

The staff's review of hydrologic engineering, coastal engineering, and oceanography includes the evaluation of all potential flood-related hazards, low water (drought) conditions, open-coastal hazards, flooding due to groundwater ingress, and groundwater transport of radionuclides that could affect the safe design and siting of a nuclear power plant. This includes the evaluation of maximum water surface elevation, potential period of inundation, and flood-related associated effects from the following flood-causing mechanisms: (1) local intense precipitation and associated site drainage, (2) rivers and streams, (3) failure of dams on onsite water

control/storage structures, (4) storm surge, (5) seiche, (6) tsunami, (7) ice-induced flooding, and (8) flooding from migration of rivers, streams or channels. These reviews are also used to compute the duration of time a flood could impact the site, including access from off-site, and flood-related associated effects such as external hydrodynamic and hydrostatic loads on important-to-safety structures. Staff conducts their review in accordance with SRP Sections 2.4.1 through 2.4.13 and in support of 10 CFR Parts 50, 52, and 100.

Geology, Geophysics and Seismology, and Geotechnical Engineering

The staff's review of geology, geophysics and seismology, and geotechnical engineering includes evaluation of geological, tectonic and seismic information to determine geologic and seismic suitability of the site; or new and significant tectonic or seismic information that could impact the site-specific probabilistic seismic hazard analysis (PSHA) and the potential for future surface deformation (tectonic or non-tectonic) that may affect the design and operation of the proposed nuclear power plant, with a focus on the Quaternary Period. The investigations to determine the site-specific ground motion response spectrum (GMRS), which must meet the regulations for the Safe Shutdown Earthquake (SSE), include the seismicity within at least the 320 km (200 mi) site region, geologic and tectonic characteristics of the site region, the correlation of earthquake activity with seismic sources—including the rates of occurrence of earthquakes associated with each seismic source, PSHA and controlling earthquakes, seismic wave transmission characteristics of the site, site-specific ground motion response spectrum, and any additional information. Geotechnical engineering considerations: (1) nearby geologic features; (2) static and dynamic engineering properties of soil and rock; (3) the relationship of the foundations for safety-related facilities and the engineering properties of underlying materials; (4) assumed dynamic soil or rock characteristics and stratigraphy; (5) excavation and backfill plans and engineered earthwork analysis and criteria; (6) groundwater conditions and piezometric pressure; (7) responses of site soils or rocks to dynamic loading; (8) liquefaction potential, including settlement; (9) earthquake design bases; (10) foundation material stability, deformation, and settlement under static and dynamic conditions; (11) static and seismic analyses of foundation materials; (12) techniques to improve subsurface conditions; and (13) slope stability.

Information provided to address seismology and geophysics may also include information obtained through the Senior Seismic Hazard Analysis Committee (SSHAC) process as outlined in NUREG/CR-6372 and NUREG-2117. The staff may also perform confirmatory calculations for the PSHA and other inputs to determine the GMRS, as well as for static and dynamic loading, liquefaction potential, bearing capacity, settlement and deformation, lateral earth pressure and slope stability. Staff conducts their review in accordance with SRP Sections 2.5.1, 2.5.2, 2.5.3, 2.5.4, and 2.5.5, and in support of 10 CFR Parts 50, 52, and 100.

6.0 Types of External Hazard Work Products

EHCOE will assume the Agency's Dam Safety Officer (DSO) responsibilities including the evaluation of the agency's administrative and regulatory practices related to dam safety. The DSO participates on several interagency committees, such as the Interagency Committee on Dam Safety (ICODS), and will continue to facilitate NRC staff feedback on products related to dam safety produced by other Federal agencies. The DSO performs this work in accordance with SECY-91-193.

The EHCOE will also accept external hazards evaluations licensing work in support of the New and Operating Reactor business lines. This will generally include both 10 CFR Parts 50 and 52 work products, such as operating license renewals, license amendment requests (LARs), RAIs,

early site permits (ESP), combined license (COL) and design control documents (DCD) application reviews, as well as environmental impact statements (EIS). The final work product produced by the COE may vary depending on the applicable regulations within 10 CFR and the scope in the request for work. Additional work products may be completed by the staff for work requests from non-supported business lines, or New and Operating Reactor business line work not associated with licensing actions, on a case-by-case basis as described in the following section. Based on its expertise, EHCOE may be requested to provide external hazards support to other organizations on a case-by-case basis.

7.0 Coordination of Activities and Work Prioritization Schemes

The EHCOE staff engage in a number of coordination activities both internally within the NRC and externally with industry and scientific community stakeholders, as described below. Several of these topics are also discussed in the EHCOE Rules of Engagement document.

Interactions within the NRC on External Hazards Evaluation Activities

The external hazards evaluations staff interacts with several divisions in NRO and NRR to ensure that adequate technical expertise is provided to produce a variety of work products. EHCOE is expected to receive work from the following divisions:

- NRO's Division of Engineering, Infrastructure, and Advanced Reactors (DEIA)
- NRO's Division of New Reactor Licensing (DNRL)
- NRR's Division of Operating Reactor Licensing (DORL)
- NRR's Japan Lessons Learned Division (JLD)

As outlined in the EHCOE Rules of Engagement, and described below, EHCOE management will coordinate work request activities using an established Work Prioritization Scheme. EHCOE staff and management will effectively communicate the status of work activities, resource expenditures, adjustments or significant changes to communicated work plans.

Other divisions in NRO and NRR, other NRC offices, or the Regions may also seek technical advice from the EHCOE staff, or feedback regarding the potential impact of an external hazard on the site. Likewise, the EHCOE staff may request feedback or insights from other divisions of NRO and NRR, other NRC offices, or the Regions in support of EHCOE staff's assigned reviews. Regardless, any and all significant work efforts will follow the Work Prioritization Scheme and the Work Request Process described below. This includes separate processes for activities that are budgeted (forecast) in advance versus emergent work activities. These topics are also discussed in the EHCOE Rules of Engagement document.

Work Prioritization Schemes

In collaboration with its partners, EHCOE management will prioritize work assignments that accounts for all budgeted activities within the supported business lines. Emerging and non-budgeted activities in support of the New and Operating Reactor business lines will be considered on a case-by-case basis given the prioritization of budgeted activities in the supported business lines and resource availability. The prioritization process will be used to develop an annual "1-n" prioritization list for work activities. In general, items having equal priority will be scheduled for completion on a first-in, first-out basis; however, an activity's priority will be periodically assessed and may be adjusted. Prioritization will consider various factors, including related activities, staff availability, and risk or safety factors associated with the project. EHCOE staff will meet and/or communicate with partners to ensure continual alignment on all activities before initiating the work. EHCOE staff will use work planning tools to plan and

schedule work, manage changes in planned work activities, and determine the impact of emergent work on ongoing activities. The EHCOE Rules of Engagement outlines the work prioritization scheme and EHCOE staff actions in support of the New and Operating Reactor business lines.

Budgeted Work

In general, budgeted activities within the supported business lines will be considered in the following order of priority:

1. Safety or risk significance – if the requested activity is related to a significant safety issue that may preclude the safe operation of a reactor at a specific site or have the potential to impact the safety and health of the public and the environment, it will be considered the highest priority project. This also includes work requested to determine if the specific issue has safety significance.
2. Staff and Resource Availability – if the requested activity requires a specific set of resources, previous prioritization considerations will apply. If the requested activity is determined to be of a lower priority than ongoing activities using the required resources, the project will be added to the queue for completion in order of priority or, if available, alternate resources will be used to complete the activity. If requested activity is determined to be of a higher priority than an ongoing activity using the required resources, then the ongoing activity milestones will be adjusted to support timely completion of the requested activity. EHCOE staff will appropriately secure external technical support through the use of contractors, if supported by the requesting organization and if budget resources are available.
3. Critical Path – if the requested activity is part of a larger project for which the requested work is, or is close to, the critical path for successful completion, it will be considered a higher priority than all other work activities except for safety or risk-significant work.
4. Related Projects – prioritization will consider whether the requested activity is related to, or similar to, an ongoing activity. Predecessor projects or activities will be given higher priority than successor projects or activities.

Emergent Work

In general, budgeted activities within the supported business lines will be given priority over emergent activities. However, it is possible that emergent work will be received which may require changes to project prioritizations and current completion schedules for ongoing budgeted work activities. Emergent work within the supported business lines will be prioritized in the same manner as described above for budgeted, regularly scheduled work. This may result in higher-priority emergent work possibly delaying or suspending the completion of lower-priority work. If the potential for emergent work to impact existing work schedules, anticipated completion dates, or any progress milestones, these impacts and the reasons for the delays will be clearly coordinated and communicated with all partners to assure full alignment among partners on work priorities before engaging on the emergent work.

Work Requests

As discussed in the EHCOE Rules of Engagement, requests for external hazards evaluations must be communicated to the supervising branch chief through the appropriate channels. Existing processes for requesting work may be used where they already exist. In cases where there is no established process, a sample work request form is included in Appendix B. Although use of this form is not required, the form is provided as an example of the information that should be sent to the cognizant EHCOE Branch Chief. The description of the requested

work including interim work products, such as draft documents, should be described in the work request commensurate with the scope of work and level of effort. It is the responsibility of the requesting organization to ensure that sufficient information regarding the level of detail, scope of work, and level of effort are provided to the EHCOE branch chief. This information is needed because, although EHCOE staff contribute to the decisionmaking process, the final decision authority rests with the Director of the office requesting the work performed by EHCOE staff. The work request should also include all applicable background information and any available work-product templates that the EHCOE staff may need to complete the request.

Work Scheduling and Work Tracking Tools

EHCOE staff or management should be included, as appropriate, in the requesting organization's project status meetings. EHCOE staff, in concert with the requesting organization, will develop or update project schedules using appropriate work planning tools, such as SharePoint, Enterprise Project Management (EPM) or Firefly. This functionality may be replaced upon implementation of the new Replacement Reactor Programming System (RRPS) licensing/workload management module. The project schedule should reflect anticipated deliverables (Safety Evaluations (SE) input, Staff Assessments (SA), etc.) and support activities (e.g. ACRS, public meetings, etc.). The level of detail to be entered into the tracking tools will be determined by the requesting organization in concert with the supervising EHCOE Branch Chief. To the extent possible, schedules should be complete before work begins to ensure clear expectations regarding milestones and deliverables are communicated to the staff from the onset of the activity. These scheduling interactions will be conducted in accordance with current procedures for entering new (budgeted or emergent) work into the tracking tools, such as those outlined in NRO Office Instruction REG-116 (Accession No. ML12132A159). When possible, the EHCOE staff and management will use prior experience with similar activities to provide scheduling feedback to the requesting organization on the estimated scope and level of effort to support development of realistic milestones such that minimal changes to the milestones are necessary over the duration of the project.

The EHCOE work may be tracked through either of the work tracking tools in use by NRO or NRR, currently EPM or FireFly, respectively. For New and Operating Reactor business line work requests, the work management tool in which the requested work is being tracked, as well as the method for providing status updates for input into the work management tool, should be specified as part of the work request. However, until a single work planning tool is developed for both business lines, the EHCOE branch chief will develop tracking and scheduling tools to monitor activities and resources across both business lines.

The process for scheduling and tracking project status may change as new scheduling and tracking tools are implemented in NRO and NRR.

Proposed Changes

Proposed changes to work schedules may come from the EHCOE or the requesting organization. Proposed changes to schedules or level of effort related to scope changes or shifting priorities will be evaluated transparently and discussed with partners promptly. Proposed schedule changes, due to licensee or applicant performance issues, will be discussed with management of EHCOE and the requesting organization to determine appropriate schedule changes. For any proposed changes that are initiated by EHCOE, the supervising branch chief will communicate the reasons for the proposed changes to the requesting organization and propose revised milestones. Agreement for the requesting organization must be obtained prior to implementing any proposed schedule change. Proposed changes in

excess of 2 weeks beyond the scheduled milestone will be updated in the appropriate work tracking tool using the applicable procedures.

Suspending or Cancelling Work

Should it become necessary to suspend or cancel work undertaken by the EHCOE staff, the requesting organization will notify the supervising EHCOE Branch Chief in writing that work on the project or activity is stopping. This communication should include instructions to the EHCOE staff of how to close the work, including the process for submitting all work already completed, or how to handle outstanding staff actions.

8.0 Communication and Outreach

The EHCOE Rules of Engagement document describes some of the anticipated internal interactions regarding work planning, including project scope, schedule, level of effort, and work products; which are critical to ensuring the timely planning, review, and completion of external hazards evaluations.

External interactions for the external hazards evaluations staff will involve applicants and licensees, professional colleagues, contractors, and members of the public. Staff attendance at external scientific meetings, such as SSHAC meetings, are necessary for external hazards evaluations. In addition, the DSO serves as the agency's point of contact (POC) regarding dam safety, and will participate in several interagency committees, including the ICODS and the National Dam Safety Review Board.

EHCOE will solicit feedback from partner organizations as described in the Rules of Engagement and Section 11.0 of this Program Plan. Appendix A of this Program Plan provides a sample feedback form.

Where available, the EHCOE staff will use pre-existing tools, policies, and procedures to facilitate effective communications. NRO Office Instruction COM-105 (Accession No. ML11266A131) specifically outlines the protocol to ensure technical, regulatory, and policy consistency between NRO and NRR. SharePoint is also an effective communication tool already in use by the external hazards evaluations staff. DSEA currently maintains a SharePoint site allowing staff and branches to easily share project status and work product drafts.

9.0 Knowledge Management and Training

Knowledge Management and Transfer

There are no new knowledge management and transfer needs associated with EHCOE beyond those already in use by the NRO/DSEA external hazards staff. Ongoing knowledge management activities in DSEA include technical caucuses in which external hazards staff share hazard-specific information with colleagues. These knowledge management and transfer activities will continue with the EHCOE staff. Additional external hazard-specific technical discussions give the EHCOE staff the opportunity to share emerging thoughts and professional opinions with their colleagues. The EHCOE staff will continue to maintain SharePoint sites to share information on various activities and project status, including 10 CFR Parts 50, 52 and 100 issues; regulatory guidance updates; unique or complex technical issues in ongoing or historical external hazards evaluations; and current events in external hazards evaluations. DSEA and the EHCOE will continue to use "Lunch-and-Learn" sessions for knowledge transfer, as well as more formal recorded knowledge management presentations by outgoing staff.

Recordings from these formal sessions are maintained for future use by the external hazards evaluations staff.

Training and Qualifications

There are no additional personnel development/training needs for the EHCOE beyond those already in use by the NRO/DSEA external hazards staff and the external hazards staff relocating from NRR/DE and the Division of Risk Assessment (DRA), also in NRR. DSEA staff currently refer to NRO Office Instruction PER-105 (Accession No. ML100620219), which outlines the Training and Qualification Program for all incoming technical, project management and inspection staff; and the process for completing the qualification through a combination of study activities, on-the-job training, and prior experience. In certain cases, technical staff may substitute previous work experience and training as evidence that an individual already possesses the required knowledge or skills achieved by completing parts of the technical reviewer qualification program. This process is in PER-105. Additionally, some hazards branches require hazard-specific qualification programs for certain subject matter experts.

Professional Development

There are no additional personnel development/training needs for the EHCOE beyond those already in use by the NRO/DSEA external hazards staff and the external hazards staff relocating from NRR/DE and NRR/DRA. To maintain its integrity as a center of expertise, the EHCOE staff will continue to engage in regular professional development and external training activities. These ongoing activities include on-the-job training, formal qualification programs, knowledge transfer, mentoring, participation in professional conferences, national and international science activities, publication in scientific journals, and professional reading to maintain their technical proficiency.

10.0 Resource Management

In terms of resource management, the consolidation of external hazards evaluations staff into one location will centralize the review functions of the Operating and New Reactor business lines, normalize the workload and support a potential merger of NRO and NRR. The formation of EHCOE will also provide additional flexibility and agility in staff resources to support both the New and Operating Reactor business lines. Additional resource management benefits include the ability to shift resources or work assignments to meet the demands of a changing environment, increased organizational capacity without increases in resources, and more effective knowledge management and maintenance of critical skill sets. Enhanced decisionmaking, cross-organization standardization, and expanded employee knowledge sharing and experience in each selected area are also expected to benefit the external hazards evaluations staff. The efficiencies gained through the establishment of the EHCOE will result in an organization that is optimally resourced to function more effectively and efficiently while meeting the needs of organizations across the agency in carrying out the agency's mission.

Minimal costs are associated with establishing the EHCOE since the majority of the technical staff currently reside in DSEA. These costs include establishing and documenting roles and responsibilities, and the standardization of procedures, work management tools, and prioritization schemes.

Additional details of the external hazards evaluations staffing plans and resources are found in the Business Case document; and the management of work, including the work prioritization scheme, is discussed in more detail in Section 7.0.

11.0 Performance and Self-Assessment

EHCOE management will actively and periodically solicit feedback on its performance from its partners to complete a self-assessment and use this feedback to continuously improve future planning, and execution of work activities. Requesting organizations will also be asked to provide feedback on how the EHCOE met the specific performance metrics for the requested work, using the feedback form provided in Appendix A of this Program Plan. This performance assessment and solicitation of feedback may occur while the requested work is ongoing or after the requested work is completed. Feedback will be sought from all levels of staff, including technical staff, branch chiefs, and senior managers, as appropriate.

In addition to feedback from requesting organizations, the external hazards evaluations staff will also provide periodic self-assessments which may include suggested improvements, notable areas of success, and feedback on the requesting organizations. The first periodic assessment will be in support of the Commission requirement in SRM-SECY-15-0143 (Accession No. ML16053A500) to assess successes and lessons learned from implementation of the COE and to issue associated agencywide communication within 1 year of implementation of the COE. The self-assessment may also result in suggested process changes, or feedback that should be shared with requesting organizations regarding staff interactions, estimated levels of effort, or the timeliness of information sharing. Typically, the self-assessment will be completed through a standard survey to be made available to participating staff. This survey will be in an electronic format within SharePoint such that the feedback can be readily viewed, binned, and shared.

Appendix A: EHCOE Report Feedback Form

To be completed by the External Hazards COE staff.

EHCOE POC: (assigned by EHCOE BC) Name:	Telephone:	Tracking # (assigned by EHCOE)
Title: (assigned by Partner POC)		

To be completed by the requesting office/division/branch upon completion of the work request.

1. Originator - Name (Last, First)	2. Organization (Office/Division/Branch)	3. Date (MM/DD/YY)	
4. Office Telephone	4a. Other Phone		5. Person Completing this Form (if different)
6. Licensee Name	7. License #	8. Docket #	Name: Phone:
<p>9. On a scale of 1 to 5, where 1 is very satisfied and 5 is very dissatisfied, please answer the following questions:</p> <ul style="list-style-type: none"> a) How satisfied are you with the work completed by the COE staff? b) How satisfied are you with the COE staff's communications during the project? c) How satisfied are you with the COE staff's adherence to the completion schedule? d) How satisfied are you with the COE staff's participation in meetings or site visits (if applicable)? e) How satisfied are you with the processes used by the COE to track progress and keep you informed? 			
<p>9. How could the External Hazards COE improve the work management, prioritization or completion process?</p>			
<p>10. Please provide any additional comments or feedback.</p>			
Signature:			Date:

Appendix B: EHCOE Work Request Form

To be completed by the requesting office/division/branch.

1. Originator - Name (Last, First)	2. Organization (Office/Division/Branch)	3. Date (MM/DD/YY)
4. Office Telephone	4a. Other Phone	5. Secondary Contact Name: Phone:
6. Licensee Name	7. License # 8. Docket #	
12. Description of requested work (e.g. scope of work and final work product) and CAC/TAC:		
13. Interim Tasks and Work Tracking (e.g. drafts required before final, RAIs, meetings or site visits and process for status updates)		
14: Additional Information (e.g. information supplied by the licensee, ADAMS Accession Nos.)		
15. Attachments? Yes / No If yes, treat attachments as proprietary? Yes / No		
16. Is this work budgeted or emergent?	Requested Due Date:	
BC Approval:	Date:	

To be completed by the External Hazards Evaluations COE staff.

EHCOE POC: (assigned by EHCOE BC) Name:	Telephone:	Tracking # (assigned by COE)
Title: (assigned by Partner POC)		