

PROVINCIAL NUCLEAR EMERGENCY RESPONSE PLAN (PNERP):

A Strategic Response Framework for Nuclear & Radiological Emergency Management

2025

Prepared by Emergency Management Ontario Ministry of Emergency Preparedness and Response



Executive Council of Ontario Order in Council

On the recommendation of the undersigned, the Lieutenant Governor of Ontario, by and with the advice and concurrence of the Executive Council of Ontario, orders that:

Conseil exécutif de l'Ontario Décret

Sur la recommandation de la personne soussignée, le lieutenant-gouverneur de l'Ontario, sur l'avis et avec le consentement du Conseil exécutif de l'Ontario, décrète ce qui suit :

Whereas section 8 of the *Emergency Management and Civil Protection Act*, as amended, requires the Lieutenant Governor in Council to formulate an emergency plan respecting emergencies arising in connection with nuclear facilities:

Therefore the document entitled "Provincial Nuclear Emergency Response Plan (PNERP): A Strategic Response Framework for Nuclear & Radiological Emergency Management" be adopted as an emergency plan respecting emergencies arising in connection with nuclear facilities formulated under section 8 of the Emergency Management and Civil Protection Act, as amended.

And further the "Provincial Nuclear Emergency Response Plan (PNERP): A Strategic Response Framework for Nuclear & Radiological Emergency Management", may be revised from time to time by the minister responsible for the Emergency Management and Civil Protection Act limited to updates clerical and administrative in nature.

And further that Order in Council O.C. 2317/2017, dated December 13, 2017, be revoked effective the date of this Order in Council.

Attendu que l'article 8 de la *Loi sur la protection civile et la gestion des situations d'urgence*, dans sa version modifiée, exige que le lieutenant-gouverneur en conseil établisse un plan de mesures d'urgence relatif aux situations d'urgence liées aux installations nucléaires;

Par conséquent, le document intitulé « Plan provincial d'intervention en cas d'urgence nucléaire (PPIUN) : Cadre d'intervention stratégique pour la gestion des situations d'urgence nucléaire et radiologique » est adopté à titre de plan de mesures d'urgence relatif aux situations d'urgence lièes aux installations nucléaires, établi en vertu de l'article 8 de la *Loi sur la protection civile et la gestion des situations d'urgence*, dans sa version modifiée.

De plus, le « Plan provincial d'intervention en cas d'urgence nucléaire (PPIUN) : Cadre d'intervention stratégique pour la gestion des situations d'urgence nucléaire et radiologique » peut être révisé selon les besoins par le ministre responsable de la *Loi sur la protection civile et la gestion des situations d'urgence* en se limitant à des mises à jour de nature rédactionnelle et administrative.

O.C. | Decret: 1020/2025

En outre, le décret 2317/2017 du 13 décembre 2017 est révoqué à compter de la date du présent décret

Recommended: Minister of Emergency Preparedness and Response

Recommandé par : Miniştre de la Protection civile et de l'Intervention en cas d'urgence

Concurred: Chair of Cabinet

Appuyé par : la présidence du Conseil des ministres

Approved and Ordered: JUL 3 1 2025

Administrator of the Government L'administrateur du gouvernement

Forward and Synopsis

The Government of Ontario is responsible for leading and directing the preparations for, the response to, and recovery from nuclear and radiological emergencies that affect Ontario. The Provincial Nuclear Emergency Response Plan (PNERP) details how the province will respond to nuclear and radiological emergencies.

Ontario's nuclear facilities have operated since 1962, for over 63 years, without having any incidents that have posed a risk to public safety. Nuclear Facilities have produced over 3600 TWh of electricity with a combined total of over 4.7M reactor operating hours without incident. Ontario's nuclear generating facilities are world leaders when it comes to being the safest and cleanest form of electrical production.

The revised PNERP is based upon a new technological study that has enabled it to be flexible, agile, and applicable to all existing, planned e.g., Small Modular Reactors (SMRs), and new future nuclear reactor technologies. The revised PNERP supports the Government of Ontario's policy of growing its nuclear power production footprint anywhere in Ontario while ensuring public safety.

Ontario has adopted a SAFE, SAFER and SAFEST approach to nuclear emergency management. The PNERP's planning basis, has accounted for the safety record of Ontario's nuclear industry and the substantive improvements that have been implemented including the enhanced safety systems that have been introduced in a post Fukushima environment.

The PNERP and its existing Nuclear Emergency Management Program (NEMP) is built upon the industry's safe foundation to make Ontario SAFER.

The revised PNERP is an essential component to Ontario's setting of the industry standard and its ability to ensure Ontario is Safe, Practiced and Prepared in a nuclear and radiological context for now and into the future.

The PNERP:

• Pursuant to section 8 of the Emergency Management and Civil Protection Act (EMCPA) the Lieutenant Governor in Council shall formulate an emergency plan respecting emergencies arising in connection with nuclear facilities, and any provisions of an emergency plan of a municipality respecting such an emergency shall conform to the plan formulated by the Lieutenant Governor in Council and are subject to the approval of the Minister responsible for emergency management, and the Minister responsible for emergency management may make such alterations as he or she considers necessary for the purpose of co-

- ordinating the plan with the plan formulated by the Lieutenant Governor in Council.
- The PNERP describes the general roles and responsibilities for the off-site response to a radiological or nuclear emergency in Ontario and includes seven Implementing Plans. (Note: the province is responsible for directing the response to all nuclear or radiological emergencies in/affecting Ontario.)
- The PNERP is operationally applied through its detailed Implementing Plans that are designed specifically for each major nuclear facility in or within the immediate vicinity of Ontario and or for all other types of radiological emergencies.

The Scientific basis for the revised PNERP:

- A new technological study and planning basis that is applicable to existing CANDU reactors, new large nuclear reactors, and Small Modular Reactors was developed.
- It was developed in collaboration with nuclear health physicists, nuclear engineers, and reactor safety experts from Ontario Power Generation (OPG), Bruce Power (BP), Chalk River Nuclear Laboratories (CNL), Emergency Management Ontario (EMO) and the Chief Nuclear Engineer from Calian Nuclear Ltd. (Note: the new technical study and planning basis have been peer reviewed and endorsed by this scientific cohort.)
- The existing 2017 PNERP's technical study and planning basis, was revised to
 account for post-Fukushima enhancements to safety systems and designs of
 operating nuclear facilities in the province as well as incorporated into lessons
 learned from continuous improvements, international best practices, and
 standards. Note: the flexibility/agility provided by the new technological study
 and planning basis for the revised PNERP supports an expansion of Ontario's
 nuclear footprint across the province.

The Duty to Consult regarding the PNERP

The province has a Duty to Consult regarding the PNERP. Emergency Management Ontario (EMO) has engaged and consulted with all First Nation and Indigenous communities in Ontario that are close to or have traditional territories that could be affected by licensed CNSC facilities within Ontario. (Note: the implementation of the PNERP during the unlikely event of a nuclear or radiological emergency could affect First Nation or Indigenous community rights etc., thus we continue to work together on a partnership basis regarding nuclear emergency management.)

"Over the next 25 years, demand for electricity in Ontario is projected to grow by at least 75 per cent, the equivalent of adding four and a half cities the size of Toronto.

Ontario's energy policy will determine the success of our province's economy, today and for a generation to come.

It's why for the last seven years your government has been hard at work restoring the promise of Ontario's energy advantage. Now, today, the province boasts one of the

cleanest grids in North America, with a steady and reliable supply of affordable electricity powering Ontario's growing economy.

Next, your government will invest unprecedented amounts in new energy production, transmission, and storage to transform our province into a global clean energy superpower, able to export clean energy and technology across the continent and beyond.

This includes the first small modular nuclear reactors in the G7 at Darlington nuclear site, alongside upgrades to existing nuclear facilities at the Darlington, Pickering, and Bruce nuclear generating stations to extend their lifespans and expand their generating capacity.

Your government is also working with interested municipalities and First Nations to dramatically expand Ontario's energy generating capacity, including exploring building the first new large-scale nuclear power plants in the province in more than 30 years in Bruce County and Port Hope" - Ontario's Speech from the Throne April 15, 2025 – Protect Ontario by Unleashing Our Economy

Executive Summary

How Ontario responds in the very unlikely event of a nuclear or radiological emergency in this province is the substance of this document. Ontario's Strategic Response Plan Framework for Nuclear and Radiological Emergency Management is short titled: Provincial Nuclear Emergency Response Plan (PNERP). With increased electricity needs and new, reduced carbon footprint technology, there is a need to meet this moment through development of this framework and nuclear implementing plans that meet or exceed all national and international public safety standards.

This plan is the guiding document for the province to prepare its ministries and employees to respond to a radiological or nuclear emergency within Ontario's borders, and to consequences that arise due to a nuclear or radiological emergency outside of its borders. In either event, the province's response shall protect people, the environment and infrastructure by ensuring any necessary radiation exposure is mitigated to the extent possible, which includes taking all reasonable measures to minimize the possibility of radiation exposure health effects.

The plan includes a requirement to provide appropriate information to members of the public and maintain public education on nuclear and radiological hazards. This awareness includes sources of radiation present during daily activities as well as those hazards present in the event of an emergency. During an emergency, the province will provide timely and accurate information to the public regarding protective actions necessary to prevent exposure to harmful levels of radiation and ensure that any exposure is kept as low as reasonably achievable (ALARA).

Furthermore, the province cultivates the expertise of its employees by providing necessary equipment and maintaining high standards of training. The use of appropriate equipment and a high degree of training will help to ensure strong situational awareness in an emergency thereby enabling timely decision making by emergency managers at all levels of government.

This is a scientifically based document for which a new, evidence-based technical study was conducted that has and will form the planning basis of the site-specific implementing plans for utilities and the nuclear-designated municipalities in Ontario regarding existing CANDU reactors and all new future builds/technologies including, but not limited to Small Modular Reactors (SMRS) that are being and or will be introduced anywhere within Ontario. A standardized methodology has been developed based upon the work described that is technologically neutral and agile in its application.

The results from the application of the methodology will inform the planning basis and policy decisions that are made by Emergency Management Ontario (EMO) when setting zone sizes and preparedness requirements for emergency planning zones for specific technologies/sites. The details for each technology's site-specific emergency planning zones are outlined in the individual respective Site-Specific Implementing Plans.

The operational governance structure is based upon the Incident Management System (IMS). A Scientific Section for nuclear and radiological emergency response purposes, has been added to the IMS structure to provide expert scientific information and advice to the EMO Command Structure. Operational details are found in the Site-Specific Implementing Plans. EMO, on behalf of the province, will direct the response to all nuclear & radiological emergencies. EMO's operational command relationship with provincial ministries, has been detailed in the PNERP. Specific details regarding all aspects of social and media related communications are detailed in separate communications plans.

Based upon the application of the PNERP's methodology, eight designated/host municipalities have been identified. The roles and responsibilities of the eight designated/host communities are clearly specified in the PNERP and the applicable Site -Specific Implementing Plans so that they can follow EMO's direction in preparation for, response to and recovery from a nuclear emergency that affects their municipality. The operational relationship between EMO and the licensed nuclear facilities is specified to ensure timely notification, communications and liaison is maintained, and support provided for the PNERP's operational implementation. The Canadian federal government and identified federal departments have operational support roles as detailed in the PNERP.

First Nation and Indigenous communities have jurisdiction over their respective community's emergency management programs including nuclear response within their communities. The strategic government to government operational relationship between Ontario as represented by EMO with the First Nation and Indigenous communities that are, or have traditional territories, in proximity to a licensed nuclear facility, has been outlined to ensure notification, mutual operational support and communications:

Individual First Nation and Indigenous community's operational details are specified in their community's emergency plans and the applicable site-specific implementing plans.

A communications and liaison structure has been detailed for cross boarder operational coordination purposes with contiguous provinces and or states within the United States.

Finally, to ensure its ongoing operational capacity, the PNERP will be reviewed regularly and updated accordingly to ensure that it maintains its applicability in an evolving nuclear radiological environment for a safe, practiced, and prepared Ontario in a nuclear and radiological context.

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This is version 1.0 of the 2025 Provincial Nuclear Emergency Response Plan. This version, once approved, will replace the 2017 PNERP Master Plan.

Administrative updates to the current version will be recorded in the following table.

Revision Number	Description of change	Date of Publication
1.0	Initial publication of 2025 version	2025-07-31

Publications Management

This publication is subject to review and administrative amendments in collaboration with ministries and consultation with key interested parties. This process is the responsibility of Emergency Management Ontario. Interested parties are encouraged to review and evaluate this plan as they use it and to submit comments and suggestions where applicable.

Copies of this Provincial Nuclear Emergency Response Plan are distributed according to the Distribution List - Annex V. Organizations that keep hard or digital copies of this document as a resource for their emergency operations are responsible for ensuring that they have the most up-to-date version of the document.

For more information on Ontario's nuclear emergency management program please visit Ontario Emergency Preparedness: Nuclear Incident.

Please submit your comments and suggestions on the Provincial Nuclear Emergency Response Plan or, to request it in a different format, please Contact us.

Website:

Nuclear Incident (English)
Incident Nucléaire (French)

Acronyms and Abbreviations

AAZ Automatic Action Zone
ADM Assistant Deputy Minister
AHJ Authority Having Jurisdiction
ALARA As Low As Reasonably Achievable

BDBA Beyond Design Basis Accident

CBRNE Chemical, Biological, Radiological, Nuclear, and Explosives

CCEM Cabinet Committee on Emergency Management CEM Commissioner of Emergency Management

CFIA Canadian Food Inspection Agency
CMOH Chief Medical Officer of Health

CNSC Canadian Nuclear Safety Commission

ConOps Concept of Operations
CPZ Contingency Planning Zone
CSA Canadian Standards Association

DBA Design Basis Accident

DMSC–EM Deputy Ministers Steering Committee on Emergency Management

DO Duty Officer

DPZ Detailed Planning Zone
DRD Direct Reading Dosimeters

EB Emergency Bulletin
EDU Ministry of Education

EIC Emergency Information Centre

EMCPA Emergency Management and Civil Protection Act

EMO Emergency Management Ontario
ENERGY Ministry of Energy and Mines
EOC Emergency Operations Center
EPA Environmental Protection Agency

EPZ Emergency Planning Zone ER Emergency Response

ERAMG Environmental Radiation and Assurance Monitoring Group

ERO Emergency Response Organization

ETE Evacuation Time Estimate EWC Emergency Worker Centre

FEMA Federal Emergency Management Agency
FERP Federal Emergency Response Plan
FNEP Federal Nuclear Emergency Plan

GC Generic Criteria

GOC Government Operations Centre

HazMat Hazardous Materials
HC Health Canada

HPPA Health Protection and Promotion Act
HSEM Health System Emergency Management
IAEA International Atomic Energy Agency

IAFNER Ministry of Indigenous Affairs and First Nation Economic

Reconciliation

IAP Incident Action Plan

IMS Incident Management System

IP Implementing Plans
IPZ Ingestion Planning Zone
ITB Iodine Thyroid Blocking

J-EIC Joint Emergency Information Centre

KI Potassium Iodide

LGIC Lieutenant Governor in Council

LO Liaison Officer

MCCSS Ministry of Children, Community and Social Services

MDU Monitoring and Decontamination Units

MECP Ministry of the Environment, Conservation and Parks

MEOC Ministry Emergency Operations Centre
MERP Ministry's Emergency Response Plan

MEPR Ministry of Emergency Preparedness and Response

MLITSD Ministry of Labour, Immigration, Training and Skills Development

MMAH Ministry of Municipal Affairs and Housing

MND Ministry of Northern Economic Development and Growth

MNR Ministry of Natural Resources

MOH Ministry of Health

MTO Ministry of Transportation

NAADS National Alert Aggregation and Dissemination System

NEAT Nuclear Emergency Assessment Team

NEMAC Northern Emergency Management Assistance Compact
NEMCC Nuclear Emergency Management Coordinating Committee

NER Nuclear Emergency Response NGO Non-Government Organization NGS Nuclear Generating Station

NOTAM Notice to Air Missions (AKA Notice to Airmen)

NAVWARN Navigational Warning NPP Nuclear Power Plant

NRCan Natural Resources Canada

NRSRP Nuclear, Radiological and Scientific Response Programs

NSCA Nuclear Safety and Control Act

OACP Ontario Association of Chiefs of Police
OEEP Ontario Electricity Emergency Plan

OFI Opportunity for Improvement

OHSA Occupational Health and Safety Act

OIL Operational Intervention Level

OMAFA Ontario Ministry of Agriculture, Food and Agribusiness

OPP Ontario Provincial Police

ORSP Ontario Reactor Surveillance Program

OSST Offsite Survey Team

PAG Protective Action Guidelines

PCEIO Provincial Chief Emergency Information Officer

PEIP Provincial Emergency Information Plan
PEOC PIMS Provincial Emergency Operations Centre
Public Information Management Section

PNEPF Provincial Nuclear Emergency Preparedness Framework

PNERP Provincial Nuclear Emergency Response Plan
PNROP Provincial Nuclear Recovery Operations Plan
PNOORF Provincial Notification of Offsite Response Form

PPE Personal Protective Equipment

PS Public Safety Canada

RASCAL Radiological Assessment System for Consequence Analysis

REGDOC Regulatory Document (a CNSC publication)

RHRP Radiation Health Response Plan
RMO Recovery Management Organization

SI International System of Units
SOLGEN Ministry of the Solicitor General
TAG Technical Assessment Group
TBS Treasury Board Secretariat
TLD Thermoluminescent Dosimeter
USAR Urban Search and Rescue

USNRC United States Nuclear Regulatory Commission

URI Unified RASCAL Interface

UTCC Unified Transportation Coordination Centre UTMP Unified Transportation Management Plan

1. <u>INTRODUCTION</u>

1.1 Introduction

The legislative authority for emergency management (including planning and response) in the province of Ontario (hereinafter referred to as "the province") is provided for by the *Emergency Management and Civil Protection Act* (EMCPA). Pursuant to Section 8 of the EMCPA, the Lieutenant Governor in Council (LGIC) shall formulate an emergency plan respecting emergencies arising in connection with nuclear facilities. Pursuant to Section 6 of the EMCPA, the Minister responsible for emergency management is responsible for developing the plan to respond to nuclear emergencies through Emergency Management Ontario (EMO).

During a nuclear emergency, the province is primarily responsible for mitigating the offsite effects and coordinating the offsite response. Provincial responsibilities shall be executed by supporting and coordinating the efforts of organizations with nuclear emergency responsibilities as set out in this Provincial Nuclear Emergency Response Plan (PNERP). The PNERP is the foundational document in the response pillar of Ontario's nuclear emergency program (Figure 1). The other two pillars are the preparedness and the recovery pillars.

The nuclear emergency response terminology used in this document is fully defined in the Provincial Nuclear Emergency Preparedness Framework (PNEPF). This PNERP is operationally focused and is intended for audiences that are already familiar with concepts such as event categorization, provincial offsite response levels, response phases, etc.

This diagram is for visual reference only. See the text below this figure for the full description.

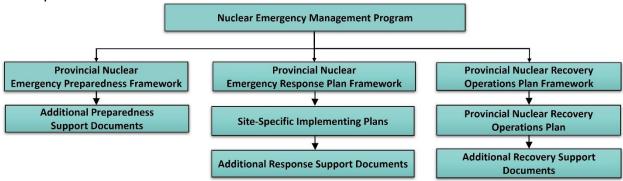


Figure 1: Nuclear Emergency Program Document Hierarchy

The diagram shows the structure of the Nuclear Emergency Management Program in Ontario, presented in a top-down approach. The program branches into three main

components: the Provincial Nuclear Emergency Preparedness Framework, the Provincial Nuclear Emergency Response Plan and Implementing Plans, and the Provincial Nuclear Recovery Operations Plan. Each of these components is linked to a corresponding set of documents: Additional Preparedness Support Documents, Site-Specific Implementing Plans, Additional Response Support Documents, Provincial Nuclear Recovery Operations Plan and Additional Recovery Support Documents, respectively.

1.2 Provincial Objective

The province, in the unlikely event of a nuclear emergency, will act to minimize the impact on public health and safety, property and the environment. To that end, the province will issue operational directives and, in the event of a declared provincial emergency, emergency orders, where warranted and appropriate in alignment with the requirements and criteria outlined in the EMCPA, and as further detailed in this Plan.

1.3 Nuclear Emergency Response Policy

The province has jurisdiction over public health and safety, property, and the environment within its borders. The province's nuclear emergency response policy (Section 2) applies to the province's capability to manage a nuclear or radiological emergency where supplementary response or assistance by the province is necessary to support the immediate onsite response and to manage offsite consequences of the accident. The policy also applies to support for the province's nuclear and radiological emergency response capacity generation and capability maintenance. The province's policy supports nuclear and radiological emergency management with First Nation and Indigenous Communities and their traditional territories.

1.4 Goal of the PNERP

The goal of this PNERP is to provide the basis upon which offsite nuclear emergency response would be undertaken to achieve the province's aim.

To achieve this goal, the province has adopted guiding principles (Annex A) to direct operational planning and ensure any protective actions taken are justified.

1.5 Scope

This Plan addresses the response to a nuclear emergency occurring at a Nuclear Generating Station (NGS) within Ontario or at the Fermi 2 Nuclear Power Plant (NPP) in Michigan. Along with the contents herein, specifics of response to other nuclear emergencies occurring outside of Ontario and directly impacting the province are covered in the Transborder Implementing Plan (IP). Non-nuclear radiological emergencies are addressed in the Implementing Plan for Other Radiological Emergencies.

The PNERP is designed to align with national and international guidance and best practices including the Canadian Nuclear Safety Commission (CNSC), the International Atomic Energy Agency (IAEA), the United States Nuclear Regulatory Commission (USNRC), and the Federal Emergency Management Agency (FEMA), and the CSA N1600 – General requirements for nuclear emergency management programs.

1.6 Supporting Plans and Procedures

Nuclear emergency plans formulated by ministries, municipalities, operators of reactor facilities and other CNSC licensed facilities, and other agencies and organizations should conform to this PNERP, to contribute to the achievement of the aim detailed in Section 1.2.

Document interdependencies are visualized in Figure 1: Nuclear Emergency Program Document Hierarchy. Specifically, the PNERP interfaces and has interdependencies with the following elements (Annex B):

- a. NGS-specific Implementing Plans;
- b. Major Organization Plans (provincial ministries and municipalities);
- c. Provincial Nuclear Emergency Preparedness Plan;
- d. Provincial Nuclear Emergency Preparedness Support Plans;
- e. Provincial Nuclear Recovery Operations Plan:
- f. Provincial Nuclear Recovery Operations Support Plans; and
- g. Procedures associated with the above (not in Annex).

1.7 Introduction of New Technologies

PNERP will be reviewed regularly and updated accordingly to ensure that it maintains its applicability in an evolving nuclear radiological environment for a safe, practiced, and prepared Ontario in a nuclear and radiological context. The implementation of new technologies will be tracked and any impact on future editions will be assessed and implemented as required in future revisions.

2. ONTARIO'S NUCLEAR EMERGENCY RESPONSE POLICY

2.1 General

To ensure Ontarians are safe, practiced, and prepared, the province, through Emergency Management Ontario (EMO) as part of the Ministry of Emergency Preparedness and Response, maintains the PNERP. To this end, the requirements of the EMCPA, the guidance provided in CSA N1600 – General requirements for nuclear emergency management programs, and international best practices (including that of the IAEA) have been used to inform the policy for nuclear emergency response.

2.2 Policy Principles

The following principles underlie the province's nuclear emergency response policy and guides all offsite nuclear and radiological emergency management within the province:

- a. The province, through its ministries, agencies, boards and commissions, has responsibility for the health, safety, and welfare of all inhabitants of the province, and the protection of property and the environment.
- b. As the Authority Having Jurisdiction (AHJ), the province shall direct, coordinate and/or support other organizations in offsite response to manage the offsite consequences of a nuclear emergency and may, where warranted and appropriate, issue operational directives as action taken under the emergency plan where an emergency exists but a provincial emergency has not yet been declared and, in the event of a declared provincial emergency, issue emergency orders under the EMCPA.
- c. In the event of a radiological emergency, other than one occurring at a nuclear reactor facility, the province's role could vary from providing support to a local municipality, to direction regarding the conduct of response and recovery operations when the situation is beyond the capability of the municipality to address safely.
- d. Even though reactor facilities are designed and operated according to stringent safety standards, emergency preparedness and response must operate on the basis that mechanical failure, human error, extreme natural events, or hostile action could lead to nuclear emergencies.
- e. The province intends to maintain a capability to respond to Design Basis Accidents (DBA) solely through internal resources and without federal assistance (DBA are accident conditions against which a facility is designed according to established design criteria, and for which the damage to the fuel and the release of radioactive material are kept within authorized limits).
- f. Plans administered under this policy will be able to deal effectively with a broad range of possible emergencies, including severe reactor facility accidents.
- g. Timely and accurate information will be provided to the public and media.

2.3 Policy Objective

This policy aims to meet EMO's nuclear emergency response mandate by delineating responsibility for management of the province's nuclear emergency management program in order to enable a robust and versatile response in the unlikely event of a nuclear or radiological emergency. Under this policy, the province shall safeguard the health, safety, welfare, and property of the people in Ontario and ensure the protection of the environment.

The Province Shall:

- a. Be prepared to respond to a radiological or nuclear incident in Ontario.
- b. Protect people, the environment and infrastructure from increased levels of radiation exposure to the extent possible.
- c. Provide appropriate information, and proactively engage education regarding nuclear and radiological hazards.
- d. In the event of an emergency, provide timely and accurate information to the public regarding protective actions required.
- e. Ensure that those charged with the planning for, response to, and recovery from a radiological or nuclear emergency are properly trained and equipped to do so, ensuring appropriate capability and capacity.
- f. Ensure it is positioned to understand and adapt to new nuclear technologies as it relates to offsite preparedness, response, and recovery.

The province's policy includes supporting impacted municipalities to mitigate local emergencies such that the response of local first responders is safe and effective.

2.4 Enabling Authority, Roles, and Responsibilities

The enabling authority for emergency response in Ontario is the EMCPA, which identifies the roles and responsibilities of provincial ministries and municipalities in preparing for and responding to emergencies that fall within their jurisdiction. Thus, the EMCPA authorizes and directs the province to take the actions necessary to meet their responsibilities under the EMCPA. Pursuant to Section 6 of the EMCPA, the Minister responsible for emergency management is assigned responsibility for nuclear and radiological emergencies while the development of a provincial emergency response plan for terrorism and civil disorder is assigned to SOLGEN. The primary responsibility for managing a terrorism and civil disorder emergency rests with the local police service of jurisdiction for the community/municipality in which the event occurs, supported by the associated municipal government. In the event of a radiological or nuclear emergency caused by terrorism or civil disorder, the MEPR, through EMO, shall act in support of SOLGEN's overall management of the incident, with EMO primarily focused on consequence management, beyond their capability and/or capacity, inclusive of any pre-existing mutual aid agreements.

A list of identified ministries and municipalities as specified in this PNERP, shall ensure effective fulfillment of their respective preparedness and response roles. The federal government also has some roles and responsibilities when a nuclear emergency happens in Canada, or when Canada is affected by a nuclear emergency abroad. See Annex D for Federal Legislative Authority. Additional emergency response organization responsibilities for nuclear emergencies are described in:

- a. federal departments Annex E
- b. provincial ministries Annex F
- c. reactor facilities Annex G
- d. designated municipalities Annex I
- e. designated host municipalities Annex J

The hierarchy of authorities related to nuclear emergency response is illustrated in Figure 2: Hierarchy Authority.

This diagram is for visual reference only. See the text below this figure for the full description.



Figure 2: Hierarchy Authority

The flowchart presents a top-down hierarchical structure of authorities involved in a nuclear emergency response in Ontario. The Lieutenant Governor in Council and the Premier have the highest authority, followed by the Cabinet Committee on Emergency

Management. Below this is the Deputy Minister's Steering Committee on Emergency Management. The next level is the Deputy Minister of Emergency Management Ontario, who also serves as the Commissioner of Emergency Management. This is followed by Emergency Management Ontario, then the Nuclear Emergency Management Coordinating Committee. At the base of the hierarchy are various subcommittees responsible for addressing specific action items. Downward-pointing arrows between each level illustrate the flow of authority throughout the structure.

2.4.1 Lieutenant Governor in Council and Premier

The LGIC and the Premier of Ontario provide overall direction to the management of the emergency response.

2.4.2 Cabinet Committee on Emergency Management / Minister of Emergency Preparedness and Response

Appointed by the LGIC, the Cabinet Committee on Emergency Management (CCEM) provides strategic advice to Cabinet on the government's efforts to prevent, mitigate, prepare for, respond to, and recover from emergency situations.

2.4.3 Commissioner of Emergency Management and Chair of Deputy Minister's Steering Committee on Emergency Management

The Commissioner/Chair will administer all programs, plans, and procedures identified in the PNERP including those considered subordinate to the PNERP and will chair the Deputy Minister's Steering Committee on Emergency Management (DMSC) which provides whole-of-government coordination, alignment, and oversight for preparedness, response and recovery operations as needed.

2.4.4 Emergency Management Ontario

EMO will lead provincial ministries in preparing for, responding to, mitigating, and recovering from the offsite radiological consequences of a nuclear emergency with the goal of protecting the health, safety, welfare, and property of the people of Ontario and the environment. In the event of a radiological emergency, other than one occurring at a facility with site-specific response plans, EMO's role may extend to directing the response in addition to the aforementioned radiological emergency functions.

EMO will:

- a. Maintain the PNERP by continually evaluating the PNERP and updating as needed.
- b. Conduct preparedness activities including:
 - i. Training and acquisition / maintenance of required survey and sampling equipment.
 - ii. Participation in drills and exercises to consolidate knowledge and training.

- iii. Through drills and exercises, identify planning gaps or areas for improvement to ensure that the province is safe, practiced, and prepared.
- c. Oversee, design, and provide public education and awareness program parameters.

2.4.5 Nuclear Emergency Management Coordinating Committee

The Nuclear Emergency Management Coordinating Committee (NEMCC) shall convene for semi-annual meetings. Provincial representation at this committee will include (but is not limited to) Directors that have a responsibility for any facet within the PNERP. These meetings are intended to monitor the status of the PNERP and identify gaps and areas for improvement. The product of these meetings shall be action plans to address issues at the lowest level possible. NEMCC membership also includes representatives from the designated and host municipalities, First Nation, and Indigenous communities in close proximity to licensed Canadian Nuclear Safety Commission (CNSC) facilities, federal departments, nuclear facilities, and contiguous states of the United States.

2.4.6 Subcommittees and Working Groups

As required, specific subcommittees and/or working groups should be utilized to enable the PNERP, with the intent of growing and maintaining provincial capabilities and capacities across all ministries that have been assigned responsibilities within the PNERP. It is intended that these subcommittees and working groups will be used as a vehicle to harmonize efforts, identify areas of concern, and develop recommendations to ensure the requirements of the PNERP are satisfied.

2.4.7 Provincial Employees

Provincial employees shall be provided training opportunities commensurate with their role as identified within the PNERP such that they can develop the skills necessary to fulfill their role in daily preparedness operations as well as during an emergency. Employees must maintain the necessary training qualifications as described within the PNERP and its subordinate documents, such as the Nuclear Training Program. The level of training required shall be commensurate with the employee's role in the program. Further, all employees engaged with the PNERP shall strive to enhance the program by identifying non-compliance/conformance and areas for improvement.

3. FOUNDATIONS OF THE PNERP

3.1 Acts, Regulations, and Orders

This section outlines the provincial legislation establishing the PNERP. Further description of provincial legislation is presented in Annex B.

3.1.1 Emergency Management and Civil Protection Act

The *Emergency Management and Civil Protection Act* establishes the province's legal framework for managing emergencies. The legislation and its regulations do this by setting out various authorities and responsibilities accorded to provincial ministries, municipalities, and specific individuals.

3.2 First Nation and Indigenous Communities

Responsibility for public safety within First Nation communities' rests with the Chief and Council, whereas in Indigenous communities, it resides with their respective leadership. Communities that have Radiological or Nuclear (RN) hazards identified as part of their Hazard and Risk profile are encouraged and supported to have community emergency plans that reflect these hazards/risks as appropriate for the protection of community members.

While there are no First Nation or Indigenous communities within the Detailed Planning Zones (DPZ) of any of Ontario's reactor facilities, there are communities and traditional territories that are within the Ingestion Planning Zone (IPZ) for reactor facilities. A DPZ is a pre-designated area immediately surrounding a reactor facility where pre-planned protective actions are implemented as needed. An IPZ is a pre-designated area identified to monitor and ensure the safety of the food, drinking water and or wild hunts/harvests and to restrict/eliminate the consumption and or distribution of potentially contaminated consumables including for example grazing animals, milk, and animal feed. First Nation Chiefs/Councils and Indigenous leadership should consider in their plans the need to undertake ingestion control measures (refer to the PNERP site specific implementing plans for Pickering NGS, Darlington NGS, Bruce NGS, Fermi 2 NPP, and for a Transborder Nuclear Emergency).

Some First Nation and/or Indigenous communities may be situated near other licensed CNSC facilities. In such cases, the communities are advised to consider relevant response measures in the event of a radiological emergency at the CNSC licensed facilities. This would include details of relevant notifications to and from the involved organizations.

Given the broad range of other radiological incidents possible (e.g., transportation accidents), First Nation and Indigenous communities should consider identifying

incidents as a potential risk within their emergency plans (refer to the PNERP Implementing Plan for Other Radiological Emergencies).

3.3 International Agreements and Arrangements

Ontario has several agreements in place for the purposes of emergency response mutual assistance (e.g., Northern Emergency Management Assistance Compact (NEMAC) Agreement) as well as more specific nuclear notification agreements. The latter are detailed in the PNERP Implementing Plan for the Fermi 2 NPP and for a Transborder Nuclear Emergency. Health Canada (HC) and the United States Department of Energy developed a statement of intent supporting joint Canada-USA nuclear emergency preparedness and response capabilities with the objective to identify areas where coordination and cooperation, including information sharing and mutual assistance would be beneficial to nuclear emergency management programs and capabilities.

Canada is a signatory of the IAEA's Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency (1986), which sets out an international framework for co-operation among countries and with the IAEA to facilitate prompt assistance and support in the event of nuclear accidents or radiological emergencies. Requests to the IAEA for international assistance would be undertaken by CNSC, as the Competent Authority-Abroad, and Global Affairs Canada.

Canada is also a signatory of the IAEA's Convention on Early Notification of a Nuclear Accident (1986). The Convention establishes a notification system for nuclear accidents with potential for international, trans-boundary releases that could be of radiological safety significance.

International notification to the IAEA of a nuclear accident in Canada would be undertaken by the CNSC as the Competent Authority-Domestic.

4. GOVERNANCE

4.1 General

The Policy (Section 2) prescribes provincial senior management's commitment to the program; detailing roles and responsibilities and assigning accountability and authority to participants of the program (see Figure 2: Hierarchy Authority).

4.1.1 PNERP Oversight

Oversight of the PNERP is the responsibility of the Minister of Emergency Preparedness and Response, who directs the actions of the Commissioner of Emergency Management (CEM). A detailed explanation of the enabling authority, roles, and responsibilities for maintaining the PNERP is detailed in Section 2.

4.1.2 PNERP Support

It is expected that provincial senior management will support the PNERP in all aspects by:

- a. Promoting the requirements of the PNERP within their organizations.
- Accepting management roles with PNERP oversight responsibilities within their organizations.

4.1.3 Administration

The approval authority for the PNERP is the Lieutenant Governor in Council. The Minister responsible for emergency management with the support of the CEM, and EMO, leads the development, implementation, evaluation, maintenance, and continual improvement of the PNERP.

4.1.4 Resource Allocation

Senior management of ministries with PNERP responsibilities shall ensure that their ministry has the resources to develop, implement, evaluate, and meet their responsibilities as identified within the PNERP. If those responsibilities cannot be met (e.g., lack of personnel, insufficient resources, lack of training, etc.) senior managers shall report their deficiencies to their superiors for resolution. If the deficiencies persist, the CEM shall be notified for discussion/resolution as needed with the appropriate Deputy Minister.

4.1.5 Program Coordination

Each ministry shall appoint at least one primary and at least one alternate point of contact to coordinate PNERP actions with other ministries. As the lead organization EMO may have more than one point of contact to coordinate and track its PNERP related actions with other ministries.

4.1.6 PNERP Review Committee

4.1.6.1 Establishment

Ministries which have a role as identified in the PNERP shall establish a ministerial review committee and conduct bi-annual meetings to assess the state of their emergency preparedness (see Figure 3). Part of that meeting shall address their responsibilities within the PNERP specifically. Minutes of those meetings shall be shared with the CEM, with outstanding issues and proposed solutions to be reported to the CEM for resolution.

In addition to the DMSC-EM, a NEMCC shall be established. The NEMCC will be comprised of key federal, provincial, and municipal representatives, as well as other invited organizations (e.g., First Nation and Indigenous communities, United States member states, and CNSC licensed facilities). The PNERP review committee includes the NEMCC and others who have the required expertise, knowledge of the organization, and the capability to identify resources from all key functional areas within the organization. Various committees as shown in Figure 3 have a role in reviewing the PNERP.

This diagram is for visual reference only. See the text below this figure for the full description.

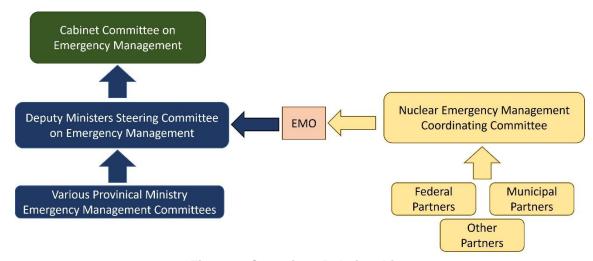


Figure 3: Committee Relationships

The diagram illustrates the committee relationships within Ontario's nuclear emergency management structure. At the top is the Cabinet Committee on Emergency Management, followed by the Deputy Ministers Steering Committee on Emergency Management, and ending with the Various Provincial Ministry Emergency Management Committees. Emergency Management Ontario is positioned alongside this structure and connects to the Nuclear Emergency Management Coordinating Committee, which includes Federal Partners, Municipal Partners, and Other Partners. Arrows indicate the relationships among these committees.

4.1.6.2 Strategic Input

NEMCC, sub-committees and working groups should provide strategic input and direction to their organizations to ensure the coordination, development, implementation, evaluation, maintenance, and continual improvement of the PNERP. Minutes shall be maintained for each meeting.

5. PLAN, VALIDATION, AND COMPLIANCE

5.1 Review and Evaluation Process

This document is subject to review and administrative amendments in collaboration with ministries and consultation with key interested parties. This process is the responsibility of Emergency Management Ontario. Interested parties are encouraged to review and evaluate this plan as they use it and to submit comments and suggestions where applicable.

During training or exercises, the PNERP and its supporting elements may be evaluated. Resulting lessons-learned should identify gaps or opportunities for improvement (OFI) as well as best practices.

Evaluation of PNERP related documents should not only assess whether they are complete, but whether they meet the overall goals of the program and international best practices. Gaps and OFIs should be addressed through a defined issue resolution process including the development of an after-action review (AAR) detailing recommendation on how the gap or OFI shall be resolved. The process should assign responsibility to an OPI and prescribe a timeline for resolution. Best practices should also be assessed for their potential to be incorporated into other aspects of the PNERP or within other response organizations.

5.2 Assessment and Benchmarking

Internal assessments of the PNERP are accomplished through internal reviews, audits, and lessons-learned from exercises.

External assessments of the PNERP are accomplished through external audits (e.g., Auditor General) or though assessment by an international body (e.g., IAEA).

PNERP benchmarking is accomplished through comparison with other response organizations or via lessons learned from real-world nuclear emergency responses.

5.3 Audits

Internal audits, external audits, and non-conformance reports will also identify gaps and OFIs. Provincial senior management shall ensure that issue resolution is monitored and that the OPIs adhere to prescribed timelines, effectively communicating progress and any potential for delay. Lead agencies, as identified in the PNERP, shall coordinate issue resolution with any additional agencies involved.

5.4 Change Validation

After-action plans and audits that result in updates to the PNERP shall be documented and trained during subsequent PNERP management courses. New policies, plans,

procedures, and other supporting documents shall be tested during training and ongoing exercises. An internal EMO exercise (e.g., a tabletop exercise) shall be conducted specifically to evaluate the effectiveness of changes to the relevant documents. Evaluation of the exercise should aim at testing and evaluating the changes and making further updates as required to ensure the changes are valid and meeting their intended purpose. The new or revised policies, plans, procedures, and other supporting documents should not be tested for the first time in a full-scale exercise with external organizations playing.

5.5 Records Management

Records management within the PNERP shall comply with the Corporate Policy on Recordkeeping, Access and Privacy, the Freedom of Information and Protection of Privacy Act, the Municipal Freedom of Information and Protection of Privacy Act as well as the Personal Health Information Protection Act. Other organizations should comply with their applicable records management and privacy legislation.

Documentation associated with the management of the PNERP during the preparedness phase shall be maintained by the province for a period of ten (10) years (e.g., NEMCC meeting minutes, training records, personnel trained, exercises conducted, exercise evaluation reports, audit reports, AARs, etc.).

Records associated with an operational response to a nuclear or radiological emergency shall be kept indefinitely by the province (e.g., time of release for emergency bulletins, time of release for Incident Management System (IMS) documents, time and actioning of immediate actions and protective measures, logs for Provincial Emergency Operations Centre (PEOC) Section Heads, reports from the NGS to EMO regarding plant conditions, dose tracking of response personnel and dose management decisions, etc.).

Records associated with recovery operations shall be maintained indefinitely by the province (e.g., minutes of NEMCC meetings, dose rates in areas being mitigated and exposure records for mitigation effort workers, recovery plans, relocation plans (if required), etc.).

6. NUCLEAR EMERGENCY RESPONSE

6.1 General

Protecting the public during a nuclear emergency is a complex operation that requires the efforts of multiple emergency response organizations. One of EMO's goals is to set the conditions to allow a transition to recovery operations as quickly as possible. This plan details the operational functions that enable transition to recovery operations to be as effective as possible.

6.2 Response Activities

The response to a nuclear emergency includes the following activities:

- a. Rapidly identify that a potential emergency is developing
- b. Rapidly notify offsite response organizations to the developing situation
- c. Activate response organizations to a level commensurate to the developing nuclear emergency, staffed with well-trained individuals in all critical positions
- d. Share information from the NGS such that response organizations can take measures to protect the public, as indicated and appropriate
- e. Take protective actions and measures to protect the public (Section 6.3)
- f. Coordinate response activities between response organizations
- g. Ensure the continuity of critical functions
- h. Communicate with the public in a timely manner to maintain public awareness and the public's trust in the ongoing response efforts
- i. Gather radiological information to develop a complete picture of radiological contamination in the environment following a release (even a filtered release following a DBA)
- Manage the medical response, including efforts to minimize the psychosocial impacts of the emergency
- k. Ensure emergency responders are aware of the radiological risk and take actions to keep their effective doses ALARA
- Identify when a nuclear emergency can transition from response to recovery operations
- m. Establish a recovery organization to manage the long-term recovery efforts.

6.3 Protective Actions

6.3.1 Guiding Principles for Protective Action Decision-Making

Based on the Planning Basis (Annex K), protective actions to mitigate nuclear and radiological emergencies include both precautionary measures (Annex L.1) and protective measures (Annex L.2).

Protective actions are complementary to each other and may be applied in combination as a protective action response strategy appropriate to the situation, while considering their respective efficacies and limitations.

Protective actions should be applied to prevent increased public exposure to radiation. In practice, this may not always be justified as protective actions entail risks and costs, including psychosocial, economic, and health risks to vulnerable populations (e.g., evacuation could result in early or premature deaths). It is therefore necessary to justify and optimize the application of protective actions in order to minimize the total risk or detriment involved (Annex A.2).

In a nuclear emergency, if a protective measure is warranted at any boundary of a response sector in the DPZ (see Annex M) it should be applied to the whole response sector. If a protective measure is warranted in a sector of the Automatic Action Zone (AAZ) and DPZs, it should be applied to the entire ring of sectors in order to ensure protection when winds are shifting.

For areas beyond the DPZ, modeling may be used to identify areas where surveys and sampling are required to assess the need for protective actions. It is unlikely for evacuation to be required as a plume exposure control measure beyond the DPZ.

6.3.2 Responsibilities for Protective Action Decision Making

The CEM, as operational lead for the offsite response (Section 7.6.2.5.1), has the authority for protective action decision-making where an emergency exists but has not yet been declared to exist.

After a provincial emergency has been declared, certain protective action decisions may be issued by the Lieutenant Governor in Council (LGIC) via provincial emergency order subject to the criteria and conditions outlined in the EMCPA. During a declared provincial emergency, the authority to issue emergency orders under subsection 7.0.2(4) may be delegated from the LGIC to a Minister of the Crown or the CEM. The CEM shall be responsible for communicating the protective actions and the areas they apply to.

Detailed information regarding direction and implementation of precautionary and protective measures will be developed and communicated as follows:

- During the preparedness stage through the Nuclear Public Education and Awareness Program Framework by the applicable responsibilities as defined in the PNERP
- b. During the emergency, through public direction (Section 8.7.2) and through the emergency public information operation (Section 8.7.2.2).

Detailed descriptions of Protective Actions can be found in Annex L.

6.4 Emergency Planning Zones

Emergency Planning Zones (EPZ) are areas in which implementation of operational and protective actions are, or might be, required during a nuclear emergency, in order to protect public health, safety, and the environment. The four planning zones include:

- a. Automatic Action Zone (AAZ)
- b. Detailed Planning Zone (DPZ)
- c. Contingency Planning Zone (CPZ)
- d. Ingestion Planning Zone (IPZ)

Ongoing operational response will generally occur within the EPZs based on the action to be taken within the zone. See Annex M for more information on planning zones.

EPZs are determined by the technical methodology and planning basis and are site and technology specific. EPZ maps are included in the site-specific implementing plans.

7. NUCLEAR EMERGENCY RESPONSE ORGANIZATION

7.1 Response Organization Basis

Ontario uses the <u>Incident Management System 2.0</u> (IMS) framework for nuclear and radiological emergency response with a standardized organizational structure, functions, processes, and terminology. The core functions for a response include the following IMS 2.0 sections:

- a. Command
- b. Operations
- c. Planning
- d. Logistics
- e. Scientific/Technical
- f. Public Information Management
- g. Finance and Administration.

The nuclear response organizational structure is illustrated in Figure 4. External interfaces between EMO and other provincial ministries, municipal, and federal Emergency Operations Centres (EOCs) at the command level will be conducted using coordination calls via web-based conferencing systems (e.g., MS Teams, Zoom, etc.) or other means, as required to maintain communication (e.g., telephone-based conference calls). Direct contact between EOC sections may be used to coordinate planning and maximize response efforts (e.g., PEOC Planning and Ministry of Health (MOH) Planning).

This diagram is for visual reference only. See the text below this figure for the full description.

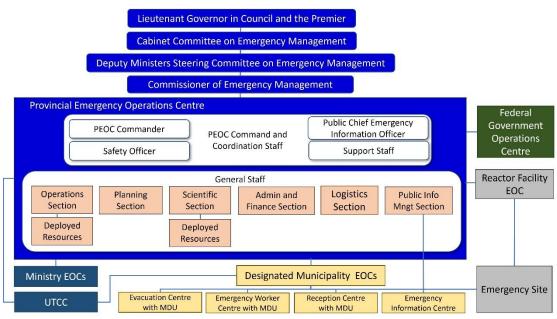


Figure 4: Provincial Nuclear Emergency Response Organizational Structure

The diagram illustrates Ontario's Nuclear Emergency Response Organizational Structure. The Lieutenant Governor in Council and the Premier have the highest authority, followed by the Cabinet Committee on Emergency Management. This is succeeded by the Deputy Ministers Steering Committee on Emergency Management, which provides oversight to the Commissioner of Emergency Management. Below this, the Provincial Emergency Operations Centre (PEOC) serves as the central coordination hub, with PEOC Command and Coordination Staff comprising of the PEOC Commander, Safety Officer, Public Chief Emergency Information Officer, and Support Staff. Supporting this team is the General Staff, organized into six functional sections: Operations, Planning, Scientific, Administration and Finance, Logistics, and Public Information Management, with deployed resources assigned to the Operations and Scientific Sections. The PEOC maintains direct links to Ministry Emergency Operations Centres (MEOC) and the Unified Transportation Coordination Centre (UTCC), as well as to Designated Municipality EOCs, which includes Evacuation Centres, Emergency Worker Centres, and Reception Centres, each supported by Monitoring and Decontamination Units (MDUs). Emergency Information Centres are also part of the Designated Municipality EOC structure. Additionally, the PEOC connects to external jurisdictions, including the Federal Government Operations Centre and the Reactor Facility EOC, which is linked to the Emergency Site. Arrows throughout the diagram represent the flow of authority and coordination across all levels and jurisdictions.

7.2 Concept of Operations

The PEOC provides overall coordination of the provincial response and is led by the CEM. The PEOC provides timely support, information, and analysis to the CEM or delegate (e.g., the PEOC Commander) to co-ordinate the provincial emergency

response and assists communities in responding to nuclear emergencies by providing protective action direction, advice, assistance, and support in coordinating the provision of additional resources. The PEOC may deploy personnel to assist in coordinating the emergency response.

The emergency response effort for the province of Ontario is led by the CEM and the organizations supporting the CEM's efforts (see Figure 4). A nuclear emergency consists of several phases:

- a. Urgent Response Phase
- b. Early Response Phase
- c. Transition Phase
- d. Recovery Phase (see Annex N).

The task of the CEM or delegate (e.g., the PEOC Commander) is to direct the offsite response of the Provincial Emergency Response Organization (ERO) to protect the health, safety, and welfare of all inhabitants of the province, and the protection of property and the environment. The following assumptions are made with respect to emergency phases:

- a. The Urgent Response Phase consists of the pre-release and the release phases.
- b. The Early Response Phase begins when once the nuclear release is brought under control (though not necessarily contained).
- c. From the beginning of the release, where an emergency exposure situation exists, the PEOC can contextualize the radiological situation by characterizing the contamination in the environment through survey and sampling efforts. This situation is characterized by a state of situational uncertainty, with potentially high dose rates, an apparent lack of control, and an unknown level of health risks to the local population.
- d. An emergency exposure situation continues to exist during the Transition Phase, and protective action decision-making remains complex as other protective actions are considered (i.e., permanent relocation, temporary relocation, lifting food restrictions).
- e. Recovery operations will be managed by a Recovery Management Organization (RMO), and the PEOC may return to its normal daily operational tempo.

7.3 The PEOC's Role

The PEOC is the central coordinating hub of the provincial ERO, with other components connecting to it to ensure a coordinated emergency response operation.

7.4 Preparing the PEOC for Nuclear Emergency Response

Several PNERP documents are foundational in preparing the PEOC for NER. These include the:

a. Provincial Nuclear Emergency Preparedness Framework

- b. Staffing Support Plan
- c. Core Competency Report
- d. Nuclear Training Plan
- e. Nuclear Exercise Plan
- f. PNERP, its Implementing Plans, and associated procedures

7.5 Strategic Command During an Emergency

7.5.1 Lieutenant Governor in Council and the Premier

The LGIC and the Premier of Ontario provide strategic direction to the CEM and Minister responsible for emergency management through the CCEM.

7.5.2 Cabinet Committee on Emergency Management

Appointed by the LGIC, the CCEM provides an advisory role to Cabinet. The membership of the CCEM includes the:

- a. Premier and President of the Executive Council
- b. Minister responsible for emergency management (Chair)
- c. President of the Treasury Board (Vice-Chair)
- d. Solicitor General
- e. Attorney General
- f. Minister of Energy and Mines
- g. Minister of Finance
- h. Minister of Health
- Indigenous Affairs and First Nations Economic Reconciliation
- j. Minister of Municipal Affairs and Housing
- k. Minister of Natural Resources
- I. Minister of Public and Business Service Delivery and Procurement

In a nuclear or radiological emergency, additional Ministers may be invited to participate in the CCEM (based on the provincial organizations listed in Annex F).

7.5.3 Deputy Ministers Steering Committee on Emergency Management

The Deputy Ministers Steering Committee on Emergency Management (DMSC-EM) supports the Commissioner/Deputy Minister in operationalizing their respective ministry resources to support the provincial response.

7.5.4 Commissioner of Emergency Management

The CEM is responsible for:

a. Maintaining ongoing communication with ministries and partners involved in the emergency response

- b. During an emergency or pending emergency, the CEM shall serve as the direct link between the EMO and DMSC-EM
- c. The CEM shall ensure that strategic and operational information and decisions are relayed between EMO, DMSC-EM and CCEM in a timely and effective manner.

7.6 PEOC Sections

Each IMS section and sub-group has identified roles and responsibilities. Detailed checklists and procedures have been developed for immediate actions and ongoing requirements of each section and are located in separate documentation.

Responsibilities of each IMS section are included in Section 7.6.

7.6.1 Command

7.6.1.1 Commissioner of Emergency Management

When a nuclear or radiological emergency occurs, the Commissioner of Emergency Management (CEM):

- a. Is primarily responsible for leading the offsite response, on behalf of the province, by supporting and coordinating the emergency response.
- b. Except for any emergency order-making powers that may be first delegated to the CEM in accordance with the EMCPA, may delegate responsibilities to others (e.g., the PEOC Commander), as required, to ensure continuity of operations, and the delegate(s) shall be deemed to represent the CEM when assuming responsibilities so assigned in this plan. All CEM responsibilities, as detailed in this PNERP, shall be assumed by a qualified delegate wherever the CEM has so delegated the responsibilities of this position.
- c. May issue Operational Directives prior to a provincial emergency declaration or liaise with ministry authorities where appropriate (see Section 7.7.2)
- d. Provide advice, assistance, and recommendations to CCEM and the LGIC
- e. Shall, where time permits, consult with affected municipalities, First Nation and Indigenous communities on any protective actions that are being considered.

7.6.1.2 Command Staff

Led by the CEM, the role of the PEOC Commander and the Command Staff is to:

- a. Approve the Incident Action Plan (IAP)
- b. Identify and resolve response issues
- c. Identify unresolved issues to be addressed by the strategic leadership team described in Section 7.5
- d. Implement direction provided by the CEM
- e. Issue operational directives and guidance including emergency bulletins (EBs)

f. Liaise with the command function of other EOCs.

Command Staff include a Safety Officer who is responsible for monitoring, tracking, and ensuring the health and safety of all PEOC personnel, the Provincial Chief Emergency Information Officer (PCEIO), and support staff including the Emergency Bulletin Officer. Liaison Officers (LO) serve as the link between the CEM and other organizations involved in emergency response outside the provincial ERO (e.g., contiguous states).

7.6.2 General Staff

Each Section Chief shall attend regular meetings to provide information and advice to PEOC Command and obtain the necessary information to implement Command decisions.

Additional staff may include technical advisors (e.g., the Chief Medical Officer of Health (CMOH) or delegate, where public health issues require attention).

7.6.2.1 Operations Section

The role of the PEOC Operations Section is to implement the IAP and provide operational input to the Commander.

Led by the Operations Section Chief, the Operations Section is comprised of representation from the following organizations:

- a. Provincial ministries as appropriate for the level and stage of the emergency
- b. Reactor facilities
- c. Federal departments including Health Canada, Public Safety Canada, Department of National Defence, and Canadian Nuclear Safety Commission
- d. State representatives from the U.S., as appropriate
- e. Non-governmental organizations
- f. Others as requested.

Functions performed by Operations Section staff include:

- a. Identifying and coordinating the operational requirements of the response
- b. Monitoring and coordinating deployed provincial resources
- c. Providing operational input to the decision-making process through the Operations Section Chief
- d. Implementing operational decisions by issuing advice or directions, as appropriate.

7.6.2.2 Planning Section

The Planning Section, led by the Planning Section Chief, coordinates the development of the IAP, oversees all incident-related non-radiological data gathering and analysis

regarding incident operations and assigned resources, and executes the Protective Action Response Planning Procedure.

The Planning Section is responsible for sharing information between all members of the PEOC, as required.

The Planning Section may include representation and/or input from the following organizations, as appropriate:

- a. Provincial ministries as appropriate for the level and stage of the emergency
- b. Deployed provincial resources
- c. Unified Transportation Coordination Centre (UTCC)
- d. Municipal planning team from designated municipalities, designated host municipalities, and support municipalities
- e. Federal departments and agencies
- f. Others as required.

7.6.2.3 Logistics Section

Under the direction of the Logistics Section Chief, staff arrange for and co-ordinate all material, personnel services, equipment, and resources required to manage and resolve the emergency, including the coordination of all logistical support for staff deployed by the PEOC.

7.6.2.4 Finance & Administration Section

Under the direction of the Finance and Administration Section Chief, staff perform administrative, financial, and staffing duties specific to the emergency. This may include the capture of incident-related costs, maintenance and scheduling of support personnel, maintenance of appropriate support records, and administering procurement contracts as necessary.

7.6.2.5 Scientific Section

The PEOC Scientific Section is led by the Scientific Section Chief, who reports to the PEOC Commander. The Scientific Section Chief is supported by a core team that includes an Admin Assistant, Scribe, and Deputy Scientific Section Chief. The Scientific Section organizational structure is illustrated in Figure 5.

This diagram is for visual reference only. See the text below this figure for the full description.

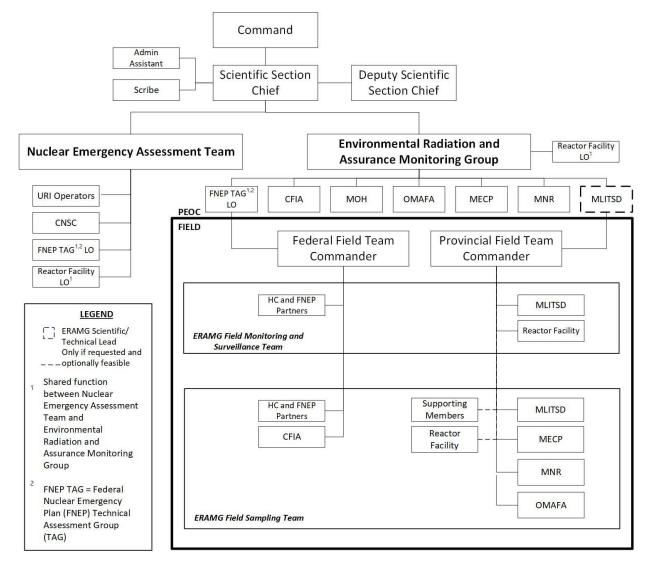


Figure 5: Scientific Section Organizational Structure

The diagram illustrates the Scientific Section Organizational Structure within Ontario's Nuclear Emergency Response Organization. At the top is Command, followed by the core positions of the Scientific Section, which includes the Scientific Section Chief and Deputy Scientific Section Chief, supported by an Administrative Assistant and a Scribe. The Scientific Section Chief reports directly to Command. The structure then branches into two primary groups. On the left is the Nuclear Emergency Assessment Team (NEAT), which includes Unified RASCAL Interface (URI) Operators, the Canadian Nuclear Safety Commission (CNSC), the Federal Nuclear Emergency Plan (FNEP) Technical Assessment Group (TAG) Liaison Officer, and the Reactor Facility Liaison Officer. On the right is the Environmental Radiation and Assurance Monitoring Group (ERAMG), which is divided into two levels. The PEOC-based ERAMG includes the FNEP TAG Liaison Officer, representatives from the CFIA, MOH, OMAFA, MECP, MNR, MLITSD, and the Reactor Facility Liaison Officer. The field-based ERAMG is further

divided into two operational teams: the ERAMG Field Monitoring and Surveillance Team and the ERAMG Field Sampling Team. These field operations are organized by jurisdiction and function to reflect the distinct Occupational Health and Safety requirements for federal and provincial staff. Coordination of these operations is managed through two command roles. The Federal Field Team Commander reports to the FNEP TAG Liaison Officer in the PEOC and oversees Health Canada and FNEP partners in both the Field Monitoring and Surveillance Team and the Field Sampling Team, which also includes CFIA. The Provincial Field Team Commander reports to the MLITSD Liaison Officer in the PEOC and oversees MLITSD and Reactor Facility members in the Field Monitoring and Surveillance Team, as well as MLITSD, MECP, MNR, OMAFA, Reactor Facility, and supporting members in the Field Sampling Team. A legend in the diagram clarifies the role of the ERAMG Scientific/Technical Lead and identifies positions with shared functions between NEAT and ERAMG.

The Scientific Section is responsible for:

- a. Conducting air dispersion (plume) modelling
- b. Conducting dose assessments and modelling
- c. Planning and conducting radiation monitoring, surveillance, and sampling activities in areas surrounding the emergency site and throughout the province
- d. Analysing and evaluating the collected monitoring, surveillance, and sampling data.

The results obtained from the actions above are used to formulate recommendations on the adoption of precautionary and protective measures as well as longer term measures or the removal of such measures.

The Scientific Section utilizes data from a variety of sources to inform recommendations on protective measures. Sources include:

- a. Ongoing monitoring and surveillance
- b. Field-based monitoring and surveillance
- c. Field-based sampling
- d. Station parameters
- e. Source terms
- f. Meteorological data and forecasts
- g. Dose projections and modelling
- h. Plume modelling

The rest of the Scientific Section is divided into two groups that each report to the Scientific Section Chief:

- a. The Nuclear Emergency Assessment Team (NEAT)
- b. The Environmental Radiation and Assurance Monitoring Group (the ERAMG).

The ERAMG is divided into a component that sits in the PEOC, and a larger component that performs tasks in the field.

7.6.2.5.1 Environmental Radiation and Assurance Monitoring Group

The ERAMG includes representatives from the following organizations:

- a. Ministry of Labour, Immigration, Training and Skills Development (MLITSD)
- b. Ministry of the Environment, Conservation and Parks (MECP)
- c. Ontario Ministry of Agriculture, Food and Agribusiness (OMAFA)
- d. Ministry of Health (MOH)
- e. Ministry of Natural Resources (MNR)
- f. Health Canada, as the lead for the Federal Nuclear Emergency Plan (FNEP) Technical Assessment Group (TAG)
- g. The Canadian Food Inspection Agency (CFIA) Ontario Regional Office
- h. Reactor facility operators:
 - i. Bruce NGS
 - ii. Pickering NGS
 - iii. Darlington NGS
- i. Ad hoc (e.g., Academia or private industry) and Supporting Members (e.g., Dairy Farmers of Ontario).

While Health Canada and the CFIA are the only federal organizations specifically named as members of the ERAMG, other FNEP member departments may be involved in accordance with the FNEP.

The ERAMG is tasked with gathering and analyzing radiological data during a nuclear emergency and is comprised of:

- a. A PEOC-based team
- b. Field-based monitoring and surveillance teams
- c. Field-based sampling teams.

The field-based component of the ERAMG is a large organization that is divided into federal and provincial teams, each of which is led by a Field Team Commander who reports into the PEOC via the PEOC based ERAMG representative(s). Each of the federal and provincial teams have a surveillance and monitoring component, as well as a sampling component.

The federal field-based surveillance and monitoring component is made up of staff from Health Canada and other partners under the FNEP. The federal field-based sampling component is made up of staff from Health Canada, CFIA, and other partners under the FNEP.

7.6.2.5.2 Nuclear Emergency Assessment Team

The NEAT provides technical inputs to the pre-release decision making process by:

- a. Calculating projected offsite radiological consequences based on meteorological data, field monitoring data, and source term estimates
- b. Performing technical assessments of the developing situation
- c. Making recommendations on protective measures when warranted
- d. Assigning a safety status to response sectors
- e. Providing technical assistance to the ERAMG.

The NEAT's membership includes:

- a. URI Operators, who run a software code called Unified RASCAL Interface (URI), where RASCAL is an abbreviation of Radiological Assessment System for Consequence Analysis for Radiological Emergencies
- b. A Liaison Officer from the Canadian Nuclear Safety Commission
- c. A Liaison Officer from the Federal Nuclear Emergency Plan Technical Assessment Group (FNEP TAG, HC representative or delegate). The FNEP TAG and Reactor Facility Liaison Officers are shared between the NEAT and the ERAMG
- d. A Liaison Officer from the reactor facility that is having the emergency.

7.6.2.6 Public Information Management Section

The Provincial Emergency Information Plan (PEIP) details how the public information function shall be carried out, including provisions regarding the following:

- a. The PCEIO is responsible for the implementation of the PEIP and leads the Public Information Management Section (PIMS)
- b. The coordination of emergency information amongst individual ministry communications branches
- c. The flow of information between PEOC Command and General Staff and the PIMS to ensure that Command-identified public information issues are incorporated into the emergency public information messaging
- d. A two-way information flow to ensure that the PEOC is made aware of any communications issues that may affect the overall response
- e. The dispatch of provincial emergency public information Liaison Officers to local emergency information centre(s) as soon as the need for assistance arises and to ensure an appropriate level of coordination and provision of emergency public information
- f. The functions of the PIMS include:
 - Issuing news releases and other public information products to the media on behalf of the province that describes the nature of the emergency and the measures that the province is taking to manage it
 - ii. Coordinating news conferences on behalf of the province and provide supportive documents for provincial spokesperson(s)

- iii. Monitoring media, social media, and the public's perception of, and reaction to, the situation and keeping the PEOC Commander and local Joint Emergency Information Centre (J-EIC) informed
- iv. Identifying misinformation and countering it with verified and credible information
- v. Providing key messages and information to activated call centres.

7.7 Other Operations Centres

7.7.1 Unified Transportation Coordination Centre (UTCC)

The Ministry of Transportation (MTO) is responsible for coordinating the development, maintenance, and implementation of the UTCC, which may be a physical or virtual centre. Within the UTCC, the operations co-leads are the Ontario Provincial Police (OPP) and local police service of jurisdiction.

During a nuclear emergency, the UTCC takes direction from EMO for all operations related to the emergency itself. The UTCC is expected to act independently for resolving issues that arise from nuclear emergency related operations (e.g., an evacuation could cause traffic flow issues far from the affected NGS).

Plans, procedures, roles, and responsibilities for the set up, operation, and decommissioning of the UTCC shall be prepared in advance by UTCC members. Reporting and notification structures under which the UTCC shall operate shall be prepared in advance by UTCC members.

Further guidance on site-specific functions and responsibilities of the UTCC shall be detailed in the PNERP Implementing Plans and site-specific Unified Transportation Management Plan (UTMP).

The MTO is responsible for coordinating the development, maintenance, and implementation of all-hazards evacuation transportation management methodology and site-specific UTMPs for nuclear emergency response and recovery. The UTCC shall be the entity responsible for the implementation of the UTMPs for nuclear emergency response and recovery.

Each site-specific UTMP, shall:

- a. Identify decision-making authorities
- b. Identify the roles and responsibilities of each participating organization
- c. Identify notification, communication, and reporting structures and procedures
- d. Identify strategies and mechanisms that may be utilized to manage transportation aspects of evacuation and the transportation impacts in surrounding areas
- e. Ensure timely input to public direction and emergency public information processes.

Evacuation Time Estimate (ETE) studies shall be carried out by the operators of the Pickering, Darlington, and Bruce Power NGSs in collaboration with the province, , in order to inform the UTMPs developed for those sites.

7.7.2 Ministry Emergency Operations Centres

In accordance with the requirements of the PNERP, designated ministries shall set up Ministry Emergency Operations Centres (MEOCs) to carry out their respective responsibilities and to direct and co-ordinate provincial ministry actions (including their regional or area offices supporting the affected areas) according to the requirements of this Plan and the directions of EMO.

The Ministry of Health Emergency Operations Centre (MOH EOC) is responsible for managing the ministry response and coordinating health and public health sector actions according to the requirements of the Radiation Health Response Plan (RHRP) and in coordination with the PEOC.

The MOH EOC coordinates a network of health and public health accountabilities exercised out of departmental EOCs or co-located with local and municipal EOCs, as appropriate.

Key health and public health sector partners include:

- a. Public Health Ontario
- b. Ontario Health/Home and Community Care Support Services
- c. Hospitals
- d. Local public health units
- e. Paramedic services
- f. Regional health authorities
- g. Government of Canada, Health Portfolio EOC

7.7.3 Federal Government

7.7.3.1 Government Operations Centre

The Government Operations Centre (GOC) coordinates federal activities at the national whole-of-government level, including coordination of activities in support of the PEOC, when required.

Representation includes subject matter experts and LOs from federal/provincial/territorial government departments and non-governmental organizations.

The GOC may include federal department representatives, based on the requirements of the response, who serve as the link between the GOC and their home institution. They provide knowledge of their home institution including roles, responsibilities, mandates, and plans.

7.7.3.2 FNEP TAG

Led by Health Canada, the FNEP TAG coordinates federal scientific and technical response capabilities and activities in support of the provincial and whole-of-government response. FNEP TAG representation includes subject matter experts from federal departments with nuclear emergency functions under the FNEP.

FNEP TAG Liaison Officers are deployed to the PEOC Scientific Section to serve as the link between the PEOC and the FNEP TAG. They facilitate requests for information and assistance from the province to the FNEP TAG, provide the PEOC with FNEP TAG products (e.g., plume and dose projection models, environmental monitoring data, advice relating to protective action recommendations) and clarify and resolve any technical questions related to FNEP TAG products.

7.7.3.3 Other Department-Specific Operations Centres

Other department-specific operations centres support their departmental roles and mandates and contribute to the integrated Government of Canada response through the GOC.

Some provincial ministries may have established working arrangements with their federal counterparts through these departmental operations centres in the event of an emergency.

7.7.3.4 The Federal Coordination Group and Public Safety Canada – Ontario Region

Coordination of the federal government emergency response activities in Ontario is managed by the Public Safety Canada Regional Office through the Federal Coordination Group.

This is distinguished from the GOC, as the Federal Coordination Group focuses on federal activities within Ontario, while the GOC focuses on the whole federal government.

The Federal Coordination Group is chaired by Public Safety Canada's (PS) Ontario Regional Director and is supported by the PS Ontario Regional Office.

The purpose of the Federal Coordination Group is to:

- a. Facilitate federal coordination
- Provide the space and capacity for executive federal officials to assess an incident
- c. Plan the overall strategy of federal actions in response and recovery
- d. Receive strategic guidance and direction from senior/executive level decision makers via the GOC.

The Federal Coordination Group is normally the single point of contact between the PEOC and federal government operations during a major response within Ontario.

If, in a rapidly evolving situation requiring urgent coordination, the PEOC directly contacts the GOC, the PEOC shall also ensure that the Public Safety Regional Director/Office is kept informed of those communications.

The PS Ontario Regional Office will, when required, send a federal LO to the PEOC.

7.7.4 Reactor Facility

In the event of a nuclear emergency involving an Ontario NGS, the reactor facility shall make the necessary provisions to conduct their offsite responsibilities through their Emergency Operations Facility. Reactor facility responsibilities shall include:

- a. Provision of personnel to offsite provincial and municipal operations centres (e.g., reception centres)
- b. Provision of the necessary information and data to the PEOC as described in the applicable PNERP Implementing Plan
- c. The provision of equipment and personnel for offsite activities such as field monitoring, emergency worker safety with respect to sector safety status (as part of the NEAT), and personal monitoring (as part of EWC and MDUs).

For reception centres, EWCs and MDUs related to an emergency at the Fermi 2 NPP, EMO supported by resources from nuclear facilities in Ontario and Designated/Host municipalities, will support these centres.

Further details of Reactor Facility responsibilities are found in Annex G.

7.7.5 Community or Municipal Emergency Operations Centres

The municipal emergency response is under the direction and coordination of the Municipal Emergency Control Group at its Emergency Operations Centre (EOC), which in turn receives information, support, and direction from EMO/PEOC.

Municipal EOCs should include representatives of appropriate municipal departments and local boards/regional organizations such as boards of health, social services departments, police services, fire services, paramedic services, public information services, and hospitals, or any other group the EOC determines advice and assistance is required from. Such groups shall provide staff as required for the various other emergency centres to be established.

EMO may deploy Liaison Officers (LOs) to municipal EOCs to act as a link, and to convey information, direction and access to resources.

Further guidance on the function and responsibilities of these centres is provided in the site-specific implementing plans.

7.8 Other Community/Municipal Emergency Facilities

7.8.1 Emergency Facilities

The structure of the municipal organization for undertaking emergency operations, including additional offsite emergency facilities, shall be defined in the municipal emergency response plans for incident site communities and designated/host Municipalities.

Additional offsite emergency facilities include:

- a. Reception Centre(s)
- b. Evacuation Centre(s)
- c. Emergency Worker Centre(s)
- d. Emergency Information Centre(s).

7.8.2 Designated/Host/Support Municipalities

Designated municipalities and designated host municipalities for each reactor facility are listed in Annex O. These municipalities are either in the vicinity of a reactor facility or act as a designated/host community for evacuees and as such must address the responsibilities presented in Annex O in their emergency management plans.

Nuclear emergency management plans for designated and host municipalities shall include provisions for the reception, care, and shelter of people (Section 8.10.5) and animals (Section 8.10.6) evacuated from their homes. Further, if the nature of the emergency is such that evacuees may have been exposed to a radioactive plume, these municipalities' plans must also include provisions for accommodating the monitoring and decontamination function (see Annex O).

Support municipalities may be specified by an Emergency Order (Section 8.6.3) and may be responsible for providing support and assistance to designated municipalities.

8. NUCLEAR EMERGENCY RESPONSE FUNCTIONS

8.1 Overview

The emergency response functions identified in this section are consistent with the functional requirements identified in the IAEA's Preparedness and Response for a Nuclear or Radiological Emergency and CSA N1600 – General requirements for nuclear emergency management programs.

8.2 Detection

The responsibility for the detection of an issue that may result in a nuclear emergency rests primarily with the operators of Ontario's NGSs. NGSs in Ontario have robust procedures in place that will provide indicators of a problem that may deteriorate into a nuclear emergency. Hence, a nuclear emergency should not happen without a significant amount of warning (i.e., days or longer). However, the NGS operator is not responsible for offsite response, and thus, does not maintain detection capabilities in the communities and environment outside of its fence line.

The province is responsible for offsite response and shall operate and maintain a detection network capable of detecting a release from a nuclear reactor operating within Ontario, or from a nearby NGS for which emergency planning zones (EPZ) extend into the province. The network shall be capable of continuously monitoring the environment for gamma radiation, and automatically informing the Scientific Section Duty Scientist if elevated readings are detected. The density of the detector network shall be such that it is unlikely for a release to go undetected.

Upon detection of elevated readings where no notification of a problem has been received from an NGS, these readings shall be verified before further response actions are triggered. Verification may be achieved when multiple detectors on the network detect an increase in radiation levels or when an independent detector used in the same vicinity as the initiating detector confirms the presence of radiation above normal background for unknown reasons. Once verified, the province will investigate and if warranted, take the appropriate actions to protect the public as detailed herein.

8.3 Categorization

Categorizing a potential nuclear emergency is solely the responsibility of the NGS operator. Categorizations include:

- a. Reportable Event
- b. Abnormal Incident
- c. Onsite Emergency (notification of Onsite Emergency will include whether a release is expected within 12 hours or is more that 12 hours away)
- d. General Emergency.

A detailed list of accident characteristics associated with each categorization is available in Annex P. Following diagnosis of the event onsite, the reactor facility Shift Manager categorizes the event and, within 15 minutes (CNSC Regulatory Document 2.10.1, section 2.2.2(5)(b)), notifies the province, the CNSC and designated municipalities. For each categorization, the PEOC adopts an activation level (Table 1).

Table 1: NGS Categorizations vs. Offsite Response Level

Categorization (Ontario)	Categorization (US)	Offsite Response Level
Reportable Event	Unusual Event	Routine Monitoring (Section 8.4.3)
Abnormal Incident	Alert	Enhanced Monitoring (Section 8.4.4)
Onsite Emergency (notification that no release is expected within 12 hours)	Site Area Emergency (all instances)	Partial Activation (Section 8.4.4)
Onsite Emergency (notification that a release is expected within 12 hours or is ongoing) General Emergency	General Emergency	Full Activation (Section 8.4.5)

Within 15 minutes of ending the confirmatory notification call with the reactor facility, the PEOC notifies designated municipalities and the OPP of the provincial offsite response level declared (i.e., the recipients of the Provincial Notification of Offsite Response Form (PNOORF)). At Partial and Full Activation, MTO is also informed.

8.4 Notification and Activation

8.4.1 Initial Notification

Initial notification for a nuclear emergency is defined as the notification made by the reactor facility to designated offsite authorities whenever an event occurs or conditions arise, which require such notification under the prescribed criteria. The initial notification period starts with the first notification and end after four hours, when the Scientific Section is established and receiving adequate information to assess the emergency at the incident NGS.

Canadian reactor facilities are required to notify the CNSC within 15 minutes of activation of their emergency response organization (CNSC Regulatory Document 2.10.1, section 2.2.2).

8.4.1.1 Purpose

The purpose of the initial notification and response system is to:

- Inform offsite authorities of the fact that a notifiable event or situation has occurred at the reactor facility
- b. Provide an indication, through the notification category system, to all relevant partners as to the appropriate initial offsite response in the initial stage of an emergency.

8.4.1.2 Application

These provisions apply to notification from reactor facilities located in Ontario, or those in contiguous American states. The specific initial notification criteria and provincial offsite response level for each reactor facility is described in the applicable site-specific implementing plan.

8.4.1.3 Internal Notification

Each organization or agency required to respond to a nuclear emergency should have an internal notification system to inform all concerned staff of the imminence or occurrence of an emergency under this plan, and of the appropriate response to the notification.

8.4.1.4 External Notification

Organizations or agencies which might be affected by a nuclear emergency under this plan, or which may be required to assist in response, should be notified at an appropriate stage by their links in the ERO. The responsibility for making such notification shall be described in the relevant Implementing Plan.

8.4.1.5 System Outline

In accordance with federal law and regulations under which they operate (i.e., Nuclear Safety and Control Act and CNSC's Regulatory Document (REGDOC) 2.10.1, or applicable US regulations), the reactor facility's nuclear emergency response plan shall include provisions to:

- Notify offsite authorities of an accidental release or the imminence of an accidental release
- b. Describe how these events are determined and categorized
- Describe the immediate notification process.

A site-specific initial notification and response system has been developed, in consultation with each Ontario nuclear operator, to facilitate a timely emergency notification categorization which corresponds to initial provincial and municipal response actions.

The category notification form from the reactor facility shall include the notification categorization (see Table 1). Where more than one criterion is applicable, the highest

category triggered shall be reported in the notification. The criterion used to determine the categorization is contained within the Implementing Plan for each NGS.

Once notified of an initial categorization or recategorization, the PEOC Duty Officer (DO) will inform the PEOC Commander of the categorization. The PEOC Commander shall inform the CEM or designate and a decision will be made by the CEM or designate (e.g. the PEOC Commander) on the appropriate provincial offsite response level to be adopted. This level should normally be the one linked to the category notification form received from the NGS (as indicated in Table 1) unless another level is judged to be more appropriate. The provincial offsite response level must be transmitted to designated municipalities (Annex O) and other PNOORF recipients within 15 minutes, and then communicated to rest of provincial ERO via IMS Form 201. Site-specific provisions for each provincial offsite response level can be found in the relevant Implementing Plan. Contiguous states and provinces shall only be notified of an Abnormal Incident notification or higher (8.4.4 below).

If, at any time during the emergency, the assessment of the onsite situation changes to warrant a different category than the last one communicated, the reactor facility shall issue an update within 15 minutes of re-categorization to the designated provincial and municipal contact points.

The initial notification period of the emergency ends once ongoing reporting by the reactor facility EOC to the Scientific Section of the PEOC is established. Thereafter, any change in plant situation will be communicated by the reactor facility EOC to the PEOC Duty Officer and the PEOC Scientific Section as part of the regular reporting, as agreed to under the Reactor Facility responsibilities stated in the Annex G.

Following any change in categorization communicated by the reactor facility in this initial stage, the CEM or designate (e.g. PEOC Commander) will normally consult with the Scientific Section Chief or Duty Scientist on the technical situation to determine any need for change to the provincial offsite response level. Otherwise, the CEM or designate (e.g. PEOC Commander) will reference Table 1 to decide on the provincial offsite response level.

The CEM or designate (e.g., PEOC Commander) can, at any time, direct that a change be made to increase the provincial offsite response level.

Once appropriate, the CEM or designate (e.g. PEOC Commander) may terminate the offsite response and notify all relevant partners of the termination.

To ensure a timely and appropriate nuclear notification system, EMO/PEOC shall maintain 24/7 contact point and alternate backup and detailed notification procedures.

Upon receipt of a category notification form from a reactor facility:

- a. The CEM or designate (e.g. PEOC Commander) shall confirm the provincial offsite response level to be adopted
- The PEOC DO shall draft, and the PEOC Commander will authorise the issuance of, a Provincial Notification of Offsite Response Form (PNOORF) and an IMS Form 201 for applicable EROs
- c. EROs should, upon receipt of the PNOORF or an IMS 201 or 209, adopt the appropriate, corresponding response level prescribed in their respective plans prepared in alignment with this PNERP
- d. Following this initial provincial offsite response level decision, EMO may upgrade/downgrade the response level in support of the operational needs of the situation.

The PEOC, under direction of the CEM or delegate (e.g. PEOC Commander), may adopt a provincial offsite response level that is different from the default provincial offsite response level illustrated in Table 1 (as appropriate) and may notify the ERO on the basis of the chosen offsite response level.

8.4.2 Activation Criteria

When a Partial (8.4.4) or Full Activation (8.4.5) response is adopted, the PEOC shall use the provincial public alerting system (8.7.2.1), which includes the Alert Ready system, to issue an EB informing the affected public of the following:

- a. That a problem exists
- b. The area affected
- c. To stay tuned to the media for further information, and
- d. Precautionary and protective measures being directed.

Protective measures may be rescinded using priority communication methods. EBs will not be used to rescind protective measures. Rescinding of protective measures is further addressed in the Provincial Nuclear Recovery Operations Plan (PNROP).

8.4.3 Routine Monitoring

The province, through the PEOC Duty Officer, maintains a state of Routine Monitoring. No additional staff are required to support Routine Monitoring as an offsite response level.

8.4.4 Activation to Enhanced Monitoring or Partial Activation

Upgrading the PEOC's offsite response level will make additional resources available to the CEM or designate (e.g. PEOC Commander) to assess the ongoing situation developing at the NGS. At Enhanced Monitoring, staff provide support to the PEOC Commander as required, and are put on notice that they may be recalled at any time. At this time, the Duty Scientist assumes the role of the Chief of the Scientific Section and recommends to the PEOC Commander whether the remainder of the Scientific Section

should be placed on standby or activated. EMO is responsible for managing and maintaining a system to recall PEOC staff in the event a recall is required (as of publication, Send Word Now).

At Partial Activation, PEOC staff are notified of the activation level and will assess and respond to the emergency (see Figure 66) as the situation dictates. Recalled personnel will report to the PEOC or Alternate PEOC as directed and will be accounted for upon their arrival. Rotation of personnel will be noted in the appropriate log for each section, and planning for rotation should begin once the section is activated. Depending on the situation, virtual attendance in the PEOC may be authorized by the CEM or designate (e.g. PEOC Commander).

8.4.5 Full Activation

At full activation, the PEOC shall be fully staffed 24/7 and organized as seen in Figure 6. Provincial actions normally taken when Full Activation is ordered are listed in Section 8.5.4. It should be noted, however, that these actions may need to be adapted at the time to suit the specific situation/local conditions.

This diagram is for visual reference only. See the text below this figure for the full description.

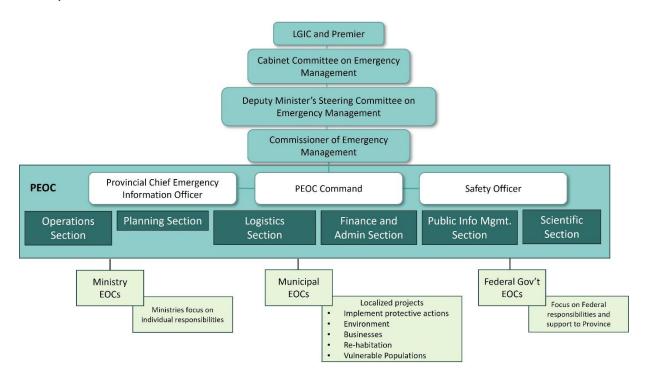


Figure 6: PEOC at Partial and Full Activation

The diagram illustrates the Provincial Emergency Operations Centre (PEOC) at Partial and Full Activation. The Lieutenant Governor in Council and the Premier have the highest authority, followed by the Cabinet Committee on Emergency Management. Directly beneath them is the Deputy Minister's Steering Committee on Emergency Management, which connects to the Commissioner of Emergency Management. The Commissioner links to the PEOC, where Command and Coordination staff include PEOC Command, the Provincial Chief Emergency Information Officer, and a Safety Officer. Below this group are six functional sections: Operations, Planning, Logistics, Finance and Administration, Public Information Management, and Scientific. These sections are connected to Ministry Emergency Operations Centres (EOCs), Municipal EOCs, and Federal Government EOCs.

8.4.6 Activation of ERAMG and NEAT

At Enhanced Monitoring, the NEAT will be fully operation and the ERAMG will be on standby. At PEOC Partial or Full Activation, both the ERAMG and the NEAT will be fully operational.

8.4.7 Activation of the UTCC

Activation of the UTCC begins with MTO Duty Officer's receipt of the PNOORF indicating a provincial offsite response level of Partial or Full Activation, which will trigger activation of the UTCC by MTO. The MTO Duty Officer will be notified of a potential emergency when the PEOC activates to Enhanced Monitoring, which ensures the UTCC is prepared for a potential escalation of the provincial offsite response level. Following receipt of the PNOORF, the MTO Duty Officer will connect with the appropriate UTCC leads based on the location of the incident to share any initial intelligence, and to confirm the following details:

- a. anticipated UTCC membership
- b. member roles (including identification of the Operations Lead and the Planning Lead for the UTCC)
- c. UTCC meeting time and format (physical/virtual)
- d. anticipated operational cycle.

8.4.8 Activation of other EROs

Other ministries will be notified through the release of IMS Forms 201 and 209, which is released by the PEOC Commander at Routine Monitoring or higher. Upon receipt of either form, those EROs will assess the information presented and activate their EOCs as appropriate.

8.4.9 Emergency Organizations' Situational Awareness

The PEOC functions to support and coordinate the efforts of the entire ERO, comprised of organizations with nuclear emergency responsibilities.

The PEOC shall support the situational awareness of other responding organizations to ensure the timely coordination of response efforts and to minimize duplication of effort when and where possible. Information may be exchanged through the PNOORF, IMS forms, web-based applications (e.g., MS Teams meetings), conference calls, group emails, and dispatched LOs and Field Officers.

The PEOC coordinates the virtual and physical deployment of provincial staff to designated municipalities and host municipalities (see Annex O) emergency operations and information centres, as appropriate and as available, to provide support and advice through liaison with the PEOC.

Event coordination briefings with the provincial ERO, chaired by the PEOC Commander, shall be conducted at least once per operational cycle to:

- a. update on the current situation
- b. update on major tasks undertaken by each organization
- c. discuss new and ongoing risks
- d. identify potential conflicts
- e. identify new support needs

The PEOC shall outline the response coordination strategy adopted by the ERO for the operational period.

The CEM or delegate (e.g. PEOC Commander) is responsible for ensuring the continuing practice of justification and optimization of protective actions, using the tools developed in the PNEPF and, in consultation with the designated municipalities (Annex I) and appropriate members of the ERO (see Section 5 of the Provincial Emergency Response Plan).

8.5 Initial Response

8.5.1 Routine Monitoring

At Routine Monitoring, the PEOC Duty Officer, the Duty Scientist, and the PEOC Commander are required to monitor the situation until it has been resolved or upgraded to a higher activation level.

8.5.2 Enhanced Monitoring

Enhanced Monitoring is normally adopted in response to an Abnormal Incident (or Alert for US facilities only) notification from a reactor facility. This response level requires some coordination, planning, and/or monitoring activities, without the need to activate the full response organization. As such, staffing of the PEOC may include:

- a. IMS Sections shall be stood-up, according to the needs of the PEOC during that operational period(the Duty Scientist or representatives of the Scientific Section would be critical)
- Ministries and other organizations that are directly involved in the response, deploying LOs to the PEOC
- c. Deployment of provincial staff to liaise with communities, depending on the needs of the situation
- d. The PIMS, or components of it, at the direction of the PCEIO.

All Routine Monitoring activities continue to be carried out at Enhanced Monitoring, as well as a combination of the following:

- a. Contingency planning for protective action response, where an escalation of the situation may be expected
- b. Situational assessment by the Duty Scientist based on information and data from the reactor facility in regular transmittals and direct outreach
- c. Consideration of the need to pre-position resources (e.g., ERAMG Field Teams)
- d. Coordination with designated municipalities, ministries, or other key response partners as applicable
- e. Distribution of event-specific information products, as detailed in the PEOC Response Procedures.

At Enhanced Monitoring, the PEOC Commander shall:

- a. Set an operational period for the provincial ERO
- Initiate the development of an IAP, as detailed in the PEOC Response Procedures
- c. Utilize the PEOC Duty Team (consisting of operations staff, scientific staff, reactor facility operator representative(s), PIMS staff, and others as required) to monitor the situation and notify the ERO of changes to the provincial response or planned course of action
- d. Begin conducting regular event coordination briefings, as detailed in the PEOC Response Procedures.

8.5.3 Partial Activation

At Partial Activation, PEOC and municipal EOCs shall be fully staffed 24/7. Provincial actions at Partial Activation include:

- a. Ministry EOCs and the UTCC to be staffed to the level appropriate for the situation, allowing monitoring and assessment of the situation on a continuous basis and implementation of associated plans, as considered appropriate
- b. Upon receipt of station parameters from the reactor facility, and prior to a release, dose modelling and potential plume dispersion will be used to determine

- the potential impact of a release. The URI dose modelling tool is provided to the Scientific Section by the NGS Operators
- c. Within a few hours of notification of an Abnormal Incident or higher, the Scientific and other Sections of the PEOC are staffed, as appropriate to the response level, and an operational/business cycle for information gathering and decision-making is established to facilitate the response
- d. In the event that protective measures become necessary, the following EMO actions will be assessed and decided upon by the CEM or designate (e.g. PEOC Commander):
 - i. The need to upgrade to Full Activation response
 - ii. The need for, and timing of, precautionary measures, operational actions, and/or urgent response actions and applicable recommendations to provincial executive authorities; these are based on Scientific Section technical assessment / recommendations and operational situation input / recommendations of the other PEOC Section Chiefs
 - iii. The need for, and timing of, EBs to be issued to the affected public
 - iv. The need for emergency public information issued through news releases and media briefings
 - v. The need for the establishment of a J-EIC (by MEPR Communications Branch) to facilitate media briefings. These would be held by a provincial spokesperson together with representatives from other ministries, federal departments, the reactor facility, designated municipalities and other organizations as necessary
- e. This system of operational and technical awareness, decision-making and emergency public information sharing is repeated, according to the PEOC operational/business cycle, until the emergency response is terminated.

Actions taken at the municipal level include:

- a. Municipal ERO staff directed to begin taking response actions, or be on standby to take response actions, as appropriate
- b. Issue notification placing municipal departments on standby
- c. Emergency Information Centres (EICs) are to be established
- d. Other emergency centres (e.g., Emergency Worker Centres, Evacuation Centres, Reception Centres) readied to become operational without undue delay.

8.5.4 Full Activation

At Full Activation, all of the actions required at Partial Activation will be completed or continued as necessary. Organizations and emergency centres that are stood-up at Partial Activation are now fully operational.

In the early hours of a nuclear emergency, the full technical assessment and decision-making capabilities will require time to stand up. In the highly unlikely event that the initial notification indicates an ongoing or imminent release, and where protective

actions must be implemented to protect public health and safety prior to a full technical assessment being completed, urgent response actions have been pre-defined for the Commissioner of Emergency Management or designate (e.g. PEOC Commander). Urgent response actions are implemented to protect public health and safety until a more fulsome technical assessment can be undertaken, which may result in revision to protective actions. Urgent response actions include:

- a. Public alerting initiated via provincial (Alert Ready) and municipal alerting systems
- b. The CEM or designate (e.g. PEOC Commander) will normally:
 - i. Direct the implementation of protective measures in the AAZ and/or the DPZ
 - ii. Direct precautionary measures in the AAZ and DPZ
 - iii. Issue an emergency bulletin advising the affected public of the above protective measures and where to get more information.

Following the implementation of the urgent response actions above or, for an escalating emergency that has reached Full Activation, the CEM or designate (e.g. PEOC Commander) determines the need for additional protective measures:

- a. Through an assessment of potential venting strategies (see Section 8.6.4) based on NGS plant parameters
- b. Through the Scientific Section's assessment of field survey results from ERAMG
- c. If so required, evacuations will be initiated for those sectors of the DPZ, closest to the reactor facility, in all directions, prior to the radioactive release. The entire DPZ may be directed to evacuate if NEAT's analysis determines the need (Note: federal agencies (e.g., Transport Canada, the Canadian Coast Guard, etc.) are notified about protective measures through the GOC)
- d. Where there is a risk of contamination of food, water, milk, or commodities, the public may be advised to:
 - Remove animals from pasture and place grazing animals on stored (covered) feed
 - ii. Restrict the consumption of some sources of drinking water until further assessments are performed
 - iii. Restrict consumption and distribution of local produce, foods that are fished, foraged or hunted, milk from grazing animals, rainwater, and animal feed
 - iv. Restrict distribution of commodities until further assessments are performed.

Actions undertaken at the municipal level include:

 a. Local Reception and Evacuation Centres are fully operational at pre-determined facilities outside of the DPZ; reception Centres can provide registration and

- inquiry, health, and psychosocial services, as well as connections to accommodation for those who require it
- b. Local Monitoring and Decontamination Units (MDU) are fully operational and located at fixed sites, including co-location with Reception Centres or, may be set up as mobile units for deployment where needed. These offsite facilities provide monitoring and decontamination facilities
- c. Local Emergency Worker Centres (EWC) are fully operational and established at pre-determined facilities outside the DPZ and are used as an entry control point for all offsite municipal, provincial, and federal emergency workers accessing the affected area; appropriately trained staff resource the EWC to provide monitoring and decontamination services.

Once the radioactive emission (if any) has ended, the ERAMG:

- a. Dispatches field-based survey and sampling teams who, using vehicle, ground, and aerial surveys, report on areas of deposition within and beyond the DPZ
- Assesses the results of surveys against pre-determined Operational Intervention Levels (OILs), to identify areas where additional protective actions or further investigation may be warranted, or where protective measures should be rescinded
- c. Dispatches field-based sampling teams once the boundaries of hot spots and other areas of contamination have been determined; these teams conduct sampling of milk, water, crops, produce and food and foodstuffs that are fished, foraged, or hunted to support the determination of the continued need for ingestion control measures. Foodstuff that may fall outside of any other category, but could still serve as a route of radiological exposure, include honey, maple syrup, herbs used for smudging, etc.

8.5.5 Nuclear Emergency Response Phases

Nuclear emergency response phases are used to situate response organizations in the timeline of an emergency as it relates to a potential release of nuclear material from the incident NGS. There are four phases to a nuclear emergency; the Urgent Response Phase, the Early Response Phase, the Transition Phase and the Recovery Phase (see Table 2).

Detailed information on these phases can be found in Annex N. The Recovery Phase is detailed in greater detail in the Provincial Nuclear Recovery Operations Plan.

Table 2: Nuclear Emergency Phase vs. Release Phase

Nuclear Emergency Phase	Release Phase
Urgent Response Phase	Pre-release and release.
	No radiological situation pre-release.
	An unknown radiological situation as the release is
	ongoing.

Early Response Phase	Release and post release. An emergency exposure situation.
Transition Phase	No further release possible.
Recovery	No further release possible. An existing exposure situation for local residents. A planned exposure situation for recovery workers.

8.6 Ongoing Response

Ongoing response requirements will be communicated to the EROs using updated PNOORF (designated recipients) and IMS Form 201 or 209 and coordination calls (e.g., MS Teams) as detailed in Table 3.

Table 3: Initial PEOC and Municipal Response Actions at each provincial offsite response level

Provincial Offsite Response Level (Associated Categorization)	PEOC Actions	Municipal Response	Emergency Information / Emergency Bulletins / Public Alerting
Routine Monitoring (Reportable/ Unusual Event)	 PEOC issues PNOORF informing municipality (and others per form) of provincial offsite response level. Members of provincial ERO notified, as appropriate. PEOC monitors event. Duty Scientist consulted. Communications Branch staff consulted, as required. 	1. Emergency response (ER) staff remain in touch with the PEOC.	 No EBs or Public Alerting will be issued at this Response Level. News releases may be required if the public learns about, and is concerned about, the reportable event (this shouldn't happen).
Enhanced Monitoring (Abnormal Incident/Alert)	1. PEOC issues PNOORF informing municipality (and others per form) of provincial offsite response level.	ER staff monitor event, preferably from municipal EOC.	1. If appropriate, MEPR Communications Branch/PEOC PIMS coordinates issuance of news release(s).

Provincial Offsite Response Level (Associated Categorization)	PEOC Actions	Municipal Response	Emergency Information / Emergency Bulletins / Public Alerting
	 Members of Provincial ERO notified, as appropriate. PEOC monitors event. Scientific Section may be fully or partially activated depending on situation. EB Officer activated. PIMS is not normally activated at this level, but Communications Branch consulted as required. 		
Partial Activation (Onsite/Site Area Emergency (US facilities only) with no ongoing or imminent release)	 PEOC issues PNOORF informing municipality (and others per form) of provincial offsite response level. Provincial EROs notified. All PEOC IMS Sections fully activated and staffed. Scientific Section is activated. PIMS activated. Ministry EOCs activated UTCC set up and staffed as appropriate. Precautionary measures directed as appropriate. 	 Issue notification to municipal EROs as appropriate. Municipal EOC, EIC fully staffed and operational. Other emergency centres readied to become operational without undue delay. 	 EB issued (unless deemed inappropriate). If appropriate, the PIMS issues a news release to supplement the EB, and/or amplifies the EB on social media

Provincial Offsite Response Level (Associated Categorization)	PEOC Actions	Municipal Response	Emergency Information / Emergency Bulletins / Public Alerting
Full Activation (Onsite/Site Area Emergency with ongoing or imminent release or a General Emergency)	 PEOC issues PNOORF informing municipality (and others per form) of provincial offsite response level. Members of provincial ERO notified. All PEOC IMS Sections fully activated and staffed. Scientific Section is activated. PIMS activated. Ministry EOCs set up and staffed as appropriate. UTCC set up and staffed as appropriate. Protective (including precautionary) measures directed, as appropriate. 	 Issue notification activating municipal ER organization. Municipal EOC, EIC, and other offsite centres activated (e.g., reception centres), fully staffed and operational. Implement protective measures, as directed by PEOC. 	 PEOC directs initiation of public alerting. Municipality initiates public alerting. PEOC issues EB. If appropriate, the PIMS issues a news release to supplement the EB, and/or amplifies the EB on social media.

8.6.1 Precautionary Measures

Precautionary measures (Annex L) are not considered urgent response actions (8.6.2), since the timing of their implementation is at the discretion of the CEM or designate (e.g. PEOC Commander), depending on how the nuclear emergency is unfolding. Precautionary measures should be implemented during the Urgent Response Phase either in advance of, or in combination with, urgent response actions to facilitate their implementation. Unlike protective measures (see Section 8.6.6), precautionary measures are not associated with a numerical intervention level.

The CEM or designate (e.g. PEOC Commander) will direct precautionary measures as appropriate, and where time permits, in consultation with applicable responsible ministries and the affected designated municipalities. Designated and host

Municipalities, First Nation and Indigenous communities, and implicated ministries will be informed of precautionary measures by the PEOC.

Precautionary measures shall be directed via EBs (Section 8.7.2.2) issued by the CEM or designate (e.g. PEOC Commander) to the affected public as well as through normal public communications channels.

Precautionary measures include (but are not limited to):

- a. closing of beaches, recreation areas, etc.
- b. closing of workplaces and schools
- c. suspension of non-critical patient admissions in hospitals
- d. entry control.

8.6.2 Implementation of Urgent Response Actions

Urgent response actions are implemented once a specific categorization is made by the NGS. Urgent response actions are taken in pre-designated zones, with each zone created for a specific purpose.

8.6.2.1 Actions at Onsite Emergency (no anticipated release within 12 hours)

If the release is not anticipated within 12 hours, but the NGS has categorized an Onsite Emergency, the PEOC should adopt Partial Activation (for details, see Section 8.4.4), and shall initiate the appropriate internal and external notifications, including the municipal contact points and host communities. In addition, consideration shall be given to issuing an EB (Section 6.4), a news release or both. Finally, Ministry EOCs and the UTCC are to be established and appropriately staffed.

8.6.2.2 Actions at Onsite Emergency (release anticipated within 12 hours)

If a release is anticipated within 12 hours, the PEOC shall activate to Full Activation and shall initiate the appropriate internal and external notifications (Section 8.4.1.3 and Section 8.4.1.4 respectively), including the host community.

Once the release is expected to occur within 12 hours, the PEOC shall:

- a. Issue the appropriate emergency bulletin (Section 8.7.2.2)
- b. Issue operational directives implementing the following urgent response actions, unless there are good reasons for modifying this response, for:
 - i. Sheltering (Annex L.2.2) in the AAZ
 - ii. Suspension of road and rail traffic through the AAZ
 - iii. Clearance of all boaters in appropriate lake sectors impacted
- c. Issue further EBs, as appropriate

- d. Order PIMS staff to issue news releases, as appropriate
- e. Order that the UTCC and Ministry EOCs be established
- f. Assess venting requirements (see Section 8.6.4)
- g. Assess the situation for further action.

8.6.2.3 Actions at General Emergency

Once a General Emergency categorization is received from the incident site NGS, the CEM or designate (e.g. PEOC Commander) shall implement the following actions, unless alternative actions are justified by operational or logistical constraints:

- a. Notify and ensure that the municipal contacts have activated the public alerting system (Section 8.7.2.1)
- b. Issue the appropriate EB (Section 8.7.2.2)
- c. Issue operational directives implementing the following urgent response actions (assuming conditions allow):
 - i. Evacuation of the AAZ and appropriate Lake Sectors
 - ii. Suspension of road, rail and air traffic throughout the AAZ
 - iii. Precautionary measures in the DPZ
- d. Assess venting requirements (see Section 8.6.4)
- e. If emission is ongoing, or if evacuations will not be completed prior to emission, issue operational directives implementing the protective measures for:
 - i. Evacuees caught in a release (e.g., those that self-evacuated when they were asked to shelter-in-place) shall report for contamination monitoring or, if not possible, to evacuate to a destination beyond the DPZ and undertake selfdecontamination
 - ii. For those in the AAZ sheltering-in-place during a release (i.e., those that cannot evacuate), ingestion of potassium iodide (KI) pills (Annex L.2.4)
 - iii. Sheltering (Annex L.2.2) in the rest of the DPZ. Otherwise, take this action 4 hours (or, at a time deemed appropriate) before the expected time of commencement of the release.
- f. Adopt Full Activation (8.4.5), and initiate the appropriate internal and external notifications (Sections 8.4.1.3 and 8.4.1.4 respectively), including the host community
- g. Issue further EBs, as appropriate.
- h. Order PIMS staff to issue news releases, as appropriate.
- i. Order that Ministry EOCs and UTCC be established (if not done at an earlier stage).
- i. Assess the situation for further action.

8.6.2.4 Expanding on Initial Actions

After urgent response actions are taken, the Scientific Section shall assess whether expansion of specific zones is necessary based on projected offsite doses as compared to generic criteria (GC). While a release is ongoing and after it has ended, the Scientific Section shall assess whether expansion of specific zones is necessary based on the field measurements and OILs. The Scientific Section Chief shall make recommendations to the CEM through the PEOC Commander to expand the area for evacuation, expand the area for shelter-in-place, expand the area for ingestion control or a combination thereof as the radiological situation dictates. See Annex Q for more details.

8.6.2.5 Deviation Process

During a provincial declaration of emergency, the LGIC or Premier may authorize operational or protective measures which deviate from the PNERP through emergency orders, subject to the conditions and criteria under the EMCPA. Additionally, the LGIC or Premier may authorize the necessary resources (human, physical, informational, and financial) required to support the proposed deviation.

If deviations are required, then all participating EOCs shall be informed through an updated PNOORF or IMS Forms 201 and 209, as well as during interagency conference calls/web meetings.

8.6.3 Declaring a provincial emergency

8.6.3.1 Authority

The EMCPA sets out provisions for the declaration of a provincial emergency throughout Ontario or in any part of Ontario. Subject to the criteria for declaring an emergency as set out in the EMCPA (see 8.6.3.2 below), the LGIC has the authority by order to declare that an emergency exists throughout Ontario or in any part of Ontario. If in the Premier's opinion the urgency of the situation requires that an order be made immediately, the Premier may also by order declare that an emergency exists.

During a provincial declaration of emergency, emergency orders may be made under sections 7.0.2 and 7.1 of the EMCPA subject to certain criteria, limitations, conditions and other legal considerations.

Additionally, pursuant to subsection 7.0.3(2), if a provincial declaration of emergency order is made under section 7.0.1 of the EMCPA and the emergency area or any part of it is within the jurisdiction of a municipality, the Premier, where he or she considers it necessary, may by order made under this section,

(a) direct and control the administration, facilities and equipment of the municipality in the emergency area, and, without restricting the generality of the foregoing, the exercise by the municipality of its powers and duties in the emergency area, whether under an emergency plan or otherwise, is subject to the direction and control of the Premier; and (b) require any municipality to provide such assistance as he or she considers necessary to an emergency area or any part of the emergency area that is not within the jurisdiction of the municipality and direct and control the provision of such assistance.

Pursuant to the EMCPA a municipality is authorized to exercise a municipal power in response to an order of the Premier or his or her delegate made under subsection (2) without a by-law.

8.6.3.2 Criteria for a provincial declaration of emergency

Pursuant to 7.0.1(3) of the EMCPA, the following criteria must be satisfied in order to declare a provincial emergency:

- 1. There is an emergency that requires immediate action to prevent, reduce or mitigate a danger of major proportions that could result in serious harm to persons or substantial damage to property.
- 2. One of the following circumstances exists:
 - i. The resources normally available to a ministry of the Government of Ontario or an agency, board or commission or other branch of the government, including existing legislation, cannot be relied upon without the risk of serious delay.
 - ii. The resources referred to in subparagraph I may be insufficiently effective to address the emergency.
 - iii. It is not possible, without the risk of serious delay, to ascertain whether the resources referred to in subparagraph I can be relied upon.

8.6.3.3 Termination of a Provincial Emergency Declaration

A provincial emergency declared under <u>EMCPA section 7.0.1</u> is terminated at the end of the 14th day following its declaration unless the LGIC by order declares it to be terminated at an earlier date. The LGIC may by order extend an emergency before it is terminated for one further period of no more than 14 days. As often as required, the Legislative Assembly may, by resolution and on the recommendation of the Premier, extend the period of an emergency for additional periods of no more than 28 days.

In accordance with subsection 7.0.1(2) of the EMCPA, a provincial declaration of emergency made by the Premier under subsection 7.0.1(1) of the EMCPA is terminated after 72 hours, unless the provincial declaration of emergency is confirmed by order of the LGIC before it terminates.

8.6.3.4 Municipal Declarations

Pursuant to <u>EMCPA Subsection 4(1)</u>, the Head of Council of a municipality may declare that an emergency exists in the municipality or in any part thereof and may take such action and make such orders as he or she considers necessary and are not contrary to law to implement the emergency plan of the municipality and to protect property and the health, safety and welfare of the inhabitants of the emergency area.

- a. The Head of Council should consider making such a declaration whenever the municipal nuclear emergency plan is activated.
- b. When a radiological emergency occurs that requires activation of the local emergency plan, the Head of Council should consider declaring an emergency.

Pursuant to EMCPA Subsection 4(3), heads of council shall ensure that the Minister responsible for emergency management is notified forthwith whenever a municipal emergency is declared or terminated.

Pursuant to subsection 4(4) of the EMCPA, the Premier may at any time declare that an emergency has terminated.

Pursuant to <u>EMCPA Subsection 4(2)</u>, the Head of Council or the council of a municipality may at any time declare that an emergency has terminated.

Considerations for municipalities declaring an emergency could include:

- a. Whenever the municipal nuclear emergency plan is activated.
- b. When a radiological emergency occurs that requires activation of the local emergency plan.

8.6.4 Venting Containment Strategy

8.6.4.1 General

Should the reactor design require a venting containment strategy, the impacted NGS may need to vent its containment structure to maintain the integrity of the overall containment system. The requirement to vent is typically known well in advance of the intended venting time and this is especially the case for a DBA. Information associated with venting from containment hold-up systems, in an accident situation, can help to inform protective action decision-making.

The Pickering, Bruce and Darlington NGSs are equipped with sub-atmospheric containment systems designed to hold, for periods of time, radioactive material released from failed nuclear fuel in an accident.

8.6.4.2 Aim of the Venting Strategy

The ability to control (within certain limits) the venting of radioactivity from containment systems within a venting window could be useful to allow prior implementation of protective actions before the release takes place.

Information about characteristics of the venting strategy, including wind direction, duration, whether the release is expected to be continuous or intermittent, and whether the release could be interrupted to allow additional protective actions can be used to support protective action decision-making.

Any decision to use a venting strategy (nominal or alternate), should be taken only after consultation among the province, CNSC, the reactor facility, and affected municipalities and First Nation and Indigenous communities which are in, or have traditional territories in, the EPZs or IPZ. In situations where venting must be performed in an urgent manner to protect the structural integrity of containment, the venting consultation may be delayed until after venting has commenced but must be conducted as soon as practicable.

8.6.4.3 Nominal Venting Strategy

In most CANDU reactor accident scenarios, released nuclear materials from the reactor building will be drawn into the vacuum building. The nominal venting strategy is to commence venting through an emergency venting system shortly before the vacuum building repressurizes to atmospheric pressure, and to continue venting at a rate just sufficient to keep containment sub-atmospheric. Controlled venting may be employed for a prolonged period (days, weeks, or months) until the internal sources of airborne contamination are removed, have decayed, or are otherwise contained.

8.6.4.4 Other Venting Strategies

Other venting strategies which do not activate the vacuum building containment system are possible, as well:

- a. Radioactivity may be confined to other parts of the containment system, and vented through other exhaust systems, such as the contaminated exhaust stack, which contains equipment capable of removing most of the radioactive materials from the exhaust.
- b. As part of post-Fukushima improvements, some Ontario reactors have had passive containment filtered venting systems installed. These systems provide an additional backup to the filtered air discharge system that can run during a station power outage.

8.6.4.5 Containment Venting Responsibilities

Reactor facility emergency response plans include:

- a. Provision for a designated person with the authority to initiate and suspend venting.
- b. Provision for consultation with the CEM or designate (e.g. PEOC Commander), (CNSC, and affected municipalities and First Nation and Indigenous communities) prior to undertaking any venting activity unless venting must be performed in an urgent manner to protect the structural integrity of containment.
- c. A requirement to provide time estimates, to EMO, indicating when venting will be required.
- d. A requirement to inform the CEM or designate (e.g. PEOC Commander), as early as possible, if venting must be performed in an urgent manner to protect the structural integrity of containment.

The CEM or designate (e.g. PEOC Commander), as operational lead for the offsite response, should initiate the following measures as appropriate to the venting situation:

- a. If time allows, consult with the appropriate relevant partners, including the applicable designated municipalities, and First Nation and Indigenous communities, on the proposed protective measures in light of the venting strategy to be initiated.
- b. In coordination with the GOC, Transport Canada and NAV CANADA, notify and restrict air traffic in the vicinity of the station before venting is initiated.
- c. In coordination with the police of jurisdiction, and where applicable, the Canadian Coast Guard, notify and restrict marine traffic in the adjacent lake/river sectors before venting is initiated.
- d. Confirm through the federal LOs in the PEOC that the federal government has initiated consultations with the affected U.S. jurisdictions.
- e. Issue the appropriate EBs to the affected population.
- f. Following the decision-making authorities outlined in Section 7.5, direct or recommend the appropriate protective measures in any populated area prior to venting being carried out.

The nuclear emergency response plans and procedures of organizations with responsibilities related to venting should identify how venting decisions are established, documented, approved, and communicated.

8.6.5 Liquid Emissions

Where a liquid emission has occurred at a reactor facility in conjunction with an event that meets the notification category system as detailed in the site-specific implementing plans (Pickering, Darlington, Bruce Power), it shall be dealt with under the applicable site-specific implementing plan.

8.6.6 Protective Measures

Protective measures are designed to protect individuals from unnecessary exposure to radiation during a nuclear emergency, thereby limiting any potential health effects. Some of these measures are applied as urgent response actions in the AAZ and the DPZ, once the emergency is categorized as an Onsite Emergency (with an imminent release) or a General Emergency. Protective measures taken at different phases of the emergency have different names and decision-making processes. These include:

- a. Urgent Response Actions: Taken based on the categorization from the NGS Urgent Response Actions include sheltering, evacuation, KI pill ingestion, ingestion control, protective clothing, respiratory protection, staying indoors and self decontamination.
- b. Protective Actions: Taken during or after a release, based on radiological surveys from the field and compared against OILs; Protective Actions include sheltering-in-place, evacuation, KI pill ingestion, ingestion control, protective clothing, respiratory protection, and decontamination.
- c. Long-Term Protective Actions: Taken after all releases have ended and there is an existing exposure situation; these actions include temporary relocation, resettlement, and ingestion control.

Precautionary measures can be taken at any time at the discretion of the CEM or designate (e.g. PEOC Commander). Precautionary measures include closing beaches and recreational areas, closing workspaces and schools, suspension of non-critical patient admission to hospitals, and entry controls.

Table 4 provides a summary of protective measures for each response phase.

The guiding principles of the PNERP (Annex A, para A.1 g), dictates that protective measures shall be implemented to prevent acute (deterministic) effects and should be implemented to prevent or reduce chronic (stochastic) effects to the public. Flexibility must be built into all plans and procedures to allow for the optimization and justification of protective measures in response to the changing nature of the emergency and its consequences for public health and safety.

Table 4: Summary of Protective Measures by Offsite Emergency Phase

Urgent Response Phase (Annex N.1)				
Precautionary Measures	Urgent Response Actions (Implementation Criteria)	Ingestion Control Measures		
 Closing of beaches, recreation areas, etc. Closing of workplaces and 	 Sheltering-in-place (as appropriate; when projections available - Generic Criteria, Annex Q) Iodine thyroid blocking (ITB) (as appropriate; when projections 	 Milk control Water control Pasture control Produce and crop control Livestock control 		

schools Suspension of non-critical patient admissions in hospitals Entry (access) control	available - Generic Criteria) Evacuation (as appropriate; when projections available - Generic Criteria) Protective Clothing (as applicable) Respiratory Protection (as applicable) Self-Decontamination (as applicable) Staying indoors (as far as practicable)		 Wild-harvested foods control Food control Land control 		
Early Response Phase (Annex N.2)					
Precautionary Measures	Protective Actions		Ingestion Control Measures(Based on OILs)		
 Closing of beaches, recreation areas, etc. Closing of workplaces and schools Suspension of non-critical patient admissions in hospitals Entry control 	 Evacuation (OILs) Relocation (OILs) Protective Clothing (as applicable) Respiratory Protection (as applicable) Staying indoors (as far as practicable) Self-Decontamination (as applicable) 		 Milk control Water control Pasture control Produce and crop control Livestock control Wild-harvested foods control Food control Land control 		
Transition Phas	se (Annex N.3)	and Recovery	Phase (Annex N.4)		
Long Te	rm	Ingestion Control Measures			
Protective Actions Temporary Relocation Resettlement Rescinded as appropriate.		(New Restrictions Based on OILs) Milk control Water control Pasture control Produce and crop control Livestock control Wild-harvested foods control Food control Land control Environmental decontamination Rescinded as appropriate			

Once the PEOC Scientific Section activates the ERAMG field teams, and data is received and analyzed, these protective measures can be adjusted or new ones directed based on operational, technical (e.g., monitoring data applied against OILs, (Annex Q.2), and public policy considerations.

Detailed information regarding direction and implementation of precautionary and protective measures will be developed and communicated as follows:

- During the preparedness stage through public awareness and education by the applicable responsibilities as defined in the Provincial Nuclear Emergency Preparedness Framework;
- b. During the emergency, through public direction (Section 8.7).

8.6.6.1 Revising Protective Measures

Protective measures implemented as urgent protective actions may need to be revised as the incident evolves as a result of the accident being more or less severe than anticipated, or because of inherent limitations to modeling. After the release has ended, protective measures shall be revised based upon the measured level of radiological contamination in the environment, and the resulting dose rate to individuals in the local area. Revising protective measures (Annex L) shall require the input and analysis of the Scientific Section and the justification for any changes shall be based on the GC and OILs as described in Annex Q. Changes to protective measures shall be documented and approved by the CEM or designate (e.g. PEOC Commander) or the LGIC (as needed in the context of an emergency order during a provincial declaration of emergency).

Protective measures should be adjusted or rescinded when radiological surveys and/or sampling indicate that the action is no longer required in a specific location, or if the burden on an individual for continued implementation realistically exceeds their capacity to comply (e.g. individuals may be limited in how long they can remain sheltered-in-place).

8.7 Emergency Public Communications

8.7.1.1 General

The emergency public information function during an emergency shall be carried out in accordance with the PEIP.

The PEIP describes the means by which prompt and co-ordinated information from the Ontario government is disseminated to the public, media, Members of the Provincial Parliament, other levels of government, Ontario ministries, emergency response organizations, and when appropriate, private sector organizations.

The PEIP shall be activated by the PCEIO to support a Partial or a Full Activation response. The CEM or designate (e.g. PEOC Commander) may consider releasing emergency public information upon adoption of an Enhanced Monitoring response, in which case the PCEIO shall be so directed.

The PCEIO may dispatch provincial emergency information liaison officers to the local Emergency Information Centre as soon as the need for assistance arises or, when a Partial or Full Activation response is implemented. This will ensure that the information being issued locally remains consistent and co-ordinated with that being released by other jurisdictions.

Multiple jurisdictions (federal, provincial, municipal, and non-government interests such as licensees) are involved in the response and, as such, every effort shall be made to ensure that the information being developed is consistent in content and issued in a coordinated manner. In this regard, consideration shall be given to establishing a Joint Information Centre, co-ordinated by the PCEIO, whenever the province adopts a Partial or Full Activation response.

8.7.2 Communication requirements during a nuclear emergency

The aim of emergency public communications is to directly communicate to the affected public, direction and guidance regarding protective measures they should take in order to ensure their safety and welfare.

Public direction shall be provided through the co-ordinated release of EBs (Section 8.7.2.2) issued from the PEOC, and broadcast through the media and all other mechanisms normally available to provincial authorities.

Every effort shall be made to:

- a. Consult with relevant partners as to the bulletin content if time and circumstance permit
- b. Issue EBs in a timely manner to ensure that the affected public has the most upto-date information as to the actions they may need to take.

Depending on the nature and progress of the emergency, some EBs may need to be prepared or revised during the emergency. Modifying an EB will be conducted by the Emergency Bulletin Officer (a position within the PEOC Command Staff), reviewed by the PCEIO, and approved for release by the CEM or designate (e.g. PEOC Commander).

8.7.2.1 Public Alerting

Public alerting informs the affected population, by means of an appropriate signal, that a nuclear emergency is occurring or is about to occur. For any nuclear emergency where protective measures are required, the PEOC shall use the National Public Alert System

(Alert Ready). Alert Ready delivers critical information to Canadians through television, radio, and Long-Term Evolution (LTE)-connected and compatible wireless devices. In a nuclear emergency, municipal and provincial public alerting shall be initiated on the direction of the CEM or designate (e.g. PEOC Commander) as follows:

- a. Whenever notification of a General Emergency has been received from the reactor facility
- b. Whenever a notification of an Onsite Emergency (emission ongoing or imminent) is received from the reactor facility
- c. As a possible action for notification of an Onsite Emergency (no emission occurring)
- d. In all other circumstances as required by the situation.

Public alerting systems, in place at both municipal and provincial levels, shall:

- Have the capability to complete the alert within 15 minutes of initiation of the system
- b. Have the capability to initiate a public alert within 30 minutes of receiving notification of the applicable notification category from the nuclear facility. The time of initiation is defined as the moment the first message is sent out from the alerting system. For the sirens and Alert Ready, this goes to everyone at once. For other systems such as a landline auto-dialer, it would be when the first call is made
- c. Alert practically 100 % of the population in the affected area(s). The term "practically 100%" means that the public alert can be heard or received by everyone in the alerting area unless exceptional circumstances provide an impediment.

Some alerting systems have the capability to include audio or text information (e.g., Alert Ready system), while others cannot (sirens). As such, those that can, shall provide information on the protective measures required to be undertaken and the population so affected.

The site-specific implementing plans shall include details on site-specific public alerting requirements or specifications, as appropriate.

Where possible, to ensure that the population receives coordinated and accurate information on what protective measures to take once they have been alerted of an emergency, the timing of the public alerting signals and public direction EBs shall be coordinated with emergency public information being issued. Due to the urgent nature of public alerting and public direction EBs, they may need to be issued prior to more detailed public information being issued.

Authorities having jurisdiction for public alerting shall ensure that an evaluation of any new public alerting system is completed to verify that the requirements under this

PNERP have been met. Further, regular integrated testing of existing public alerting systems shall be undertaken.

8.7.2.2 Emergency Bulletins

EBs are one component of the province's public alerting process and are a decisive form of communications that gets widespread public attention. EBs are required when an emergency results in immediate danger to the impacted area (e.g., an imminent tornado).

EBs contain pre-scripted and pre-approved content used to notify the public of specific situations occurring at an NGS. There are three types of information contained within an EB:

- a. Section 1 contains information for public release (e.g., on websites, in print, through social media, etc.) as well as (if practical) a graphic image detailing the emergency planning zones surrounding the NGS site
- Section 2 contains information that broadcasters must share with the public (e.g., content that interrupts the current signal and is played over the audio on a radio program, or as a ticker on a TV/Cable broadcast)
- c. Section 3 contains concise information that can be posted to the National Alert Aggregation and Dissemination System (NAADS), one component of which is Alert Ready. The use of Alert Ready provides the public with information they need to act on immediately to avoid putting their health at risk.

Pre-scripted EBs are drafted by the Nuclear, Radiological and Scientific Response Program Branch (NRSRP) of EMO, in consultation with MEPR Communications Branch and other relevant contributing partners. Pre-scripted EBs are pre-approved by the CEM for immediate release in an emergency. Additionally, EBs that reference KI tablets will also be approved by Ontario's CMOH. EBs that are developed in situ during an emergency are drafted by the Emergency Bulletin Officer residing in the PEOC Command Section, in consultation with the PCEIO, the PEOC Scientific Section and the PIMS and are approved for release by the CEM or designate (e.g. PEOC Commander). EBs are not included in this document due to the level of control maintained over their authorization and use.

EBs are released in accordance with the PEOC's Emergency Bulletin Procedure.

8.7.2.3 Media Communications

Media communications during a nuclear emergency are guided by the PEIP. In addition to EBs, ongoing communications with the media will be required to meet the information demands from the public, and to maintain public confidence in the province's efforts to respond to the nuclear emergency. Press releases and social media post will play a significant role in meeting the demands of the public.

8.7.3 National Public Alert System (Alert Ready)

Alert Ready is an automated web-based notification system that allows the user to broadcast a text message to cellphones within specific geo-locations (i.e., a municipality). Alert Ready is part of the NAADS. The use of Alert Ready provides the public with information they need to act on immediately to avoid putting their health at risk (e.g., a tornado warning).

EMO maintains a 24/7 capability in the PEOC to operate the Alert Ready system. This is done through the PEOC Duty Officer, who is physically present at the PEOC at all times. EMO/PEOC is the authority in Ontario for issuing alerts through Alert Ready for nuclear and radiological emergencies.

8.8 Protection of Emergency Workers

8.8.1 General

An emergency worker is any person performing emergency services in support of emergency response. These workers may be federally or provincially regulated, and as such, the relevant workplace health and safety legislation applies to them. This includes people on the periphery of the response, like personnel staffing the EWC.

The Scientific Section shall periodically (as defined in Scientific Section Procedures) recommend to the CEM, through the PEOC Commander, the safety status colour code for all sectors in which emergency workers may be required to operate. This information shall then be communicated to the ERO by the PEOC Commander, per PEOC procedure.

For those working in the field after a release, sector safety status (Annex R) shall be determined as follows:

- Initially based on notification category, as described in the relevant Implementing Plan
- b. If the release is imminent or ongoing, the assignment of safety status should be done immediately
- c. If the release is delayed, the assignment of safety status should be done approximately two hours prior to the release
- d. After a release, periodically by the PEOC as described in the relevant implementing plan.

8.8.2 Reactor Facility Responsibility

Reactor facilities shall support EWCs as described in 8.8.3, Annex R, and according to applicable provisions in their emergency plans and procedures.

8.8.3 Emergency Worker Centres

In the event of a nuclear emergency, reactor facilities (except Fermi 2) shall provide the equipment and trained staff to perform monitoring and decontamination activities (pursuant to federal licensing requirements to provide offsite assistance). In Ontario, these activities are provided through EWCs. During a nuclear emergency, EWCs shall be established as an operations centre, with the capability to monitor and decontaminate emergency workers and to maintain their radiation records.

At an EWC, emergency workers shall be provided, as necessary, with:

- a. Personal dosimeters and other radiation monitoring devices as appropriate
- b. Personal Protective Equipment (PPE)
- c. Information and training on safe working precautions.

During a nuclear emergency there may be a need for emergency workers to enter affected areas prior to the establishment of EWCs (e.g., police coordinating an evacuation). Whenever possible, dosimeters should be issued, respiratory protection should be worn and workers going off shift should be checked for contamination. If contamination is found, self decontamination should be conducted until the contamination is removed.

In the event of a nuclear emergency at Fermi 2 in Michigan, EMO shall co-ordinate with relevant partners to establish arrangements for emergency worker monitoring and decontamination for the Town of Amherstburg.

8.8.4 Permissible Dose

The GC for emergency workers (Annex R) sets the overall permissible dose at 50 mSv for the duration of the response. Additionally, Annex R contains:

- a. guidance for ensuring emergency worker safety
- b. precautions associated with each sector safety status
- c. permissible dose for non-licensee emergency workers.

Qualified radiation protection personnel shall be available to provide advice and guidance to employers, supervisors and workers registered at the EWC on how to keep their doses ALARA. This should include, at a minimum, advice on PPE, dosimetry, administrative controls, and any job-specific guidance (i.e., stay time, back-out dose rate, etc.). In addition, accumulated worker doses shall be tracked to ensure that no individual exceeds their permissible dose.

8.8.5 OHSA Responsibilities

The Minister of Labour, Immigration, Training and Skills Development (MLITSD) has the responsibility for administering the Occupational Health and Safety Act (OHSA).

Inspectors are appointed under the Act to enforce the Act, including employer obligations for worker safety during nuclear emergencies.

EROs, whose responsibilities are set out in the OHSA:

- a. Should ensure the provision of equipment and training to their personnel, as appropriate, to prevent contamination and enable them to respond to nuclear and radiological emergencies prior to the establishment of EWCs. Equipment should include personal dosimeters, other radiation monitoring devices, and PPE, as required
- b. May access the necessary equipment and training through mutual aid agreements or through the reactor facility, as necessary.

In the event of a conflict between the EMCPA or an order made under subsection 7.0.2 (4) of the EMCPA, and the *Occupational Health and Safety Act* or a regulation made under it, the *Occupational Health and Safety Act* or the regulation made under it prevails (EMCPA, s.7.2 (8)).

During a nuclear emergency:

- a. Designated municipalities shall include provisions in their municipal plans for the establishment of EWCs. Locations for these centres should ideally be able to accommodate the co-location of an ERAMG Field Command Post for field monitoring purposes
- b. Reactor facilities shall support EWCs as described in Annex G, and according to applicable provisions in their emergency plans and procedures.

8.8.6 Consultants/Contractors

Any private industry organizations engaged to assist with response efforts will fall under the relevant jurisdiction's health and safety legislative and regulatory requirements for personal protection of their workers. In most cases, this will be the provincial Occupational Health and Safety Act, however federally regulated workplaces will be subject to the Canada Labour Code. Any company hiring consultants or field workers to assist with gathering radiological survey or sampling data shall develop a workplace safety plan, including radiological safety, as appropriate under the OHSA prior to deployment in the field. The plan will detail how worker doses will be managed, and how dose information will be provided to the MOH for tracking in the individual's medical records.

8.9 Radiological Assessments of the Environment

The extent of radiological impacts to the environment is characterised through radiological surveys, which provide near-instantaneous results, and radiological sampling, which requires laboratory analysis of samples. Protective actions may initially be based on pre-release plume modeling, or during rapidly deteriorating situations,

automatic actions. Following release, protective actions can be revised once the radiological situation has been characterized, based on survey results and followed up with environmental radiological sampling (Section 8.6.6).

Knowing the level of radiological contamination in the environment provides:

- a. An understanding of the radiological distribution in the environment including short and long-lived isotopes, which leads to effective protective actions
- b. Control of the response through the ability to prioritize the mitigation of high dose rate areas
- c. An understanding of the potential health risks to individuals tasked with mitigating the contamination in the environment.

Survey and sampling methodologies are further discussed in the ERAMG Plan.

8.10 Additional Protective Measures

8.10.1 General

During the response phase of a nuclear emergency, protecting the public consists of ordering specific actions to be taken at various times (Annex L). Actions initially include urgent protective actions based on NGS categorization. Subsequent protective actions are based on GCs and OILs. As the emergency progresses, additional protective measures may be required to minimize the potential effective dose received by the public; that is, personal monitoring and decontamination.

The CEM or designate (e.g. PEOC Commander) shall, in consultation with the MOH and affected designated municipalities, consider the need for personal monitoring and decontamination, and direct implementation of these measures as appropriate. Medical management of individuals who were contaminated, or received an effective dose during evacuation, may be necessary based on their potential exposure.

8.10.2 Personal Monitoring and Decontamination

8.10.2.1 General

Individuals who have evacuated during or after a release should be monitored for contamination, and decontaminated (Annex L.2.6) as required. Evacuees shall be directed to a reception centre (Section 8.10.3) in host communities where they can be processed through an MDU (see Section 8.10.4). See Annex S for more information.

Reactor facilities in Ontario shall resource and operate mobile MDUs and those colocated with Reception Centres according to applicable provisions in their emergency plans and procedures.

Emergency plans of host municipalities and their nearby reactor facility shall:

- a. Be co-ordinated to ensure compatibility and mutual support.
- b. Ensure that a personal monitoring and decontamination system meets the requirements specified in Annex S
- c. Ensure that adequate resources are in place to monitor and decontaminate the affected population, as far as practical.
- d. Ensure that resources are in place to undertake monitoring and decontamination of the facility housing the MDU.

8.10.2.2 Designated Host Municipality

Designated host municipalities shall be responsible for arranging the necessary space and facilities for the accommodation of an MDU. Designated host municipalities may include provisions in their municipal plans for the establishment of Reception Centres and Evacuation Centres which have MDUs co-located.

Where MDUs are located within Reception Centres, municipal emergency plans for nuclear emergencies shall include provisions to ensure:

- a. That the Reception Centre procedures and the MDU procedures are coordinated to ensure effective and expeditious processing of evacuees
- b. The municipal appointment of a Manager of the Reception Centre who shall, during an emergency, have overall responsibility for the efficient functioning of the Reception Centre.

8.10.3 Reception Centres

A Reception Centre is generally the first destination for evacuees. Evacuee monitoring and decontamination may be accomplished either in a Reception Centre that receives evacuees immediately upon leaving the emergency area or in a facility set up separately from the Reception Centre. Reception Centres are organized to perform many of the following functions:

- a. registration and inquiry
- b. allocation to Evacuation Centres
- c. first aid
- d. monitoring and decontamination.

In the event of a nuclear emergency, reactor facilities in Ontario shall provide the equipment and trained staff to perform monitoring and decontamination activities (pursuant to federal licensing requirements to provide offsite assistance).

For those individuals unable or unwilling to attend a reception centre, they will be advised to undertake self-decontamination (instructions to be provided).

8.10.4 Medical Management

8.10.4.1 General

First and foremost, medical management shall prioritize lifesaving above all else, regardless of the risk of cross-contamination from a contaminated individual. Medical management, as detailed in the MOH RHRP, shall ensure that monitored and decontaminated individuals (i.e., those that arrive at an MDU) are medically tracked (including those with no contamination) so that their effective dose can be determined post-emergency and appropriate steps taken to monitor potential developing health issues. See Annex S for more information.

8.10.4.2 Responsibility

The CMOH will consider the need for medical management and direct implementation of these measures as appropriate.

Medical personnel trained in the clinical management of radiation injuries shall be designated in the preparedness phase, to the extent possible, and deployed to the impacted area as needed to meet the needs of the local population.

8.10.5 Reception and Care of Evacuees

8.10.5.1 General

Reception Centres is generally the first destination for evacuees who require assistance following evacuation from their homes. After monitoring and decontamination, evacuees may require assistance with lodging and unforeseen expenses.

8.10.5.2 Responsibility

In a nuclear emergency, emergency social service needs (e.g., reception, registration and inquiry, shelter, food, clothing and personal services) for members of the public who have been evacuated from their homes, shall be assessed and provided by:

- a. Host municipalities designated under this plan
- b. Municipalities directed to provide support or assistance under a provincial emergency declaration (Section 8.6.3).

8.10.6 Protection and Care of Animals

8.10.6.1 General

Any emergency that affects humans may affect their animals whether these are raised for foodstuff production, kept as companion or service animals, or for other purposes, such as in zoos. Pursuant to EMCPA Section 7.0.2, provincial emergency orders can include evacuation of animals under a declared provincial emergency. Regardless of a declaration of provincial emergency, evacuating pets will be a priority for some members of the public and should be accounted for in planning.

8.10.6.2 Responsibility

Provisions for the protection and care of animals should be included in public awareness and education materials in advance of a nuclear emergency. Municipal emergency response plans for nuclear emergencies shall make provisions for the protection and care of all animals, including those left behind during an evacuation. See Section Annex U for more information.

8.10.7 Selection of Evacuees for Monitoring

Evacuees should not be directed to report to an MDU for monitoring and decontamination if it is estimated that the evacuees can exit the affected area before a release occurs. Evacuees may be directed to report to an MDU for monitoring and decontamination if they are unable to exit the affected area before a release occurs:

- a. In the case of a filtered release, evacuees from affected sectors in the AAZ and DPZ inner ring should be directed to report to an MDU. Evacuees from affected sectors in the DPZ outer ring should be instructed how to conduct basic selfdecontamination of their bodies, equipment and vehicles after evacuating.
- b. In the case of an unfiltered release, evacuees from all affected sectors should be directed to report to an MDU, if available. Otherwise, evacuees should be instructed how to conduct basic self-decontamination as per a) above. Follow-up monitoring should be provided in accordance with the RHRP.

8.11 Transportation Management

8.11.1 General

The MTO develops and maintains plans to manage evacuations, and the transportation impacts in the surrounding areas during a nuclear or radiological emergency response.

A site-specific UTMP shall be developed for each of the following areas:

- a. Pickering NGS
- b. Darlington NGS
- c. Bruce NGS
- d. Fermi 2 Nuclear Power Plant.

A UTCC, either physically or virtually, shall be resourced to provide overall coordination of the transportation management function and implementation of the UTMPs.

Where UTCC activation is required, the MTO Duty Officer will initiate notification of UTCC member organizations through email and follow-up telephone call to confirm receipt.

The UTCC shall include representatives from MTO, OPP, designated municipalities, designated host municipalities, local police, road and transit authorities, applicable provincial ministries, Metrolinx and others as required. Table 5 lists the UTCC site location based on the incident site.

Table 5: UTCC Location Based on Incident NGS

Incident NGS	UTCC Location	Responsible Organization
Pickering NGS and Darlington NGS	MTO Central Region COMPASS Transportation Management Centre (CRCTMC) 97 Arrow Road, North York, ON M9M 2L4	MTO Traveller Communications Office
Bruce Power NGS	South Bruce OPP Detachment, Kincardine Office 700 Kincardine Avenue, Kincardine, ON, N2Z 0B1	Ontario Provincial Police
Fermi 2 in Michigan	Emergency Worker Centre in the Libro Credit Union Centre 3295 Meloche Rd, Amherstburg, ON N9V 2Y8	Town of Amherstburg, Amherstburg Fire Department

8.11.2 Special Cases

Motorists travelling through the affected area and exposed to a release may be directed (through appropriate broadcasts and social media) to report for monitoring.

Marine craft in the affected area shall be treated on the same basis as evacuees. When required, marine craft may be directed to report to an appropriate harbour or landing for monitoring and decontamination (if required).

The CEM or designate (e.g. PEOC Commander) shall advise the federal GOC of any change in the provincial offsite response level with known or potential impacts to marine, air, and rail travel. Navigation Canada will release a Notice to Air Missions (AKA Notice to Airmen – NOTAM) and the Canadian Coast Guard will issue a Navigational Warning (NAVWARN) in the area surrounding the NGS as communicated to the GOC from the PEOC. Likewise, the Transport Canada, may direct any train passing through

the affected area and exposed to a release to stop at an appropriate station to enable monitoring and decontamination of passengers, as required.

8.12 Response Continuity and Sustainment

The requirement for continuity and sustainment is dependent of the offsite response level. When the PEOC is at Routine or Enhanced Monitoring, operations are conducted with minimal staff. At Partial and Full Activation, the PEOC is manned 24/7, thus requiring shift rotations and a multi-fold number of trained staff to fulfill critical functions. Identifying personnel within the pool of provincial employees who could take on a role within the PEOC during a nuclear emergency should be a priority once the PEOC has any indication that Partial or Full Activation will likely happen. Although identification and training of provincial employees should be accomplished in the preparedness phase, the realities of retirement, changes in employment status, lapsed training, etc. will affect the staffing of some positions. In these instances, just-in-time training may be required to prepare individuals for their nuclear emergency response duties.

As operational lead, whenever a nuclear emergency occurs the CEM may delegate responsibilities, as required, to ensure continuity of operations and the delegate(s) shall be deemed to represent the CEM when assuming responsibilities so assigned in this plan. This would not include any emergency order-making powers that may be first delegated to the CEM in accordance with the EMCPA.

Sustainment includes ensuring the staff on-watch are fed and stay hydrated for the duration of their shift. Many individuals will not take the time to step away from a hectic emergency response situation, however, it is vital to the ongoing operations that individuals do not exhaust themselves. The Logistics Section should be tasked with sustainment planning to ensure the ongoing availability of the limited staff available for operations.

During the transition-to-recovery, the operational tempo may slow down and allow operations to be suspended (or at least minimally staffed) at night. Once the RMO is stood-up and recovery operations are transferred, the PEOC can return to normal, Routine Monitoring operations.

8.13 Transition Phase

Transitioning to recovery is the first step in transitioning from response operations to recovery operations. As the RMO stands-up (see Figure 7), the PEOC is transitioning away from nuclear emergency response towards other issues that may be impacting the province. Additionally, the PEOC may be reverting to Partial Activation, Enhanced Monitoring, or Routine Monitoring.

The ultimate goal of the transition is to remove the PEOC from the ongoing nuclear incident and turning over responsibility for managing the ongoing remediation to other organizations within the provincial government, who have the mandate to manage the

emergency's impact on various sectors of the province's environment and economic base. During the Transition Phase, the partially activated RMO (along with the appropriate ministry), should focus on:

- a. Establishing a recovery management plan based on the PNROP;
- b. Strategies for restoration of normal socio-economic activities;
- c. Monitoring contaminated areas and assessing potential doses to public and workers (through ERAMG members or contracted assistance);
- d. Assessing medium- and long-term health hazards that may result in temporary relocation or permanent resettlement; and
- e. Maintaining dose registries for emergency workers in cooperation with the MOH.

This diagram is for visual reference only. See the text below this figure for the full description.

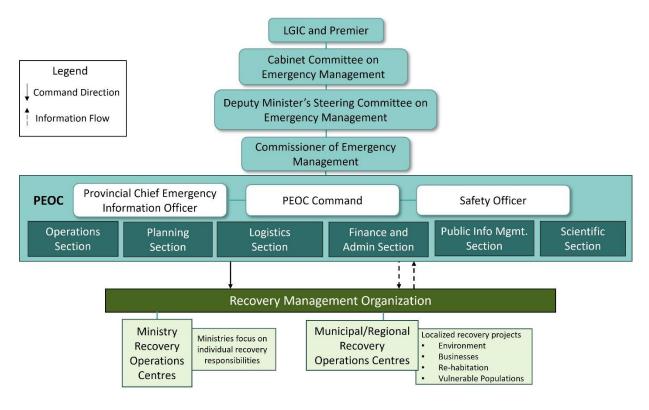


Figure 7: Transition Phase Organizational Structure

The diagram outlines the organizational structure for the province's transition from emergency response to recovery. The Lieutenant Governor in Council and the Premier have the highest authority, followed by the Cabinet Committee on Emergency Management. Directly beneath them is the Deputy Minister's Steering Committee on Emergency Management, which connects to the Commissioner of Emergency Management. The Commissioner connects to the Provincial Emergency Operations Centre (PEOC), which includes PEOC Command, the Provincial Chief Emergency Information Officer, and a Safety Officer. Below this group are six functional sections:

Operations, Planning, Logistics, Finance and Administration, Public Information Management, and Scientific. These sections are connected to the Recovery Management Organization (RMO), which in turn links to Ministry Recovery Operations Centres and Municipal and Regional Recovery Operations Centres. Ministry Recovery Operations Centres are ministries that focus on individual recovery responsibilities, while Municipal and Regional Recovery Operations Centres oversee localized recovery projects. Solid lines represent command direction, while dotted lines indicate information flow.

8.14 Termination

The CEM or designate (e.g. PEOC Commander) may downgrade the provincial offsite response level during the Early Response Phase or when the response enters the Recovery Phase. Considerations for downgrading the provincial offsite response level include:

- a. There is no chance for an additional release (as communicated from the incident NGS)
- b. The radiological picture is known, and long-term protective actions have been implemented
- c. Other EROs are starting Transition Phase actions
- d. The public is well informed regarding the emergency and the planned remediation efforts.

Termination of the emergency can be considered once the RMO is fully stood-up and assumes responsibility for managing recovery operations. Further information on recovery operations can be found in the PNROP. Once the emergency is over, the PEOC should revert to Routine Monitoring for other potential emergencies within the province.

ANNEX A. GUIDING PRINCIPLES

A.1 GUIDING PRINCIPLES

The following principles underlie the PNERP and guide all offsite nuclear emergency management in the province:

- a. The province, through its ministries, agencies, boards and commissions, has the primary responsibility for the health, safety and welfare of all inhabitants of the province, and the protection of property and the environment.
- b. The province shall support and coordinate the response to the offsite consequences of a nuclear emergency and may, where warranted and appropriate, issue operational directives and, in the event of a declared provincial emergency, emergency orders, in accordance with the EMCPA.
- c. In the event of a radiological emergency, other than one occurring at a reactor facility, the province's role may vary from providing support to coordinating the response.
- d. Even though reactor facilities are designed and operated according to stringent safety standards, emergency preparedness and response must operate on the basis that mechanical failure, human error, extreme natural events, or hostile action can lead to nuclear emergencies.
- e. This PNERP details the response for managing the consequences resulting from a reactor facility accident and, as such, does not contemplate its root cause. However, all plans under the PNERP should be able to deal effectively with a broad range of possible emergencies, including severe reactor facility accidents.
- f. The protection of the public's health, safety, welfare, property and the protection of the environment must be balanced with other important considerations to ensure that the response actions result in more benefit than harm.
- g. Protective measures shall be implemented to prevent acute (deterministic) effects and should be implemented to prevent or reduce chronic (stochastic) effects on the public.
- h. Flexibility must be built into all plans and procedures to allow for the optimization of protective and operational measures in response to the changing nature of the emergency and its consequences for public health and safety.
- i. Protective actions should be applied to keep the dose to the public ALARA, accounting for the social and economic risks and costs of such avoidance.
- j. As far as is practicable, preparedness activities should be undertaken in advance to enable a rapid, effective, and efficient response to a nuclear or radiological emergency.
- k. Preparedness activities should include a program of public awareness and education for people who might be affected, to inform them of emergency plans, how they should prepare for an emergency and what they should expect to do in an emergency.
- I. Public awareness and education preparedness activities should further ensure ongoing and meaningful consultation with vulnerable populations in consideration of their unique needs.

- m. As far as is practicable, operational measures (especially alerting and notification systems) and protective measures should be implemented to avoid significant radiation exposure.
- A policy of truth and transparency should be followed in providing information to the public and media prior to, during and after a nuclear or radiological emergency.

A.2 PRINCIPLES OF JUSTIFICATION AND OPTIMIZATION

The principle of justification ensures that, in an emergency, protective action decisions result in greater benefit than harm.

Optimization of the protective actions ensures that doses are kept ALARA, while minimizing, as far as possible, health, safety, psychosocial, economic and environmental impacts.

In the planning and preparedness stage, these principles were applied when detailing the following:

- a. Appropriate precautionary, protective and ingestion control measures and considerations for their implementation (Annex L)
- b. GC and OILs at which to apply protective and ingestion control measures (Annex Q)
- c. Initial, pre-determined, protective measures based on the initial notification categories transmitted by the reactor facility (Section 8.5).

The CEM is responsible for ensuring the continuing practice of justification and optimization of protective actions, using the tools developed in the preparedness phase and, in consultation with the designated municipalities and appropriate members of the emergency response organization.

As the emergency progresses through the Urgent and Early Response Phases and ultimately to the Recovery Phase, the time available for recovery planning decreases and with it, the opportunity for public input into the protective measures strategy and the justification and optimization thereof. Recovery Phase planning should be initiated during preparedness and should include a system, as detailed in the PNROP, to prioritize and facilitate the involvement of the affected public and other relevant partner organizations in developing the initial Recovery Phase protection strategy and updating the strategy based on the prevailing conditions. Planning during preparedness will support justified and optimized protective action decision-making during recovery.

A.3 JUSTIFICATION AND OPTIMIZATION OF PROTECTIVE ACTION STRATEGIES

The objective of protective action decision-making is to reduce radiation doses while minimizing, as far as possible, societal, economic, and environmental disruptions.

When applied to protective action decision-making, the principle of justification requires that decisions will result in greater benefit than harm for the affected population. Upon receipt of an initial notification from the reactor facility of an ongoing or imminent emission, protective measures should be directed by the CEM or designate (e.g. PEOC Commander) subject to operational situation considerations, based on a conservative estimate of the situation.

Urgent response actions (which may include sheltering-in-place, evacuation, and ITB) are pre-defined because time or data may not be available to carry out a comprehensive assessment of imminent risk and are detailed in the applicable implementing plan.

The basis for the justification process rests in calculating projected doses or measuring actual dose rates against GC or OILs respectively. This analysis is detailed in the Scientific Section procedures.

A technical assessment of actual environmental radiation monitoring (surveillance and sampling) results applied against OILs (Annex Q.2) should inform the decision-making process to determine the need for both ingestion control and exposure control measures.

Optimization principles must then be applied to the justified protective action decision to ensure that it is implemented in such a way as to minimize psychosocial, economic, and other disruptions. This application is detailed in the Planning Section procedures.

Justification and optimization reassessment of the protective action strategy should be undertaken regularly as the emergency progresses and as more information becomes available.

Where the effectiveness or safety of a protective action might be impacted by another emergency happening at the same time, the CEM or designate (e.g. PEOC Commander) shall consult with the ministry responsible for that type of emergency to ensure the proposed actions are justified.

Authorities having jurisdiction should develop decision-making guidance and tools for the justification and optimization of protective action strategies during all phases of the emergency.

ANNEX B. PNERP SUPPORT PLANS

B.1 IMPLEMENTING PLANS

The six PNERP Implementing Plans apply the principles, concepts and policies contained in the PNERP, to provide detailed guidance and direction for dealing with a specific nuclear or radiological emergency. The six plans include:

- a. Four site-specific Implementing Plans are available to manage the consequences of Nuclear Emergencies at Pickering NGS, Darlington NGS, Bruce NGS, and the Fermi 2 NPP in Monroe County, Michigan, USA
- b. An Implementing Plan for a Transborder Nuclear Emergency that addresses nuclear emergencies occurring outside Ontario, other than at Fermi 2 NPP, that could affect the province
- c. An Implementing Plan for Other Radiological Emergencies.

In the case of any apparent difference between this PNERP and the relevant implementing plan, the relevant provision(s) of the more recently approved plan should be applied.

B.2 MAJOR ORGANIZATION PLANS

B.2.1 Ministry Plans

Provincial ministries, agencies, boards, and commissions shall develop their own plans and procedures to fulfil the responsibilities as outlined in the Annex F.

B.2.2 Municipal Plans

Pursuant to <u>EMCPA</u>, <u>Section 8</u>, provisions of an emergency plan of a municipality respecting emergencies arising in connection with nuclear facilities shall conform to this PNERP and shall address the responsibilities outlined throughout this document.

Municipalities in close proximity to, or with CNSC licensed facilities within their boundaries, should include in their emergency response plans the measures they may need to take to respond to a nuclear emergency (i.e., the ability to enact the protective actions and measures ordered by the province). This would include details on the relevant notifications to and from the involved organizations.

All municipal nuclear or radiological emergency response plans shall provide for the development of plans and procedures involving local boards (as defined in the EMCPA) and police services operating in the area to provide necessary support and assistance required by such plans, or that may be needed in an emergency.

B.2.3 Reactor Facility Plans

Reactor facilities shall have emergency plans to fulfil their onsite responsibilities as well as to discharge offsite responsibilities in accordance with the Nuclear Safety and Control Act, its associated regulations, and with the responsibilities outlined in Annex G.

B.2.4 CNSC Licensed Facilities Plans

CNSC licensed facilities (nuclear establishments) have plans and procedures for the control of radioactive material and for the notification of offsite authorities in the event of an accident. These plans are in accordance with the Nuclear Safety and Control Act and its associated regulations, as well as with the responsibilities outlined in Annex H.

B.2.5 Federal Emergency Response Plan

Under the Emergency Management Act, the Minister of Public Safety is responsible for coordinating the Government of Canada's response to an emergency. The Federal Emergency Response Plan (FERP) is the Government of Canada's all-hazards response plan.

The FERP outlines the processes and mechanisms to facilitate an integrated Government of Canada response to an emergency.

B.2.6 Federal Nuclear Emergency Plan

The Federal Nuclear Emergency Plan (FNEP), prepared by the Minister of Health, is an annex to the FERP and describes the roles, responsibilities, and capabilities of the federal government to support the scientific and technical response to nuclear or radiological emergencies.

The FNEP contains provincial annexes which outline the provision of scientific and technical support from the federal government to provinces during a nuclear emergency.

The FNEP's Ontario Annex functions as a pre-arrangement between the province of Ontario and the federal government for such support, under Section 6.3 of the federal Emergency Management Act. This arrangement replaces the need for further requests for response assistance. However, requests for support beyond those specified in the FNEP Ontario Annex need to be made pursuant to the normal request for federal assistance process (see Section 7.7.3).

B.2.7 First Nation and Indigenous Communities

Individual First Nation and Indigenous communities are the first line of response in the event of an emergency within their community and are advised to create and implement emergency management plans in order to increase community preparedness.

While there are no First Nation or Indigenous communities within the Detailed Planning Zones (DPZ) of any of Ontario's reactor facilities, First Nation and Indigenous communities that are, or have traditional territories, within the Ingestion Planning Zone (IPZ) for reactor facilities should consider in their plans, the need to undertake ingestion control measures (refer to the site-specific implementing plans for the Pickering NGS, Darlington NGS, Bruce NGS, Fermi 2 NPP, and for a Transborder Nuclear Emergency).

First Nation and Indigenous communities that are, or have traditional territories, in close proximity to other types of CNSC-licensed facilities should include in their emergency response plans, the measures they may need to take to respond to a radiological emergency. This would include details on the relevant notifications to and from the involved organizations.

B.2.8 International Agreements and Arrangements

B.2.8.1 Northern Emergency Management Assistance Compact

Ontario participates in several agreements for the purposes of emergency response mutual assistance (e.g., Northern Emergency Management Assistance Compact (NEMAC) Agreement, a memorandum of agreement, entered into by the Central and Prairie regions of the United States with select Canadian provinces (including Ontario) intended to facilitate cross border emergency management assistance through mutual aid) as well as more specific nuclear notification agreements. The latter are detailed in the PNERP Implementing Plan for the Fermi 2 Nuclear Power Plant and Implementing Plan for a Transborder Nuclear Emergency.

B.2.8.2 Statement of Intent

Health Canada and the US Department of Energy developed a statement of intent supporting joint Canada-U.S. nuclear emergency preparedness and response capabilities with the objective to identify areas where coordination and cooperation, including information sharing and mutual assistance would be beneficial to nuclear emergency management programs and capabilities.

B.2.8.3 IAEA's Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency

Canada is a signatory of the IAEA's Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency, which sets out an international framework for cooperation among countries and with the IAEA to facilitate prompt assistance and support in the event of nuclear accidents or radiological emergencies. Requests to the IAEA for international assistance would be undertaken by Health Canada, as the Competent Authority-Abroad, and Global Affairs Canada.

ANNEX C. PROVINCIAL LEGISLATIVE AUTHORITY

C.1 PROVINCIAL ROLES AND RESPONSIBILITIES

The provincial government has jurisdiction over public health and safety, property, and the environment within its borders. In the event of a radiological or nuclear emergency, the province is primarily responsible for mitigating the offsite consequences of the emergency, by conducting the offsite response to those emergencies as detailed in the PNERP. This annex is supplemental to provincial legislation found in Section 3.1.

C.2 EMERGENCY MANAGEMENT AND CIVIL PROTECTION ACT R.S.O 1990, CHAPTER E.9

The legislative authority for emergency management (including planning and response) in Ontario is the Emergency Management and Civil Protection Act (EMCPA).

One of the actions available to the province under the EMCPA is a provincial declaration of emergency. A provincial declaration of emergency can be made by the Lieutenant Governor in Council (LGIC) or the Premier for an emergency that exists throughout Ontario or in any part of Ontario. The provincial declaration of emergency allows the province to immediately make emergency orders to address the emergency quickly and effectively.

C.2.1 Emergency Orders

Once a provincial declaration of emergency has been made, the LGIC has authority to make emergency orders and may delegate these powers to a Minister or to the CEM. All emergency orders are subject to the Canadian Charter of Rights and Freedoms.

A Minister to whom powers have been delegated may in turn delegate any of their powers to the Commissioner of Emergency Management (CEM).

In accordance with the EMCPA (s. 7.0.2(2)):

During a declared provincial emergency, the Lieutenant Governor in Council may make orders that the Lieutenant Governor in Council believes are necessary and essential in the circumstances to prevent, reduce or mitigate serious harm to persons or substantial damage to property, if in the opinion of the Lieutenant Governor in Council it is reasonable to believe that,

- (a) the harm or damage will be alleviated by an order; and
- (b) making an order is a reasonable alternative to other measures that might be taken to address the emergency.

2006, c. 13, s. 1 (4).". s. 7.0.2(3)(1) goes on to say that actions authorized by emergency orders "shall be exercised in a manner which, consistent with the objectives of the order, limits their intrusiveness."

C.2.2 Reporting Requirements

Pursuant to Section 7.0.6 of the EMCPA, during a provincial emergency, the Premier or a Minister as delegated is required to regularly report to the public with respect to the emergency. Pursuant to subsection 7.0.10(1) of the EMCPA, the Premier is required to submit a report in respect of the declared emergency to the Assembly within 120 days following the termination of the declared emergency. If the Assembly is not in session at that time, the Premier is required to submit a report within seven (7) days of the Assembly reconvening.

C.2.3 Liability for Action

Pursuant to subsection 11(1) of the EMCPA, ministers of the Crown, Crown employees, members of municipal councils, municipal employees, public servants, or any other individual acting pursuant to this Act or an order made under this Act for any act are protected from personal liability for doing any act done in good faith under the Act or pursuant to an Order made under the Act.

C.2.4 Authority

The responsibilities, functions, and tasks outlined in the PNERP, and its implementing plans shall carry the following authority in accordance with the EMCPA Section 9:

An emergency plan formulated under section 3, 6, 6.0.1 or 8 shall,

- a. in the case of a municipality, authorize employees of the municipality or, in the case of a plan formulated under section 6 or 8, authorize public servants to take action under the emergency plan where an emergency exists but has not yet been declared to exist;
- b. specify procedures to be taken for the safety or evacuation of persons in an emergency area;
- c. in the case of a municipality, designate one or more members of council who
 may exercise the powers and perform the duties of the head of council under this
 Act or the emergency plan during the absence of the head of council or during
 his or her inability to act;
- d. establish committees and designate employees to be responsible for reviewing the emergency plan, training employees in their functions and implementing the emergency plan during an emergency;
- e. provide for obtaining and distributing materials, equipment and supplies during an emergency;
- e. provide for any other matter required by the standards for emergency plans set under section 14; and
- f. provide for such other matters as are considered necessary or advisable for the implementation of the emergency plan during an emergency. R.S.O. 1990, c. E.9, s. 9; 2002, c. 14, s. 13; 2006, c. 35, Sched. C, s. 32 (5); 2022, c. 11, Sched. 1, s. 7.

C.3 ONTARIO DRINKING WATER QUALITY STANDARDS (O. REG. 169/03)

Provincial standards for water quality are set out in the Ontario Drinking Water Quality Standards (O. Reg. 169/03), a regulation under the Safe Drinking Water Act, 2002, S.O. 2002, c. 32.

C.4 OCCUPATIONAL HEALTH AND SAFETY ACT, R.S.O. 1990, C. O.1

In the event of a conflict between an Emergency Order made under the EMCPA and the Occupational Health and Safety Act or a regulation made under it, OHSA or the regulation made under it prevails (subsection 7.2 (8) of the EMCPA).

C.5 HEALTH PROTECTION AND PROMOTION ACT, R.S.O. 1990, C. H.7

The Health Protection and Promotion Act (HPPA) includes provisions for the Minister of Health, Chief Medical Officer of Health, and local Medical Officers of Health to issue orders and directives. It further authorizes the Minister to publish public health standards for the provision of mandatory health programs and services, and every board of health shall comply with them.

C.6 RESPONSIBILITIES

Where the PNERP assigns responsibilities to the province, those responsibilities are to be carried out by the Ontario provincial government as a whole, as coordinated by Emergency Management Ontario (EMO) through the Provincial Emergency Operations Centre (PEOC). The CEM is responsible for leading response and recovery coordination.

The responsibilities, functions, and tasks outlined in the PNERP, and its implementing plans shall carry the following authorities:

- a. In the case of those assigned to an organization, it should be the responsibility of the operational or administrative head of the organization to ensure their implementation.
- b. In the case of those assigned to a position, implementation shall also be the responsibility of any substitute, alternate, or the person next in line of authority if the permanent incumbent of that position is absent or otherwise unable to take the necessary action.

ANNEX D. FEDERAL LEGISLATIVE AUTHORITY

D.1 FEDERAL ROLES AND RESPONSIBILITIES

The federal government maintains exclusive jurisdiction over the regulation of nuclear energy in Canada.

The province has exclusive jurisdiction for matters of property and civil rights in Ontario and has jurisdiction over matters that affect the public health, safety, and environment of Ontario.

D.2 EMERGENCIES ACT, R.S.C. 1985, C.22 (4TH SUPP.)

Pursuant to Section 6 of the Emergencies Act, the federal Governor in Council may declare a public welfare emergency, which includes an emergency caused by a real or imminent accident or pollution that results in or may result in a danger to life or property, social disruption or a breakdown in the flow of essential goods, services or resources, so serious as to be a national emergency.

Pursuant to Section 14 of the Emergencies Act, before the Governor in Council issues, continues or amends a declaration of a public welfare emergency, the Lieutenant Governor in Council of each province in which the direct effects of the emergency occur shall be consulted with respect to the proposed action. However, where the direct effects of the emergency are confined to, or occur principally in one province, the Governor in Council may only issue a declaration of public welfare emergency when the "Lieutenant Governor in Council of the province" has indicated to the federal Governor in Council that the emergency exceeds the capacity or the authority of the province to deal with it.

Pursuant to Section 8 of the Emergencies Act, while a declaration of a public welfare emergency is in effect, the Governor in Council may make orders or regulations "that the Governor in Council believes, on reasonable grounds, are necessary for dealing with the emergency."

D.3 EMERGENCY MANAGEMENT ACT, S.C. 2007, C.15

The Emergency Management Act provides for the coordination of emergency management activities including the development and implementation of emergency management plans. Federal authorities also coordinate or support the provision of assistance to a province in respect of a provincial emergency. Assistance could include financial assistance, including where the emergency has been declared to be of concern to the federal government and the province has requested assistance.

D.4 NUCLEAR SAFETY AND CONTROL ACT, R.S.C. 1997, C.9

The NSCA establishes the CNSC, which is a federal entity responsible for matters including the regulation of certain activities related to nuclear energy, including the construction and operation of reactor facilities, and response to emergencies with radiological or nuclear aspects.

The CNSC regulates all activities, actions and decisions regarding possession, handling, transport, or storage of licensed radioactive material.

The CNSC is authorized to make any order in an emergency that it considers necessary to protect the environment or the health and safety of persons or to maintain national security and compliance with Canada's international obligations (see Section 47 (1) of the NSCA).

D.5 NUCLEAR SAFETY AND CONTROL ACT, CLASS I NUCLEAR FACILITIES REGULATIONS (SOR/2000-204)

Under the Nuclear Safety and Control Act, Class I Nuclear Facilities Regulations, licensed nuclear facilities (e.g., reactor facilities) face various requirements, including being required to demonstrate proposed measures to prevent or mitigate the effects of accidental releases of nuclear substances and hazardous substances on the environment, the health and safety of persons and the maintenance of national security, including measures to:

- a. assist offsite authorities in planning and preparing to limit effects of an accidental release.
- b. notify offsite authorities of an accidental release or the imminence of an accidental release.
- c. report information to offsite authorities during and after an accidental release.
- d. assist offsite authorities in dealing with the effects of an accidental release.
- e. test the implementation of the measures to prevent or mitigate the effects of an accidental release.

D.6 NUCLEAR LIABILITY AND COMPENSATION ACT S.C. 2015, C.4, S.120

The federal Nuclear Liability and Compensation Act S.C. 2015, c.4, s.120 (NLCA), administered by Natural Resources Canada (NRCan), governs civil liability and compensation for damage in Canada in case of a nuclear incident. This legislation provides for various matters, including the following:

a. Operators of nuclear power plants designated under the NLCA are liable for up to one billion dollars for damage resulting from a nuclear incident and must have

- insurance from an insurer approved under the NLCA with terms and conditions approved by the federal Minister of Natural Resources
- b. Compensable damage includes bodily injury or death, property damage, psychological trauma of a person who suffered bodily injury caused by a nuclear incident, certain environmental damage, economic loss incurred as a result of a person's bodily injury or damage to their property and that is caused by a nuclear incident, or psychological trauma that results from that bodily injury, certain lost wages, and certain costs related to preventive measures. Actions or claims in relation to bodily injury or death must be brought within 30 years, while any other actions or claims must be brought within 10 years.

Liaison between the federal government, the Nuclear Insurance Association of Canada (NIAC) and the Ontario Ministry of Municipal Affairs and Housing (MMAH) shall be undertaken to ensure that any financial assistance provided by the province does not duplicate assistance provided under the federal legislation.

D.7 TRANSPORTATION OF DANGEROUS GOODS ACT (S.C.1992, C.34)

The Transportation of Dangerous Goods Act (S.C.1992, C.34), administered by Transport Canada, governs the transportation of dangerous goods (including nuclear substances, within the meaning of the NSCA, that are radioactive). It provides for various matters, including:

- a. certain safety and security requirements and standards.
- b. requirements for emergency response assistance plans, which outline what is to be done to respond to an actual or anticipated release of dangerous goods in the course of their handling or transporting that endangers, or could endanger, public safety.

ANNEX E. FEDERAL DEPARTMENT RESPONSIBILITES

E.1 OVERVIEW

Under the Emergency Management Act, the Minister of Public Safety is responsible for coordinating the Government of Canada's response to an emergency. The Federal Emergency Response Plan (FERP) is the Government of Canada's all-hazards response plan. The FERP outlines the processes and mechanisms to facilitate an integrated Government of Canada o response to an emergency.

The federal response to emergencies is housed within the Government Operations Centre (GOC), which is managed by Public Safety Canada (PS) and is the single point of contact in emergencies. The GOC supports provincial and local authorities, and coordinates with federal government departments, non-governmental organizations, the private sector, and allied governments.

The National Emergency Response System (NERS) forms the basis for a federal response. The NERS:

- a. Provides for harmonization of joint federal, provincial, and territorial response to emergencies.
- b. Supports and facilitates procurement and logistics coordination between all levels of government, the private sector, non-governmental organizations, and international consulting partners.
- c. Applies to federal support at the request of a province or territory and can also be used when provinces or territories support federal response to an emergency under federal jurisdiction.

Health Canada administers the Federal Nuclear Emergency Plan (FNEP), which can be activated when:

- A nuclear emergency requires coordination between several Canadian provinces or territories.
- b. Federal response activities for multi-departmental offsite response must be managed and coordinated for a radiological or nuclear emergency.

The FNEP is an annex to the FERP and describes the roles, responsibilities, and capabilities of the federal government to support the scientific and technical response to radiological or nuclear emergencies.

The FNEP contains provincial annexes which outline the provision of scientific and technical support from the federal government to provinces during a nuclear emergency.

The FNEP's Ontario Annex functions as a pre-arrangement between the province of Ontario and the federal government for such support, under Section 6.3 of the

Emergency Management Act. This arrangement alleviates the requirement for certain requests for response assistance. However, requests for support beyond those specified in the FNEP Ontario Annex must be made pursuant to the normal request for federal assistance process.

In the event of a radiological or nuclear emergency, the CNSC monitors and evaluates the onsite response of the licensee. In the case of an event with no identified licensee, the CNSC, in compliance with the NSCA and Regulations:

- a. Oversee and regulate the response activities of the licensees responding to the event.
- b. Ensure the health, safety, and security of licensee, the response staff, the public and the environment.
- c. Ensure compliance with Canada's international obligations.

In either case, the CNSC implements their CNSC Nuclear Emergency Response Plan.

In accordance with the FNEP and with the NERS, in the event of a nuclear emergency, the federal government (through PS) will liaise with the provinces and territories as well as with neighbouring countries and the international community.

NRCan administers the NLCA, which governs the compensation regime in the event of a nuclear emergency.

The federal government further coordinates Canada's response (through Global Affairs Canada) should Canadians be affected by a nuclear emergency that occurs in a foreign country.

The following departments have agreed to assume the identified responsibilities within the PNERP.

E.2 HEALTH CANADA

The following sections detail the responsibilities for Health Canada within the PNERP.

E.2.1 Planning and Preparedness

Under the PNERP, Health Canada will:

- Execute the applicable preparedness responsibilities described in the Provincial Nuclear Emergency Preparedness Framework prior to a radiological or nuclear emergency.
- Ensure that federal and provincial nuclear emergency management activities are supported and coordinated in conjunction with the PNERP and FNEP and its Ontario Annex

- c. Work with the province and other supporting organizations to put in place appropriate safety measures to protect the public and emergency workers from immediate and delayed health effects that may result from a radiological or nuclear event, and to mitigate the impacts of such an event on property and the environment.
- d. On an annual basis, provide the province with most current data from their Fixed Point and other radiological monitoring networks.
- e. Assist the Ministry of Labour, Immigration, Training and Skills Development (MLITSD) in maintaining an environmental radiation database.
- f. Develop departmental procedures for carrying out the collection, delivery and radio- analysis of samples, and other assigned actions, as required under the Environmental Radiation and Assurance Monitoring Group (ERAMG) Plan
- g. Ensure that HC / FNEP Technical Assessment Group (TAG) staff working in the PEOC have an overall knowledge of their emergency plans and PNERP.
- h. Participate in Public Education and Awareness Program by maintaining respective strategies and products in accordance with the in Public Education and Awareness Strategy.

E.2.2 Provision of Personnel

Under the PNERP, Health Canada will:

- a. Provide suitable Health Canada personnel for staffing various positions in the province's Emergency Response Organization (ERO) including the PEOC Operations Section and qualified personnel for the ERAMG-PEOC Team and ERAMG-Field Team
- b. Provide a suitable representative to participate on inter-organizational NEMCC sub-committees and working groups set up under the PNERP to ensure alignment and address inter-organizational issues.

E.2.3 Response

Under the PNERP, Health Canada will:

- a. Execute the applicable responsibilities described in the PNERP at the first practicable occasion during a nuclear emergency.
- b. In the event of a nuclear emergency requiring a coordinated Government of Canada response, the Minister of Emergency Preparedness Canada shall be responsible for overall federal coordination unless otherwise specified. The federal technical support and coordination would be led by Health Canada as per the FNEP and the Ontario Annex
- c. During a radiological or nuclear emergency, ensure coordination and communication between the Scientific Section and the FNEP TAG, including the provision of offsite assessments to support situational awareness.

- d. The FNEP TAG members of the PEOC shall provide scientific and technical information and advice to the PEOC Scientific Section to assist in performing its functions.
- e. Coordinate the release and content of emergency information for public release with the PEOC Public Information Management Section
- f. As lead of the FNEP TAG, provide offsite atmospheric dispersion modelling and dose assessments to the PEOC Scientific Section to support protective action decision-making.

E.2.4 Training and Exercises

Under the PNERP, Health Canada will:

- a. Execute the training and exercise responsibilities described in the Nuclear Training Program and the Nuclear Exercise Program prior to a radiological or nuclear emergency to ensure appropriate training of HC staff.
- b. Participate in training and exercises held by the province according to a mutually agreed schedule.
- c. Arrange appropriate training of FNEP TAG staff involved in the Scientific Section of the PEOC.

E.2.5 Study and Research

Under the PNERP, Health Canada will:

- a. Make available to the province the results of studies and research, which affect offsite safety. Within available resources, participate in such studies and research undertaken by the province.
- b. Provide the province with, or assist the province in obtaining information, studies, and research, having a bearing on offsite safety, from international agencies, other countries, and other provinces of Canada.

E.3 CANADIAN NUCLEAR SAFETY COMMISSION

The following responsibilities have been agreed to pursuant to the Memorandum of Understanding (MOU) maintained between CNSC and EMO, in accordance with their respective mandates under the federal NSCA and the provincial EMCPA with respect to nuclear safety regulation, public safety, and protection of the environment in the province of Ontario.

The CNSC adheres to the following principles regarding nuclear emergency management:

a. The top priorities in managing a nuclear emergency are health, safety, security, and the environment.

- b. Nuclear emergencies are managed in accordance with Section 9 of the NSCA, which outlines the mandate of the Commission.
- c. A risk-informed approach is used.
- d. Activities are coordinated with relevant consulting partners.

E.3.1 Planning and Preparedness

Under the PNERP, CNSC will:

- Execute the applicable preparedness responsibilities described in the Nuclear Emergency Preparedness Framework prior to a radiological or nuclear emergency.
- b. The CNSC maintains a Nuclear Emergency Response Plan, along with supporting procedures and guidelines, to address the CNSC's response to a nuclear emergency.
- c. Pursuant to MOU article 3, the CNSC and EMO:
 - Consult on the development and implementation of Commission regulations as they affect nuclear safety, regulation, public safety, and the protection of the environment within Ontario as well as nuclear events and issues occurring outside, particularly as they affect Class I nuclear facilities.
 - ii. Consult on the evolution and implementation of the PNERP as well as the Commission's Nuclear Emergency Plan
 - iii. Facilitate contact with other federal, provincial, municipal, or non-governmental organizations.
 - iv. Facilitate contact with foreign governments and international organizations recognizing that EMO maintains contact with contiguous U.S. states regarding nuclear emergency preparedness and response.
 - v. Pursuant to MOU article 4, provide EMO with annual reports of radiological environmental monitoring.
 - vi. CNSC staff working in the PEOC should have an overall knowledge of their emergency plans and the PNERP.
 - vii. Participate in Public Education and Awareness Program by maintaining respective strategies and products in accordance with the in Public Education and Awareness Strategy.

E.3.2 Provision of Personnel

Under the PNERP, CNSC will:

- a. Pursuant to MOU article 7:
 - Provide staff for the PEOC Operations Section to liaise with the CNSC's Emergency Operations Centre (EOC) and technical personnel to work in the PEOC scientific section during an emergency.

- ii. Exchange current contact numbers for duty personnel and operations centres.
- b. Provide a suitable representative to participate on inter-organizational NEMCC sub-committees and working groups set up under the PNERP to ensure alignment and address inter-organizational issues.

E.3.3 Response

Under the PNERP, CNSC will:

- a. Execute the applicable responsibilities described in the PNERP at the first practicable occasion during a nuclear emergency.
- b. Maintain the capability to receive notice of actual or potential nuclear emergencies and ensures that its Nuclear Emergency Response Plan can be activated at any time.
- c. Pursuant to MOU article 7, provide EMO with timely notification of actual or potential nuclear, radiological, and other related emergencies.
- d. The CNSC's EOC is activated in the event of a nuclear emergency.
- e. The CNSC activates its EOC and assembles staff who have a role to play in order to provide assurance that appropriate actions are taken by the licensee and response organizations, to limit the risk to health, safety, security of the public and the environment.
- f. For nuclear emergencies involving licensed facilities and substances, the CNSC:
 - i. Performs regulatory oversight of the licensee's activities (monitoring the response actions, evaluation of protective action recommendations, and, when appropriate, direction in the form of directives and orders)
 - ii. Performs an independent assessment of the Onsite conditions and potential offsite consequences, to provide or confirm the licensee's recommendations concerning any protective measures that may be needed.
- g. The CNSC plays a supporting role to the response under the FNEP. This includes (but is not limited to) providing technical assistance and support to the lead organization, in accordance with CNSC's authorities and responsibilities.
- h. The CNSC provides support to the whole-of-government response for nuclear emergencies involving non-licensees, such as foreign emergencies and malevolent acts.
- During a nuclear emergency, the CNSC co-ordinates its activities with consulting partners and, as appropriate, shares information to enable informed and efficient decision-making. Where necessary, the Nuclear Emergency Organization (NEO) advises the CNSC in making timely regulatory decisions related to the emergency.
- j. Coordinate the release and content of emergency public information for public release with the PEOC Public Information Management Section.

E.3.4 Training and Exercises

Under the PNERP, CNSC will:

- a. The CNSC may participate in training and exercises held by the province.
- b. Pursuant to MOU article 6, the CNSC and EMO:
 - i. Exchange information on training, drill, and exercise schedules at least once per year.
 - ii. Identify mutual training opportunities.
 - iii. Support each other during exercises.
 - iv. Arrange appropriate training of CNSC staff involved in the scientific section of the PEOC.

E.3.5 Study and Research

Under the PNERP, CNSC will:

- a. Make available to the province the results of studies and research, which affect offsite safety. Within available resources, participate in such studies and research undertaken by the province, if invited to do so by the province
- b. Provide the province with, or assist the province in obtaining information, studies and research having bearing on offsite safety, from international agencies, other countries, and other provinces of Canada
- c. Share studies published by CNSC staff once published.

E.4 PUBLIC SAFETY CANADA

The following sections detail the responsibilities for Public Safety Canada (PS) within the PNERP.

E.4.1 Planning and Preparedness

Under the PNERP, PS will:

- Execute the applicable preparedness responsibilities described in the Nuclear Emergency Preparedness Framework prior to a radiological or nuclear emergency.
- b. Confirm that federal and provincial nuclear emergency management activities are supported and coordinated in conjunction with the PNERP and FNEP
- c. Confirm that threats, alerts, and advisories are issued to the PEOC to communicate information about potential, imminent, or actual threats that endanger public health and safety.
- d. Public Safety Canada staff working in the PEOC should have an overall knowledge of their emergency plans and the PNERP.

e. Participate in Public Education and Awareness Program by maintaining respective strategies and products in accordance with the in Public Education and Awareness Strategy.

E.4.2 Provision of Personnel

Under the PNERP, PS will:

- a. Provide a suitable representative to participate on inter-organizational NEMCC sub- committees and working groups set up under the PNERP to ensure alignment and address inter-organizational issues.
- b. Provide suitable Public Safety personnel for staffing various positions in the province's emergency management organization including the PEOC Operations Section.

E.4.3 Response

Under the PNERP, PS will:

- a. Execute the applicable responsibilities described in the PNERP at the first practicable occasion during a nuclear emergency.
- b. Confirm that the GOC is notified, to facilitate the coordination of federal activities relating to areas of federal jurisdiction. This may include liaising with any other potentially affected province, with United States, any other country, and international agencies.
- c. Notify the province, as soon as possible, of any report received of an occurrence, which has resulted, or has the potential to result, in the receipt by any person offsite (in Ontario) of a dose of ionizing radiation in excess of prescribed regulatory limits.
- d. Coordinate the release and content of emergency public information for public release with the PEOC Public Information Management Section.

E.4.4 Training and Exercises

Under the PNERP, PS will participate in training and exercises held by the province.

E.4.5 Study and Research

Under the PNERP, PS will provide the province with, or assist the province in obtaining information, studies and research, having a bearing on offsite safety, from international agencies, other countries, and other provinces of Canada.

E.5 CANADIAN FOOD INSPECTION AGENCY REGIONAL OFFICE

The following sections detail the responsibilities the Canadian Food Inspection Agency (CFIA) Ontario Regional Office has agreed to within the PNERP.

E.5.1 Planning and Preparedness

Under the PNERP, CFIA will:

- Execute the applicable preparedness responsibilities described in the Nuclear Emergency Preparedness Framework prior to a radiological or nuclear emergency.
- Assist in the development and implementation of a public awareness and education program for farmers, and federally regulated food processing facilities and abattoirs prior to a nuclear emergency.
- c. Prepare plans, federally regulated food processing facilities and abattoirs together with the Ontario Ministry of Agriculture, Food, and Agribusiness (OMAFA), to provide information and advice to farmers, and federally regulated food processing facilities in the DPZ of each reactor facility for the initial stages of an emergency. This includes the preparation of advisories covering different situations.
- d. Participate in the preparation of plans and procedures for Environmental Radiation and Assurance Monitoring for nuclear emergencies.
- e. Plan and prepare ingestion control measures in the DPZ of each reactor facility as a protective measure to minimize the radiation hazard.
- f. Maintain an information database relating to federally regulated food processing facilities and abattoirs for use in nuclear emergency planning and management. The nuclear data shall be organized to allow access to information for the DPZ and each sub zone of the IPZ around each reactor facility.
- g. Departmental staff working in the PEOC should have an overall knowledge of their emergency plans and the PNERP.
- h. Assist the Ministry of Labour, Immigration, Training and Skills Development (MLITSD) in maintaining an environmental radiation database.
- i. Participate in Public Education and Awareness Program by maintaining respective strategies and products in accordance with the in Public Education and Awareness Strategy.

E.5.2 Provision of Personnel

Under the PNERP, CFIA will:

 a. Provide suitable personnel for staffing various positions in the province's emergency management organization, including qualified personnel for the ERAMG-PEOC Team and ERAMG-Field Team b. Provide a suitable representative to participate on inter-organizational NEMCC set up under the PNERP to ensure alignment and address inter-organizational issues.

E.5.3 Response

Under the PNERP, CFIA will:

- a. Execute the applicable responsibilities described in the PNERP at the first practicable occasion during a nuclear emergency.
- Act as the main federal department through which food ingestion control operations shall be conducted by the PEOC at the first practicable occasion during a nuclear emergency.
- Execute a sampling program and other assigned actions required under the ERAMG Operations Manual at the first practicable occasion during a nuclear emergency.
- d. Liaise with Agriculture and Agri-Food Canada and OMAFA at the first practicable occasion during a nuclear emergency to assist in securing agricultural commodities in affected areas.
- e. Provide advice and guidance to farmers and federally regulated food processing facilities and abattoirs on the humane transport of animals during evacuations or other displacements.
- f. Provide advice related to the import and export of potentially contaminated food products and bottled water in the affected zone, assist with the facilitation of food embargoes through appropriate channels.
- g. Channel emergency public information for public release through the PEOC Public Information Management Section.

E.5.4 Training and Exercises

Under the PNERP, CFIA will execute the training and exercise responsibilities described in the Nuclear Training Program and the Nuclear Exercise Program prior to a radiological or nuclear emergency to ensure appropriate training of departmental staff.

E.5.5 Study and Research

Under the PNERP, CFIA will participate in studies and inter-comparisons in the area of environmental radiation monitoring and analysis of the impact of radiation on the food chain.

ANNEX F. PROVINCIAL MINISTRY RESPONSIBILITES

F.1 MINISTRY OF THE ATTORNEY GENERAL

The Minister, together with the agencies, boards and commissions operating to assist the Ministry, have the following responsibilities consistent with the planning responsibilities assigned by Order in Council under Section 6 of the EMCPA.

F.1.1 Planning and Preparedness

In support of the PNERP, the Ministry of the Attorney General will:

- a. Execute the applicable preparedness responsibilities described in the PNERP prior to a radiological or nuclear emergency
- b. Ensure that the administration of Ontario's public affairs is in accordance with the law
- c. Superintend all government legislative matters
- d. Ensure the administration of the courts in partnership with the constitutionally independent judiciary and superintend all matters connected with judicial offices
- e. Ministry staff working in the PEOC should have an overall knowledge of their emergency plans and the PNERP
- f. Participate, as required, in an NEMCC sub-committee related to long-term housing and the associated economic, educational, health, psychosocial, and other issues associated with the relocation of large population groups.

F.1.2 Provision of Personnel

In support of the PNERP, the Ministry of the Attorney General will:

- a. Support the Attorney General's mandate and role as Chief Law Officer of the Crown.
- b. Conduct all provincial Crown prosecutions.
- c. Conduct and regulate all litigation for and against the Crown or any provincial ministry or agency of government in respect of any subject within the authority or jurisdiction of the Legislature
- d. Provide a suitable representative to participate on inter-organizational NEMCC sub-committees and working groups set up under the PNERP to ensure alignment and address inter-organizational issues.

F.1.3 Response

In support of the PNERP, the Ministry of the Attorney General will:

a. Execute the applicable responsibilities described in the PNERP at the first practicable occasion during a nuclear emergency

- b. Advise government upon all matters of law referred to it, including the constitutionality and legality of emergency response issues
- Represent the personal and property rights and obligations of children in the civil justice system
- d. Provide court-based assistance services to the most vulnerable victims and witnesses of crime
- e. Provide guardianship services to vulnerable and incapable adults
- f. Provide legislative drafting services to ministers of the Crown, members of the legislature and applicants for private bills and drafting services for regulations.
- g. Co-ordinate the response to legal issues that arise.
- h. Channel emergency information for public release through the PEOC Public Information Management Section.

F.1.4 Training and Exercises

In support of the PNERP, Ministry of the Attorney General will execute the training and exercise responsibilities described in the Nuclear Emergency Preparedness Framework prior to a radiological or nuclear emergency to ensure appropriate training of ministry staff.

F.2 MINISTRY OF AGRICULTURE, FOOD AND AGRIBUSINESS

The Minister, together with the agencies, boards and commissions operating to assist the Ministry, have the following responsibilities consistent with the planning responsibilities assigned by Order in Council under Section 6 of the EMCPA.

F.2.1 Planning and Preparedness

In support of the PNERP, OMAFA will:

- Execute the applicable preparedness responsibilities described in the Nuclear Emergency Preparedness Framework prior to a radiological or nuclear emergency
- Assist in the development and implementation of a public awareness and education program for farmers and food processors prior to a nuclear emergency
- c. Together with the CFIA, prepare information and advice for farmers and food processors in the DPZ of each reactor facility for the initial stages of an emergency, including the preparation of advisories covering different situations
- d. Prepare and plan ingestion control measures in the DPZ of each reactor facility to minimize the radiation hazard, including arrangements for clearing DPZ dairy farm milk storages at the first practicable opportunity during a nuclear emergency
- e. Participate in the preparation of plans and procedures for Environmental Radiation and Assurance Monitoring for nuclear or radiological emergencies.

- f. Prepare operating procedures for the Ministry Action Group and making necessary organizational and administrative arrangements to enable it to execute its functions
- g. Maintain an information database relating to agricultural and food facilities, producers, marketing organizations, etc. for use in nuclear emergency planning and management. The nuclear data shall be organized to allow access to information for the DPZ and each sub zone of the IPZ around each reactor facility
- h. Ministry staff working in the PEOC and on field teams should have an overall knowledge of their emergency plans and the PNERP
- i. Participate, as required, in an NEMCC sub-committee related to long-term housing and the associated economic, educational, health, psychosocial, and other issues associated with the relocation of large population groups
- j. Participate in Public Education and Awareness Program by maintaining respective strategies and products in accordance with the in Public Education and Awareness Strategy.

F.2.2 Provision of Personnel

In support of the PNERP, OMAFA will:

- a. Provide suitable ministry personnel for staffing various positions in the provincial ERO, including the Operations section and qualified personnel for the ERAMG-PEOC Team and ERAMG-Field Team
- b. Assist the Ministry of Labour, Immigration, Training and Skills Development (MLITSD) in maintaining an environmental radiation database
- c. Provide a suitable representative to participate on inter-organizational NEMCC sub- committees and working groups, set up under the PNERP to ensure alignment and address inter-organizational issues.

F.2.3 Response

In support of the PNERP, OMAFA will:

- a. Execute the applicable responsibilities described in the PNERP at the first practicable occasion during a nuclear emergency
- Act as the main ministry through which food (excluding water) ingestion control operations shall be conducted by the PEOC at the first practicable occasion during a nuclear emergency
- c. Establish a Ministry Action Group to direct and co-ordinate ministry actions under the direction of the PEOC at the first practicable occasion during a nuclear emergency
- d. Execute a sampling program and other assigned actions required under the ERAMG Operations Manual at the first practicable occasion during a nuclear emergency

- e. Liaise with Agriculture and Agri-Food Canada and CFIA at the first practicable occasion during a nuclear emergency to assist in securing agricultural commodities, such as animal feed for affected areas
- f. Channel emergency information for public release through the PEOC Public Information Management Section.

F.2.4 Training and Exercises

In support of the PNERP, OMAFA will:

- Execute the training and exercise responsibilities described in the Nuclear Emergency Preparedness Framework prior to a radiological or nuclear emergency to ensure appropriate training of ministry staff
- b. Arrange appropriate training of OMAFA staff involved in the Scientific Section of the PEOC.

F.3 MINISTRY OF CHILDREN, COMMUNITY AND SOCIAL SERVICES

The Minister, together with the agencies, boards and commissions operating to assist the Ministry, have the following responsibilities consistent with the planning responsibilities assigned by Order in Council under Section 6 of the EMCPA.

F.3.1 Planning and Preparedness

In support of the PNERP, MCCSS will:

- Execute the applicable preparedness responsibilities described in the Nuclear Emergency Preparedness Framework prior to a radiological or nuclear emergency
- Ensure that any 24/7 institutions operated by the ministry and located within the Detailed Planning Zone of designated reactor facilities have plans for implementing the various protective measures
- c. Liaise with non-governmental emergency social service organizations on their role in a nuclear emergency
- d. Prepare operating procedures for the Ministry Action Group and make the necessary organizational and administrative arrangements for the establishment of the Ministry Action Group to enable it to execute its functions
- e. Ministry staff working in the PEOC should have an overall knowledge of their emergency plans and the PNERP
- f. Participate, as required, in an NEMCC sub-committee related to long-term housing and the associated economic, educational, health, psychosocial, and other issues associated with the relocation of large population groups
- g. Participate in Public Education and Awareness Program by maintaining respective strategies and products in accordance with the in Public Education and Awareness Strategy.

F.3.2 Provision of Personnel

In support of the PNERP, MCCSS will:

- a. Provide ministry representatives upon request, to assist in relevant operations in the PEOC
- b. Provide a suitable representative to participate on inter-organizational NEMCC sub- committees and working groups set up under the PNERP to ensure alignment and address inter-organizational issues.

F.3.3 Response

In support of the PNERP, MCCSS will:

- a. Execute the applicable responsibilities described in the PNERP at the first practicable occasion during a nuclear emergency
- Activate the Ministry Emergency Operations Centre (MEOC) and its associated processes, including activating the Ministry Action Group to direct and coordinate provincial ministry action, and engaging in the appropriate notification and communication protocols
- c. Liaise, as required, between EMO and non-governmental emergency social service organizations, including the Canadian Red Cross Society, in the delivery of emergency social services
- d. Assist affected municipalities in the delivery of emergency social services, including emergency shelter, food and clothing, registration and inquiry and personal services when their capacity is exceeded, and a provincial response is required
- e. Channel emergency information for public release through the PEOC Public Information Management Section (PIMS).

F.3.4 Training and Exercises

In support of the PNERP, MCCSS shall execute the training and exercise responsibilities described in the Nuclear Training Program and the Nuclear Exercise Program prior to a radiological or nuclear emergency to ensure appropriate training of ministry staff.

F.4 MINISTRY OF ENERGY AND MINES

The Minister, together with the agencies, boards and commissions operating to assist the Ministry, have the following responsibilities consistent with the planning responsibilities assigned by Order in Council under Section 6 of the EMCPA.

F.4.1 Planning and Preparedness

In support of the PNERP, ENERGY will:

- Execute the applicable preparedness responsibilities described in the PNERP prior to a radiological or nuclear emergency
- b. Assist EMO in ensuring that the corporate head offices of designated reactor facilities execute their responsibilities under this program
- c. Ensure that the Ontario Electricity Emergency Plan (OEEP) is consistent with the PNERP. This shall be done through the Independent Electricity Systems Operator, which shall co-ordinate the preparation and implementation of electricity emergency plans, to mitigate the impact of a nuclear emergency on the reliability of the bulk electricity system
- d. Develop operating procedures for the Ministry Action Group aligned with the PEOC's notification protocol to ensure that ENERGY is kept fully informed of all aspects of the provincial response to a nuclear emergency, including the actions being taken by the operator of the reactor facility, the CNSC, EMO, and others to ensure public health and safety
- e. Ministry staff working in the PEOC should have an overall knowledge of their emergency plans and the PNERP
- f. Participate, as required, in an NEMCC sub-committee related to long-term housing and the associated economic, educational, health, psychosocial, and other issues associated with the relocation of large population groups.

F.4.2 Provision of Personnel

In support of the PNERP, ENERGY will:

- a. Provide suitable ministry representatives to serve in the Operations Section of the PEOC. If requested, also provide suitable ministry personnel for staffing positions in the province's ERO
- Provide a suitable representative to participate on inter-organizational NEMCC sub-committees and working groups, set up under the PNERP to ensure alignment and address inter-organizational issues.

F.4.3 Response

In support of the PNERP, ENERGY will:

- a. Execute the applicable responsibilities described in the PNERP at the first practicable occasion during a nuclear emergency
- b. Establish a Ministry Action Group to direct and co-ordinate ministry actions consistent with those of the EMO/PEOC, to provide advice to EMO/PEOC, and to keep the Minister of Energy and Mines informed of emergency public information on a regular and timely basis

- c. Maintain liaison with the Independent Electricity Systems Operator as required to address matters affecting electricity supply
- d. In a nuclear emergency, respond to EMO request for information specific to its (ENERGY's) responsibilities under Section 6 of the EMCPA.
- e. Channel emergency information for public release through the PEOC PIMS.

F.4.4 Training and Exercises

In support of the PNERP, ENERGY will:

- a. Participate in nuclear emergency training and exercises that simulate impacts on electricity supply
- b. Ministry staff nominated to various elements of the emergency management organization shall participate in the associated training
- c. Execute the training and exercise responsibilities described in the PNERP prior to a radiological or nuclear emergency to ensure appropriate training of ministry staff.

F.5 MINISTRY OF THE ENVIRONMENT, CONSERVATION AND PARKS

The Minister, together with the agencies, boards and commissions operating to assist the Ministry, have the following responsibilities consistent with the planning responsibilities assigned by Order in Council under Section 6 of the EMCPA.

F.5.1 Planning and Preparedness

Under the PNERP, the MECP will:

- Execute the applicable preparedness responsibilities described in the Nuclear Emergency Preparedness Framework prior to a radiological or nuclear emergency
- b. Prepare and maintain an Annex to the Ministry's Emergency Response Plan to guide ministry actions under PNERP including the activation of a Ministry Action Group to direct ministry response activities
- c. Develop ministry procedures for carrying out the collection and delivery of samples, and other assigned actions, as required under the ERAMG Operations Manual
- d. Assist the Ministry of Labour, Immigration, Training and Skills Development (MLITSD) in maintaining an environmental radiation database
- e. Participate in the preparation of plans and procedures for the ERAMG for nuclear emergencies
- f. Establish procedures to notify and evacuate provincial parks that lie within the DPZs of the designated reactor facilities
- g. Establish procedures to notify conservation authorities that lie within the DPZs of the designated reactor facilities

- h. Ministry staff working in the PEOC should have an overall knowledge of their emergency plans and the PNERP
- i. Participate, as required, in an NEMCC sub-committee related to long-term housing and the associated economic, educational, health, psychosocial, and other issues associated with the relocation of large population groups
- j. Participate in Public Education and Awareness Program by maintaining respective strategies and products in accordance with the in Public Education and Awareness Strategy.

F.5.2 Provision of Personnel

Under the PNERP, the MECP will:

- a. Provide suitable ministry personnel for staffing various positions in the province's emergency management organization, including the Operations Section and qualified personnel for the ERAMG-PEOC Team and ERAMG-Field Team
- b. Provide suitable ministry personnel for staffing the waste management planning working group, if requested by the CEM or designate (e.g. PEOC Commander)
- c. Provide a suitable representative to participate on inter-organizational NEMCC sub-committees and working groups set up under the PNERP to ensure alignment and address inter-organizational issues.

F.5.3 Response

Under the PNERP, the MECP will:

- a. Execute the applicable responsibilities described in the PNERP at the first practicable occasion during a nuclear emergency
- b. Act with the MOH as the main ministry through which water control measures shall be conducted by EMO/PEOC at the first practicable occasion during a nuclear emergency
- c. Activate a Ministry Action Group when the PNERP is activated. Under overall direction from the PEOC, the Ministry Action Group shall direct and co-ordinate the ministry's response to ensure the ministry is able to:
 - i. Provide hydrological support to the PEOC
 - ii. Identify municipal and non-municipal drinking water systems regulated under O. Reg. 170/03 (Drinking Water Systems), a regulation under the Safe Water Drinking Act, by sub-zones in any affected zone as required
 - iii. Provide support, either directly or through the PEOC, to local Medical Officers of Health regarding the implementation of drinking water precautionary and protective measures
 - iv. Support drinking water systems as needed during the recovery phase
- d. The MECP Ministry Action Group shall also keep the Minister of Environment, Conservation and Parks informed of actions taken

- e. Carry out the sampling program and other assigned activities required under the ERAMG Operations Manual and as directed by the ERAMG
- f. Channel emergency information for public release through the PEOC PIMS.
- g. Carry out precautionary actions as detailed in the PNERP when so ordered by the CEM or designate (e.g. PEOC Commander)
- h. Participate in Public Education and Awareness Program by maintaining respective strategies and products in accordance with the in Public Education and Awareness Strategy.

F.5.4 Training and Exercises

Under the PNERP, the MECP will execute the training and exercise responsibilities described in the Nuclear Training Program and the Nuclear Exercise Program prior to a radiological or nuclear emergency to ensure appropriate training of ministry staff.

F.5.5 Study and Research

Under the PNERP, the MECP will assist in studies and research as appropriate to nuclear emergencies, especially in the fields of meteorological and radionuclide dispersion forecasting.

F.6 MINISTRY OF HEALTH

The Minister, together with the agencies, boards, and commissions operating to assist the MOH, have the following responsibilities for leading and coordinating the health system preparation for, and response to nuclear emergencies consistent with provincial statutes and the responsibilities assigned by Order in Council, OIC 1739/2022, under Section 6 of the EMCPA.

These activities are detailed in the MOH Emergency Response Plan and the RHRP.

F.6.1 Planning and Preparedness

Under the PNERP, the MOH will:

- Execute the applicable preparedness responsibilities described in the Nuclear Emergency Preparedness Framework prior to a radiological or nuclear emergency
- b. Lead the preparations necessary to ensure the effective implementation of the RHRP
- c. Participate in provincial nuclear emergency response planning as led by EMO and in coordination with provincial ministries, designated municipalities, federal authorities, facility and installation operators, and other consulting partners
- d. Assist the Ministry of Labour, Immigration, Training and Skills Development (MLITSD) in maintaining an environmental radiation database

- e. Participate in the preparation of plans and procedures for PEOC Sections, including the ERAMG
- f. Participate in the development and maintenance of a Provincial Emergency Information Plan (PEIP) and associated procedures to ensure the co-ordination of emergency information among provincial ministries and in coordination with other consulting partners
- g. Develop and maintain the RHRP per the PNERP and ministry mandate as defined by provincial statute, and in coordination with health system partners
- h. Promote awareness and understanding of the RHRP to health consulting partners and municipalities
- i. Brief ministry executives and program areas on the ministry emergency management program, including the RHRP.
- j. Monitor, co-ordinate, and assist in the development and maintenance of nuclear emergency response plans and programs of specified partners and consulting partners (e.g., local medical officers of health, designated municipalities, designated hospitals, paramedic services, etc.), including arrangements for implementing precautionary and protective measures for health institutions and the public.
- k. Ensure arrangements in the Ministry's Emergency Response Plan (MERP), Continuity of Operations Plan (COOP), and MEOC procedures can be implemented to lead the ministry response and coordinate the health system response to a radiological or nuclear emergency
- I. Provide guidance and advice to health consulting partners and local organizations on matters related to iodine thyroid blocking (ITB) with stable potassium iodine (KI) (detailed in the RHRP's Potassium Iodide Guidelines Annex)
- m. Procure, in advance, adequate quantities of KI pills for use by local authorities of:
 - i. The Fermi 2 DPZ and IPZ
 - ii. Populations in the IPZs as identified in the Transborder Emergencies Implementing Plan
- n. Provide support to local authorities for all reactor facilities' IPZ populations to ensure that the ITB related requirements are completed
- o. Liaise with EMO to develop a strategy to distribute KI pills to IPZ populations, as required, during a nuclear emergency
- p. Provide guidelines for handling contaminated persons as well as those exposed to high levels of radiation as outlined in the RHRP
- q. Develop guidelines for population monitoring and the creation of a dose registry, should they be required
- r. Provision of public awareness and education related to radiation health per the PNERP and RHRP
- s. Assist in the development and implementation of a public awareness and education program, and coordinate MOH activities within it
- t. Assist in studies and research related to radiation health and the psychosocial aspects of nuclear emergencies

u. Participate, as required, in an NEMCC sub-committee related to long-term housing and the associated economic, educational, health, psychosocial, and other issues associated with the relocation of large population groups.

F.6.2 Provision of Personnel

Under the PNERP, the MOH will:

- a. Provide suitable ministry personnel for staffing various positions in the province's emergency management organization, including the PEOC Operations and Scientific Sections
- b. Ensure ministry staff working in the PEOC have an overall knowledge of their emergency plans (including the RHRP) and the PNERP
- c. Provide a suitable representative to participate on inter-organizational NEMCC, sub-committees and working groups set up under the PNERP to ensure alignment and address inter-organizational issues.

F.6.3 Response

Under the PNERP, the MOH will:

- a. Execute the applicable responsibilities described in the PNERP at the first practicable occasion during a nuclear emergency
- b. Act as the lead ministry through which health and public health sector accountabilities shall be conducted during a nuclear emergency, in coordination with EMO
- Ensure continued delivery of the ministry's mandate and support executive decision-making through provision of timely emergency information options, and advice
- d. Activate the MEOC to direct and co-ordinate MOH and health system actions per executive direction and ministry plans (MERP, COOP, and RHRP), and consistent with the general direction of the PEOC
- e. Complete the appropriate ministry and health system notification and communication protocols for a nuclear emergency
- f. Provide advice and support in the development and issuing of emergency orders or draft and issue Chief Medical Officer of Health (CMOH) / Minister of Health directive (under other ministry statutes) for health-related emergency actions (i.e., CMOH orders for KI consumption, suspension of non-critical hospital admissions)
- g. Support the province's CMOH in deciding, in coordination with the CEM and the local Medical Officers of Health, the need for and timing to direct ITB as a protective action
- h. Provide advice, either directly or through the PEOC, to regional and local authorities regarding the implementation of the CMOH directive for ITB using KI and other precautionary and protective measures

- Monitor and assist affected health system partners in the implementation of emergency response plan actions, as appropriate (e.g., transportation and treatment of causalities, DPZ health institution evacuations)
- j. Liaise with and provide radiation health or public health advice to the Scientific Section/ Coordination and Command Section and other nuclear emergency management consulting partners
- k. During operations, oversee or implement the required arrangements for follow-up medical monitoring and dose registry, as well as care and rehabilitation for those with radiation exposure
- I. Develop health-related emergency information in coordination with the PEOC PIMS and other ministry emergency information functions
- m. Support MOH spokespersons in the delivery of emergency information in coordination with the PEOC PIMS, Premier's Office, and Cabinet Office as required
- n. Identify small drinking water systems regulated under O. Reg. 319/08 (Small Drinking Water Systems), a regulation under the Health Protection and Promotion Act, by sub-zones in any affected area as required, in collaboration with the MECP
- Provide support, either directly or through the PEOC, to local Medical Officers of Health regarding the implementation of food and drinking water protective measures (i.e., ingestion control protective actions).

F.6.4 Training and Exercises

Under the PNERP, the MOH will:

- a. Execute the training and exercise responsibilities described in the Nuclear Training Program and the Nuclear Exercise Program prior to a radiological or nuclear emergency to ensure appropriate training of ministry staff
- b. Provide guidance regarding training for health consulting partners and care settings as outlined in the RHRP
- Arrange appropriate training of MOH staff involved in the PEOC Scientific Section.

F.7 MINISTRY OF LABOUR, IMMIGRATION, TRAINING AND SKILLS DEVELOPMENT

The Minister, together with the agencies, boards and commissions operating to assist the Ministry, have the following responsibilities consistent with the planning responsibilities assigned by Order in Council under Section 6 of the EMCPA.

F.7.1 Planning and Preparedness

Under the PNERP, the MLITSD will:

- Execute the applicable preparedness responsibilities described in the Nuclear Emergency Preparedness Framework prior to a radiological or nuclear emergency
- b. Prepare and maintain plans for completing the responsibilities of the ERAMG in the PNERP
- c. Prepare and maintain the appropriate notification lists, operating procedures, and technical manuals for the groups indicated above
- d. Operate the Ontario Reactor Surveillance Program (ORSP) to monitor the environment around nuclear generating stations in order to measure routine, unplanned, unannounced, and emergency emissions from nuclear plants and assess their potential impact on the public
- e. Maintain and operate the provincial radio-analysis laboratory
- f. Maintain an environmental radiation database
- g. Ministry staff working in the PEOC should have an overall knowledge of their emergency plans and the PNERP
- h. Participate, as required, in an NEMCC sub-committee related to long-term housing and the associated economic, educational, health, psychosocial, and other issues associated with the relocation of large population groups.

F.7.2 Provision of Personnel

Under the PNERP, the MLITSD will:

- a. Provide suitable ministry personnel for staffing various positions in the province's emergency management organization including the Operations section and qualified personnel for the ERAMG-PEOC Team and ERAMG-Field Team
- b. Provide a suitable representative to participate on inter-organizational NEMCC sub- committees and working groups set up under the PNERP to ensure alignment and address inter-organizational issues.

F.7.3 Response

Under the PNERP, the MLITSD will:

- a. Execute the applicable responsibilities described in the PNERP at the first practicable occasion during a nuclear emergency
- b. Ensure that provincial employers meet their obligations under OHSA during a nuclear emergency
- c. Provide or arrange the required radio-analysis to support the PNERP
- d. Carry out the radiation monitoring activities required under the PNERP
- e. If requested, provide technical assistance to the emergency response organization responding to a radiological or nuclear emergency not being mitigated under the PNERP
- f. Operate the provincial radio-analysis laboratory to provide environmental sampling results following a release to the environment

- g. Monitor radioactivity in the environment around all reactor facilities in Ontario and notify the PEOC of any abnormal (above ambient background) results
- h. Establish a Ministry Action Group to direct and co-ordinate ministry actions under the direction of the CEM or designate (e.g. PEOC Commander) at the first practicable occasion during a nuclear emergency
- i. Channel emergency information for public release through the PEOC PIMS
- j. Perform dose management for provincial members of the ERAMG and ensure that field doses are accurately recorded and entered into a dose registry system.

F.7.4 Training and Exercises

Under the PNERP, the MLITSD will:

- a. Execute the training and exercise responsibilities described in the training and exercise responsibilities described in the Nuclear Training Program and the Nuclear Exercise Program prior to a radiological or nuclear emergency to ensure appropriate training of ministry staff.
- b. Provide administrative support for radiation monitoring during planning, training, or emergency operations.
- c. Inspect Emergency Worker Centres for compliance with OHSA.
- d. Inspect radiation safety training programs (for compliance with OHSA) provided to first responders and emergency workers, as appropriate.
- e. Inspect designated nuclear response hospitals for compliance with the OHSA and regulations for healthcare and residential facilities with attention to worker protection and training under the RHRP.
- Arrange appropriate training of MLITSD staff involved in the PEOC Scientific Section of the PEOC.

F.7.5 Infrastructure

Under the PNERP, the MLITSD will:

- a. Provide or arrange laboratory facilities for radio analysis of samples of air, water, soil, herbage, milk, foodstuffs, etc.
- b. Equip, maintain and operate an adequate network of fixed radiological monitoring sites in the Ontario portions of IPZs.

F.7.6 Study and Research

Under the PNERP, the MLITSD will participate in studies and inter-comparisons in the area of radiation monitoring and analysis.

F.8 MINISTRY OF MUNICIPAL AFFAIRS AND HOUSING

The Minister, together with the agencies, boards and commissions operating to assist the Ministry, have the following responsibilities consistent with the planning responsibilities assigned by Order in Council under Section 6 of the EMCPA.

F.8.1 Planning and Preparedness

In support of the PNERP, the MMAH will:

- a. Execute the applicable preparedness responsibilities described in the PNERP prior to a radiological or nuclear emergency.
- b. Participate, as required, in an NEMCC sub-committee related to long-term housing and the associated economic, educational, health, psychosocial, and other issues associated with the relocation of large population groups.
- c. Participate in Public Education and Awareness Program by maintaining respective strategies and products in accordance with the Public Education and Awareness Strategy.

F.8.2 Provision of Extraordinary Financial Assistance

In support of the PNERP, the MMAH will:

- Throughout the emergency and recovery period, the ministry shall co-ordinate extraordinary provincial expenditures associated with the province's response to the emergency
- b. If directed by the LGIC, the MMAH shall:
 - i. Lead development and implementation of disaster financial assistance programs, in consultation with other ministries as required
 - ii. Liaise with the federal government and the NIAC to ensure that any financial assistance provided by Ontario does not duplicate assistance provided under the federal legislation
- c. Ministry staff working in the PEOC should have an overall knowledge of their emergency plans and the PNERP

F.8.3 Provision of Personnel

In support of the PNERP, the MMAH will:

a. Provide suitable ministry representatives to serve in the Operations Section of the PEOC. If requested, provide additional suitable ministry personnel for staffing positions in the provincial ERO. b. Provide a suitable representative to participate on inter-organizational NEMCC subcommittees or working groups set up under the PNERP to ensure alignment and address inter-organizational issues.

F.8.4 Response

In support of the PNERP, the MMAH will:

- a. Execute the applicable responsibilities described in the PNERP at the first practicable occasion during a nuclear emergency.
- b. If called upon to do so, the MMAH shall support the PEOC by providing:
 - Advice and assistance regarding the provision of long-term emergency shelter;
 - Financial assistance to designated municipalities, host municipalities and supporting municipalities for their eligible response, emergency shelter and long-term emergency shelter costs, as directed by the government; and
 - iii. Financial assistance to impacted residents for eligible costs not covered by the NLCA, as directed by the government.
- c. Establish a Ministry Action Group to direct and co-ordinate ministry actions under the direction of the CEM or designate (e.g. PEOC Commander) at the first practicable occasion during a nuclear emergency.
- d. Channel emergency information for public release through the PEOC PIMS.

F.8.5 Training and Exercises

In support of the PNERP, the MMAH will:

- a. Execute the training and exercise responsibilities described in the Nuclear Emergency Preparedness Framework prior to a radiological or nuclear emergency to ensure appropriate training of ministry staff
- b. Participate in nuclear emergency training and exercises.

F.9 MINISTRY OF NATURAL RESOURCES

The Minister, together with the agencies, boards and commissions operating to assist the Ministry, have the following responsibilities consistent with the planning responsibilities assigned by Order in Council under Section 6 of the EMCPA.

F.9.1 Planning and Preparedness

In support of the PNERP, the MNR will:

- Execute the applicable preparedness responsibilities described in the Nuclear Emergency Preparedness Framework prior to a radiological or nuclear emergency
- b. Provide maps and topographical data as required
- c. Provide subject matter expertise related to wildlife and fish populations, water control structures, and overland water flows
- d. Participate in the preparation of plans and procedures for Environmental Radiation and Assurance Monitoring for nuclear emergencies
- e. Ministry staff working in the PEOC should have an overall knowledge of their emergency plans and the PNERP
- f. Participate, as required, in a NEMCC sub-committee related to long-term housing and the associated economic, educational, health, psychosocial, and other issues associated with the relocation of large population groups
- g. Participate in Public Education and Awareness Program by maintaining respective strategies and products in accordance with the Public Education and Awareness Strategy.

F.9.2 Provision of Personnel

In support of the PNERP, the MNR will:

- Establish a Ministry Action Group to direct and co-ordinate ministry actions under the direction of the CEM or designate (e.g. PEOC Commander) at the first practicable occasion during a nuclear emergency
- Provide a suitable representative to participate on inter-organizational NEMCC sub- committees and working groups set up under the PNERP to ensure alignment and address inter-organizational issues
- c. Provide suitable MNR representatives to serve in the Operations and Scientific Sections of the PEOC.

F.9.3 Response

In support of the PNERP, the MNR will:

- a. Execute the applicable responsibilities described in the PNERP at the first practicable occasion during a nuclear emergency
- b. Execute the provincial ministry emergency response plan
- c. Provide aircraft, telecommunications, and other resources, if required by the PEOC Commander
- d. Channel emergency information for public release through the PEOC PIMS.

F.9.4 Training and Exercises

In support of the PNERP, the MNR will:

- a. Execute the training and exercise responsibilities described in the Nuclear Training Program and the Nuclear Exercise Program prior to a radiological or nuclear emergency to ensure appropriate training of ministry staff.
- b. Arrange appropriate training of MNR staff involved in the scientific section of the PEOC.

F.10 MINISTRY OF NORTHERN ECONOMIC DEVELOPMENT AND GROWTH

The Minister, together with the agencies, boards and commissions operating to assist the Ministry, have the following responsibilities consistent with the planning responsibilities assigned by Order in Council under Section 6 of the EMCPA.

F.10.1 Planning and Preparedness

In support of the PNERP, the MND will:

- a. Execute the applicable preparedness responsibilities described in the PNERP prior to a radiological or nuclear emergency
- b. Participate, as required, in a NEMCC sub-committee related to long-term housing and the associated economic, educational, health, psychosocial, and other issues associated with the relocation of large population groups
- c. Participate in Public Education and Awareness Program by maintaining respective strategies and products in accordance with the Public Education and Awareness Strategy.

F.10.2 Provision of Personnel

In support of the PNERP, the MND will:

- Establish a Ministry Action Group to direct and co-ordinate ministry actions under the direction of the CEM or designate (e.g. PEOC Commander) at the first practicable occasion during a nuclear emergency
- b. Provide a suitable representative to participate on inter-organizational NEMCC sub- committees and working groups set up under the PNERP to ensure alignment and address inter-organizational issues.

F.10.3 Response

In support of the PNERP, the MND will:

- a. Execute the applicable responsibilities described in the PNERP at the first practicable occasion during a nuclear emergency
- b. Execute the provincial ministry emergency response plan, which could include, among other things, the actions outlined below

- Support emergency response operations in Northern Ontario, whether coordinated by the PEOC or another provincial ministry that has been assigned lead responsibility
- d. Channel emergency information for public release through the PEOC PIMS
- e. Assist in communicating information and government messages to northern communities
- f. Assist with communications between local emergency response units, the PEOC and other ministries, as appropriate
- g. Provide personnel, equipment, and material to support emergency response operations in Northern Ontario, as required and available.

F.10.4 Training and Exercises

In support of the PNERP, the MND will execute the training and exercise responsibilities described in the Nuclear Training Program and the Nuclear Exercise Program prior to a radiological or nuclear emergency to ensure appropriate training of ministry staff.

F.11 MINISTRY OF TRANSPORTATION

The Minister, together with the agencies, boards and commissions operating to assist the Ministry, have the following responsibilities consistent with the planning responsibilities assigned by Order in Council under Section 6 of the EMCPA.

F.11.1 Planning and Preparedness

In support of the PNERP, the MTO will:

- Execute the applicable preparedness responsibilities described in the PNERP prior to a radiological or nuclear emergency
- b. Coordinate the development of the transportation management function of evacuation plans for nuclear emergencies with participation of the NEMCC Transportation Management Sub-Committee which includes Ministry of Transportation (MTO), Ontario Provincial Police (OPP), Metrolinx, designated municipalities and designated host municipalities (including local police, road, and transit authorities), applicable provincial ministries and others, as required
- c. Lead the development of a Unified Transportation Coordination Centre (UTCC) to manage transportation aspects of evacuation planning and to ensure the operationalization of Unified Transportation Management Plans (UTMPs). Sitespecific UTMPs shall be developed for each area covered by a site-specific Implementing Plan
- d. Establish operating procedures related to the transportation management function and provide them to the Ministry Action Group to ensure their operational readiness
- e. Participate, as required, in an NEMCC sub-committee related to long-term housing and the associated economic, educational, health, psychosocial, and other issues associated with the relocation of large population groups

f. Participate in Public Education and Awareness Program by maintaining respective strategies and products in accordance with the Public Education and Awareness Strategy.

Note: Ministry staff working in the PEOC should have an overall knowledge of their emergency plans, the PNERP, and UTCC plans and procedures.

F.11.2 Provision of Personnel

In support of the PNERP, the MTO will:

- a. Ensure suitable personnel for staffing various positions in the provincial ERO
- Provide a suitable representative to participate on inter-organizational NEMCC sub-committees and working groups set up under the PNERP to ensure alignment and address inter-organizational issues.

F.11.3 Response

In support of the PNERP, the MTO will:

- a. Execute the applicable responsibilities described in the PNERP at the first practicable occasion during a nuclear emergency.
- b. Convene the Ministry Action Group to direct and co-ordinate ministry actions under the direction of the CEM or designate (e.g. PEOC Commander) at the first practicable occasion during a nuclear emergency.
- c. Provide assistance and resources for response, as directed by the CEM or designate (e.g. PEOC Commander), and as required by the UTMPs.
- d. Inform the PEOC immediately upon the closing of any provincial roads which might be earmarked as evacuation routes and suggest alternatives as per the transportation management function methodologies and plans.
- e. Correspond with the PEOC and other transportation organizations, as needed, to employ an "all routes out" strategy by arranging for route clearance, road maintenance, diversions, etc. on provincial roads.
- f. Work with the OPP and other supporting organizations, to ensure the operationalization of the UTMPs.
- g. Manage the transportation function during recovery, if required.
- h. Channel emergency information for public release through the PEOC PIMS.

F.11.4 Training and Exercises

In support of the PNERP, the MTO will:

 Execute the training and exercise responsibilities described in the Nuclear Training Program and the Nuclear Exercise Program prior to a radiological or nuclear emergency to ensure appropriate training of ministry staff. b. Co-ordinate and participate in nuclear evacuation transportation management training and exercises, with transportation consulting partners across the province, to ensure the efficiency and effectiveness of the UTCC and UTMPs.

F.11.5 Infrastructure

In support of the PNERP, the MTO will accord priority to maintaining and keeping open the provincial highways (if possible), earmarked for evacuation routes and diversion routes in the UTMPs.

F.11.6 Study and Research

In support of the PNERP, the MTO will lead the development and maintenance of sitespecific UTMPs for reactor facilities in Ontario under the advisement of the NEMCC Transportation Management Sub-Committee.

F.12 MINISTRY OF THE SOLICTOR GENERAL

The Minister, together with the agencies, boards and commissions operating to assist the Ministry, have the following responsibilities consistent with the planning responsibilities assigned by Order in Council under Section 6 of the EMCPA.

F.12.1 Planning and Preparedness

Under the PNERP, the SOLGEN will:

- Execute the applicable preparedness responsibilities described in the Nuclear Emergency Preparedness Framework prior to a radiological or nuclear emergency
- b. Maintain appropriate plans and preparations to execute its operational role in a nuclear emergency, including procedures for the OPP General Headquarters EOC, other OPP EOCs, and participation in the development of UTMPs
- c. Maintain appropriate plans and preparedness for the emergent deployment of OPP "emergency workers" prior to and after the establishment of an Emergency Workers Centre (EWC), including dosimetry, thyroid blocking, decontamination, and other personal protective equipment, as necessary
- d. Ensure the plans and process are developed internally with OPP Physician(s) to ensure that member health and safety is safeguarded to the greatest possible standard, and (on behalf of the Commissioner of the OPP) provide direction to members on radiological exposure, thyroid blocking and the utilization of other personal protective equipment and safeguards to help ensure member safety
- e. Ensure that it maintains a provincial Rapid Mobilization Strategy to support sustained emergent operations, on a provincial level that also addresses second/third order effects and the potential for multiple sites

- f. Through partnerships at the Ontario Association of Chiefs of Police (OACP) under the Emergency Management Sub-Committee; establish and chair a Nuclear Emergency Working Group to:
 - Facilitate the coordination between all Ontario Police Services of Jurisdiction (and external partner agencies) on a framework and plans to consolidate integrated police resource allocations
 - ii. Assist in ensuring public safety in a radiological/nuclear emergency
- g. Provide OPP representation on the provincial NEMCC, Transportation/ Evacuation Sub-Committee, and other NEMCC Sub-Committees and Working Groups as required
- h. Maintain plans and procedures (integrated with the Solicitor General) to ensure the co- ordination of consistent emergency information and public messaging and direction on road closures, diversion routes, area orders, 911 services, and other related emergency messaging
- i. Participate, as required, in an NEMCC sub-committee related to long-term housing and the associated economic, educational, health, psychosocial, and other issues associated with the relocation of large population groups.

F.12.2 Provision of Personnel

Under the PNERP, the SOLGEN will provide administrative support and a suitable representative to participate on inter-organizational NEMCC sub-committees and working groups set up under the PNERP to ensure alignment and address inter-organizational issues.

F.12.3 Response

Under the PNERP, SOLGEN will:

- a. On behalf of the ministry or the province, ensure the provision of trained and knowledgeable OPP representation and applicable resources are provided within the:
 - i. Ministry of the Solicitor General (Ministry Action Group)
 - ii. Unified Traffic Coordination Centre (UTCC)
 - iii. Emergency Worker Centre (EWC) (if required)
 - iv. Joint Information Centre (J-EIC) (if required)
- b. On behalf of the ministry or the province, the Office of the Fire Marshal shall:
 - Coordinate disaster firefighting and suppression resources available through the Provincial Mutual Aid Plan under the Fire Protection and Prevention Act

- ii. Coordinate the provision of provincial chemical, biological, radiological, nuclear and explosives (CBRNE) / hazardous materials (HazMat) teams
- iii. Coordinate the provision of provincial urban search and rescue teams (USAR)
- iv. Coordinate provision of CBRNE resources in the province.

F.12.4 Training and Exercises

Under the PNERP, SOLGEN will:

- Execute the training and exercise responsibilities described in the Nuclear Training Program and the Nuclear Exercise Program prior to a radiological or nuclear emergency to ensure appropriate training of ministry staff
- b. Develop and maintain a coordinated internal training program to meet OPP Nuclear/ Radiological Plan(s) objectives and deliverables
- c. Ensure participation by all required staff in municipal, provincial, and centre specific nuclear emergency training and exercises
- d. Ensure OPP staff deployed for a radiological or nuclear emergency response have an overall knowledge of their emergency plans and PNERP.

F.13 MINISTRY OF EMERGENCY PREPAREDNESS AND RESPONSE

The Minister, together with the agencies, boards and commissions operating to assist the Ministry, have the following responsibilities consistent with the planning responsibilities assigned by Order in Council under Section 6 of the EMCPA.

F.13.1 Planning and Preparedness

In support of the PNERP, MEPR will:

- a. Execute the applicable preparedness responsibilities described in the PNERP prior to a radiological or nuclear emergency.
- b. Undertake an annual internal review of the PNERP, PNEPP, and PNROP, and conduct a documented review with appropriate nuclear partners.
- c. Administer the PNERP and oversee its implementation in collaboration with provincial ministries and in coordination with nuclear emergency management partners.
- d. Monitor, co-ordinate, and assist in the development of the nuclear emergency response programs of provincial ministries (and agencies, boards, and commissions), nuclear facilities, and designated and host municipalities.
- e. Issue, or arrange for the issuance, of procedures and other documents needed to ensure effective implementation of the PNERP.
- f. Ensure the establishment of an adequate alerting, notification, and response system for nuclear emergencies.
- g. Liaise with MOH to develop and maintain health-related nuclear emergency response strategies, including those related to KI pill distribution and ingestion,

- suspension of non-urgent admissions to affected hospitals, evacuation of health centres, population monitoring and dose registry, and medical management of causalities.
- h. Liaise with MOH to develop and maintain a strategy for the distribution of KI pills as necessary during an emergency.
- i. Ensure that the infrastructure required to implement the PNERP is available and is kept in operational readiness.
- j. Monitor and assess the operational readiness and effectiveness of all elements of the emergency response organization, including those of municipalities, provincial ministries and agencies, nuclear facilities, and facility operators, and make recommendations for improvement, where necessary and appropriate
- k. Provide guidance and coordinate efforts with reactor facilities, designated municipalities, and other consulting partners as appropriate for the public awareness and education program for populations likely to be affected by a nuclear emergency.
- I. Ensure the continuity of government services in coordination with ministry continuity of operations plans (as required under the EMCPA)
- m. Ensure the divisions and branches of Emergency Management Ontario (EMO) co-ordinate and make plans and preparations for implementing any protective measure ordered during a nuclear emergency in any of its facilities or operations situated inside the Detailed Planning Zone of a reactor facility and for those that may be affected by a radiological emergency.
- n. Coordinate with provincial ministry representatives to ensure essential functions in the emergency management organization are fulfilled.
- o. Ensure ministry staff working in the PEOC should have an overall knowledge of their emergency plans and the PNERP.
- p. Equip and maintain the PEOC in a state of continuous readiness, in order to meet the 15 minutes notification requirement.
- q. Develop and maintain continuity of operations arrangements for the PEOC, including the provision of an alternate service delivery location that can meet the technical and notification needs of the PNERP.
- r. Develop and maintain the PNERP supporting documentation for Emergency Information Management and Recovery.
- s. Facilitate, maintain and participate in a Public Education and Awareness Program.
- t. Participate, as required, in an NEMCC sub-committee related to long-term housing and the associated economic, educational, health, psychosocial, and other issues associated with the relocation of large population groups.

F.13.2 Provision of Personnel

In support of the PNERP, the MEPR will provide administrative support and a suitable representative to participate on inter-organizational NEMCC sub-committees and working groups set up under the PNERP to ensure alignment and address inter-organizational issues.

F.13.3 Response

In support of the PNERP, the MEPR will:

- a. Execute the applicable responsibilities described in the PNERP at the first practicable occasion during a nuclear emergency.
- Ensure that the PEOC co-ordinates and supports the response to a radiological or nuclear emergency in collaboration with ministry Emergency Operations Centres and in coordination with other members of the nuclear emergency response organization.
- c. Provide recommendations to the government regarding declaration and termination of a provincial emergency.
- d. Co-ordinate with ministries through the PEOC to ensure continuity of provincial government services.
- e. Provide information through the CEM to the Deputy Ministers Steering Committee on Emergency Management and the Cabinet Committee on Emergency Management, in coordination with provincial ministries, regarding the provincial activities related to emergency response and continuity of government services during an emergency.
- f. Channel emergency information for public release through the PEOC Public Information Management Section and coordinate with ministry emergency information functions and spokespersons as appropriate.
- g. Through the PEOC, provide logistical arrangements and support for ERAMG field teams.

F.13.4 Training and Exercises

In support of the PNERP, the MEPR will:

- Execute the training and exercise responsibilities described in the PNERP prior to a radiological or nuclear emergency to ensure appropriate training of ministry staff
- Develop and maintain a PEOC training program to ensure that EMO staff working within the PEOC have an overall knowledge of their emergency plans, the PNERP, and their roles and responsibilities during a radiological or nuclear event
- c. Ensure participation by all required staff in nuclear emergency training and exercises.

F.13.5 Study and Research

In support of the PNERP, the MEPR will:

- Arrange, through the NEMCC structure, for studies and research to be carried out in the area of nuclear emergency effects, planning, management, and response
- b. Remain abreast of the state of the art and science in this area.

F.14 COMMUNICATIONS BRANCH

F.14.1 Planning and Preparedness

On behalf of MEPR and the province, the Communications Branch shall:

- a. Develop and maintain a Provincial Emergency Information Plan.
- b. Develop plans and procedures to ensure the co-ordination of emergency information from ministries and other consulting partners
- c. Assist in the development of the emergency information program of provincial ministries (and agencies, boards, and commissions), reactor facilities and designated and host municipalities
- d. Develop plans and procedures to prepare staff to assist any municipality that may have to respond to a radiological emergency to co-ordinate emergency information
- e. Ensure ministry staff working in the PEOC should have an overall knowledge of their emergency plans and the PNERP
- f. Participate, as required, in an NEMCC sub-committee related to long-term housing and the associated economic, educational, health, psychosocial, and other issues associated with the relocation of large population groups.

F.14.2 Provision of Personnel

In support of the PNERP the Communications Branch will provide a suitable representative to participate on inter-organizational NEMCC sub-committees and working groups set up under the PNERP to ensure alignment and address inter-organizational issues.

F.14.3 Response

In support of the PNERP the Communications Branch will:

- Direct and support emergency information activities in the PEOC during a radiological or nuclear emergency
- b. Ensure that all provincial ministry emergency information is co-ordinated during an emergency response
- c. Ensure the coordination of emergency information being released by all jurisdictional levels involved in the emergency response
- d. Assist municipalities in their emergency information operations during an emergency response to help ensure that all emergency information is being handled in a timely, consistent, and accurate manner

e. Establish a Public Information Management Section within the PEOC to direct and co-ordinate emergency information at the first practicable occasion following a nuclear emergency.

F.14.4 Training and Exercises

In support of the PNERP the Communications Branch will:

- a. Execute the training and exercise responsibilities described in the Nuclear Training Program and the Nuclear Exercise Program prior to a radiological or nuclear emergency to ensure appropriate training of ministry staff
- Develop and maintain a PEOC training program to ensure that Communications
 Branch staff working within the PEOC have an overall knowledge of their
 emergency plans and the PNERP
- c. Ensure participation by all required staff in nuclear emergency training and exercises.

F.15 NON-ORDER IN COUNCIL MINISTRIES

This section applies to those Ministers (together with the leadership of the agencies, boards, and commissions operating to assist them) whose mandates lie outside the scope of the OIC. In accordance with EMPCA 5.1:

In accordance with section 5.1 of the EMCPA, every Minister of the Crown presiding over a ministry of the government of Ontario and every agency, board, commission and other branch of government designated by the Lieutenant Governor in Council shall develop and implement an emergency management program consisting of:

- a. an emergency plan as required by section 6 of the EMCPA
- b. training programs and exercises for public servants and other persons with respect to the provision of necessary services and the procedures to be followed in emergency response and recovery activities
- public education on risks to public safety and on public preparedness for emergencies
- d. any other element required by the standards for emergency management programs set under section 14 of the EMCPA.

While not specifically identified within the OIC, non-OIC ministries should still prepare for the impact of a nuclear emergency on their operations. Non-OIC ministries include:

- a. Ministry of Education
- b. Ministry of Finance
- c. Ministry of Francophone Affairs
- d. Ministry of Indigenous Affairs and First Nations Economic Reconciliation
- e. Ministry of Infrastructure
- f. Ministry of Intergovernmental Affairs

- g. Ministry of Long-Term Care
- h. Ministry of Tourism, Culture and Gaming

Ministry of Sport

To the extent that the circumstance in a nuclear emergency may permit, ministries without responsibilities outlined in Annex F1-14 of the PNERP should endeavor to conduct the following operations endeavour to prepare for the impact of a nuclear emergency on their operations.

F.15.1 Planning and Preparedness

In support of the PNERP, non-OIC ministries will:

- a. Execute the applicable preparedness responsibilities described in the PNERP prior to a nuclear emergency
- b. Ensure ministry staff with emergency response assignments to the PEOC should have knowledge of their emergency responsibilities, consistent with the PNERP and with the ministry's mandate.

F.15.2 Provision of Personnel

In support of the PNERP, non-OIC ministries will:

- a. As required, ensure suitable personnel are available for staffing positions in the PEOC, as consistent with their ministry mandate in an emergency
- b. As required, provide a suitable representative to participate on interorganizational NEMCC sub-committees and working groups.

F.15.3 Response

In support of the PNERP, non-OIC ministries will:

- a. Execute the applicable responsibilities described in the PNERP, and consistent with the ministry's mandate, at the first practicable occasion during a nuclear emergency
- Convene a Ministry Action Group to direct and co-ordinate ministry actions under the direction of the PEOC at the first practicable occasion during a nuclear emergency
- c. Provide assistance and resources as required for emergency response and consistent with the ministry's mandate.
- d. Channel emergency public information, as it pertains to the ministry's mandate, for public release through the PEOC PIMS.

F.15.4 Training and Exercises

In support of the PNERP, non-OIC ministries will participate in training and exercises described in the Nuclear Training Program and the Nuclear Exercise Program to ensure appropriate training of ministry staff.

ANNEX G. ONTARIO REACTOR FACILITY RESPONSIBILITIES

Pursuant to the NSCA and Section 6 of the Regulations for Class 1 Nuclear Facilities, and based upon agreements made with the province, reactor facilities have the following responsibilities:

G.1 PLANNING AND PREPAREDNESS

In support the PNERP, Ontario's Reactor Facilities will:

- Execute the applicable preparedness responsibilities described in the PNERP prior to a nuclear emergency.
- b. Set up and maintain the organization, equipment, and procedures necessary to fulfil their functions and responsibilities under the PNERP
- c. In accordance with CNSC Regulatory Document 2.10.1 and with CSA N1600, assist the province in carrying out reviews of the PNERP's planning basis through the provision of applicable risk assessment and related studies and by participating in associated working groups.
- d. Assist the province and the designated municipalities in their planning and preparedness for a nuclear emergency.
- e. Provide resources for and assist the designated municipalities to set up and maintain a KI pill distribution program pursuant to the PNERP.
- f. Assist in the development and implementation of the public awareness and education program.
- g. On an annual basis, provide the province with the most current data from their Radiological Environmental Monitoring Program
- h. Ensure reactor facility staff working in the PEOC should have an overall knowledge of their emergency plans and the PNERP.
- i. Develop procedures for carrying out the collection and delivery of samples, and other assigned actions, as required under the ERAMG Operations Manual
- Participate in Public Education and Awareness Program by maintaining respective strategies and products in accordance with the in Public Education and Awareness Strategy.

G.2 PROVISION OF PERSONNEL

In support the PNERP, Ontario's Reactor Facilities will:

- a. Provide suitable personnel for staffing various positions in the provincial ERO
 (i.e., a technical liaison for the Scientific Section and a corporate liaison officer for
 Operations), plus qualified personnel for the Nuclear Emergency Assessment
 Team and ERAMG-PEOC Team
- Provide suitable personnel from the Offsite Survey Team (OSST) to join the ERAMG-Field Team once facility monitoring, surveillance, and sampling tasks have been completed

c. Provide a suitable representative to participate on inter-organizational NEMCC sub- committees or working groups set up under the PNERP to ensure alignment and address inter-organizational issues.

G.3 RESPONSE

In support the PNERP, Ontario's Reactor Facilities will:

- a. Execute the applicable responsibilities described in the PNERP at the first practicable occasion during a nuclear emergency
- b. Send regular reports and plant data to the PEOC Scientific Section on the status of the emergency situation during the emergency response.
- Provide personnel and resources for offsite personal monitoring as well as field monitoring services as specified in the PNERP and in the site-specific Implementing Plan and procedures
- d. Provide field-based radiation monitoring service to the Environmental Radiation and Assurance Monitoring Group once all facility-assigned tasks have been completed
- e. Pickering, Bruce, and Darlington: Carry out post-accident venting of containment according to the guidance contained in the PNERP
- f. Assist the province and the designated municipalities mitigating the emergency.
- g. Coordinate the release and content of emergency information for public release with the PEOC Public Information Management Section.

G.4 TRAINING AND EXERCISES

In support the PNERP, Ontario's Reactor Facilities will:

- a. Execute the training and exercise responsibilities described in the Nuclear Training Program and the Nuclear Exercise Program prior to a nuclear emergency to ensure appropriate training of reactor facility staff
- b. Ensure that its personnel required to perform any of the tasks within its responsibilities are suitably trained
- c. Assist the province and designated municipalities in the development and acquisition of training, as appropriate
- d. Implement and participate in nuclear emergency training and exercises.
- e. Where appropriate, arrange, or participate in emergency response exercises with the local public safety authorities or municipal response organization
- f. Arrange appropriate training of reactor facility staff involved in the PEOC Scientific Section.

G.5 INFRASTRUCTURE

In support the PNERP, Ontario's Reactor Facilities will:

- a. Provide and maintain reliable telecommunication links for the facility and specified offsite centres
- b. Provide resources for and assist the designated municipalities to set up and maintain a public alerting system pursuant to the PNERP
- c. Provide and maintain the equipment and facilities required to execute their responsibilities under the PNERP and its implementing documents.

G.6 STUDY AND RESEARCH

In support the PNERP, Ontario's Reactor Facilities will:

- a. Carry out Evacuation Time Estimate (ETE) studies to inform the UTMPs developed for each Ontario reactor facility site
- b. Carry out and sponsor studies on risk abatement, risk assessment, and the enhancement of Onsite and offsite safety, as agreed
- c. Assist the province in carrying out studies to enhance public safety during nuclear emergencies.

ANNEX H. CNSC LICENSED FACILITIES RESPONSIBILITES

CNSC licensed facilities (nuclear establishments) have the following responsibilities pursuant to the NSCA and its regulations and based upon agreements made with the province.

H.1 PLANNING AND PREPAREDNESS

In support of the PNERP, nuclear establishments will:

- Execute the applicable preparedness responsibilities described in the Nuclear Emergency Preparedness Framework prior to a nuclear emergency
- Consult with the province as necessary, to ensure emergency plans and procedures are established for executing their responsibilities under the PNERP and this program, and meeting license requirements
- c. Carry out all necessary measures onsite to contain and nullify the hazard.

H.2 PROVISION OF PERSONNEL

In support of the PNERP, nuclear establishments will:

- a. Establish liaison and make arrangements with the local public safety authorities for notifying them, when necessary
- b. Liaise with the Scientific Section of the PEOC at the first practicable opportunity to discuss and exchange scientific/technical information related to an onsite incident
- c. For all other incidents (radiological or nuclear), and at the request of the PEOC Scientific Section, provide scientific/technical advice and guidance related to nuclear reactor accident prognosis or progression, offsite health impacts and health physics assessments.

H.3 RESPONSE

In support of the PNERP, nuclear establishments will:

- a. Execute the applicable responsibilities described in the PNERP at the first practicable occasion during a nuclear emergency
- Notify the province, affected municipalities, and CNSC whenever there is an actual or potential hazard to public health, property or the environment from radiation or a radioactive material originating from or belonging to the establishment
- Assist the public safety authorities in containing and neutralizing the hazard offsite
- d. Coordinate the release and content of emergency information for public release with the PEOC Public Information Management Section.

H.4 TRAINING AND EXERCISES

In support of the PNERP, nuclear establishments will execute the applicable training and exercise responsibilities described in the Nuclear Training Program and the Nuclear Exercise Program prior to a nuclear emergency to ensure appropriate training of facility staff.

ANNEX I. DESIGNATED MUNICIPALITY RESPONSIBILITIES

Municipalities designated pursuant to Section 3(4) of the EMCPA as municipalities in nuclear DPZs have the following responsibilities.

I.1 PLANNING AND PREPAREDNESS

In support of the PNERP, designated municipalities will:

- a. Execute the applicable preparedness responsibilities described in the Provincial Nuclear Emergency Preparedness Framework prior to a nuclear emergency
- b. Prepare a municipal plan for mitigating nuclear emergencies, based on and in conformity with the PNERP. This municipal plan shall include:
 - Establishment of a municipal contact point to receive and act upon an initial notification from the reactor facility and from the province on a 24/7 basis
 - ii. Establishment of detailed arrangements and procedures for implementing precautionary and protective measures in accordance with the PNERP
 - iii. Planning data including demographic data, institutional data, resource inventory, etc.
 - iv. Details regarding a public alerting system meeting the requirements of public notification
 - v. Details regarding a nuclear public awareness and education program;
 - vi. Details the provision of emergency public information
 - vii. Arrangements to receive and accommodate evacuees, including liaison arrangements with other host municipalities, as appropriate
- c. Ensure municipal staff working in the PEOC have an overall knowledge of their emergency plans and the PNERP.
- d. Participate in Public Education and Awareness Program by maintaining respective strategies and products in accordance with the Public Education and Awareness Strategy.

I.2 PROVISION OF PERSONNEL

In support of the PNERP, designated municipalities will provide a suitable representative to participate on inter-organizational NEMCC sub-committees and working groups set up under the PNERP to ensure alignment and address inter-organizational issues.

I.3 RESPONSE

In support of the PNERP, designated municipalities will:

- a. Execute the applicable responsibilities described in the PNERP at the first practicable occasion during a nuclear emergency
- b. Implement the municipal emergency plan for nuclear emergencies (prepared pursuant to the PNERP and the EMCPA)
- c. Carry out the required emergency response under the guidance and support of the province prior to a declaration of a provincial emergency
- d. Implement the directions of the province following an emergency declaration, and pursuant to any orders which may be made by the province (Section 7.0.2 of the EMCPA)
- e. Coordinate the release and content of emergency information for public release with the PEOC Public Information Management Section.

I.4 TRAINING AND EXERCISES

In support of the PNERP, designated municipalities will:

- Execute the training and exercise responsibilities described in the Nuclear Training Program and the Nuclear Exercise Program prior to a nuclear emergency to ensure appropriate training of municipal staff
- b. Ensure that all municipal personnel assigned any functions under emergency plans for nuclear emergencies are suitably trained for their tasks
- c. Implement and participate in nuclear emergency training and exercises.

I.5 INFRASTRUCTURE

In support of the PNERP, designated municipalities will ensure availability of the essential facilities, emergency centres, resources, and equipment required by municipal agencies to mitigate a nuclear emergency.

ANNEX J. DESIGNATED HOST MUNICIPALITY RESPONSIBILITES

Municipalities designated pursuant to Section 3(4) of the EMCPA as municipalities acting as host municipalities, have the following responsibilities.

J.1 PLANNING AND PREPAREDNESS

In support of the PNERP, host municipalities will:

- a. Execute the applicable preparedness responsibilities described in the Provincial Nuclear Emergency Preparedness Framework prior to a nuclear emergency
- b. Prepare a municipal plan for mitigating nuclear emergencies in conjunction with the lead designated municipalities, which includes:
 - i. The municipal emergency plan shall be based upon and in conformity with the PNERP
 - ii. Arrangements to receive and accommodate evacuees from the designated municipalities
 - iii. Arrangements to host the ERAMG Field Team Command Post ideally colocated with an EWC
 - iv. Coordination of reception plans and procedures with the reactor facility's monitoring & decontamination arrangements
 - v. Establishment of a municipal contact point, which can receive and act upon an initial notification from the provincial contact point on a 24/7 basis
 - vi. Liaison arrangements with the designated municipality (in reactor facility Detailed Planning Zones) officials and with the PEOC to ensure appropriate communication during an emergency
 - vii. Detailed arrangements with various municipal departments, including social services, public health, police, fire, paramedic services and volunteer agencies which would be involved in staffing and security arrangements for the Reception and Evacuation Centres
 - viii. Arrangements for the provision of emergency information on Reception and Evacuation Centre issues
 - ix. This municipal emergency plan shall be based upon the PNERP and shall conform to it
- c. Municipal staff working in the PEOC should have an overall knowledge of their emergency plans and the PNERP
- d. Participate in Public Education and Awareness Program by maintaining respective strategies and products in accordance with the Public Education and Awareness Strategy.

J.2 PROVISION OF PERSONNEL

In support of the PNERP, host municipalities will provide a suitable representative to participate on inter-organizational NEMCC sub-committees and working groups set up under the Nuclear Emergency Preparedness Framework to ensure alignment and address inter-organizational issues.

J.3 RESPONSE

In support of the PNERP, host municipalities will:

- a. Execute the applicable responsibilities described in the PNERP at the first practicable occasion during a nuclear emergency
- b. Implement the municipal emergency plan for nuclear emergencies (prepared pursuant to the PNERP and the EMCPA)
- c. Carry out the required emergency response under the guidance and support of the province prior to a declaration of a provincial emergency
- d. Implement the directions of the province following an emergency declaration, and pursuant to any orders which may be made by the province (Section 7.0.2 of the EMCPA)
- e. Coordinate the content and release of emergency information for public release with the PEOC Public Information Management Section.

J.4 TRAINING AND EXERCISES

In support of the PNERP, host municipalities will:

- Execute the training and exercise responsibilities described in the Nuclear Training Program and the Nuclear Exercise Program prior to a nuclear emergency to ensure appropriate training of municipal staff
- b. Ensure that all municipal personnel assigned any functions under emergency plans for nuclear emergencies are suitably trained for their tasks
- c. Implement and participate in nuclear emergency training and exercises.

J.5 INFRASTRUCTURE

In support of the PNERP, host municipalities will ensure availability of the essential facilities, emergency centres, resources and equipment required by municipal agencies to mitigate a nuclear emergency.

ANNEX K. PLANNING BASIS

K.1 THE HAZARD

This PNERP details the response to an ionizing radiation hazard, resulting from an accident, malfunction, or loss of control at a reactor facility (i.e., nuclear emergency). The public may be harmed by radiation released from such incidents via the following exposure pathways:

- a. External exposure resulting from:
 - i. Radiation emitted by airborne radioactive materials in a plume ("cloudshine")
 - ii. Radiation emitted by radioactive materials that have deposited on the ground ("groundshine")
 - iii. Radiation emitted by radioactive materials that have deposited on clothing or skin ("external contamination").
- b. Internal exposure resulting from radioactive materials that entered the body ("internal contamination") by:
 - i. Inhalation of radioactive airborne materials
 - ii. Skin absorption or wound absorption of radioactive material
 - iii. Ingestion of drinking water, plant or animal products that have radioactive materials on or in them.

Health effects from exposure to ionizing radiation can be grouped into two main categories:

- a. Stochastic effects are those resulting from chronic low doses of radiation. They present primarily in the form of increased risk of various latent cancer types.
- b. Deterministic effects are those resulting from high doses of radiation and include cell death or tissue reactions.

The likelihood of stochastic and deterministic effects is reduced when protective actions are promptly implemented.

Nuclear and radiological hazards may be measured in both Imperial and System International (SI) units. A unit conversion table is provided in Annex R.

Other potential effects of the hazard, including those on mental health, psychological, psychosocial, environment, education, culture, ethics, political governance, traditional ways of knowing/living, etc. must also be considered in response to decision-making.

K.2 PLANNING BASIS FOR NUCLEAR EMERGENCIES

The planning basis involves the identification of hazards that the nuclear emergency management program must address based on the impact on health and safety, property and the environment. In a nuclear emergency, an ionizing radiation hazard could arise from an accident or event at a reactor facility, whereas a radiological emergency is not location dependent.

Elements of the planning basis include:

- a. the radiological hazard(s)
- b. the basis for protective action decision-making, i.e., GC and operational intervention levels (Annex Q)
- c. the potential effects on public health and safety (i.e., potential radiation doses resulting from a) above)
- d. the geographical extent of consequences.

K.3 REACTOR FACILITY ACCIDENTS

Nuclear emergency management requires a planning basis which considers both design basis accidents (DBAs) and beyond design basis accidents (BDBAs), including severe accidents and multi-unit scenarios where applicable.

While the planning basis should include a wide range of accidents, the amount of detailed planning should decrease as the probability of the accidents' occurrence decreases. For this reason, the planning basis for managing a nuclear emergency must strike an appropriate balance.

Reactor facility safety analyses and risk assessments shall be used to inform the planning basis.

This PNERP has been prepared in conformity with national and international standards and guidance for nuclear emergency management and, as such, it:

- a. Provides detailed planning and preparedness to mitigate the effects of DBAs for which safety systems have been specifically designed to ensure that radiological releases are kept within authorized limits
- b. Provides additional tools and mechanisms to mitigate the effects of BDBAs, including severe accidents, which are more unlikely than Design Basis Accidents.

K.3.1 Design Basis Accidents

The DBA release provides the main platform for detailed planning and is generally characterized by one or more of the following:

a. An accident that a nuclear facility has been specifically designed to withstand

- b. Station containment systems would function normally, allowing radiation to decay prior to a controlled release
- Sufficient time would be available to alert the public and implement protective measures prior to a release
- d. The main radiological hazard to people would be external exposure to, and inhalation of, radioactive material
- e. Filter systems would function to remove almost all of the radioiodines and particulate radionuclides. As a result, the plume would be mostly comprised of inert noble gases, which would dissipate and not pose a contamination hazard.
- f. Radiation doses to the public would likely be below the GC as defined in Annex O
- g. Environmental contamination would be limited to very low levels
- h. The area affected would likely be contained to the Detailed Planning Zone.
- i. Low-level radioactive releases to the environment could occur on and off for some time (e.g., days or weeks).

Planning and preparedness shall be conducted in Ontario to mitigate the consequences of releases from DBAs and shall further provide the basis for an expanded response, as required, to mitigate the effects of a Beyond Design Basis Accident (BDBA).

K.3.2 Beyond Design Basis Accidents

The BDBA is an exceptionally low probability event that is more severe than a DBA and is generally characterized by one or more of the following:

- a. A single unit or multi-unit accident (i.e., an accident involving more than one reactor) that exceeds the conditions a facility has been designed to withstand
- b. Station containment system impairment leading to:
 - Significantly reduced hold up time of radioactivity in containment resulting in reduced decay of radioactive materials;
 - ii. Little time available to alert the public and implement protective measures;
 - iii. An early release of radioactivity: or
 - iv. An uncontrolled and unfiltered release of radioactivity
- c. The main radiological hazard to people would be external exposure to, and inhalation or ingestion of, released radioactive material
- d. Filter systems may fail, leading to the release of a mix of particulates, radioiodines, and noble gasses
- e. Released radioiodines could be inhaled or ingested leading to internal exposure of the thyroid gland
- f. Radiation doses could potentially be high and could potentially exceed the GC as defined in Annex Q
- g. Environmental contamination could be quantitatively significant in both extent and duration

- h. The area affected could extend beyond the Detailed Planning Zone into the Contingency and Ingestion Planning Zones
- i. Radioactive releases to the environment could occur on and off for some time (e.g., days or weeks).

BDBAs which go unmitigated may evolve into a more severe accident involving fuel degradation in the reactor core.

The response to BDBAs is facilitated by the measures already in place to respond to DBAs and the ability to expand their function.

Additional planning and preparedness measures shall be undertaken to facilitate the implementation of the following response actions, as appropriate, to mitigate the much less probable, but possibly more severe, offsite effects of BDBAs:

- a. Initiation of public alerting to direct protective actions, including sheltering and evacuation
- b. Priority evacuations for those closest to the hazard
- c. Radiation monitoring and, if necessary, decontamination of persons.
- d. Urgent Response Phase Iodine Thyroid Blocking (ITB)
- e. Timely dispatch of aerial and ground monitoring teams to determine areas of contamination
- f. Medical assessment, treatment and counselling as required.

ANNEX L. PROTECTIVE ACTIONS

L.1 PRECAUTIONARY MEASURES

Precautionary measures should be implemented during the Urgent Response Phase either in advance of, or in combination with, exposure control protective measures to facilitate their implementation. Unlike protective measures, precautionary measures are not associated with a numerical intervention level.

The CEM or designate (e.g. PEOC Commander) will direct precautionary measures as appropriate, and where time permits, in consultation with applicable responsible ministries and the affected designated municipalities.

Precautionary measures shall be directed to the public via EBs (Section 8.7.2.2), or other public communications channels (as the situation dictates) and issued by the PEOC Commander. Municipalities will be informed via PNOORF update. The provincial ERO shall be informed in advance via IMS Form 201 or 209, as time permits. Precautionary measures include (but are not limited to):

- a. closing of beaches, recreation areas, etc.
- b. closing of workplaces and schools
- c. suspension of non-critical patient admissions in hospitals
- d. entry control.

L.2 PROTECTIVE MEASURES

L.2.1 Evacuation

An evacuation is:

- A directed exposure control measure for the controlled displacement of the population from an area, which has been or might become contaminated by radioactive substances to avoid exposure
- Normally less than a period of two weeks. If an evacuation is expected to last longer than two weeks, temporary relocation should be considered (see Annex L.2.5)
- c. Normally undertaken during the Urgent or Early Response Phase to avoid or reduce short-term exposure to the plume or deposited radiation.

L.2.1.1 Responsibility for Evacuation

Responsibility for directing evacuation rests with the CEM or designate (e.g. PEOC Commander) or the LGIC, following the decision-making authorities outlined in Section 7.5.

In circumstances where the directive is not being issued as a protective measure following an initial notification from the reactor facility, the CEM or designate (e.g. PEOC Commander) shall consult with the following, as time permits, to determine the applicability of this measure:

- a. Scientific Section Chief regarding emission timing, intervention levels, and the appropriateness of evacuation as a protective measure
- b. affected designated municipalities
- c. CMOH to determine the need to direct ITB as a supplemental protective measure.

The CEM or designate (e.g. PEOC Commander) shall ensure that all protective measures are issued to the public via emergency bulletin (Section 8.7.2.2) and that municipalities (notified through the PNOORF) are affecting the protective measures to the best of their abilities. Upon receipt of a PNOORF, or the issuance of an EB, the municipalities support the implementation of the protective action, where and when they can (e.g., UTCC and local police identify best evacuation options and direct traffic for an efficient evacuation).

L.2.1.2 Considerations for Evacuation

Evacuation should be directed in areas where the projected or actual dose is expected to equal or exceed the evacuation GC (pre-release) or OILs (post-release) (Annex L.2.5).

Evacuation is most effective at limiting exposures when completed prior to the radioactive release.

When evacuation is implemented during a radioactive release, radiation exposure could be increased. Therefore, if the release duration is known to be short, sheltering-in-place may be directed, followed by evacuation after the release. However, if the release is known to be prolonged, evacuation in the plume should be assessed in comparison to sheltering-in-place in order to determine the most effective protective measure to minimize the effective dose to the impacted population.

Evacuation can provide protection against unnecessary exposure to radiological contamination in the environment after a release, when sheltering-in-place is not a viable option.

Evacuation of the affected population should be considered for those areas where sheltering-in-place is expected to be required for more than 48 hours.

In the offsite area immediately adjacent to the source of radiation, evacuation may be the best protective action unless:

- a. Persons are unable to safely evacuate (e.g., persons with health conditions that would make evacuation more dangerous than sheltering-in-place); or
- b. Conditions exist which make the evacuation hazardous (e.g., inclement weather, road or transportation issues, consequences resulting from another hazard); in such cases, sheltering-in-place may be more appropriate followed by evacuation once the release has ceased and it is possible to safely evacuate.

L.2.2 Sheltering-In-Place

L.2.2.1 General

Sheltering-in-place is normally directed in the Urgent Response Phase of a nuclear emergency response. A directed sheltering-in-place order is a short-term exposure control measure for taking immediate refuge in an enclosed structure, with windows and doors closed and ventilation systems shut down, for protection from an airborne plume, deposited radioactive material, or both.

Sheltering-In-Place may be appropriate as an interim measure in areas where:

- a. A release is expected to occur before evacuations can be safely completed.
- b. The release is expected to be of short duration, not exceeding 48 hrs.
- c. Sheltering-In-Place may be a preferable alternative to evacuation where circumstances prevent a safe and efficient evacuation or for maintenance of essential services:
 - Severe weather conditions
 - ii. Environmental or other hazards
 - iii. Transportation infrastructure issues
 - iv. For vulnerable populations (e.g., hospitals, long-term care homes, etc.) for whom evacuation may pose greater risks than that of the hazard itself; or
 - v. For essential service staffing requirements (e.g., critical infrastructure).
- d. For situations where sheltering-in-place is directed, the PEOC Scientific Section Chief should prioritize rapid surveys, undertaken by its Environmental Radiation and Assurance Monitoring Group (ERAMG). The analysis of this information will inform the Scientific Section's recommendations to either lift the shelter-in-place directive/order or conversely, to direct follow-up evacuations.
- e. The CMOH should consider the need to direct ITB together with sheltering-inplace, in order to provide maximum protection. This additional layer of protection may not be necessary where the PEOC Scientific Section advises that radioiodine definitively does not pose a hazard (based on analysis of reactor facility plant data).

L.2.2.2 Responsibility

Responsibility for directing sheltering-in-place rests with the CEM or designate (e.g. PEOC Commander) or the LGIC, following the decision-making authorities outlined in Section 7.5.

In circumstances where the directive is not being issued as a protective measure following an initial notification from the reactor facility, the CEM or designate (e.g. PEOC Commander) shall consult with the following, as time permits, to determine the applicability of this measure:

- a. Scientific Section Chief regarding emission timing, intervention levels, and the appropriateness of sheltering-in-place as a protective measure
- b. affected designated municipalities
- c. CMOH to determine the need to direct ITB as a supplemental protective measure.

The CEM or designate (e.g. PEOC Commander) shall ensure that all protective measures are issued to the public via emergency bulletin (Section 8.7.2.2) and that municipalities (notified through the PNOORF) are affecting the protective measures to the best of their abilities.

EBs shall contain sufficient guidance regarding the efficacy of sheltering structures (per L.2.2 above).

L.2.3 Ingestion Control

L.2.3.1 General

The following protective measures for ingestion control, defined in Annex W, include:

- a. milk control
- b. water control
- c. pasture control
- d. produce and crop control
- e. livestock control
- f. wild harvested foods
- g. food and foodstuff control
- h. land control

Strategies for deciding on and implementing ingestion control measures during a nuclear or radiological emergency include the following:

a. As a precaution, the direction of ingestion control measures during the Urgent Response Phase within the AAZ, the DPZ, and potentially the CPZ

- b. The initiation of background environmental radiation and assurance monitoring during the Urgent Response Phase if time permits
- c. The initiation of environmental radiation and assurance monitoring for the entire Ingestion Planning Zone (IPZ), at the end of the Urgent Response Phase (or beginning of the Early Response Phase), in accordance with priorities set by the ERAMG
- d. The continuation of environmental radiation and assurance monitoring during the Early Response Phase and through to the Recovery Phase to guide recovery decision-making
- e. Recommendations for implementation of additional ingestion control long-term protective actions shall be based on analysis of field monitoring data referenced against the OILs detailed in Annex L.2.5.

L.2.3.2 Responsibility

Recommendations on the application, revision, and rescinding of ingestion control measures shall be made by the PEOC Scientific Section Chief to the CEM or designate (e.g. PEOC Commander). These recommendations shall be based on an analysis of monitoring results.

The CEM or designate (e.g. PEOC Commander) shall consult on the recommended measures with affected municipalities, where time permits.

Ingestion control measures are communicated to the municipalities via the PNOORF, and to the public via the EBs or other communications methods issued by the PEOC Commander during the Urgent and Early Response Phases (Annex N) and, as deemed appropriate for the situation during the Recovery Phase.

Designated municipalities shall include the necessary provisions in their municipal nuclear emergency plans in order to ensure the effective implementation of the ingestion control measures for which they have associated responsibilities.

All other municipalities located in the IPZ should ensure that they have the necessary plans and procedures in place to ensure the effective implementation of the ingestion control measures for which they have associated responsibilities (e.g., shutting intake valves of affected drinking water systems).

L.2.4 Iodine Thyroid Blocking

L.2.4.1 General

Iodine Thyroid Blocking (ITB) is a protective measure normally undertaken in the Urgent Response Phase of a nuclear emergency. The ITB protective measure involves the ingestion of potassium iodide (KI) pills to prevent the thyroid gland's uptake of radioactive iodine, one of the radioisotopes which may be present in a radioactive plume.

ITB is most effective if ingested either prior to, or soon after a radioactive emission.

Detailed ITB planning and preparedness shall be undertaken, in advance of a nuclear emergency, to ensure that the population that may be affected by the release of radioiodine has access to the pills in a timely manner.

L.2.4.2 Guidance for its use a protective measure

Because this measure protects only the thyroid gland, and only from one type of radioactive material (radioiodine), ITB should be used in combination with sheltering-in-place or evacuation. This combination provides more comprehensive, whole-body protection.

The Scientific Section determines whether ITB is required based on exceedance of the thyroid GC as determined through dose modeling. The resultant recommendation is sent to the CMOH, via the CEM, for authorization of consumption. If the CMOH authorizes the consumption of KI, the authorization is returned to the CEM or designate (e.g. PEOC Commander) who will issue the consumption order within the identified area. Guidance for its use as a protective measure includes:

- a. Potassium Iodide (KI) pill ingestion should be directed 2-6 hours prior to, or immediately following exposure to an emission to be optimally effective
- Because this measure protects only the thyroid gland, and only from one type of radioactive element (radioiodine), ITB should be used in combination with sheltering-in-place or evacuation. This combination provides more comprehensive, whole-body protection
- c. If evacuation is not feasible, KI should be directed to be ingested using the manufacturer's daily recommended dose, until the risk of significant radioiodine exposure (through inhalation) no longer exists. Note: certain populations (e.g., pregnant and breastfeeding women, and infants <1-month-old) should only take one dose of KI.

Further guidance is provided in the Radiation Health Response Plan and on the Ministry of Health's website.

L.2.4.3 Preparedness

The preparedness requirements set out in this PNERP are consistent with the KI pill provisions found in CNSC regulations. These preparedness requirements do not preclude any organization, or person, from acquiring KI pills for protection in the event of a nuclear emergency. Emergency Social Services planning should consider the need for baby formula supplies for breastfeeding mothers where ITB has been implemented.

L.2.4.4 Response Considerations

Once the radioactive release has ended, provincial direction for ITB should cease unless otherwise justified.

L.2.4.5 Decision-Making

During the response to the initial notification from the reactor facility that an emission is ongoing or imminent, the CEM or designate (e.g. PEOC Commander) shall direct protective actions detailed in the appropriate site-specific implementing plan. This includes the consumption of KI pills, when authorized by the CMOH.

Subsequent ITB protective action decision-making by the CMOH will be based on the Scientific Section Chief's technical assessment and recommendation as communicated through the CEM, and implementation will be directed in consideration of the following:

- a. The extent to which the affected public is in possession of KI pills
- b. The means and timing to access KI pills, for those who do not possess a supply
- c. Information provided through consultation with the local Medical Officer(s) of Health
- d. Based on the above, the CMOH shall direct ITB implementation, as appropriate, in coordination with the PEOC.

L.2.4.6 Provincial Responsibilities

EMO and MOH, together with assistance from reactor facilities as applicable, shall develop plans, in coordination with designated municipalities within all Ontario DPZs and CPZs to ensure the availability of KI pills during an emergency. The applicable implementing plans shall include details to guide planning.

The MOH shall procure, in advance, adequate quantities of KI pills, for the Fermi 2 DPZ and CPZ.

L.2.4.7 Designated Municipality Responsibilities

Designated Municipality nuclear emergency plans shall detail provisions for undertaking the following:

- a. Pre-distribution of KI pills for DPZ institutions (including schools, daycare centres, seniors' residences, long-term care facilities, hospitals, correctional facilities etc.)
- b. Pre-distribution of KI pills for emergency centres designated under this PNERP (EWCs, Reception and Evacuation Centres, and MDUs)
- c. Pre-distribution of KI pills for households and businesses in the DPZ.
- d. Facilitating the availability of KI pills for populations within that area of the Contingency Planning Zones lying within their borders, wishing to possess a supply
- e. Detailed planning and preparedness to ensure that pills can be made available to those that may require them, during a nuclear emergency response. The four

site-specific nuclear facilities (Pickering, Darlington, Bruce Power, and Fermi 2) and the Transborder PNERP Implementing Plans will provide applicable guidance for the development of emergency distribution processes and plans.

L.2.4.8 Reactor Facility Responsibilities

In accordance with CNSC regulations and pursuant to their responsibilities to assist offsite authorities under the Regulations of Class I Facilities (Nuclear Safety and Control Act) and operating licence requirements, reactor facilities are responsible for providing the necessary resources and support to provincial and municipal authorities to ensure that the ITB related requirements of this PNERP and of municipal emergency plans are completed.

L.2.5 Temporary Relocation

L.2.5.1 General

Temporary relocation is a protective measure undertaken post-release, during the intermediate response phase, based on actual measured contamination levels. It is the displacement of people from their homes for a period beyond two weeks and up to one year to avoid chronic exposure to radiation, usually from ground contamination. Beyond one-year, permanent resettlement must be considered. Temporary relocation (i.e., relocation with a duration between two weeks and one year) requires dedicated planning and preparedness. This will be led by a multi-ministry and multi-jurisdictional planning group managing issues including housing, social services, education, etc.

Temporary relocation can be directed as a subsequent measure to evacuation or sheltering-in-place or, as a separate measure.

The need for temporary relocation is determined following analysis of environmental radiation monitoring results and assessment against OILs (Annex L.2.5).

EMO shall consider a variety of factors (optimization) before recommending temporary relocation as the potential impacts of this action may not be justified in areas where the OIL for temporary relocation is minimally exceeded. The CEM on the technical advice of the Scientific Section and the operational advice of the other PEOC sections, will make a recommendation to government on the appropriateness of temporary relocation.

L.2.5.2 Responsibility

In collaboration with relevant ministry officials and following consultation with the affected designated municipalities and designated host municipalities, the CEM shall make recommendations regarding the need for temporary relocation.

Temporary relocation shall be directed through public communications issued by the CEM in coordination with the PEOC Provincial Information Management Section (PIMS).

Relocation planning involves a significant interdisciplinary approach, involving at minimum:

- a. Transportation management (e.g., Ministry of Transportation)
- b. Reception and evacuation centres (e.g., designated municipalities)
- c. Long-term housing (e.g., multi-ministry and multi-jurisdictional planning group)
- d. Access to health services and public health issues coordinated by the Ministry of Health.

L.2.6 Decontamination

L.2.6.1 General

In nuclear and radiological emergencies, personal monitoring determines the presence of contamination on any individual who may be contaminated after a radiological release to the environment. Decontamination serves to reduce or remove contamination. Personal monitoring and decontamination are used to mitigate the exposure effects of external contamination.

Facilities and provisions for personal monitoring and decontamination shall be established and resourced with the specialized equipment and expertise required to undertake this function.

In nuclear and radiological emergencies, population monitoring and medical management (Annex S) refers to the process undertaken by the MOH to assess long term health impacts, following the personal monitoring and decontamination that is undertaken at MDUs.

With the exception of Fermi 2, personal monitoring and decontamination are not expected to be needed for a transborder emergency.

L.2.6.2 Responsibility

The operators of the Bruce, Darlington, and Pickering NGS have responsibility for the radiation monitoring and decontamination activities at emergency centres established for the public and for emergency workers in a nuclear emergency.

For a nuclear emergency at the Fermi 2 NPP, EMO is responsible for coordinating, in advance, arrangements for monitoring and decontamination for evacuees and for emergency workers.

Designated Municipalities shall ensure that their municipal emergency plans include provisions for the establishment, administration and operation of the non-radiological components of centres housing the monitoring and decontamination facilities for the public and for emergency workers.

L.2.6.3 Designated Communities

Reactor facilities in Ontario are responsible for providing resources, qualified staff and their training in order to meet their responsibility for the monitoring and decontamination of evacuees and emergency workers (see section above) in their designated community.

EMO shall co-ordinate with appropriate relevant partners to establish arrangements for monitoring and decontamination of both emergency workers and evacuees as outlined in Sections 8.8 and 8.10 for the Town of Amherstburg.

ANNEX M. EMERGENCY PLANNING ZONES

M.1 INTRODUCTION

The emergency planning zones (EPZ) define the areas beyond the boundary of a reactor facility, in which implementation of operational and protective actions are, or might be, required during a nuclear emergency in order to protect public health, safety and the environment.

Emergency Planning Zones shall be delineated in the appropriate site-specific implementing plan as follows:

- a. With consideration for municipal boundaries, First Nation and Indigenous communities and traditional territories, existing roads and geographic features
- b. To facilitate the effective implementation of operational and protective measures
- c. To provide a distinction between the types and extent of protective actions that may be required to protect against the radioactive plume and the resulting contamination, as they increase in distance from the reactor facility.

Planning and preparedness activities are undertaken to facilitate the implementation of external exposure and ingestion control protective measures in the emergency planning zones during a response. Some protective measures, while requiring operational arrangements to facilitate their implementation, do not require detailed planning. For example:

- a. Sheltering can be implemented through existing public alerting mechanisms, advising the population to stay indoors
- b. ITB requires an effective distribution program in advance of an emergency.

In contrast, detailed plans and procedures are required to implement evacuations including those pertaining to the following:

- a. Transportation and traffic
- b. Monitoring and decontamination
- c. Short-term accommodation
- d. Long-term accommodation
- e. Provision of health services, economic and trade disruptions, alternate education arrangements, etc.

As such, the DPZ for the CANDU stations have been delineated to accommodate the projected effective dose at which the evacuation generic criterion is reached. Projected doses for sheltering and ITB were not used in the DPZ determination.

Emergency Planning Zones have been defined in this PNERP as:

a. Automatic Action Zone (AAZ)

- b. Detailed Planning Zone (DPZ)
- c. Contingency Planning Zone (CPZ)
- d. Ingestion Planning Zone (IPZ)

While each of the above zones are distinct and do not overlap, when ingestion control measures are initiated for the IPZ, they should be implemented for all other zones noted above.

This diagram is for visual reference only. See the text below this figure for the full description.

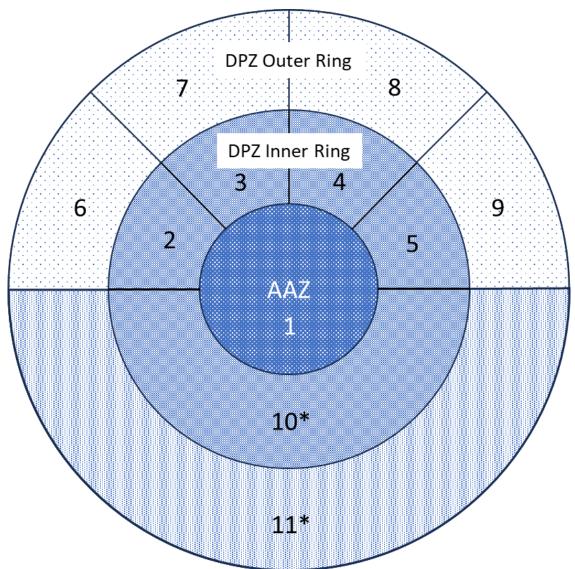


Figure M – 1: Detailed Planning Zone and Response Sectors (Diagrammatic - Not to Scale, * = Lake/River Sectors)

The diagram presents a circular, multi-layered structure that organizes emergency planning zones into defined response sectors. At the center is the Automatic Action

Zone (AAZ 1), representing the innermost emergency planning zone. The Detailed Planning Zone (DPZ) encompasses AAZ 1. The DPZ Inner Ring is divided into five response sectors labeled 2, 3, 4, 5, and 10*. The DPZ Outer Ring encompasses the inner ring and AAZ 1 and is comprised of five additional response sectors labeled 6, 7, 8, 9, and 11*.

This diagram is for visual reference only. See the text below this figure for the full description.

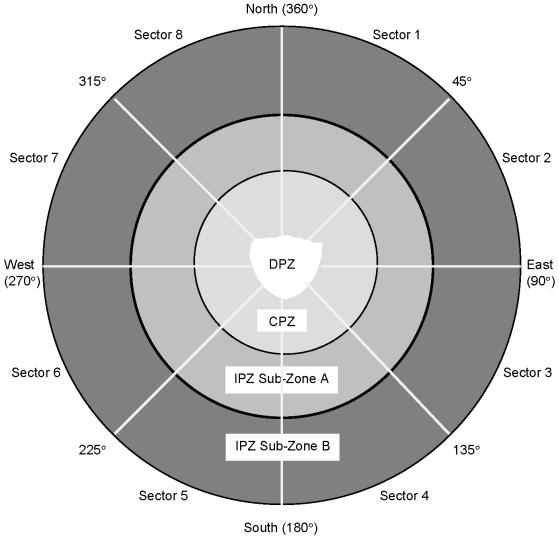
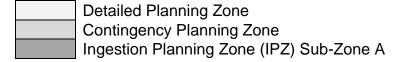


Figure M - 2: Ingestion Planning Zones

LEGEND



The diagram presents a circular, multi-layered structure that illustrates the relationship between the Detailed Planning Zone (DPZ), the Contingency Planning Zone (CPZ), and the Ingestion Planning Zone (IPZ). At the center is the DPZ, surrounded by the CPZ, forming the next ring. Beyond the CPZ are two additional concentric zones: IPZ Sub Zone A (inner) and IPZ Sub Zone B (outer), each extending outward from the CPZ. The entire circular layout is divided into eight sectors, labeled Sector 1 through Sector 8, aligned with the compass directions North (360 degrees), East (90 degrees), South (180 degrees), and West (270 degrees), as well as the intermediate bearings at 45, 135, 225, and 315 degrees.

M.2 AUTOMATIC ACTION ZONE (AAZ)

A pre-designated area immediately surrounding a reactor facility where pre-planned protective actions would be implemented on the basis of reactor facility conditions, with the aim of preventing or reducing the occurrence of severe deterministic effects.

Additional detailed planning and preparedness shall be undertaken for the AAZ to prevent or reduce deterministic effects for this zone, including the implementation of urgent protective actions (e.g., evacuation, sheltering-in-place, and ITB) during General Emergencies and some Onsite Emergencies.

M.3 DETAILED PLANNING ZONE (DPZ)

A pre-designated area surrounding a reactor facility where pre-planned protective actions are implemented as needed on the basis of reactor facility conditions, dose modelling, and environmental monitoring, with the aim of preventing or reducing the occurrence of stochastic effects (latent cancers).

Detailed planning and preparedness shall be conducted for the DPZ to ensure that protective measures can be implemented and that the associated needs and requirements of the affected public can be met.

The DPZ around a reactor facility shall be divided into response sectors. All emergency response measures, both operational and protective, shall be planned and implemented in terms of these sectors.

The desirable pattern of response sectors in a DPZ is illustrated in Figure M-1. Response sectors lie within two rings around the reactor facility: an inner ring (which lies beyond the AAZ) and an outer ring. Within each ring, it is desirable to have as few sectors as possible while maintaining the need for flexibility and practicability in the application of the operational response strategy.

The actual demarcation of the response sector boundaries shall be such that, as far as practical, they lie along clearly recognizable features, such as roads, waterways and

railway tracks. Other factors to be taken into account shall be municipal boundaries, population densities and availability of appropriate evacuation routes.

M.4 THE CONTINGENCY PLANNING ZONE (CPZ)

A pre-designated area surrounding a reactor facility, beyond the DPZ (Figure M - 2), where contingency planning and arrangements are made in advance, so that during a nuclear emergency, protective actions can be extended beyond the DPZ, as required, to reduce the potential for exposure.

Plans and arrangements for this CPZ include considerations for:

- a. Division into sub-zones
- b. Population estimates for each sub-zone
- Development of mechanisms, processes and procedures to provide for environmental radiation monitoring and data analysis by the PEOC Scientific Section
- d. Familiarization sessions with impacted municipalities, as required
- e. Identification of existing response centres that fall within the CPZ and development of a list of possible alternates located outside the CPZ
- f. ITB arrangements as applicable and as agreed to by relevant partner consultation
- g. Public awareness and education requirements consistent with Ingestion Planning Zone requirements
- h. No requirement for designation of additional emergency response centres (e.g., Emergency Operations Centres (EOCs), the Emergency Information Centre (EIC), reception and evacuation centres, personal monitoring and decontamination facilities, etc.) beyond those designated for the DPZ
- i. No additional public alerting and communications requirements beyond those established for the DPZ.

M.5 INGESTION PLANNING ZONE (IPZ)

The IPZ is a pre-designated area surrounding a reactor facility where plans or arrangements are made to:

- a. Protect the food chain
- b. Protect drinking water supplies
- c. Restrict consumption and distribution of potentially contaminated produce, wild harvested foods (e.g., mushrooms and game animals) milk from grazing animals, rainwater, and animal feed
- d. Restrict distribution of non-food commodities until further assessments are performed.

The IPZ is divided into concentric sub-zones in order to facilitate implementation of protective measures:

- a. Ingestion Control Sub-Zones A and B are each divided into eight sub-zones
- b. Ingestion control measures are further discussed in Section L.2.3.

The divisions described above are illustrated in Figure M-2. Actual zones and response sectors for each reactor facility shall be described in the applicable site-specific Implementing Plan.

M.6 EMERGENCY PLANNING ZONE DISTANCES

EPZ distances for reactor facilities are established based on a number of scientific factors including the design and number of reactors on site, and for Fermi 2, considerations for cross-border coordination. EPZ distances are determined by the application of the methodology and the details of which are found in the site-specific implementing plans. EPZ distances may vary from site to site. The radii of the EPZ surrounding each of the reactor facilities, as measured from the venting or release stacks, are detailed in the relevant site-specific implementing plans.

ANNEX N. NUCLEAR EMERGENCY PHASES

Due to the nature of nuclear reactor emergencies, where the hazard and its location are known and, the extent of the hazard is normally verifiable, protective action decision-making can be categorized according to the following phases of the emergency:

- a. Urgent Response Phase
- b. Early Response Phase
- c. Transition Phase
- d. Recovery (See the PNROP for more details)

N.1 URGENT RESPONSE PHASE

The Urgent Response Phase starts with an initial notification from the reactor facility of a General or Onsite Emergency notification category, which may require urgent protective and operational actions to deal with the immediate effects of radiation.

Upon receipt of an initial notification from the reactor facility of an ongoing or imminent emission, protective measures should be implemented (subject to operational situation considerations), based on a conservative estimate of the situation because time or data may not be available to carry out a comprehensive assessment of imminent risk. These protective measures shall be detailed in the applicable site-specific implementing plan and may include sheltering-in-place, evacuation, and ITB.

In situations where a release is not imminent or ongoing, decision-making should commence as soon as data is available (i.e., status of affected reactor(s)' control, cooling, and containment) and well before exposure is expected to occur. This is accomplished with an assessment of projected doses, compared against the GC (Annex Q), to determine the need for protective measures (Annex L).

Ingestion control measures shall be directed as appropriate. The measures may be modified in later phases based on the results of environmental field monitoring of food, milk, and water. The following additional protective measures are not associated with either a numerical intervention level (GC or OlLs) and may be directed in combination with any of the protective and precautionary measures listed in Annex L:

- a. protective clothing
- b. respiratory protection
- c. self-decontamination

Population monitoring and medical management would begin during the Urgent Response Phase of a nuclear response (See Annex S).

N.2 EARLY RESPONSE PHASE

The Early Response Phase begins (and, by extension, the Urgent Response Phase ends) once the nuclear release is brought under control (though not necessarily contained), permitting environmental radiation surveys to continue, radiological sampling to be undertaken, and decision-making to be based on actual dose rate and radiological contamination measurements.

Evacuation and/or temporary relocation are the preferred protective measures during the Early Response Phase to prevent external exposure from deposited radioactive particles (e.g., ground contamination) as well as to prevent internal exposure from inhalation of radioactive particulates.

Ingestion control measures shall be directed as appropriate based on the results of environmental field monitoring of food, milk, and water.

A technical assessment of actual environmental radiation monitoring results applied against OILs (Annex Q.2) should inform the decision-making process to determine the need for both ingestion and exposure control measures.

The developing situation should be continuously re-assessed, and appropriate decisions made to apply protective measures and rescind those no longer necessary.

During the Early Response Phase, the CEM or designate (e.g. PEOC Commander) may recommend other, practical dose reduction measures to the public. Such measures may be implemented in combination with the measures described in this Annex or may simply be recommended to provide an additional level of protection against possible radioactive material present in the air or on the ground. Implementation of these measures are not based on GC or OILs and include:

- a. Respiratory protection, such as covering of the nose and mouth with available material that can filter particulates when present in the air
- Self-decontamination, including removing and bagging contaminated clothing, showering, and decontaminating surfaces of critical areas and objects
- Staying indoors to the extent that it is practical, e.g., only conducting outdoor tasks when necessary (e.g., seeking medical attention, buying foodstuff and necessities).

Advice regarding these measures shall be issued through the emergency bulletin process (See Section 8.7.2.2) as well traditional public communications methods.

All technical assessments shall be evaluated in the context of operational factors and public policy (e.g., psychosocial and economic) considerations. Such considerations shall provide an overall assessment of the risks and costs associated with various protective measures to provide for decision-making that optimizes public health, safety, and welfare.

The Early Response Phase starts to overlap with the Transition Phase once there is no potential for further releases and the need for early protective actions diminishes. The Early Response Phase ends at the moment the Recovery Phase begins.

Population monitoring and medical management would continue during the Early Response Phase of the response (See Annex S).

N.3 TRANSITION PHASE

The Transition Phase can begin when the radiological environment has been characterized to the point where the risk to recovery workers is fully understood and manageable. The transition to recovery in these areas may proceed independent of ongoing Early Response Phase activities, including those in other areas.

The imposition and rescinding of protective measures, as well as the distinction between the first three phases, may not be uniform across the affected area as contamination levels may differ. Relevant partners and affected communities should be consulted and engaged early and often when developing and implementing Recovery Phase long-term protective action strategies.

The practical dose reduction measures detailed in the Early Response Phase are also applicable to the Transition Phase.

During both the Transition Phase and the Recovery Phase, recovery operations will be controlled and coordinated through a recovery management organization (RMO). Establishing the RMO is not a mandatory action when the PEOC is activated but should be considered at the earliest practical opportunity. As the nuclear emergency stabilizes, recovery operations will require planning for the transfer of operational control to the RMO.

N.4 RECOVERY PHASE

Recovery is the final stage in responding to a nuclear emergency. The goal during the Recovery Phase is to return Ontario to a state of normalcy as quickly and effectively as possible, to the extent practically achievable. Recovery operations may begin before to the Transition Phase is complete. At this time, oversight of operations transfers from the PEOC Commander to the RMO Commander.

Recovery operations will be managed by the RMO (Figure N - 1). Recovery Phase decision-making should focus on adjusting or rescinding of protective measures imposed during the previous phases with the goal of reducing environmental radiation to appropriate levels established in consultation with relevant partners and affected communities, in order to improve living conditions and resume social and economic activities.

Recovery Phase decision-making should be based on ongoing environmental and assurance monitoring results and continuous re-assessment of the radiological situation in order to optimize long-term protective actions and manage the long-term radiological exposure situation.

The Recovery Phase is detailed in the Provincial Nuclear Recovery Operations Plan.

This diagram is for visual reference only. See the text below this figure for the full description.

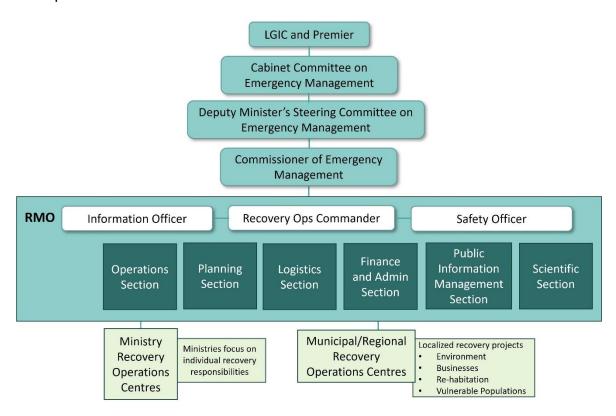


Figure N – 1: RMO Full Activation Organization

The diagram illustrates the Recovery Management Organization (RMO) structure during full activation. The Lieutenant Governor in Council and the Premier have the highest authority, followed by the Cabinet Committee on Emergency Management. Directly beneath them is the Deputy Minister's Steering Committee on Emergency Management, which connects to the Commissioner of Emergency Management. The Commissioner links to the RMO, which includes an Information Officer, Recovery Ops Commander, and a Safety Officer. Below this group are six functional sections: Operations, Planning, Logistics, Finance and Administration, Public Information Management, and Scientific. The Recovery Management Organization (RMO) links to Ministry Recovery Operations Centres and Municipal/ Regional Recovery Operations Centres. Ministry Recovery Operations Centres are ministries that focus on individual recovery responsibilities,

while Municipal and Regional Recovery Operations Centres oversee localized recovery projects.

ANNEX O. DESIGNATED/HOST MUNICIPALITIES

O.1 REACTOR FACILITIES AND THEIR DESIGNATED/HOST MUNICIPALITIES

Pursuant to EMCPA 3(4), the following municipalities (Table O - 1) are hereby designated as municipalities that must address nuclear emergencies in their municipal emergency plans either for the purposes of protecting their citizens from the hazard or in the capacity of designated host municipality.

Table O – 1: Reactor Facilities and their Designated/Host Municipalities

Reactor Facilities	Designated Municipalities	Designated Host Municipalities
Pickering Nuclear Generating Station	Regional Municipality of Durham City of Toronto	City of Peterborough
Bruce Nuclear Generating Station	Municipality of Kincardine	Town of Saugeen Shores
Darlington Nuclear Generating Station	Regional Municipality of Durham	City of Toronto City of Peterborough
Fermi 2 Power Plant (Michigan, U.S.)	Town of Amherstburg	City of Windsor Town of Essex

O.2 RECEPTION CENTRES

Municipal emergency plans for nuclear emergencies shall identify the location of facilities that will be used for the reception, care, and initial shelter of evacuees.

Evacuee monitoring and decontamination may be accomplished either in a Reception Centre that receives evacuees immediately upon leaving the emergency area or in a facility set up separately from the reception centre.

A Reception Centre is generally the first destination for evacuees. It is organized to perform many of the following functions:

- a. registration and inquiry
- b. allocation to Evacuation Centre
- c. first-aid
- d. monitoring and decontamination

Host Municipalities shall resource Reception Centres for the first three functions listed above.

In the event of a nuclear emergency, reactor facilities in Ontario shall provide the equipment and trained staff to perform monitoring and decontamination activities (pursuant to federal licensing requirements to provide offsite assistance).

EMO shall co-ordinate with appropriate response partners to establish arrangements for monitoring and decontamination for the Town of Amherstburg.

Municipal emergency plans for nuclear emergencies shall identify the roles and functions fulfilled by emergency workers at Reception Centres and include provisions for the selection, staffing, and resourcing of these facilities.

O.3 EVACUATION CENTRES

Evacuation Centres are facilities set up by designated host municipalities to provide shelter, food, and other services (e.g., family reunification and emergency social services) to people who have been evacuated as a result of a nuclear emergency.

Municipal emergency plans for nuclear emergencies shall identify the location of facilities that will be used for Evacuation Centres.

Municipal emergency plans for nuclear emergencies shall identify the roles and functions fulfilled by emergency workers at Evacuation Centres and include provisions for the selection, staffing and resourcing of these facilities.

O.4 EMERGENCY WORKER CENTRES

Emergency Worker Centres are facilities set up to monitor, decontaminate and control exposure of emergency workers to radiation.

Emergency workers are those who perform emergency services in support of an emergency response, but do not include those designated as nuclear energy workers (NEW). Emergency workers include:

- a. Those required to remain in, or to enter, areas affected or likely to be affected by radiation from a nuclear emergency, and for whom special safety arrangements are required
- b. Those who are required to provide response outside the affected areas
- c. Those who are registered with an authorized responding organization
- d. Police, firefighters, paramedic services, emergency social services workers, other essential services.

Municipal emergency plans for nuclear emergencies shall identify the location of facilities that will be used as Emergency Worker Centres. These locations should also be able to accommodate a command post for environmental monitoring, surveillance,

and sampling operations of the Environmental Radiation and Assurance Monitoring Group (ERAMG) Field Teams.

Municipal emergency plans for nuclear emergencies shall identify the roles and functions fulfilled by emergency workers at Emergency Worker Centres and include provisions for the selection, staffing, and resourcing of these facilities.

In the event of a nuclear emergency, reactor facilities (except Fermi 2) shall provide the equipment and trained staff to perform monitoring and decontamination activities (pursuant to federal licensing requirements to provide offsite assistance).

O.5 MONITORING AND DECONTAMINATION

A Monitoring and Decontamination Unit (MDU) is a deployable asset with equipment to monitor for contamination on an evacuees' person or vehicle. If contamination is identified, a decontamination process is used to reduce the amount of contamination to safe levels.

Reactor facilities in Ontario are responsible for providing resources, qualified staff and their training in order to meet their responsibility for the monitoring and decontamination of evacuees and emergency workers (per Annex G.4).

Similarly, once the emergency functions have ceased to be necessary, the Ontario reactor facility is responsible for restoring the monitoring and decontamination portion of any facility used to its pre-emergency state.

In the event of a nuclear emergency at the Fermi 2 NPP, EMO shall co-ordinate with appropriate response partners, including nuclear facilities in Ontario, to establish arrangements for monitoring and decontamination of both evacuees at the reception centre, and emergency workers at the EWC, as outlined in the Fermi 2 IP for the Town of Amherstburg and Town of Essex.

ANNEX P. ACCIDENT CHARACTERIZATIONS

Categorization of a nuclear event is the responsibility of the NGS operator. Potential categorizations are detailed below. Upon receiving a categorization, the CEM or designate (e.g. PEOC Commander) will determine an appropriate provincial offsite response level (see Table 1) as well as having additional specific actions to take.

P.1 REPORTABLE EVENT

A reportable event is an event affecting the reactor facility which would be of concern to the offsite authorities responsible for public safety. Triggers for reportable events include:

- a. Any event or condition that reduces the reactor facility's capability to mitigate an emergency onsite, and which persists for longer than the allowable time limits
- b. Any event or condition that reduces the reactor facility's capability to provide the agreed offsite emergency support, and which is expected to persist for over 8 hours, or actually does so
- c. Natural, toxic, flammable, destructive or other phenomena which have the potential to lead to a minor break (to be defined in reactor facility procedures) in the physical integrity of the nuclear heat transport system boundary or the moderator system
- d. Unexpected or unplanned activation of the emergency cooling injection system or the containment system (including box-up)
- e. Declaration of a Station Emergency, with no potential for offsite effects
- f. Any credible publicly announced threat to, or attempted or actual breach of, the facility's security that threatens its safe operation.

P.2 ABNORMAL INCIDENT

An abnormal incident is defined as an abnormal occurrence at the reactor facility which may have a significant cause, and/or may lead to more serious consequences. Triggers for Abnormal Incidents include:

- a. A minor break in the physical integrity of the nuclear heat transport system boundary with no fuel failures (actual or likely)
- b. Natural, toxic, flammable, destructive or other phenomena which have the potential to lead to the major (to be defined in reactor facility procedures) break specified in Item a. under Onsite Emergency
- Activation of the emergency coolant injection system or the containment system (including box-up) due to a process system upset which is not reportable under any other category
- d. Declaration of a Station Emergency due to an occurrence which has the potential to result in offsite effects.

P.3 ONSITE EMERGENCY

An onsite emergency is characterized as a serious malfunction that results or may result in an atmospheric release of radioactive material or is likely to result in a release at a later time. Triggers for onsite emergencies include:

- a. A major break (to be defined in reactor facility procedures) in the physical integrity of the nuclear heat transport system boundary, the moderator system, or the irradiated (or spent) fuel handling and storage system, with fuel failures but with a fully intact and functioning containment system
- b. An abnormal emission (to be defined in reactor facility procedures) of radioactive material to the atmosphere from any non-reactor source
- An event or condition which has the potential to lead to a General Emergency criterion, concurrent with the loss of the ability to detect or control such a development
- d. Hostile action in the protected area resulting in actual or potential loss of control over station safety or safety related systems but excluding reactor control systems.

A notification with this categorization must state whether an emission is ongoing or, if not, give a best estimate of when it is expected to commence.

P.4 GENERAL EMERGENCY

A general emergency is characterized as an ongoing or imminent atmospheric release of radioactive material as a result of a more severe accident. Triggers for general emergencies include:

- a. Damage to reactor fuel leading to the release of radioactivity from the fuel coincident with the failure, impairment, or bypass of containment, resulting in an atmospheric emission or, a reasonable expectation of an emission within the next 12 hours
- b. Hostile action in the protected area resulting in actual or imminent loss of the ability to achieve and maintain the reactor in a cold shutdown state.

A notification with this categorization must state whether an emission is ongoing or, if not, give a best estimate of when it is expected to commence.

ANNEX Q. BASIS FOR PROTECTIVE ACTIONS

Q.1 GENERIC CRITERIA

GC are used in the early stages of an emergency, prior to the availability of actual radiation monitoring data, when technical staff in the PEOC Scientific Section undertake dose projection modelling. GC values are calculated to reduce the risk of stochastic effects and are expressed in terms of equivalent dose (tissue or organ) and effective dose (whole body).

GC are compared against the dose projections modelled in order to determine the need for implementation of protective measures for the purposes of:

- a. exposure control
- b. ingestion control
- c. population monitoring and medical management
- d. trade control of foodstuff and other commodities
- e. protection of emergency workers.

The GC used in this PNERP are implemented based on Health Canada's Generic Criteria and Operational Intervention Levels for Nuclear Emergency Planning and Response.

Table Q – 1: Generic Criteria for Exposure Control Measures

Projected Dose	Protective Measure
50 mSv (5 rem) in the first 7 days (H⊤)	lodine thyroid blocking
10 mSv (1 rem) of averted dose in the first 2 days (E)	Sheltering
100 mSv (10 rem) in the first 7 days (E or H _{fetus})	Evacuation
100 mSv (10 rem) in the first year* (E)	
Or	Temporary relocation
100 mSv in the full period of in utero development (H _{fetus})	

Table Q – 2: Generic Criteria for Ingestion Control Measures

Projected Dose	Protective Measure
3 mSv/year (0.3 rem/year)	Restriction of distribution and ingestion of potentially contaminated:
(1 mSv/year (0.1 rem/year) for each of the following categories: drinking water, milk and other foods and beverages) (E)	Drinking waterMilkOther foodstuffs and beverages

^{*} This is an initial value. As the response progresses, this generic criterion should be reduced.

Table Q - 3: Generic Criteria for Population Monitoring and Medical Management

Projected Dose	Protective Measure
• 100 mSv (10 rem) in one month (E)	Population monitoring
100 mSv (10 rem) for the full period of	Internal assessment
in utero development (H _{fetus})	Medical follow-up (health screening)

Table Q – 4: Generic Criteria for Protecting Offsite Emergency Workers

Projected Dose	Protective Actions
50 mSv ^{†‡} over the duration of the response (H _p (10) or E)§	Restriction of activities for individual workers

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[†] This generic criterion is not appropriate for female workers who may be pregnant. These individuals should be excluded from emergency duties that would result in a dose greater than the relevant permissible dose for non-emergency situations.

[‡] While the employer is responsible for ensuring worker safety at all times, offsite emergency workers should be fully aware of the potential health risks associated with the dose they may receive, and they should accept these risks.

[§] H_p(10) = personal dose equivalent at 10 mm

Q.2 OPERATIONAL INTERVENTION LEVELS

Operational Intervention Levels (OILs) are used once radiation monitoring data is available to determine the need to implement or adjust protective measures. OILs are classified as follows:

- a. Plume exposure OILs (1γ and 2γ) are used to identify areas (beyond those for response actions that have been taken during the Urgent Response Phase) where the ground deposition of radioactive material warrants protection of the public frequenting or living in the area.
- b. Skin monitoring OIL 4 γ is used to identify individuals with enough radioactive material on the skin to warrant response actions (such as decontamination). Only the public being evacuated or relocated is expected to possibly have sufficient radioactive material on the skin to warrant response actions.
- c. Ingestion control OIL 3γ is used to identify in which areas food, milk, and drinking water may have become contaminated. Where OIL 3γ is exceeded, restrictions should be put in place until more detailed assessments can be completed.
- d. The alpha/beta screening OILs 5α and 5β are used to confirm and adjust initial restrictions on food, milk and drinking water restrictions that were enacted based on OIL 3γ . If any of these OILs are exceeded, a radionuclide-specific assessment must be undertaken.
- e. Radionuclide-specific OILs for ingestion control based on laboratory measurements are provided in Annex R. If the concentration of radionuclides in food, drinking water, or milk are exceeded, or if the summation condition is exceeded, then that item is not suitable for consumption and shall be disposed of.

Summation condition:
$$\sum_{i} \left(\frac{c_i}{oIL_i} \right) \ge 1$$
 Where,

- C_i is the concentration of radionuclide in the drinking water, milk or other foods or beverages (Bq/kg or Bq/L)
- OIL_i is the radionuclide specific value of OIL for radionuclide in drinking water, milk or other foods or beverages (Bq/kg or Bq/L).
- f. The OILs have been derived for use in nuclear emergencies.
- g. The OILs used in this PNERP are adopted from Health Canada's Generic Criteria and Operational Intervention Levels for Nuclear Emergency Planning and Response.

OILs are values that support decision-making post-release by quickly relating discrete measurements of contamination to GC, thereby identifying the need for, or confirming the adequacy of, protective actions.

The OILs presented in this section should ensure that doses do not exceed the GC in Annex Q.1. Measurements should be made in accordance with the details and

timeframes provided below and using properly calibrated equipment that is fit for purpose.

Table Q – 5: Operational Intervention Levels for External Exposure Control

OIL #	Protective Action	Measurement Details	Level	Timeframe for Action, Relative to Release
1γ	Evacuation	Gamma dose rate (H*(10)),	1000 µSv/h (100 mrem/h)	Within 24h of
		1 m from the ground	(100 miem/n)	the beginning of exposure
2 _Y	Temporary relocation	Gamma dose rate (H*(10)), 1 m from the ground, measured within 10 days of reactor shutdown	100 μSv/h (10 mrem/h)	Initiate after evacuation
		Gamma dose rate (H*(10)), 1 m from the ground, measured more than 10 days after reactor shutdown	25 μSv/h (2.5 mrem/h)	

Table Q – 6: Operational Intervention Levels for Ingestion Control

OIL #	Protective Action	Measurement Details	Level	Timeframe for Action, Relative to Release
3γ	Restriction of distribution and ingestion of potentially contaminated drinking water, milk and other food	Gamma dose rate (H*(10)) at 1 m from the ground	1 μSv/h (0.1 mrem/h)	Implement with Exposure Control and extend within days
5α	Confirm ingestion controls (with lab	Gross alpha activity	See Annex Q	Initiate within a week to a
5 ß	measurements)	Gross beta activity	See Annex Q	month, depending on
6		Activity concentrations for specific radionuclides	See Table Q - 9	importance of local food and drinking water to the community

Table Q – 7: Operational Intervention Levels for Population Monitoring and Medical Management

				Timeframe for
OIL#	Protective Action	Measurement Details	Level	Action, Relative to
				Release

4γ	Personal	Skin measurement at	1 μSv/h	Implement
	decontamination	10 cm from the hands	(0.1 mre	concurrently with
	and/or medical	and the face	m/h)	Exposure Control
	follow-up			

Table Q - 8: Ingestion Control OILs for Alpha/Beta Screening

OIL	Action	Measurement details	Drinking water (mSv/y)	Milk (mSv/y)	Other foods and beverages (mSv/y)
5α	Restrict distribution and ingestion pending radionuclide-specific analysis	Gross alpha (Bq/L)	1	1	3
5ß	Restrict distribution and ingestion pending radionuclide-specific analysis	Gross beta (Bq/L)	10	30	30

Table Q – 9: Radionuclide-Specific OILS

Radionuclide	Symbol	Drinking Water (Bq/L)	Milk (Bq/L)	Other Foods and Beverages (Bq/kg)
Tritium (Hydrogen-3)	³ H	100000	30000	100000
Carbon-14	¹⁴ C	3000	3000	10000
Sulphur-35 (inorganic sulphur)	³⁵ S	3000	3000	30000
Chromium-51	⁵¹ Cr	10000	30000	100000
Iron-55	⁵⁵ Fe	1000	3000	10000
Iron-59	⁵⁹ Fe	100	100	1000
Cobalt-58	⁵⁸ Co	1000	1000	3000
Cobalt-60	⁶⁰ Co	100	100	1000
Zinc-65	⁶⁵ Zn	100	100	1000
Rubidium-86	⁸⁶ Rb	100	300	1000
Strontium-89	⁸⁹ Sr	300	300	1000
Strontium-90	⁹⁰ Sr	30	30	100
Strontium-91	⁹¹ Sr	10000	10000	30000
Strontium-92	⁹² Sr	10000	10000	30000
Yttrium-90	⁹⁰ Y	3000	1000	10000
Yttrium-91	91 Y	300	300	1000
Yttrium-92	92 Y	10000	10000	30000
Yttrium-93	93 Y	3000	3000	10000
Niobium-95	⁹⁵ Nb	1000	1000	3000
Zirconium-95	⁹⁵ Zr	1000	1000	3000
Zirconium-97	⁹⁷ Zr	1000	1000	3000

Radionuclide	Symbol	Drinking Water (Bq/L)	Milk (Bq/L)	Other Foods and Beverages (Bq/kg)
Molybdenum-99	⁹⁹ Mo	3000	10000	30000
Technetium-99	⁹⁹ Tc	100	100	300
Technetium-99m	^{99m} Tc	1000	100000	300000
Ruthenium-103	¹⁰³ Ru	1000	1000	3000
Ruthenium-105	¹⁰⁵ Ru	1000	10000	100000
Ruthenium-106	¹⁰⁶ Ru	100	100	300
Rhodium-105	¹⁰⁵ Rh	3000	3000	30000
Silver-110m	^{110m} Ag	300	300	1000
Antimony-127	¹²⁷ Sb	300	300	3000
Antimony-129	¹²⁹ Sb	1000	10000	30000
Tellurium-127	¹²⁷ Te	3000	30000	100000
Tellurium-127m	^{127m} Te	1000	1000	10000
Tellurium-129	¹²⁹ Te	10000	100000	300000
Tellurium-129m	^{129m} Te	100	100	1000
Tellurium-131m	^{131m} Te	1000	3000	10000
Tellurium-132	¹³² Te	1000	1000	3000
lodine-129	129	10	30	30
lodine-131	131	100	100	300
lodine-132	132	3000	10000	30000
lodine-133	133	1000	1000	3000
lodine-134	134	300	30000	100000
lodine-135	135	1000	1000	3000
Cesium-134	¹³⁴ Cs	100	300	1000
Cesium-136	¹³⁶ Cs	300	300	3000
Cesium-137	¹³⁷ Cs	100	300	1000
Barium-139	¹³⁹ Ba	10000	30000	100000
Barium-140	¹⁴⁰ Ba	300	300	3000
Lanthanum-140	¹⁴⁰ La	300	300	3000
Lanthanum-141	¹⁴¹ La	1000	10000	30000
Lanthanum-142	¹⁴² La	1000	30000	100000
Cerium-141	¹⁴¹ Ce	1000	1000	3000
Cerium-143	¹⁴³ Ce	100	3000	10000
Cerium-144	¹⁴⁴ Ce	100	100	300
Praseodymium-143	¹⁴³ Pr	300	300	3000
Neodymium-147	¹⁴⁷ Nd	300	300	3000
Iridium-192	¹⁹² lr	300	300	3000
Uranium-235	235 U	30	30	100
Neptunium-237	²³⁷ Np	3	3	10
Neptunium-239	²³⁹ Np	3000	3000	30000
Plutonium-238	²³⁸ Pu	1	1	3
Plutonium-239	²³⁹ Pu	1	1	3

Radionuclide	Symbol	Drinking Water (Bq/L)	Milk (Bq/L)	Other Foods and Beverages (Bq/kg)
Plutonium-240	²⁴⁰ Pu	1	1	3
Plutonium-241	²⁴¹ Pu	100	100	300
Plutonium-242	²⁴² Pu	1	1	3
Plutonium-244	²⁴⁴ Pu	1	1	3
Americium-241	²⁴¹ Am	1	1	10
Curium-242	²⁴² Cm	30	30	100
Curium-244	²⁴⁴ Cm	1	1	10

ANNEX R. RADIATION SAFETY AND EXPOSURE CONTROL STRATEGY

R.1 RADIATION PROTECTION CONSIDERATIONS

R.1.1 General

Dose control procedures for ERAMG field teams are detailed in the ERAMG Response Plan, and the procedures therein should be considered when developing dose control procedures for other emergency workers.

Equipment must be available to measure and/or determine the dose received by field staff including (as required):

- a. Passive Dosimeter (e.g. TLD, OSLD) to all emergency workers
- b. Direct Reading Dosimeters (DRD) (e.g., electronic personal dosimeter (EPD)) for all emergency workers or a representative individual in all groups at risk
- c. radiation survey meters
- d. air sampling equipment and contamination meters.

R.1.2 Exposure Control

Notwithstanding the permissible doses given (See Table R-1), due diligence shall be exercised to maintain individual doses ALARA.

Table R – 1: Actions vs. Permissible Dose for Emergency Workers in the Urgent Response, Early Response, and Transition Phases

Action	Effective dose (mSv)	Equivalent dose to the skin (mSv)
Permissible dose for participation in control of emergency	50	500
Permissible dose for actions taken to minimize dose consequences, for members of the public, associated with the release of radioactive material.	100	1 000
Permissible dose for actions taken to prevent health effects of radiation that are fatal or lifethreatening, or that result in permanent injury.	500	5 000
Permissible dose for actions taken to prevent the development of conditions that could significantly affect people and the environment.	500	5 000

All personnel participating as emergency workers shall be provided training to perform required responsibilities during an actual emergency and informed of:

- a. The possible radiation hazards to which they might be exposed
- b. The applicable rules, regulations, orders, directives, plans and procedures
- The equipment, clothing, methods and measures required to reduce radiation doses
- d. Their responsibilities, obligations and rights including the individual's responsibilities for personal and collective protection
- e. Their expected radiation dose levels
- f. The specified permissible dose and of the dose management control levels
- g. The potential effects of radiation during pregnancy, the rights and obligations of a pregnant woman
- h. That the designation shall only be effective during the nuclear emergency.

R.1.3 Turn-back Dose Rate

Turn-back dose rates are associated with Sector Safety Status, found in Table R -2, and form the basis for worker safety decision making at the EWC. If the values associated with the dose rate are exceeded, the member must leave the area when safe to do so, or move away from the radiation source until the dose rate has dropped below the dose rate set by the EWC. In order to use turn-back dose rates, personnel must have:

- A handheld dose rate meter may be carried by a representative individual in a group, which is to be closely monitored at all times when in an area of risk from radiation exposure; and/or
- b. A DRD worn when at risk of radiation exposure. The DRD will be configured with both a dose and dose rate alarm and may be used to indicate excessive radiation levels independent of the handheld meter or in tandem with the handheld meter.

The DRD measures both the accumulated dose and the dose rate the individual is receiving from the surrounding environment. However, the DRD and the dose rate meter measure the incident rate of radiation; thus, the specified limit applies only to situations where the individual is wearing suitable clothing and respiratory protection.

Table R - 2: Guidelines for Assigning Sector Safety and Stay Times

Sector Status	Criteria
Red	> 1 rem/h (10 mSv/h) Recommended Stay Time – 1 hour
Orange	25 mrem/h (250 μSv/h) to < 1 rem/h (10 mSv/h) Recommended Stay Time – 4 hours
Yellow	0.1 mrem/h (1 μSv/h) to < 25 mrem/h (250 μSv/h) Recommended Stay Time – 4 hours
Green	< 0.1 mrem/h (1 μSv/h) Recommended Stay Time – No Limit

Table R - 3 details some of the potential actions to be taken in the field after a release. Additional precautions are found in Table R - 4.

R.1.4 Personal Protective Equipment

PPE will be supplied to members who are tasked with conducting survey and sampling operation in any sector that may be contaminated following a nuclear release. Specifics on the type, quantities, and capabilities of specific PPE are available in the Provincial Nuclear Facilities, Equipment and Maintenance Manual. In general, PPE shall provide an outer layer to protect the skin and respiratory protection. The PPE shall be sealable at the wrists, ankles, waist, neck, and around the face. Tape is acceptable to create the seal. More detailed PPE requirements are found in Table R-5.

R.2 SAFETY SECTOR STATUS TABLES

Table R – 3: Precautions for Each Sector Safety Status

Safety	Precautionary Measures for Emergency Workers
Status Green	No precautions necessary. No limit on stay period.
Yellow	 a) Report to the Emergency Worker Centre (EWC) before entering the sector. b) Carry personal monitoring devices and observe all precautions prescribed by the EWC. c) If duties permit, remain under shelter or inside a vehicle. d) If working outside, wear appropriate personal protective equipment (PPE) as prescribed by the EWC. e) Stay in the sector shall be limited to 4 hours, or the time prescribed by the EWC. f) Report again to the EWC on leaving the sector.
Orange	 a) Pregnant emergency workers shall not enter the sector. b) Report to the Emergency Worker Centre (EWC) before entering the sector. c) Carry personal monitoring devices and observe all precautions prescribed by the EWC. d) Dosimeters should be checked every hour. Exit from the sector if the reading reaches 40 mSv (4rem), or any lower personal limit prescribed by the EWC. e) If duties permit, remain under shelter or inside a vehicle. f) If working outside, wear appropriate personal protective equipment (PPE) as prescribed by the EWC. g) Stay in the sector shall be limited to 4 hours, or the time prescribed by the EWC. h) Report again to the EWC on leaving the sector.
Red	 a) Pregnant emergency workers shall not enter the sector. b) Report to the Emergency Worker Centre (EWC) before entering the sector. c) Enter the sector accompanied by a qualified escort provided by the reactor facility and carry alarming personal dosimeters. Observe any precautions prescribed by the EWC. d) Dosimeters should be checked every 30 minutes. Exit from the sector if the reading reaches 40 mSv (4 rem), or any lower personal limit prescribed by the EWC. e) If duties permit, remain under shelter or inside a vehicle. If working outside, wear an outer garment such as a plastic raincoat or any other personal protective equipment (PPE) prescribed by the EWC. f) Stay in the sector shall be limited to 1 hour, or the time prescribed by the EWC. g) Report again to the EWC on leaving the sector.

Table R - 4: Recommended Reference Levels

Band (acute or per year)	Type of Situation
20-100 mSv	Emergency situations, where events with uncertain consequences require urgent protective actions such a sheltering and evacuation to minimize the impacts of possible radiation exposures.
1–20 mSv	Existing situations, where radioactivity is already present in the environment at the time actions are taken to reduce radiation exposures. If doses are optimized below this reference level it is safe to live in the contaminated area.

Note: From https://www.cnsc-ccsn.gc.ca/eng/resources/fact-sheets/reference-levels/

Table R - 5: Recommended PPE Based on Sector Safety Status

Table R – 5: Recommended PPE Based on Sector Safety Status			
Sector safety status	Recommended PPE (to be determined in the moment)		
RED	 Tyvek coveralls Full-face piece air purifying respirator with a P-100 or high-efficiency particulate air (HEPA) filter Rubber boot covers Protective gloves Electronic personal dosimeter (EPD) Passive dosimeter Hard hat, if required Safety glasses, if required Any other items as defined by the EWC supervisor 		
ORANGE	 Tyvek coveralls N-100 mask <u>or</u> full-face piece air purifying respirator Rubber boot covers Protective gloves Electronic personal dosimeter (EPD) Passive dosimeter Hard hat, if required Safety glasses, if required 		
YELLOW	 N-100 mask Disposable (paper) boot covers Electronic personal dosimeter (EPD) Passive dosimeter Hard hat, if required Safety glasses, if required Protective gloves, if required 		
GREEN	 Passive dosimeter Hard hat, if required N95, if required Safety glasses or face shield, if required Protective gloves, if required 		

Table R - 6: Conversion Tables for Radiological Units

Table IV = 0. Conversion Tables for Ivadiological Offics			
From Curie to Becquerel	From Becquerel to Curie		
1 kilocurie (kCi) ≈ 37 terabecquerel (TBq)	1 terabecquerel (TBq) ≈ 27 curie (Ci)		
1 curie (Ci) ≈ 37 gigabecquerel (GBq)	1 gigabecquerel (GBq) ≈ 27 millicurie (mCi)		
1 millicurie (mCi) ≈ 37 megabecquerel (MBq)	1 megabecquerel (MBq) ≈ 27 microcurie (□Ci)		
1 microcurie (µCi) ≈ 37 kilobecquerel (kBq)	1 kilobecquerel (kBq) ≈ 27 nanocurie (nCi)		
1 nanocurie (nCi) ≈ 37 becquerel (Bq)	1 becquerel (Bq) ≈ 27 picocurie (pCi)		
1 picocurie (pCi) ≈ 37 millibecquerel (mBq)			
From Rem to Sievert	From Sievert to Rem		
1 kilorem (krem) = 10 sievert (Sv)	1 sievert (Sv) = 100 rem (rem)		
1 rem (rem) = 10 millisievert (mSv)	1 millisievert (mSv) = 100 millirem (mrem)		
1 millirem (mrem) = 10 microsievert (µSv)	1 microsievert (μSv) = 100 microrem (μrem)		
1 microrem (µrem) = 10 nanosievert (nSv)	1 nanosievert (nSv) = 100 nanorem (nrem)		

Table R - 7: Unit Prefixes

Large Prefixes	Small Prefixes
Tera (T) = $x \cdot 10^{-12}$	Pico (p) = $x 10^{-12}$
Giga (G) = x 10 ⁹	Nano (n) = $x 10^{-9}$
Mega (M) = x 10 ⁶	Micro (μ) = x 10 $^{-6}$
Kilo (k) = $x 10^3$	Milli (m) = $x 10^{-3}$

ANNEX S. POPULATION MONITORING

S.1 GENERAL

Population monitoring and medical management shall be required in the event of a nuclear release (such monitoring may be conducted in the absence of a release to provide assurances to the public).

The MOH outlines the methods by which population monitoring, decontamination, and medical management functions may be provided:

- a. at a hospital when there are contaminated casualties
- at personally determined evacuation destinations by undertaking selfdecontamination
- c. at a Monitoring and Decontamination Unit (MDU)

For nuclear emergencies, an Operational Intervention Level (OIL) based on the level of skin contamination for population monitoring and medical management is provided in Annex Q.2. Personal decontamination and medical follow-up shall be conducted for any person with skin contamination levels exceeding this value.

S.2 RESPONSIBILITY

The CEM or designate (e.g. PEOC Commander) shall, in consultation with the MOH and affected designated municipalities, consider the need for population monitoring, decontamination, and medical management to direct implementation of these measures as appropriate.

Population monitoring, decontamination, and medical management should be implemented according to the provisions of MOH's Radiation Health Response Plan, as appropriate, and by activating the monitoring and decontamination facilities administered by the designated municipalities and resourced by the reactor facilities.

The need for population monitoring, decontamination and medical management shall be communicated to the public via EBs and press releases issued by the CEM or designate (e.g. PEOC Commander) (Section 8.7).

Designated municipalities shall include provisions in their municipal plans for the establishment of Reception Centres which have Monitoring and Decontamination Units (MDUs) co-located. Ontario Reactor facilities shall resource and operate mobile MDUs and those co-located with Reception Centres according to applicable provisions in their emergency plans and procedures.

Medical personnel trained in the clinical management of radiation injuries may be designated in the preparedness phase, to the extent possible.

In accordance with the Radiation Health Response Plan (RHRP), the MOH shall coordinate the following, in order to assess long-term health impacts, if required:

- a. A medical registry of affected people (public and workers).
- b. Medical follow-up of the population affected.
- c. Guidance for personal monitoring is provided in this Annex, as well as in the MOH RHRP.

S.3 CONTAMINATED DECEDENTS

There are situations in a nuclear or radiological emergency that could result in the need to manage contaminated decedents. While even a severe nuclear accident is not expected to cause offsite fatalities, an event simultaneous to a nuclear accident could have fatal consequences, as evidenced by the release of radioactive material from the Fukushima Daiichi Nuclear Power Plant. The nuclear accident itself resulted from the devastation caused by the 2011 earthquake and tsunami; the death of thousands of individuals was attributed to the natural disaster and not to the radioactive release. However, many bodies from the natural disaster still became contaminated after the fact due to the atmospheric releases.

As a result of the contamination, such decedents must be handled differently than nonradiologically contaminated decedents and consequently, special measures would be enacted.

ANNEX T. RECEPTION AND CARE OF EVACUEES

T.1 GENERAL

Reception Centres shall be set up to provide the following functions:

- a. registration and inquiry
- b. accommodation allocations at evacuation centres
- c. first aid
- d. monitoring and decontamination (co-location optional)

Efforts should be made not to separate households during evacuation (e.g., keep parents, children, elders together) to the extent practicable, as this maintains existing social support structures and reduces the burden placed on evacuation and reception centre staff.

Reception and Evacuation Centres may be operated separately or co-located.

T.2 RESPONSIBILITY

In a nuclear emergency, emergency social service needs (e.g., reception, registration and inquiry, shelter, food, clothing and personal services) for members of the public who have been evacuated from their homes, shall be assessed and provided by:

- a. Designated/host municipalities identified under this plan;
- b. Appropriate Ontario ministries (e.g., MMAH); or
- c. Municipalities directed to provide support or assistance under a provincial emergency declaration (Section 8.6.3).

In a nuclear emergency, monitoring and decontamination facilities associated with Reception Centres shall be resourced and operated by reactor facilities (with the exception detailed in the Fermi 2 Implementing Plan).

In a radiological emergency, emergency social service needs (e.g., reception, registration and inquiry, shelter, food, clothing and personal services) for members of the public who have been evacuated from their homes:

- a. May be assessed and provided under the provisions of existing municipal mutual assistance agreements; or
- b. Shall be provided by municipalities ordered to provide support or assistance under a provincial emergency declaration (Section 8.6.3).

ANNEX U. PROTECTION AND CARE OF ANIMALS

U.1 GENERAL

Pursuant to <u>EMCPA Section 7.0.2.</u>, provincial emergency orders can include evacuation of animals under a declared provincial emergency.

Any emergency that affects humans may affect their animals whether these are raised for foodstuff production, kept as companion or service animals, or for other purposes, such as in zoos.

U.2 RESPONSIBILITY

Provisions for the protection and care of animals should be included in public awareness and education materials in advance of a nuclear emergency.

Municipal emergency response plans for nuclear emergencies shall make provisions for the protection and care of all animals, including those left behind during an evacuation.

Designated municipalities should consult with the following for assistance in developing plans for the protection and care of animals:

- a. OMAFA (provincial lead on farm animal disease)
- b. the Ministry of Natural Resources (MNR) for issues pertaining to wildlife
- c. Ontario Ministry of the Solicitor General (Mandate for Animal Welfare in Ontario)

During a nuclear or radiological emergency, the PEOC should coordinate assistance for the protection and care of animals with the following, as appropriate:

- a. Ontario Ministry of the Solicitor General (mandate for Animal Welfare in Ontario)
- b. Ontario Society for the Prevention of Cruelty to Animals (OSPCA)
- c. OMAFA (provincial lead on farm animal disease)
- d. MNR (for issues pertaining to wildlife).

ANNEX V. DISTRIBUTION LIST

V.1 NEMCC MEMBERSHIP

V.1.1 Federal Departments

- a. Canadian Nuclear Safety Commission (CNSC)
- b. Health Canada (HC)
- c. Public Safety Canada (PS)
- d. Transport Canada (TC)
- e. Canadian Food Inspection Agency (CFIA)
- f. Canadian Coast Guard (CCG)
- g. Department of National Defence (DND) / Joint Task Force Central (JTFC)

V.1.2 Reactor Facilities

- a. Ontario Power Generation (OPG)
- b. Bruce Power Inc.
- c. Chalk River Canadian Nuclear Laboratories Limited (CNL)
- d. Fermi 2 DTE Electric

V.1.3 Designated / Host Municipalities

- a. Regional Municipality of Durham
- b. City of Toronto
- c. City of Peterborough
- d. Municipality of Kincardine
- e. Town of Saugeen Shores
- f. Town of Amherstburg
- a. City of Windsor
- h. Town of Essex

V.1.4 Provincial Ministries

- a. Ministry of Agriculture, Food and Rural Agribusiness (OMAFA)
- b. Ministry of the Attorney General
- c. Ministry of Children, Community and Social Services (MCCSS)
- d. Ministry of Energy and Mines (ENERGY)
- e. Ministry of Environment, Conservation and Parks (MECP)
- f. Ministry of Health (MOH)
- g. Ministry of Labour, Immigration, Training and Skills Development (MLITSD)
 - i. Radiation Protection Services, MLITSD
- h. Ministry of Long-Term Care (MLTC)
- i. Ministry of Municipal Affairs and Housing (MMAH)
- j. Ministry of Natural Resources (MNR)

- k. Ministry of Northern Economic Development and Growth (MND)
- I. Ministry of the Solicitor General (SOLGEN)
- m. Ministry of Transportation (MTO)
- n. Ministry of Emergency Preparedness and Response (MEPR)
 - i. Communications Branch
 - ii. Legal Services Branch

V.2 OTHER INTERESTED PARTIES

V.2.1 Provincial

- a. New Brunswick Emergency Measures Organization
- b. Québec Ministry of Public Security (Ministère de la Sécurité publique du Québec)
- c. Québec Ministry of Health and Social Services (Ministère de la Santé et des Services sociaux)

V.2.2 International

- a. Michigan State Police, Emergency Management and Homeland Security Division
- b. Michigan State Police REP Program, Emergency Management and Homeland Security Division
- New York State Department of Homeland Security and Emergency Services-REP Program
- d. Ohio Emergency Management Agency

V.3 FIRST NATION AND INDIGENOUS PARTNERS

- a. Algonquins of Ontario
- b. Algonquins of Pikwakanagan
- c. Alderville First Nation
- d. Caldwell First Nation
- e. Chippewas of Nawash First Nation
- f. Curve Lake First Nation
- g. Delaware Nation at Moraviantown
- h. Hiawatha First Nation
- Mississauga First Nation
- j. Mississauga's of the Credit First Nation
- k. Mississauga's of Scugog Island First Nation
- I. Mohawks of the Bay of Quinte
- m. Saugeen First Nation
- n. Six Nations of the Grand River
- o. Union of Indians, Anishinabek
- p. Walpole Island First Nation

V.4 PNERP DARLINGTON NUCLEAR GENERATING STATION IMPLEMENTING PLAN

V.4.1 Ingestion Planning Zone Municipalities

- a. Township of Brock
- b. Town of Ajax
- c. Municipality of Clarington
- d. City of Kawartha Lakes
- e. City of Oshawa
- f. City of Pickering
- g. Township of Scugog
- h. Township of Uxbridge
- i. Town of Whitby
- j. Town of Cobourg
- k. County of Northumberland
- I. Township of Hamilton
- m. Municipality of Port Hope
- n. Township of Cavan Monaghan
- o. Township of Ottonabee-South Monaghan
- p. City of Markham
- q. Regional Municipality of York
- r. County of Peterborough
- s. Town of Whitchurch Stouffville

V.5 PNERP PICKERING NUCLEAR GENERATING STATION IMPLEMENTING PLAN

V.5.1 Ingestion Planning Zone Municipalities

- a. Township of Brock
- b. Town of Ajax
- c. City of Kawartha Lakes
- d. Municipality of Clarington
- e. City of Oshawa
- f. City of Pickering
- g. Township of Scugog
- h. Township of Uxbridge
- i. Town of Whitby
- j. City of Brampton
- k. Regional Municipality of Peel
- I. City of Mississauga
- m. Town of Bradford West Gwillimbury
- n. Town of Aurora
- o. Regional Municipality of York

- p. County of Simcoe
- q. Town of East Gwillimbury
- r. Township of King
- s. City of Markham
- t. Town of Newmarket
- u. Town of Richmond Hill
- v. City of Vaughan
- w. Town of Whitchurch-Stouffville

V.6 PNERP BRUCE POWER NUCLEAR GENERATING STATION IMPLEMENTING PLAN

V.6.1 Ingestion Planning Zone Municipalities

- a. Municipality of Brockton
- b. Township of Huron-Kinloss
- c. Municipality of Arran-Elderslie
- d. Municipality of South Bruce
- e. Town of South Bruce Peninsula
- f. Township of Chatsworth
- g. Township of Georgian Bluffs
- h. Town of Hanover
- i. Municipality of West Grey
- j. Township of Ashfield-Colborne-Wawanosh
- k. Municipality of Morris-Turnberry
- I. Township of North Huron
- m. County of Huron
- n. County of Grey
- o. County of Bruce

V.7 PNERP FERMI 2 NUCLEAR POWER PLANT IMPLEMENTING PLAN

V.7.1 Ingestion Planning Zone Municipalities

- a. Town of Essex
- b. Township of Pelee
- c. Municipality of Chatham Kent
- d. Town of Kingsville
- e. Town of Lakeshore
- f. Town of Lasalle
- g. Municipality of Leamington
- h. Town of Tecumseh

V.8 TRANSBORDER IPZ MUNICIPALITEIS WITHIN A 80 KM RADIUS

V.8.1 Reactor Facility Ginna

- a. Township of Alnwick/Haldimand
- b. Prince Edward County
- c. County of Northumberland
- d. Municipality of Brighton
- e. Town of Cobourg
- f. Township of Cramahe
- g. Township of Hamilton
- h. Municipality of Port Hope

V.8.2 Reactor Facility Fitzpatrick and Nine Mile Point

- a. Township of Frontenac Islands
- b. Town of Greater Napanee
- c. County of Prince Edward County
- d. County of Frontenac
- e. City of Kingston
- f. County of Lennox and Addington
- g. Township of Loyalist
- h. Municipality of Brighton
- i. County of Northumberland

V.8.3 Reactor Facility Perry

- a. Municipality of Bayham
- b. Municipality of Central Elgin
- c. County of Elgin
- d. Municipality of Chatham Kent
- e. Norfolk County
- f. Municipality of Dutton\Dunwich
- g. Township of Malahide
- h. Municipality of West Elgin

V.9 PNERP OTHER RADIOLOGICAL EMERGENCIES IMPLEMENTING PLAN

a. CNSC Licensed Facilities in Ontario

ANNEX W. GLOSSARY

(For other references see the Ontario Emergency Management Glossary of Terms)

Abnormal Incident: An abnormal occurrence that may have a significant cause and/or may lead to more serious consequences. (Source: <u>CNSC Glossary</u>)

Accident: Any unintended event, including operating errors, equipment failures or other mishaps, the consequences, or potential consequences, of which are significant from the point of view of protection or safety. With respect to nuclear criticality safety, the term accidents or accident sequences means events or event sequences, including external events that lead to violation of the sub-criticality margin (that is, to exceeding the upper subcritical limit). (Source: CNSC Glossary)

Activation: Decisions and actions taken to implement a plan, a procedure or to open an emergency operations centre. (Source: Ontario Emergency Management Glossary of Terms)

After-Action Report (AAR): A report that documents the performance of tasks related to an emergency, exercise or planned event and, where necessary, makes recommendations for improvements. (Source: Ontario Emergency Management Glossary of Terms)

Alert (U.S. emergency classification): Events are in progress or have occurred that involve an actual or potentially substantial degradation of the safety of the plant. Any releases of radioactive material are expected to be limited to a small fraction of the U.S. Environmental Protection Agency (EPA) Protective Action Guides (PAG) exposure levels.

Alerting: Informing the affected population, by means of an appropriate signal, that a nuclear emergency has occurred or is about to occur.

As Low As Reasonably Achievable (ALARA): A principle of radiation protection that holds that exposures to radiation are kept as low as reasonably achievable, social and economic factors taken into account. (Source: CNSC Glossary)

Automatic Action Zone (AAZ): A pre-designated area immediately surrounding a reactor facility where pre- planned protective actions would be implemented on the basis of reactor facility conditions with the aim of preventing or reducing the occurrence of severe deterministic effects. (Source: Canadian Standards Association (CSA N1600, General requirements for nuclear emergency management programs)

Becquerel (Bq): The International System of Units (SI) unit of radioactivity. One becquerel (Bq) is the activity of a quantity of radioactive material in which one nucleus decays per second. In Canada, the Bq is used instead of the non-SI unit curie (Ci). (Source: CNSC Glossary)

Beyond Design Basis Accident (BDBA): An accident less frequent and potentially more severe, than a design-basis accident. Note: For a reactor facility, a beyond-design-basis accident may or may not involve fuel degradation. (Source: CNSC Glossary)

CANDU Reactor: A Canadian-invented pressurized heavy-water reactor that uses heavy water (deuterium oxide) for moderator and coolant and natural uranium for fuel. "CANDU" is short for CANADA Deuterium Uranium. Also called CANDU. (Source: CNSC Glossary).

Cloudshine: Gamma radiation from radioactive materials in an airborne plume.

Communications: Advisories, directives, information, and messages that are transmitted.

(Source: Ontario Emergency Management Glossary of Terms)

Community: A generic term that includes both municipalities and First Nations. (Source: Ontario Emergency Management Glossary of Terms)

Containment (System): A series of physical barriers that exist between radioactive materials contained in a reactor facility and the environment. Containment usually refers only to the reactor and vacuum buildings, and integral systems such as dousing.

Contamination: Contamination refers to nuclear or hazardous substances on surfaces, or within solids, liquids or gases (including the human body), where their presence is unintended or undesirable, or to the process giving rise to their presence in such places. (Source: <u>CNSC Glossary</u>)

Contingency Planning Zone (CPZ): A pre-designated area surrounding a reactor facility, beyond the Detailed Planning Zone, where contingency planning and arrangements are made in advance, so that during a nuclear emergency, protective actions can be extended beyond the Detailed Planning Zone as required to reduce potential for exposure. (Source: CSA N1600, General requirements for nuclear emergency management programs)

Crop Control: See Produce and Crop Control.

Declaration of Emergency: A signed declaration made in writing by the Head of Council or the Premier of Ontario in accordance with the Emergency Management and Civil Protection Act. This declaration is usually based on a situation or an impending situation that threatens public safety, public health, the environment, critical infrastructure, property, and/or economic stability and exceeds the scope of routine community emergency response.

Notes:

 Municipal Declaration of Emergency: a declaration of emergency made by the Head of Council or a municipality, based on established criteria.

Provincial Declaration of Emergency: a declaration of emergency made by the Lieutenant Governor in Council or the Premier of Ontario, based on established criteria. (Source: Provincial Glossary)

Decontamination: Reduction or removal of radioactive contamination from materials or persons.

Design Basis Accident (DBA): Accident conditions against which a facility is designed according to established design criteria, and for which the damage to the fuel and the release of radioactive material are kept within authorized limits. (Source: CSA N1600 – General requirements for nuclear emergency management programs)

Designated Host Municipality: The municipality assigned responsibility in the Provincial Nuclear Emergency Response Plan for the reception and care of people evacuated from their homes in a nuclear emergency (for list see Annex A).

Designated Municipality: A municipality in the vicinity of a reactor facility which has been designated under the Emergency Management and Civil Protection Act, as one that shall have a nuclear emergency plan (for list see <u>Annex A</u>).

Detailed Planning Zone: A pre-designated area surrounding a reactor facility, incorporating the AAZ, where pre-planned protective actions are implemented as needed on the basis of reactor facility conditions, dose modelling, and environmental monitoring, with the aim of preventing or reducing the occurrence of stochastic effects. (Source: Modified from CSA N1600 – General requirements for nuclear emergency management programs)

Deterministic Effects: Radiation-induced health effects including changes to cells and tissues that are certain to occur in an individual exposed to a radiation dose greater than some threshold dose, with a severity that increases with increasing dose. Now referred to as tissue reactions. (Source: Health Canada Glossary)

Direct Reading Dosimeter: An active dosimeter that displays cumulative dose and dose rate while in use, and may have an alarm that sounds at a preset dose and/or dose rate

Dose: A measure of the radiation received or "absorbed" by a target. The quantities termed absorbed dose, organ dose, equivalent dose, effective dose, committed equivalent dose or committed effective dose are used, depending on the context. The modifying terms are often omitted when they are not necessary for defining the quantity of interest.

Dose Management: Includes administrative controls to limit doses, monitor doses and

record doses received by emergency workers while fulfilling their duties related to nuclear emergency response.

Dose Projection: The calculation of projected dose (see <u>Projected Dose</u>).

Dose Rate: The amount of radiation dose which an individual would receive in a unit of time. In the context of this Plan, the measurement units are multiples or submultiples of the Sievert (or rem) per hour.

Dosimeter: An instrument for measuring and registering total accumulated exposure to ionizing radiation.

Duty Team (PEOC): The PEOC Duty Team's composition is flexible, based on the nature of the emergency response scenario. For a nuclear or radiological emergency, the Duty Team consists of Operations Section staff, Scientific Section staff, reactor facility operator representative(s), PIMS staff, and others as (and if) the emergency dictates.

Effective Dose (E): A quantity calculated by multiplying the equivalent dose received by irradiated tissues, by a tissue specific weighting factor that reflects the risk of radiation-induced cancer to that tissue. The effective doses can then be summed to obtain the effective dose absorbed by the body.

Emergency: A situation or an impending situation that constitutes a danger of major proportions that could result in serious harm to persons or substantial damage to property and that is caused by the forces of nature, a disease or other health risk, an accident or an act whether intentional or otherwise (EMCPA).

Emergency Bulletin: Directions to the public on appropriate protective and other measures to be taken during a nuclear or radiological emergency, which are issued by the province and broadcast through the media.

Emergency Exposure Situation: Emergency exposure situations arise as a result of an accident, a malicious act or other unexpected event, and require prompt action in order to avoid or to reduce adverse consequences. (<u>Guidance on Planning for Recovery Following a Nuclear or Radiological Emergency</u>)

Emergency Information Centre (EIC): A designated facility that is properly equipped to monitor and co-ordinate emergency information activities including the dissemination of information to the public. (Source: Ontario Emergency Management Glossary of Terms)

Emergency Planning Zone: The area in which implementation of operational and protective actions are or might be required during a nuclear emergency, in order to protect public health, safety, and the environment.

Emergency Public Information: Information about an emergency that can be disseminated in anticipation of an emergency or during an emergency. It may provide situational information or directive actions to be taken by the public.

Emergency Response Organization: A group (public, private or volunteer), trained in emergency response that may be called upon to respond to an emergency situation. (Source: Ontario Emergency Management Glossary of Terms)

Emergency Worker: A person performing emergency services to support emergency response.

Notes:

- Emergency workers can include the following: nuclear emergency workers required to remain in, or to enter, areas affected or likely to be affected by radiation from a nuclear emergency, and for whom special safety arrangements are required; emergency workers required to provide response outside the affected areas.
- This does not include nuclear energy workers.
- Emergency workers can include police, firefighters, ambulance and emergency social services workers, and other essential services.
- Those who are registered with an authorized responding organization.
- (Source: CSA N1600 General requirements for nuclear emergency management programs)

Emergency Worker Centre: A facility set up to monitor and control radiation exposure to emergency workers.

Entry Control: The prevention of non-essential persons from entering a potentially dangerous area.

Environmental Decontamination: Reduction or removal of radioactive contamination from the environment.

Equivalent Dose: The absorbed dose multiplied by a weighting factor for the type of radiation giving the dose. Weighting factors for use in Canada are prescribed by the Canadian Nuclear Safety Commission. This term is also sometimes called weighted dose. Expressed in terms of sievert (or rem).

Evacuation: A directed protective action for the controlled displacement of the population from an area which has been or might become contaminated by radioactive substances to avoid exposure. (Source: CSA N1600 — General requirements for nuclear emergency management programs)

Evacuation Centre: A centre which provides affected people with basic human needs including accommodation, food, and water. (Source: Australian Emergency

Management Glossary

Exclusion Zone: A parcel of land within or surrounding a reactor facility on which there is no permanent dwelling and over which a licensee has the legal authority to exercise control. (Source: CNSC Glossary)

Existing Exposure Situation: Existing exposure situations already exist when a decision on control must be taken, including prolonged exposure situations after emergencies. These situations include exposure to natural background, exposure due to residual radioactive material that derive from past practices that were never subject to regulatory control, and exposure due to the residual radioactive material deriving from a nuclear or radiological emergency. (Guidance on Planning for Recovery Following a Nuclear or Radiological Emergency)

Exposure: The act or condition of being subject to irradiation. Exposure can be either external exposure (irradiation by sources outside the body) or internal exposure (irradiation by sources inside the body).

Exposure Control: Emergency operations aimed at reducing or avoiding exposure to a plume or puff of radioactive material. Measures to deal with surface contamination and re-suspension might also be included.

Exposure Pathways: The routes by which radioactive material can reach or irradiate humans.

External Notification: The notification of organizations and agencies (not directly part of the emergency management organization) which may be affected by a nuclear or radiological emergency, or which may be required to assist in responding to it.

Food Control: Measures taken to prevent the consumption of contaminated foods that fall outside of any other ingestion control strategy (e.g., produce and crop control, livestock control). Measures may include controlling the supply of uncontaminated foodstuffs, placing foods in storage to permit radionuclide decay, and disposal of unusable stocks.

Fuel Failure: Any rupture of a fuel sheath such that fission products may be released. (Source: <u>CNSC Glossary</u>)

Gamma Radiation: Penetrating electromagnetic radiation emitted from an atom's nucleus. Also called gamma rays. (Source: <u>CNSC Glossary</u>)

General Emergency: Events at a nuclear power plant or onboard a nuclear-powered vessel resulting in an actual or substantial risk of a release of radioactivity or radiation exposure which warrants the implementation of protective actions offsite. (Source: Health Canada Glossary)

General Emergency (U.S. Emergency Classification): Events are in progress or have occurred that involve actual or imminent substantial core degradation or melting with potential for loss of containment integrity. Release of radioactive material can be reasonably expected to exceed PAG exposure levels offsite for more than the immediate site area.

Generic Criteria: Expressed as a projected dose, over a specified time period, above which protective actions are recommended to reduce the risk of stochastic effects.

Government Operations Centre: The Government Operations Centre (GOC) provides an all-hazards integrated federal emergency response to events (potential or actual, natural or human-induced, accidental or intentional) of national interest. It provides 24/7 monitoring and reporting, national-level situational awareness, warning products and integrated risk assessments, as well as national-level planning and whole-of-government response management. During periods of heightened response, the GOC is augmented by staff from other government departments/ agencies (OGD) and non-governmental organizations who physically work in the GOC and connect to it virtually.

Gray (Gy): The International System of Units (SI) unit of measurement used to express absorbed dose. One gray is defined as the absorption of 1 joule of ionizing radiation by 1 kilogram of matter. For gamma and beta radiation, the gray is numerically equal to the sievert. (Source: <u>CNSC Glossary</u>)

Groundshine: Gamma and/or beta radiation from radioactive material deposited on the ground.

Imminent Release: A radioactive emission that will occur in 12 hours or less.

Ingestion Control: Emergency response operations in which the main aim is to avoid or reduce the risk from ingestion of contaminated foodstuff and water.

Ingestion Planning Zone: A pre-designated area surrounding a reactor facility where plans or arrangements are made to:

- protect the food chain;
- protect drinking water supplies;
- restrict consumption and distribution of potentially contaminated produce, wildharvested foods that are fished, foraged and hunted, milk from grazing animals, rainwater, animal feed; and
- restrict distribution of non-food commodities until further assessments.

(Source: CSA N1600 — General requirements for nuclear emergency management programs)

Initial Notification: The notification made by a reactor facility to provincial and/or municipal authorities upon the occurrence of an event or condition which has

implications for public safety or could be of concern to these authorities. The criteria and channels for making such notification are usually described in emergency plans.

Internal Notification: The notification by an organization to its personnel who are required to respond to an emergency.

Intervention Level: A radiation dose above which a specific protective action is generally justified. (Source: Health Canada Glossary)

lodine Thyroid Blocking: The reduction or prevention of the absorption of radioiodine by the thyroid gland, which is accomplished by the intake of a stable iodine compound (such as potassium iodide) by people exposed or likely to be exposed to radioiodine.

lonizing Radiation: For the purposes of *radiation* protection, *radiation* capable of producing ion pairs in biological material(s). *lonizing radiation* is constantly present in the environment and includes the *radiation* that comes from both natural and artificial sources, such as cosmic rays, terrestrial sources (radioactive elements in the soil), ambient air (radon), and internal sources (food and drink). (Source: <u>CNSC Glossary</u>)

Joint Information Centre: A joint centre for the province, designated municipality, federal government, and the reactor facility or CNSC licensed facility, that is responsible for providing information on the emergency to the media and the public.

Key-Holing Strategy: A key-holing strategy refers to a targeted approach that involves selectively evacuating specific sectors or zones based on assessed risk levels and radiation exposure. This strategy prioritizes the safety of individuals in the most affected areas while minimizing disruption and resource allocation in less impacted zones.

By identifying and isolating critical sectors, emergency response teams can implement timely evacuation procedures, provide focused resources, and maintain effective communication with the public. The key-holing strategy aims to enhance the efficiency of evacuation operations, reduce potential contamination spread, and ensure the safety of both evacuees and emergency personnel during a nuclear incident.

Land Control: Control on the use of contaminated land for growing food products or animal feed.

Livestock Control: Quarantine of livestock in the affected area to prevent movement to other areas. Slaughter of such animals for food may be banned.

Megabecquerel: 10⁶ becquerels. (Source: CNSC Glossary)

Microsievert (µSv): One-millionth of a sievert. (Source: CNSC Glossary)

Milk Control: Measures taken to prevent the consumption of contaminated milk in the area affected by a nuclear emergency, and its export outside the area until it has been

monitored. Collection and destruction of contaminated milk may also be involved.

Millisievert (mSv): One-thousandth of a sievert. (Source: CNSC Glossary)

Mitigate: Actions taken to reduce the adverse impacts of an *emergency* or *disaster*. Such actions may include diversion or containment measures to lessen the impacts of a flood or a spill. (Source: Ontario Emergency Management Glossary of Terms)

Municipality: "Municipality" means a geographic area whose inhabitants are incorporated (Municipal Act). (Source: Ontario Emergency Management Glossary of Terms)

Notification: Conveying to a person or an organization, by means of a message, warning of the occurrence or imminence of a nuclear or radiological emergency, usually includes some indication of the measures being taken or to be taken to respond to it.

Nuclear Emergency: An emergency that has led to or could lead to the release of radioactive material, or exposures to uncontrolled sources of radiation, which pose, or could pose, a threat to health and safety, property, and the environment. (Source: CSA N1600 — General requirements for nuclear emergency management programs)

Nuclear Establishment: A facility that uses, produces, processes, stores or disposes of a nuclear substance, but does not include a reactor facility. It includes, where applicable, any land, building, structures or equipment located at or forming part of the facility, and, depending on the context, the management and staff of the facility.

Nuclear Facility: A generic term covering both nuclear establishments and reactor facilities.

Nuclear Substance: Means:

- deuterium, thorium, uranium or an element with an atomic number greater than 92
- a derivative or compound of deuterium, thorium, uranium or of an element with an atomic number greater than 92
- a radioactive nuclide
- a substance that is prescribed as being capable of releasing nuclear energy or as being required for the production or use of nuclear energy
- a radioactive by-product of the development, production or use of nuclear energy
- a radioactive substance or radioactive thing that was used for the development or production, or in connection with the use, of nuclear energy

(Source Nuclear Safety and Control Act)

Offsite: Offsite refers to the area outside the boundary (fence) of a reactor facility.

Onsite: Onsite refers to the area inside the boundary (fence) of a reactor facility.

Onsite Emergency: A serious malfunction which results or may result in an atmospheric release of radioactive material or is likely to result in a release at a later time.

Operational Directive: Direction given by the Emergency Response Organization to implement operational measures.

Operational Intervention Level (OIL): A calculated value, measured by instruments or determined by laboratory analysis that corresponds to an intervention level.

Notes:

- OILs are typically expressed in terms of dose rates or of activity of radioactive material released, time integrated air concentrations, ground or surface concentrations, or activity concentrations of radionuclides in environmental, food, or water samples.
- An OIL is a type of action level that can be used immediately and directly (without further assessment) to determine the appropriate protective actions and other response actions on the basis of an environmental measurement.

(Source: Based on CSA N1600 — General requirements for nuclear emergency management programs)

Operational Measures: Measures undertaken by the Emergency Response Organization to deal with the emergency, including measures to enable or facilitate protective action for the public, e.g., public alerting, public direction, activation of plans, traffic control, emergency information, etc.

Operator: Holder of a subsisting licence issued pursuant to the Nuclear Safety and Control Act for the operation of a reactor facility.

Optimization: The process of determining a level of protection and safety that makes exposures and the probability and magnitude of potential exposures as low as reasonably achievable, with economic and social factors being taken into account.

Pasture Control: Measures taken to prevent animals from consuming contaminated feed and water. Measures may include removing milk- and meat-producing animals from pasture and from access to open water sources and supplying them with uncontaminated feed and water.

Personal Monitoring: The use of radiation monitoring devices to assess whether persons, and their belongings, including vehicles, are contaminated or not, and, if contaminated, the type and level of contamination.

Personal Protective Equipment: Clothing or other specialised equipment provided to an offsite emergency worker to prevent or reduce their exposure to radioactive material. (Source: Health Canada Glossary)

Planned Exposure Situation: Planned exposure situations involve the planned operation of a source (e.g., the operation of nuclear reactors) or planned activities that result in an exposure from a source (e.g., disposal of radioactive waste at an EWC). (Guidance on Planning for Recovery Following a Nuclear or Radiological Emergency)

Note: See definitions for AAZ, DPZ, CPZ, and IPZ. (Source: CSA N1600, General requirements for nuclear emergency management programs)

Plume: A cloud of airborne radioactive material that is transported in the direction of the prevailing wind from a reactor facility. A plume results from a continuing release of radioactive gases or particles. (This term may also be used for waterborne radioactive material resulting from a liquid emission. Where the context does not make it clear, this will be referred to as a waterborne plume).

Population Monitoring and Medical Management: The protective action strategy which includes population screening, decontamination, internal contamination assessment and medical follow-up. The purpose of this Protective Action Strategy is to reduce exposures to individuals. (Source: Health Canada Glossary)

Precautionary Measures: Measures directed to facilitate the application and effectiveness of protective measures.

Preparedness: Actions taken prior to an emergency or disaster to ensure an effective response. These actions include the formulation of emergency response plans, business continuity/continuity of operations plans, training, exercises, and public awareness and education. (Source: Ontario Emergency Management Glossary of Terms)

Prevention: Actions taken to stop an emergency or disaster from occurring. Such actions may include legislative controls, zoning restrictions, improved operating standards/procedures or critical infrastructure management. (Source: Ontario Emergency Management Glossary of Terms)

Probability: The likelihood of an event occurring that may result in an emergency, disaster or service disruption. (Source: Health Canada Glossary)

Produce and Crop Control: Measures taken to restrict the harvesting or processing of potentially or actually contaminated crops, vegetables and fruits. Measures include embargoing export outside the affected area; storage to allow radionuclide decay; destruction and disposal of contaminated produce

Projected Dose: The highest committed effective equivalent dose or committed

equivalent dose to a specified organ or tissue, likely to be received through all applicable exposure pathways by the most exposed member of the critical group in the area for which the projection is being made.

Protective Actions: Actions to mitigate the effects of a nuclear or radiological emergency. The actions include both precautionary measures and protective measures.

Protective Measures: Measures designed to protect against exposure to radiation during a nuclear or radiological emergency. The measures include sheltering, evacuation, potassium iodide (KI) pill ingestion, ingestion control, relocation, protective clothing, and respiratory protection.

Provincial Emergency Operations Centre (PEOC): A fully equipped facility maintained by Emergency Management Ontario that can be activated in response to, or in anticipation of, emergencies. The PEOC is staffed with appropriate representatives from ministries that have been delegated responsibilities for specified emergencies as well as EMO staff, and other partners in emergency management. It serves as a coordinating point-of-contact for the affected municipality, provincial, and federal interests. (Source: Ontario Emergency Management Glossary of Terms)

Provincial Nuclear Emergency Response Plan (PNERP): Short title for the Strategic Response Framework for Nuclear & Radiological Emergency Management. An approved emergency response plan for the Province of Ontario to respond to a nuclear or radiological emergency, and its consequences.

Public Alerting: See Alerting.

Public Awareness and Education Program: A program that provides focused information to a target audience to educate about protective actions to reduce the *risk* of life and property damage, in the event of an emergency. (Source: Ontario Emergency Management Glossary of Terms)

Radiation: The emission by a nuclear substance, the production using a nuclear substance, or the production at a reactor facility of, an atomic or subatomic particle or electromagnetic wave with sufficient energy for ionization. (Source: Health Canada Glossary)

Radioactive Material: For purposes of nuclear security, any material that emits one or more types of ionizing radiation, such as alpha or beta particles, neutrons or gamma rays. (Source: CNSC Glossary)

Radioiodine: A substance containing radioactive iodine in a chemical form that has a metabolic pathway similar to iodide, such as inorganic compounds and metabolic forms of organic iodine that are broken down in a living organism. Some examples are the radioisotopes iodine-125 and iodine-131. (Source: <u>CNSC Glossary</u>)

Radioisotope: A variation in the form of atoms, of the same chemical element, which are distinguished by the number of neutrons in the nucleus. The number of protons remains the same, but the number of neutrons differs. For example, uranium has 16 different isotopes. (Source: <u>CNSC Glossary</u>)

Radiological Emergency: Emergency caused by an actual or environmental hazard from ionizing radiation emitted by a source other than a reactor facility.

Radionuclide (or radioactive isotope or radioisotope): A naturally occurring or artificially created isotope of a chemical element having an unstable nucleus that decays, emitting alpha, beta and/or gamma rays until stability is reached.

Reactor Facility: A facility producing greater than 10 megawatts gross thermal energy from nuclear fuel and consisting of one or more reactor units.

Note: This includes nuclear power plants and research reactors greater than 10 megawatts gross thermal energy.

Reception Centre: Locations for the initial reception, monitoring, decontamination, and registration of evacuated members of the public, which provides or arranges for further emergency social services, humanitarian assessments and support.

Notes:

- A public Reception Centre is typically located in an existing facility, such as a community centre. Public Reception Centres should be beyond the Detailed Planning Zone boundary.
- Examples of emergency social services include emergency shelter, food, clothing, victim registration and inquiry and personal services.
- Examples of humanitarian support include, but are not limited, to housing and family reunification. (Source: Modified IAEA Safety Guide GS-G-2.1.)

Recovery: The short-term and long-term actions taken in order to restore, to an acceptable level, both the organizations involved in, and the communities affected by, the nuclear emergency and the associated response activities.

(Source: CSA N1600 — General requirements for nuclear emergency management programs)

Release: In the context of this plan, release refers to the emission of radioactive material to the environment from a reactor facility in the form of either an airborne or a liquid emission.

Representative Individual: An individual that due to his/her characteristics, habits and location of residence, is representative of the more highly exposed individuals in the population. May also be referred to as Representative Person. (Source Health Canada Glossary)

Reportable Event: An event affecting the reactor facility which would be of concern to the offsite authorities responsible for public safety.

Response: The actions taken during a nuclear or radiological emergency to reduce the magnitude of the hazard and manage its consequences, including the impact of the hazard on people, property, and the environment.

(Source: CSA N1600, General requirements for nuclear emergency management programs)

Response Sectors: The Detailed Planning Zone is subdivided into Response Sectors to facilitate the planning and implementation of protective measures.

Risk: The product of the probability of the occurrence of a hazard and its consequences. (Source: Ontario Emergency Management Glossary of Terms)

Self-decontamination: the removal of radioactive contamination from oneself through removal of clothing, washing of oneself and dressing in clean clothes. (Source: Centers for Disease Control and Prevention)

Severe Accident: A beyond design basis accident involving fuel degradation in the reactor core or wet storage bay.

Shall: Is used to express a requirement, i.e., a provision that the user is obliged to satisfy in order to conform to the PNERP.

Shelter-in-place: A directed protective action to take immediate refuge in an enclosed structure for protection from an airborne plume, deposited radioactive material, or both.

Notes:

- Shelter-in-place is a protective action which uses the shielding properties of buildings and their potential for ventilation control to reduce the radiation dose to people inside. Shelter-in-place has varying degrees of effectiveness depending on the type of building construction.
- Shelter-in-place should typically not extend beyond two days.
- Shelter-in-place is utilized as a protective action if there is insufficient time to safely evacuate an area; if the dose projected for an area is so low that evacuation is not required; or the risks of evacuation are higher than shelter-inplace (e.g., severe weather inhibits safe evacuation).

(Source: CSA N1600 — General requirements for nuclear emergency management programs)

Should: Is used to express a recommendation or that which is advised but not required in order to conform to the PNERP.

Shutdown State: A subcritical reactor state with a defined margin to prevent a return to criticality without external actions. (Source: <u>CNSC Glossary</u>)

SI: International System of Units; acronym from the French definition "Système International d'unités". (Source: modified from CNSC Glossary)

Sievert: The International System of Units (SI) unit of equivalent dose and effective dose, equal to 1 joule/ kilogram. (Source: CNSC Glossary)

Source Term: A generic term applied to the *radioactive material* released from a *reactor facility*. It includes the quantity and type of material released as well as the timing and rate of its release. It could apply to a release that was currently occurring, or one which had ended, or one which could take place in the future.

Site Area Emergency (U.S. Emergency Classification): Events are in progress or have occurred that involve actual or likely major failures of plant functions needed for protection of the public. Any releases of radioactive material are not expected to exceed PAG exposure levels, beyond the site boundary.

Stochastic Effects: Radiation-induced health effects, such as cancer and heritable diseases, which are associated with a statistical *risk* and where no threshold has been established. The *probability* of occurrence is proportional to the *dose* (the higher the *dose* the higher the *probability* of occurrence) but the severity of the effect is independent of *dose*. (Source: Health Canada Glossary)

Support Municipality: Pursuant to <u>Section 7.0.2 (4)</u> of the EMCPA, the LGIC may, by order, specify a municipality to act in a support capacity to provide assistance to designated municipalities.

Tissue Reactions: Radiation exposure can lead to various biological effects at the cellular and tissue levels, depending on the type, dose, and duration of exposure. Tissue reactions, also known as deterministic effects, are dose-dependent responses that manifest in specific organs or systems following exposure to ionizing radiation.

Transborder Emergency: A nuclear emergency involving a reactor facility or nuclear accident or event outside the borders of Ontario that might affect people and property in the province.

Unusual Events: (U.S. Emergency Classification): Unusual events are in progress or have occurred that indicate a potential degradation of the level of safety of the plant. No releases of radioactive material requiring offsite response or monitoring are expected unless further degradation of safety systems occurs.

Urgent Protective Action: A protective action in the event of an emergency which must be taken promptly (normally within hours) in order to be effective, and the effectiveness of which will be markedly reduced if it is delayed. The most commonly

considered urgent protective actions in a nuclear or radiological emergency are evacuation, decontamination of individuals, sheltering, respiratory protection, iodine prophylaxis and restriction of the consumption of potentially contaminated foodstuffs. (Source: IAEA definition)

Venting: The release to the atmosphere of radioactive material from the containment of a reactor facility through systems designed for this purpose.

Vulnerable populations: Members of the public who have additional needs before, during, and after a nuclear or radiological emergency in one or more functional areas.

Notes:

- Functional areas can include, but are not limited to, the following:
 - maintaining independence;
 - o communication;
 - transportation;
 - o supervision; or
 - medical care.
- Individuals in need of additional assistance could include those who:
 - have disabilities;
 - are from diverse cultures;
 - o have limited or no proficiency in the local official language; or
 - o are transportation disadvantaged.

(Source: CSA N1600 — General requirements for nuclear emergency management programs)

Water Control: Measures taken to avoid the contamination of drinking water supplies and sources, and to prevent or reduce the consumption of contaminated water. Measures may include the isolation of drinking water systems to prevent system-wide contamination.

Weighted Dose: See Equivalent Dose. Expressed in terms of Sievert (or rem).

Wild-Harvested Food: A wild harvest represents food gathered from plants that grow naturally in an untouched environment and in their native habitat.

Wild-Harvested Food Control: Wild-Harvested Food Control refers to the systematic management and monitoring of food sources obtained from natural environments in the context of nuclear emergency response. This process includes the assessment of safety and contamination levels of wild-harvested foods—such as plants, mushrooms, and game—potentially impacted by nuclear incidents. It involves protocols for testing, guidelines for harvesting, and public advisories to ensure that consumption of these foods does not pose a health risk due to radioactive exposure or contamination. The

objective is to safeguard public health and mitigate the risks associated with consuming wild foods in areas affected by nuclear incidents.)