Central Midwest Interstate Low-Level Radioactive Waste Commission

Regional Management Plan

Draft for Comment

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CENTRAL MIDWEST INTERSTATE LOW-LEVEL RADIOACTIVE WASTE COMMISSION
REGIONAL MANAGEMENT PLAN

INTRODUCTION

The federal Low-Level Radioactive Waste Policy Act of 1980, as amended (Policy Act), made each state responsible, either on its own or in cooperation with other state(s) forming a regional compact, for providing the capacity to dispose of the low-level radioactive waste (LLRW) generated within its borders. The State of Illinois and the Commonwealth of Kentucky joined together in 1984 to create the Central Midwest Interstate Low-Level Radioactive Waste Compact (Compact) which was ratified by Congress in 1986. Ten compacts involving 42 states have been formed and ratified since the Policy Act was enacted. There are eight unaffiliated states in addition to the District of Columbia and the Commonwealth of Puerto Rico.

The Compact is administered by a three-member Commission, presently consisting of two representatives from Illinois and one from Kentucky. The Commission is required to adopt and amend as appropriate a plan for establishing the needed regional LLRW management facilities. Specifically, Article IV of the Compact Act states:

ARTICLE IV. REGIONAL MANAGEMENT PLAN

The Commission shall adopt a regional management plan designed to ensure the safe and efficient management of waste generated within the region. In adopting a regional waste management plan the Commission shall:

a) Adopt procedures for determining, consistent with considerations of public health and safety, the type and number of regional facilities which are presently necessary, and which are projected to be necessary to manage waste generated within the region.

b) Develop and adopt policies promoting source and volume reduction of waste generated within the region.

c) Develop alternative means for the treatment, storage, and disposal of waste, other than shallow-land burial or underground injection well.

d) Prepare a draft regional management plan that shall be made available in a convenient form to the public for comment. The Commission shall conduct one or more public hearings in each party state prior to the adoption of the

> regional management plan. The regional management plan shall include the Commission's response to public and party state comment.

The Commission adopted its first Regional Management Plan (Plan) in September 1988 and its second in May 1999. Since the adoption of these previous Plans, there have been significant events in the region and in the nation, which caused the Commission to re-evaluate its adopted policies and to adopt an updated Plan. This Plan is a complete statement of the Commission's policy regarding the regional management of LLRW.

This Plan is divided into 3 main sections. The first section provides background information regarding the authority and responsibility of the Commission, the need for and history of the Plan, the description of events since the adoption of the previous versions of the Plan, and a description of the LLRW generation and management in the Compact.

The second section provides detailed discussion regarding the regional LLRW management policies of the Commission. Specifically addressed are requirements for source and volume reduction, determination of need for regional LLRW management facilities, disposal at facilities other than the regional LLRW disposal facility, management of naturally occurring radioactive material (NORM)[1] and naturally occurring and accelerator produced radioactive material (NARM)[2], import and export of LLRW, and tracking shipments of LLRW.

The third section provides a response to public and party state comments received on the draft Plan. Responding to public and party state comments is a requirement of the Compact Act.

[1] "Naturally occurring radioactive material" or "NORM" means materials that are undisturbed as a result of human activities and that contain any of the primordial radionuclides or radioactive elements as they occur in nature, such as radium, uranium, thorium, potassium, and their radioactive decay products. NORM does not include accelerator-produced, byproduct, source, or special nuclear material. (32 Illinois Administrative Code 622.20)

[2] "NARM" means any naturally occurring or accelerator-produced radioactive material. It does not include byproduct, source or special nuclear material. (32 Illinois Administrative Code 310.20)

PART I - BACKGROUND INFORMATION

This part provides background information to enable the reader to gain an understanding of the Compact, the responsibilities of the Commission, the requirements of the Plan, the purpose of regional facilities, and LLRW generation and management.

Authority for the Compact

As stated in the introduction, the federal Policy Act made the states responsible for providing for the disposal of LLRW generated within their borders. The Policy Act encouraged states to form compacts to manage LLRW on a regional basis and to limit the overall number of disposal facilities developed. The enticement provided to form a compact is that compacts may prohibit the import or export of LLRW into or out of their regions.

Illinois and Kentucky joined together in 1984 to form the Central Midwest Interstate Low-Level Radioactive Waste Compact. Congress ratified this compact in 1986. The authorizing statute, known as the Central Midwest Interstate Radioactive Waste Compact Act (Compact Act), in conjunction with the Policy Act, establishes the scope and authority of the Compact and the Commission.

Responsibilities of the Commission

The Commission is the body appointed to oversee and implement the Compact. Currently there are three members on the Commission. Two commissioners are from Illinois and one commissioner is from Kentucky. The Commission has numerous responsibilities identified in the Compact Act. The key responsibilities include:

- preparation of a Regional Management Plan;
- identification of the need for regional LLRW facilities; and
- designation of a host state for regional LLRW facilities.

In 1987, the Commission determined that there was a need for a regional LLRW disposal facility and designated Illinois as the host state. The Commission adopted its first Regional Management Plan in 1988.

Requirements for the Regional Management Plan

The Compact Act requires the Commission to adopt a Regional Management Plan. The goal of the Plan is to ensure the safe and efficient management of LLRW generated in the region. In adopting the Plan, the Commission shall:

- adopt procedures for determining the number and type of regional facilities that are necessary;
- develop and adopt policies promoting source and volume reduction;
- develop alternative means for treatment, storage, and disposal of waste, other than shallow land burial or underground injection wells; and
- prepare a draft plan for public comment, conduct at least one hearing in each party state and respond to public comment.

The Plan serves as the basis for the Commission's decisions regarding the use of regional LLRW treatment, storage, and disposal facilities for imported LLRW and exports of LLRW from the region.

Regional Facility

The Compact Act defines "regional facility" as "a parcel of land or site, together with the structures, equipment and improvements on or appurtenant to the land or site, which is used or is being developed for the treatment, storage or disposal of low-level radioactive waste that is (1) located in the region, and (2) established by a party state pursuant to designation of that state as a host state by the Commission."

Host State

In evaluating the need for regional facilities, the Commission considered the currently available LLRW facilities located within and outside of the compact region. If the Commission determines that an LLRW facility is needed and does not currently exist, the Commission will designate a host state to develop that facility. To become a host state, the state must either volunteer to host a specific facility or must generate more than 10 percent of the region's LLRW based on recorded LLRW manifests during the year the need is determined.

The host state is responsible for the timely development and operation of the regional facility. Designation as host state is for a period of 20 years or the life of the regional

facility established under that designation, whichever is shorter. The Commission is not liable for any costs associated with the development, operation, and closure of any facility. Article VI of the Compact Act identifies additional responsibilities of the host state.

History of the Regional Management Plan

The Commission adopted its first Plan in September 1988. The Plan served as the basis for the Commission's decisions regarding the use of facilities for the treatment, storage, and disposal of waste as well as the import and export of LLRW into and out of the region.

Upon designation as host state for the regional LLRW disposal facility, Illinois conducted a siting program that led to the selection of a site near the town of Martinsville. The site was characterized, a disposal facility was designed, a license application was prepared and submitted for review, and an adjudicatory hearing before a three-member panel was conducted. In 1992, the hearing panel found that the site did not meet the statutory requirements. Further consideration of the site was abandoned.

Illinois started a second siting process in 1993 with an amendment to the Illinois Low-Level Radioactive Waste Management Act [420 ILCS 20/1]. The Act created the Low-Level Radioactive Waste Task Group charged with the creation of site selection criteria for the regional disposal facility. After conducting an open, public process, the nine-member group published its site selection criteria in December 1996[3].

The Illinois Department of Nuclear Safety (IDNS)[4] evaluated the economic viability of developing a disposal facility for the region. The findings of this study[5] suggest that given declining LLRW volumes the development of a regional disposal facility is not cost effective until the nuclear power stations are decommissioned. This decommissioning will produce large volumes of LLRW. IDNS restructured the siting process to time the development of the disposal facility with the start of decommissioning. The projection at that time was that the disposal facility would be operational in the year 2012.

[3] Site Selection Criteria for a Low-Level Radioactive Waste Disposal Facility, Illinois Low-Level Radioactive Waste Task Group, December 19, 1996.

[4] The Illinois Department of Nuclear Safety was merged into the Illinois Emergency Management Agency in 2003. IEMA has since incorporated the Office of Homeland Security and is now titled the Illinois Emergency Management Agency and Office of Homeland Security (IEMA-OHS).

[5] Modeling the Impact of Declining Waste Volumes for Input to the Economic and Development Strategies of New LLRW Disposal Facilities for Illinois, T. Ortciger, M. Klebe, P. Corpstein, presentation at Waste Management '98, March 3, 1998.

The Regional Management Plan was revised in 1999 as a restatement of the Commission's policies related to the import and export of LLRW. The Commission adopted policies for LLRW management for situations before and after the development of regional facilities. In addition, the Commission adopted policies for the management of naturally occurring radioactive materials (NORM) and technologically enhanced naturally occurring radioactive materials (TENORM).

When the 1999 version of the Regional Management Plan was published, it was envisaged that the nuclear power stations would be decommissioned following the expiration of their operating licenses. The Zion Nuclear Power Station ceased operating in 1996 (Unit 2) and 1997 (Unit 1) and went into a SAFESTOR status (an NRC[6] approved decommissioning strategy). Decommission was not planned to start until 2015. However, in 2008 Exelon Generating Co., LLC, requested NRC approval to transfer their license to Zion*Solutions* LLC for decommissioning. Zion*Solutions* is a subsidiary of Energy*Solutions*, a waste disposal facility operator discussed below. Approval was granted in 2010, and the plant went into active decommissioning. Decommissioning was completed in 2023, and the site license was transferred to Constellation Energy Generation, LLC (successor to Exelon). The current license covers the storage of spent nuclear fuel remaining in dry cask storage at the site, which consists of the Independent Spent Fuel Storage Installation (ISFSI), the ISFSI Support Building, and the ISFSI Warehouse. The ISFSI encompasses approximately five acres.

The decision to transfer the license for decommissioning did not allow for the development of a regional disposal facility. In addition, the NRC allows plant operators to seek an extension to the operating license. The license expiration dates for the region's nuclear power stations are:

Power Station	License Date	Power Station	License Date
Braidwood Unit 1	2046	Dresden Unit 2	2029
Braidwood Unit 2	2047	Dresden Unit 3	2031
Byron Unit 1	2046	LaSalle Unit 1	2042
Byron Unit 2	2043	LaSalle Unit 2	2043
Clinton	2027	Quad Cities Units 1 & 2	2032

Constellation Energy Generation, LLC[7] has announced that they have applied to the NRC for a 20-year extension to the operating license for the Clinton and Dresden nuclear power stations. As the license dates for the other plants come up, it is likely that efforts will be made to extend those operating licenses.

[6] NRC is an acronym for the US Nuclear Regulatory Commission.
[7] Constellation Energy Generation, LLC is the successor to Exelon and is the current operator of the nuclear power generating stations in the Region.

As demonstrated by the economic modeling, development of a regional disposal facility is not cost effective unless timed to correspond with the decommissioning of a nuclear power station. With decommissioning likely decades in the future combined with the current out-of-state disposal facility access, it is unlikely that an economically viable regional disposal facility can be developed in the near term.

Given this and the waste treatment and disposal facility access described below, the Commission is revisiting and revising the Regional Management Plan to better reflect current conditions.

Definition of LLRW

The Energy Policy Act of 2005 expanded the definition of byproduct material contained in the Atomic Energy Act, amended the definition of LLRW, and limited the Commission's authority over byproduct wastes. The Compact Act was amended to incorporate the new definition which now reads:

> "Low-level radioactive waste" or "waste" means radioactive waste not classified as (1) high-level radioactive waste, (2) transuranic waste, (3) spent nuclear fuel, or (4) byproduct material as defined in Sections 11e(2), 11e(3), and 11e(4) of the Atomic Energy Act of 1954 (42 U.S.C. 2014). This definition shall apply notwithstanding any declaration by the federal government, a state, or any regulatory agency that any radioactive material is exempt from any regulatory control.

The revised definition adds the expanded byproduct materials in the list of what LLRW is not. Atomic Energy Act Section 11e reads:

> (2) the tailings or wastes produced by the extraction or concentration of uranium or thorium from any ore processed primarily for its source material content;
> (3) (A) any discrete source of radium–226 that is produced, extracted, or converted after extraction, before, on, or after August 8, 2005, for use for a commercial, medical, or research activity; or
> (B) any material that –
> (i) has been made radioactive by use of a particle accelerator; and
> (ii) is produced, extracted, or converted after extraction, before, on, or after the date of enactment of this paragraph for use for a commercial, medical, or research activity; and
> (4) any discrete source of naturally occurring radioactive material, other than source material, that –
> (A) the Commission, in consultation with the Administrator of the Environmental Protection Agency, the Secretary of Energy, the Secretary of

> Homeland Security, and the head of any other appropriate Federal agency, determines would pose a threat similar to the threat posed by a discrete source of radium–226 to the public health and safety or the common defense and security; and
> (B) before, on, or after August 8, 2005 is extracted or converted after extraction for use in a commercial, medical, or research activity.

The expanded definition of byproduct material applies to discrete sources of radium-226. The NRC defines discrete sources as:

> Discrete source means a radionuclide that has been processed so that its concentration within a material has been purposely increased for use for commercial, medical, or research activities.[8]

In discussing the management of technologically enhanced naturally occurring radioactive material, the Commission in its 1999 Regional Management Plan defined TENORM (radium-226 and other naturally occurring radionuclides) being "discrete" at a concentration of 2000 pCi/g. As defined by the NRC, bulk TENORM is not considered discrete. This will be addressed in the TENORM section of this Plan below.

Functionally, LLRW is classified into four classes: A, B, C or greater than class C (GTCC). LLRW is classified based on the concentration of key short and long half-life[9] radionuclides present in the waste. Class A has the smallest concentration of these radionuclides. Class B has larger concentrations of the shorter half-life radionuclides. Class C has the largest concentrations of both short and long half-life radionuclides. GTCC contains short and long half-life radionuclides in concentrations that exceed the limits established for Class C. The NRC has determined that GTCC waste is not generally acceptable for near=surface disposal.[10]

The federal Policy Act makes disposal of class A, B and C wastes a responsibility of states and compacts and the disposal of GTCC wastes a federal responsibility. In addition, LLRW that is (1) owned or generated by the U.S. Department of Energy (DOE), (2) owned or generated by the U.S. Navy as a result of decommissioning Navy vessels, (3) resulting from research, development, testing or production of atomic weapons, and

[8] This definition appears in NRC regulations 10 CFR Parts 20 and 30.

[9] Half-life means the time required for half the atoms of a particular radioisotope to decay into another isotope. A specific half-life is a characteristic property of each radioisotope. Measured half-lives range from millionths of a second to billions of years, depending on the stability of the nucleus. As a general rule, the passage of ten half-lives is considered sufficient to reduce the radioactivity to a level (0.00097% of the original amount) no longer considered hazardous.

[10] At the time of preparing this Regional Management Plan, the US Nuclear Regulatory Commission is considering a rulemaking that would "authorize the near-surface disposal of certain GTCC waste streams and provide for Agreement State licensing of these waste streams. Near surface disposal is defined as disposal within the upper 30 meters of the earth's surface.

(4) identified by the federal government under its program to decontaminate sites used during the Manhattan Project (the Formerly Utilized Site Remedial Action Program) are also federal responsibilities. In 1996 Public Law 104-134 was enacted clarifying that states are not responsible for LLRW originating from the operation, decontamination and decommissioning of uranium enrichment facilities.

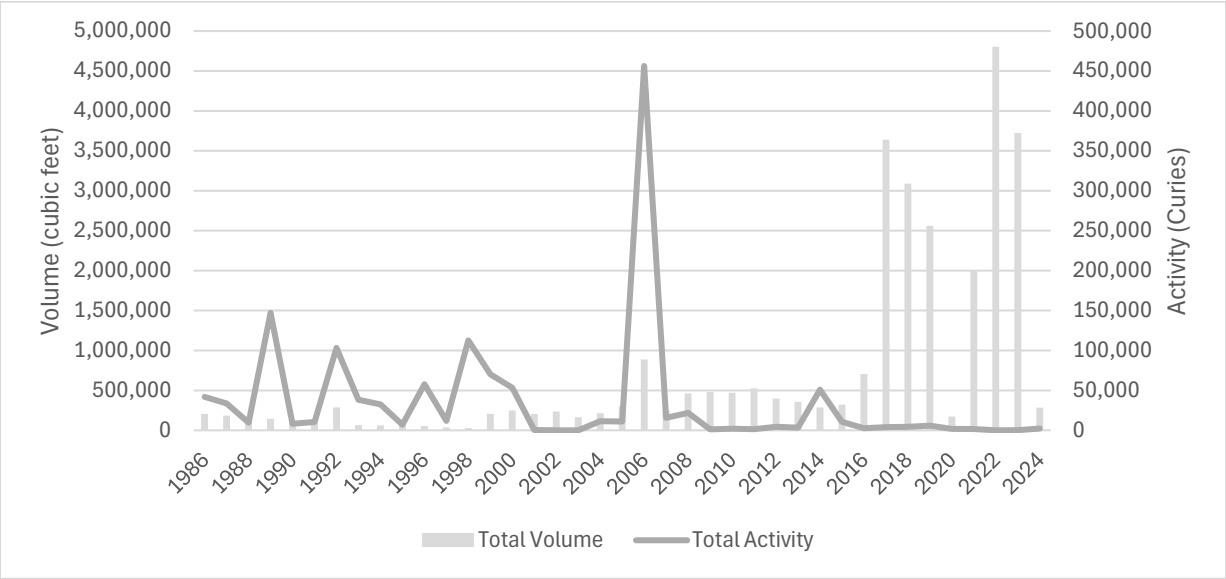
Historical Waste Production

LLRW can be quantified based on its volume or its radioactivity. Volume is measured in cubic feet and represents the amount of space the LLRW occupies in a disposal facility. Activity is measured in curies and represents the level of radioactivity contained in the waste. Figure 1 shows historical waste volume and activity for waste generated in the Compact region.

The scale of the graph makes it difficult to discern trends in waste generation. There is a baseline level of waste generation that will vary slightly year to year, primarily the result of refueling outages at the nuclear power stations. A fuel cycle facility in the region conducted cleanup operations that resulted in increased waste volumes in 2006 through 2011. Decommissioning of the Zion Nuclear Power station generated increased waste volumes from 2016 to 2023. An environmental remediation project conducted in 2022 and 2023 also generated large volumes of waste.

Increases in activity generated are usually associated with shipments of activated hardware from the region's nuclear power stations. The spikes in activity shown in Figure 1 identify the years this occurred.

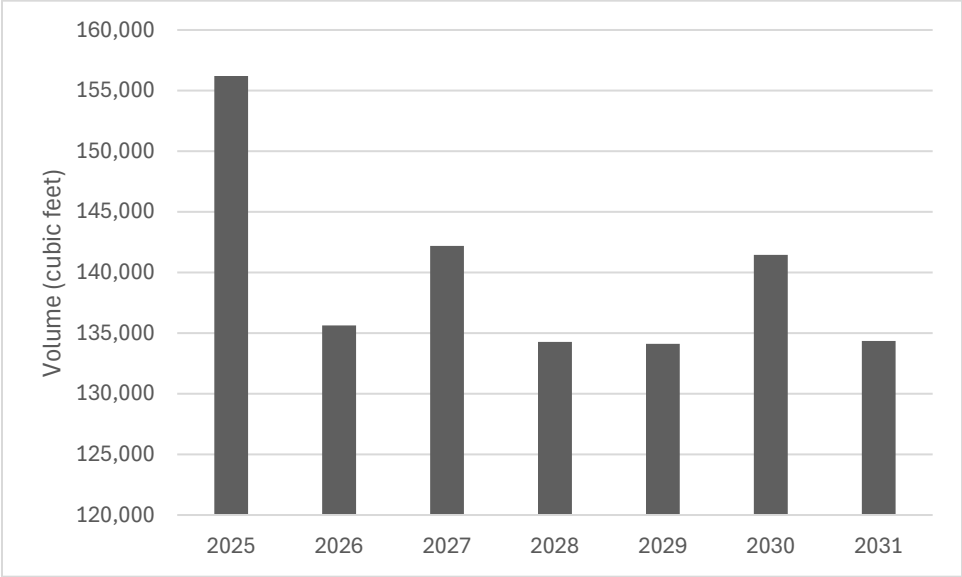
Figure 1 – Historical Waste Volumes and Activities



Projected Waste Volumes

The 1999 version of the Regional Management Plan presented a long-term (36 year) projection of future waste production. This projection was provided by the nuclear power plant operators as part of the disposal facility economic modeling activity discussed previously. A similar projection does not exist for inclusion in this report. The Illinois Emergency Management Agency and Office of Homeland Security (IEMA-OHS) conducts an annual survey of its generators and asks for a seven-year projection. (The Commonwealth of Kentucky does not conduct a similar survey). Figure 2 shows the waste volume projection for 2025 through 2031.

Figure 2 – LLRW Volume Projection



Waste Processing

LLRW processing is performed to reduce the volume requiring disposal or to improve the disposal waste form. These processing services are performed at numerous facilities located in and out of the region. Treatment techniques include sorting, storage for decay, compaction and super-compaction, incineration, decontamination, steam reformation, thermal desorption, and metal recycling. In addition to treatment facilities, there are brokers who arrange for the transportation, treatment, and disposal of LLRW from small generators.

Since the publication of the 1999 Regional Management Plan, the number of waste processors and the treatment services offered has increased. One service that was implemented in 2007 is the bulk survey for release (BSFR) process in the State of Tennessee.[11] This is a regulatory process that allows for waste with extremely low levels of radioactivity to be disposed of in a Class 1 landfill. BSFR waste is surveyed by a limited number of processors in Tennessee prior to disposal.

Numerous other waste processing technologies have been developed to serve the needs of the LLRW generators.

[11] Information about the Tennessee Department of Environment and Conservation can be found at: https://www.tn.gov/environment/program-areas/rh-radiological-health1/rh-bulk-survey-for-release.html.

Waste Disposal

In the 1970's, there were six operating disposal facilities capable of taking all classes of LLRW. They were:

- West Valley, New York;
- Maxey Flats, Kentucky;
- Beatty, Nevada;
- Sheffield, Illinois;
- Barnwell, South Carolina; and
- Richland, Washington

The facilities in New York, Illinois and Kentucky all closed by the late 1970's. When the federal Low-Level Radioactive Waste Policy Amendments Act (Amendments Act) was enacted, generators in the Central Midwest region had access to the remaining three sites. The Amendments Act required the three operating disposal facilities to remain open until the end of 1992. After that, the facilities could limit access to out-of-region waste or close completely. The Beatty, Nevada site closed on December 31, 1992.

The Richland, Washington facility, operated by Republic Services, serves as the regional disposal facility for the Northwest Compact and closed to Central Midwest generators at the end of 1992. This facility receives LLRW from the Northwest Compact region as well as from the Rocky Mountain Compact. The Northwest Compact does not consider naturally occurring radioactive material (NORM), technologically enhanced naturally occurring radioactive material (TENORM), and naturally occurring and accelerator-produced radioactive material (NARM) to be LLRW so these waste streams are not excluded from out of Northwest Compact region generators.

The Barnwell, South Carolina LLRW disposal facility, operated by Energy*Solutions*, was closed to generators in the Central Midwest region from July 1, 1994, until June 30, 1995. Barnwell reopened to Central Midwest generators on July 1, 1995, and was available for generators in the Central Midwest region until it was closed to out-of-Atlantic Compact region generators in July 2008.

Energy*Solutions* operates an LLRW disposal facility located near Clive, Utah. This facility began operation in 1988 and only accepts Class A waste. The Clive facility is not a regional facility and only accepts LLRW from generators located outside of the Northwest Compact Region.

Waste Control Specialists (WCS) operates an LLRW disposal facility near Andrews, Texas. This facility began operations in 2012 and serves as the regional disposal facility for the Texas Compact. A portion of the disposal facility's annual capacity is reserved for out-of-Texas Compact region generators. The Texas Compact Commission developed an import permit system where out-or-region generators can apply to have their waste disposed of at the WCS facility.

PART II - COMMISSION POLICY

SOURCE AND VOLUME REDUCTION

Requirements of the Compact Act

One of the purposes stated in the Compact Act is "promoting the volume and source reduction of low-level radioactive waste generated in the region." A requirement for the Plan is to "develop and adopt policies promoting source and volume reduction of waste generated within the region." Source reduction is defined in the Compact Act as "those administrative practices that reduce the radionuclide levels in low-level radioactive waste or that prevent the generation of additional low-level radioactive waste." Specific practices include:

- not allowing unnecessary materials to enter radioactively contaminated areas and thus becoming LLRW;
- reducing defects in reactor fuel rods so radionuclides are better contained within the fuel; and
- substituting procedures or materials that are non-radioactive for ones that contain radionuclides.

The Commission encourages all practices that reduce the amount of LLRW produced. These source reduction practices occur at the generator locations and are not achievable at a regional facility.

Volume reduction is defined in the Compact Act as "those methods including, but not limited to, biological, chemical, mechanical, and thermal methods used to reduce the amount of space that waste materials occupy and to put them into a form suitable for storage or disposal. Storage for decay, a technique used to treat LLRW containing radionuclides with relatively short half-lives, results in waste not requiring disposal as radioactive LLRW. Most volume reduction techniques result in the increased concentration of radionuclides in the smaller volume of LLRW requiring disposal.

The LLRW processing industry continues to develop new processes to treat LLRW. The primary impetus for developing new processes has been the increase in disposal costs. As disposal costs have increased, LLRW treatment has become more cost effective.

The Commission considered several policy options to reduce the volume and activity of LLRW that must be disposed of in the regional disposal facility. These options included:

- economic incentives and disincentives;
- education and information; and
- regulatory measures.

Economic Incentives and Disincentives - Economic incentives and disincentives could include the structure of fees assessed at the regional disposal facility. It is common practice at existing disposal facilities to base the fee structure primarily on the waste volume. High activity waste or waste that require remote handling carry additional surcharges. Continuation of this practice should encourage generators to reduce their waste volume. Additional volume-related surcharges might also be part of the fee structure and could encourage generators to treat their LLRW to reduce its volume.

Education and Information - Education and information-related policy options could include providing training or technical assistance on LLRW reduction. The Commission could provide written material for distribution to LLRW generators. For example, it could provide newsletters and special information mailings, audio-visual packages, and workshops at which generators could compare experiences and obtain additional information on volume reduction techniques. The Commission could provide an information service available to all generators within its region. This information service could develop a digital library and become a clearinghouse for information and evaluations of different LLRW reduction techniques and equipment.

Regulatory Measures – The Commission could encourage the regulatory authorities in the party states to require generators to reduce their volumes. One regulatory measure could be to establish a performance standard in the form of a limit on the volume or radioactivity of LLRW that each generator may ship for disposal in a given period of time. Prescriptive standards could be implemented by the regulatory agencies either in a generic rulemaking or through license specific conditions.

Commission's Intent

Ultimately, it is the Commission's intent to encourage the member states to regulate generators and to manage regional facilities in a way that promotes source and volume reduction. Primary reliance will be placed on establishing a disposal facility fee structure that creates strong incentives for source and volume reduction because it is the least intrusive and preserves maximum freedom of choice on the part of the generators.

Because the fee structure must be designed to achieve other objectives, such as collecting sufficient revenues to recover capital costs, operating expenses, operator profit, and financial commitments to the local community, and build up the long-term care and liability fund, it may not be possible to optimize the fee structure for source and volume

reduction. If a fee-based policy does not lead to cost-effective LLRW volume and source reductions, the Commission could assume a more active and aggressive role, promoting regulatory or other policies to reduce LLRW generation.

REGIONAL LOW-LEVEL RADIOACTIVE WASTE MANAGEMENT FACILITIES

Article IV of the Compact Act requires the Commission to adopt a Regional Management Plan, including procedures for determining the type and number of regional facilities necessary to manage the region's LLRW. This section describes the Commission's determinations regarding those regional LLRW facilities.

The Compact Act specifies that to be designated as a host state for a regional LLRW facility, that state must either volunteer, or the state's total volume of LLRW recorded on manifests for any year is greater than 10 percent of the region's total. The host state is responsible for determining the possible locations for the facility within its borders as well as ensuring its timely development. The designation for host state is for a period of 20 years or the life of the facility, whichever is shorter. The Compact Act, in Article VI, prescribes additional requirements for the host state.

In 1988, the Commission designated Illinois as the host state for the regional disposal facility because Illinois generators produce more than 90 percent of the region's LLRW. Given the types of generators in Illinois and Kentucky, it is highly unlikely that Kentucky will exceed the 10 percent threshold for being designated a host state. Illinois, in adopting regulations for the regional disposal facility, established the requirement that the regional disposal facility be designed to accept LLRW for disposal for a period of at least 50 years.

When considering the need for a regional facility, the Commission will consider whether the region's generators have access to facilities outside of the Compact region.

Regional Facilities for Disposal of LLRW

The Commission considered what the appropriate number of disposal facilities should be if access to out-of-region disposal facilities were terminated. Based on the declining LLRW volumes cited in this report, the Commission was concerned as to whether more than one facility would be economically viable or even desirable. The Commission also considered it their responsibility to limit the number of facilities in the region.

Commission Policy

The Commission's policy is that while generators in the Compact region have access to out-of-region disposal facilities, there is currently no need to designate a host state for a regional disposal facility. The Commission will reconsider this determination should access to disposal facilities be restricted or terminated.

Regional Facilities for Treatment of LLRW

Since the mid-1980's, the LLRW processing industry has grown not only in the number of companies offering treatment services but also in the types of services provided. Most of these new services are a direct result of the increasing costs of LLRW disposal. The majority of the LLRW processing facilities utilized by the region's generators are located outside of the region. Generators in the region have access to these treatment facilities through interregional agreements between the Commission and the compacts that host the facilities.

In developing the policy options for consideration, the Commission considered whether regional LLRW treatment facilities were needed and what services they should provide. Consideration was also given to the role of the private sector in demonstrating the need for these facilities and the likelihood of continued access to facilities located out of the region.

Commission Policy

The Commission determines that based on the current availability of LLRW treatment capacity, there is no need to designate a host state responsible for developing a treatment facility. The Commission will reconsider this determination should access to treatment facilities be restricted or terminated.

Regional Facilities for Storage for Decay of LLRW

Storage for decay is the practice of holding LLRW for a period equal to 10 half-lives of the radionuclide with the longest half-life present in the LLRW. Following this period, the LLRW is then considered no longer radioactive and can be disposed of as non-radioactive waste. Storage for decay is practiced typically for LLRW containing radionuclides with half-lives of 120 days or less.

Storage for decay can occur at the generator's location or it can be done offsite at a commercial facility. In developing options for consideration, the Commission considered whether regional storage for decay facilities were needed and if so, how many.

Commission Policy

The Commission's policy is that while generators in the Compact region have access to out-of-region storage for decay facilities, there is currently no need to designate a host

state for a regional storage for decay facility. The Commission will reconsider this determination should access to storage for decay facilities be restricted or terminated.

Regional Facilities for Interim Storage of LLRW

The Commission is charged with determining the number and types of regional facilities needed to safely and efficiently manage the region's LLRW. The Commission considered whether a regional interim storage facility is needed until the regional disposal facility becomes available.

At present, there are several LLRW disposal facilities available for use by the region's generators. Thus, the Commission determines at this point that a regional LLRW storage facility is not needed. Further, the Commission notes that designation as a host state for a regional LLRW storage facility would have a significant impact on that state.

Commission Policy

The Commission determines that based on the current availability of LLRW disposal capacity, there is no need to designate a host state responsible for developing an interim storage facility. The Commission will reconsider this determination should access to disposal facilities be restricted or terminated.

IMPORT AND EXPORT OF LOW-LEVEL RADIOACTIVE WASTE

In encouraging states to form regional compacts, the Policy Act allows compacts the authority to limit the import or export of LLRW across the compact boundaries. The Commission considered the appropriateness of exercising this authority. Specifically, the Commission considered when to limit the import and export of LLRW and to what facilities these limits would apply.

Limiting Exports of LLRW Prior to the Opening of the Regional Disposal Facility

In adopting the original Regional Management Plan in 1988, the Commission evaluated the impact to the region's generators if export of LLRW were to be prohibited prior to the opening of a regional LLRW disposal facility. The Commission considered the financial impact associated with the cost of out-of-region disposal and the increasing surcharges imposed by the sited states. This outflow of money from the region was considered as a source of funding for development of the regional LLRW disposal facility. Also, the Commission considered the operational impacts of requiring the region's generators to store their LLRW for an undetermined period. These impacts included availability of storage space, occupational exposure, and licensing related issues.

Commission Policy

The Commission's policy is to allow the unrestricted export of LLRW until the regional LLRW disposal facility begins operation.

Limiting Exports of LLRW for Disposal After the Regional Disposal Facility Becomes Operational

Given the capital-intensive nature of an engineered disposal facility, the more LLRW that the facility receives, the cheaper the unit cost. To protect the economic investment made in the regional disposal facility and to adequately allocate the disposal charges, the Commission considered whether there should be an export prohibition of LLRW for disposal after the regional disposal facility becomes operational.

Commission Policy

The Commission's policy is to prohibit the export of LLRW for disposal after the regional LLRW disposal facility begins operation.

Limiting the Export of LLRW for Treatment After the Regional Disposal Facility Becomes Operational

Prohibiting the export of LLRW for treatment would prevent the generators in the region from securing these services from vendors located outside of the region. This may impose a hardship if those services were not available in the region. Currently, the majority of LLRW processors are located outside of the region.

Commission Policy

The Commission's policy is to allow the export of LLRW for treatment after the regional LLRW disposal facility begins operation, subject to the approvals required in the Compact Act.

Limiting Access to the Regional Disposal Facility for Imported LLRW

The history of the Amendments Act and the authority it gives to the compact commissions to limit the import of LLRW into their regions reflect the public attitude that LLRW disposal is best done on a regional basis where access to a regional disposal facility is limited in scope. It is not possible to predict whether these public attitudes will eventually change when new LLRW disposal facilities are developed. For the present, the Commission intends to operate on the assumption that citizens are willing to accept responsibility for LLRW generated within their own region, but not for LLRW generated by others.

Commission Policy

It is the Commission's policy to prohibit access to the regional LLRW disposal facility for imported LLRW.

Limiting Access to Treatment or Storage Facilities for Imported LLRW

Treatment and storage facilities play an important role in the management of LLRW. These facilities provide services reducing the volume of LLRW requiring disposal and to improving the disposal waste form. To ensure the viability of LLRW treatment and storage facilities located in the region and to make these facilities available to generators, the Commission considered whether imports of out of region LLRW should be prohibited.

In developing the policy options, the Commission considered the establishment of agreements between compacts that would specify the terms under which the import of

LLRW would be allowed. As mentioned previously, the Commission has entered into interregional agreements that specify the conditions for LLRW import.

Commission Policy

The Commission's policy is to prohibit access to LLRW treatment or storage facilities for imported LLRW, except as authorized under an agreement or contract entered by the Commission subject to the provisions of the Compact.

DISPOSAL OF LLRW AT FACILITIES IN THE REGION OTHER THAN THE REGIONAL DISPOSAL FACILITY

Article IX(b) of the Compact Act provides that "Unless authorized by the Commission pursuant to Article III(i), or otherwise provided in this Compact, after January 1, 1986 it is a violation of this compact . . . for any person to dispose of waste at a facility other than a regional facility." The Commission acknowledges that the regulatory agencies of each of the Compact's party states are authorized to allow the disposal of LLRW at facilities not specifically licensed to dispose of such LLRW. The regulations may (1) establish exempt concentrations and quantities of radioactive material, (2) establish limits on the concentration of radionuclides in effluents that may be released into the environment, (3) establish limits below which radionuclides may be released into sanitary sewer systems, (4) authorize disposal of specified LLRW without regard to its radioactivity, and (5) establish a procedure for obtaining approval to dispose of LLRW in a manner not otherwise authorized by the regulations. In addition, it is conceivable that the NRC, the party states, or other states not a party to the Compact might adopt policies declaring some LLRW to be Below Regulatory Concern (BRC). If implemented, such policies would result in these BRC wastes being disposed of without regard to their radioactive characteristics. Each of these provisions, which could result in disposal of LLRW at other than the regional LLRW disposal facility, is discussed below.

LLRW in Concentrations or Quantities Exempt from Licensure (See 32 Ill. Adm. Code 330.30, 330.40, and 622 (Illinois) and 902 KAR 100:045, 080, 085. (Kentucky))

The Illinois and Kentucky radiation control regulations contain provisions exempting a person from the requirements of the regulations "to the extent that the person receives, possesses, uses, transfers, owns or acquires products or materials containing radioactive material" in quantities that do not exceed listed quantities or in concentrations that do not exceed the listed exempt concentration limits. These provisions are applied to persons who possess only exempt quantities or concentrations of radioactive materials from the regulatory requirements pertaining to disposal. Because the possession of such materials is not subject to licensing requirements, persons who possess only unlicensed material are not licensees and are not, therefore, required to comply with the disposal requirements applicable to licensees. It should be noted, however, that an exemption from licensing requirements does not relieve a person who possesses LLRW from complying with the provisions of the Compact Act. The Compact Act provisions requiring LLRW to be disposed of at a regional LLRW disposal facility unless the Commission has authorized otherwise are equally applicable to licensed and unlicensed LLRW.

In considering whether to authorize the disposal of LLRW containing exempt quantities and concentrations of radioactive materials, the Commission has not been given any

reason to reject the implied findings of the IEMA and the Kentucky Cabinet for Health and Family Services that public health and safety concerns do not necessitate the regulation or restriction of disposal of such materials. In the absence of an operational regional disposal facility, the Commission does not need to consider the effects on the regional facility of allowing exempt quantities or concentrations of radioactive materials to be disposed of at facilities other than a regional facility.

There remains a tracking issue regarding the disposal of exempt concentrations or exempt quantities of radioactive materials. Since disposal of exempt wastes does not raise significant public health and safety issues, the Commission does not need to track these wastes to verify that they are properly disposed of.

In developing the policy options for consideration, the Commission considered various reporting requirements, either by the user, the regulatory agencies, or not at all. The Commission also considered whether it is appropriate that this proposed authorization be extended to all persons who possess these materials or only to non-licensees.

Commission Policy

The Commission's policy is to allow LLRW generated within the region and containing exempt quantities or exempt concentrations of radionuclides as specified in the current radiation control regulations of the party states, to be disposed of at facilities other than the regional LLRW disposal facility.

Releases into the Environment of Effluents Containing LLRW (32 Ill. Adm. Code 340.310, 340.320, and 622; 902 KAR 100:019, Section 10 and 902 KAR 100:021, Section 1)

The radiation protection regulations of Illinois and Kentucky specify limits on the concentrations of radionuclides in effluents that are released to unrestricted areas. These regulations prohibit the release to unrestricted areas of air or water effluents containing radioactive material in concentrations exceeding the limits specified in the rules. Conversely, the regulations allow effluents containing radionuclides in concentrations less than those specified to be released into the environment.

The Commission understands that the effluent release limits are generally applicable to all licensees and are more in the nature of an operational requirement than a LLRW disposal option. The rules require licensees to demonstrate that any release of air or water effluent to unrestricted areas will not cause the licensee to violate the regulatory limits on radiation doses to members of the public. The Commission recognizes that it would be impractical for many licensees to operate their facilities without releasing air and water effluents. Furthermore, in the absence of an operational regional disposal

facility, the Commission is not concerned that authorizing release of radionuclides in effluents, in accordance with limits specified in state radiation protection regulations, will divert LLRW from the regional LLRW disposal facility. Similarly, because the radiation protection regulations permit release of effluents only in air and water, allowing such releases will not increase the number of facilities necessary for management of LLRW. In developing the policy options for consideration, the Commission considered various reporting requirements, either by the user, the regulatory agencies, or not at all.

Commission Policy

The Commission's policy is to authorize disposal of waste in the region by release of effluents containing radionuclides in to the environment, provided that such releases are in accordance with the applicable regulations of the party states' radiation protection agencies (32 Ill. Adm. Code 340.310 and 340.320 (for releases in Illinois) and 902 KAR 100:019, Section 10 and 902 KAR 100:021, Section 1 (for releases in Kentucky)).

Releases into Sanitary Sewer Systems (32 Ill. Adm. Code 340.1030 and 622; 902 KAR 100:021, Section 3)

The radiation protection regulations adopted by Illinois and Kentucky contain a provision that authorizes the release of licensed radioactive material into sanitary sewer systems. These regulations permit licensees to discharge soluble radioactive materials in quantities that would not cause the licensee to exceed the average water concentration limits specified in the rules. The rules also allow excreta from individuals undergoing medical diagnosis or therapy with radioactive material to be discharged to the sanitary sewers. Licensees that dispose of radioactive materials as allowed under this rule are required to maintain records documenting that the discharges do not exceed the allowable concentration limits.

In developing the policy options for consideration, the Commission considered various reporting requirements, either by the user, the regulatory agencies, or not at all. The Commission also considered whether a release to the sanitary sewers constituted disposal and is subject to the provisions of the Plan.

Commission Policy

The Commission's policy is that releases of radionuclides into sanitary sewer systems in accordance with the applicable regulations of the party states' radiation protection agencies (32 Ill. Adm. Code 340.1030 (for releases in Illinois) and 902 KAR 100:021, Section 3 (for releases in Kentucky)) is not disposal of LLRW and is not subject to the restrictions and requirements established in the Plan.

Disposal of Specific Waste (32 Ill. Adm. Code 340.1050; 902 KAR 100:021, Section 5)

Both Illinois' and Kentucky's regulations allow licensees to dispose of limited quantities of tritium, carbon-14, and iodine-125 used as scintillation media or contained in animal tissue as if these materials were not radioactive. The regulations limit this disposal to scintillation media or tissue that contains no more than 0.05 microcurie per gram of the radionuclide present and specifically prohibits disposal in any manner that would cause the waste to be used as food for humans or animals. The regulations also require the licensee to maintain records of wastes disposed of for inspection by the regulators.

The Commission encourages generators to use nonhazardous liquid scintillation media whenever practical. However, because some scintillation media are chemically hazardous and because animal tissue may be biohazardous, the effect of these radiation protection regulations is to allow scintillation media and animal tissue to be disposed of as hazardous or biomedical waste according to the regulations applicable to the remaining hazard. In most cases, that means the materials are incinerated.

In the absence of this rule, licensees would have to manage these wastes in the same manner that wastes containing higher concentrations of radionuclides are managed, i.e., by either disposing of the waste at a licensed LLRW disposal facility or treating the waste by sending it to an incinerator that is licensed to incinerate mixed (hazardous and radioactive) wastes. Here, where the concentration of the radionuclides is small, and the wastes present a chemical or biological hazard independent of the radiological hazard, the regulatory agencies have determined that the chemical or biological hazards outweigh the radiological hazard and that the public is best protected by managing the waste according to its chemical or biological hazard. The Commission has no reason to question the appropriateness of this determination.

In developing policy options, the Commission considered implementing reporting requirements for the user or the party states. The Commission also considered the appropriateness of regulating issues that are beyond the Commission’s jurisdiction.

Commission Policy

The Commission authorizes disposal of waste generated in the region in accordance with the provisions of 32 Ill. Adm. Code 340.1050 and 902 KAR 100:021, Section 5.

Disposal of Wastes in a Manner not Specifically Authorized by Regulation (32 Ill. Adm. Code 340.1020; 902 KAR 100:021, Section 2)

The regulations of each of the party states contain a procedure for obtaining authorization to dispose of radioactive materials in a manner not otherwise authorized by the regulations (32 Ill. Adm. Code 340.1020; 902 KAR 100:021, Section 2). The regulatory provisions require the person seeking the authorization to apply to the regulatory agency for authorization. The application must include a description of the LLRW, a description of the proposed manner and conditions for LLRW disposal, environmental information, and analyses and procedures to ensure that doses will not exceed the regulatory limits for doses to members of the public and will be as low as is reasonably achievable.

The Commission considered whether and under what conditions it will allow disposal of LLRW in the region at other than a regional facility, in accordance with such regulatory agency authorizations. At the start of its analysis, the Commission recognized that the regulatory agencies would not grant authorizations to dispose of LLRW in a manner that would pose a threat to public health and safety or the environment. Accordingly, the Commission did not consider which alternative disposal practices would be suitable, from a radiation safety standpoint, for approval under the regulatory provisions. The Commission nevertheless is required by the Compact Act to adopt a Plan that ensures the safe and efficient management of all LLRW generated within the region.

In the absence of a regional LLRW disposal facility, the Commission's primary concern regarding alternative disposal practices is to ensure that LLRW that is disposed of in the region was generated in the region. In the long term, once a regional disposal facility is operational, the Commission must be concerned with any impact that disposal of LLRW pursuant to an authorization will have on the volume of LLRW sent to the regional disposal facility for disposal. The Commission must be assured that allowing LLRW to be disposed of at a facility other than a regional LLRW disposal facility in accordance with authorizations issued by the radiation protection agencies will not adversely affect the economic viability of the regional disposal facility. In addition, in both the short term and the long term, the Commission needs to establish that disposal in accordance with regulatory agency-approved alternative methods will be efficient for the region as a whole and will be consistent with the Compact Act's expressed purpose of "limiting the number of facilities required to manage low-level radioactive waste generated in the region effectively and efficiently."

In developing policy options, the Commission considered the role of the party states' regulatory agencies and the appropriate reporting requirements.

Commission Policy

The Commission's policy is to allow LLRW generated within the region to be disposed of at facilities other than the regional LLRW disposal facility provided that such disposal is approved by the party state under the general scope of its radiation control authority and regulations.

Import for Disposal at Facilities Other than the Regional Facility of Below Regulatory Concern Wastes

Article IX(b) of the Compact Act prohibits any person from depositing at any facility in the region waste from outside the region or disposing of waste at a facility other than a regional facility, unless authorized by the Commission. In the 1988 Regional Management Plan the Commission adopted a policy prohibiting access to the regional disposal facility for imported waste. In doing so, the Commission noted that "Central Midwest Compact was established precisely because the citizens of Illinois and Kentucky do not wish to take waste from outside the region." The Commission is not aware of any willingness on the part of either party state to encourage or allow disposal within its borders of LLRW from outside the region, regardless of whether another state or the federal government has declared the waste to be below regulatory concern. While the Commission recognizes that such waste presumably poses minimal health risks, the Commission cannot ignore the intent of the Compact and the law and policy of the party states, which is to assume responsibility only for disposal of waste generated within the two-state region.

Neither Illinois nor Kentucky has established a general policy or rule declaring LLRW to be "below regulatory concern." In the absence of such state policies, the Commission is not inclined to accept BRC determinations made by other states or by the federal government. The Commission also notes that the party states have expressed concerns regarding past BRC determinations made by federal agencies. For example, in 1988, 1989, and 1990 the IDNS criticized a BRC policy proposed by the U.S. Environmental Protection Agency as well as the BRC policy that was adopted, and later rescinded, by the NRC. In 1992, Illinois expressed outrage at the unilateral determination made by prime contractors of the DOE to consider certain DOE wastes to be below regulatory concern and, accordingly, send the wastes to a hazardous waste incinerator that was not licensed to incinerate radioactive waste.

Since that time, legislation has been enacted in Illinois that provides that the Compact's definition of LLRW shall apply notwithstanding any declaration by the federal government or any state that any radioactive material is exempt from any regulatory control. The Commission respects the reluctance of the party states to allow disposal

within the region of LLRW generated outside the region that may be characterized by others as being below regulatory concern.

The Commission also notes that Article III(i) of the Compact Act provides that Commission agreements allowing waste from outside the region to be disposed of at facilities within the region must be ratified by the legislature of the receiving state. The obvious intent of this provision is to ensure that the Commission does not authorize, over the objections of the receiving state, the disposal within the region of waste not generated within the region. Accordingly, even if the Commission were inclined to adopt a policy authorizing the import of BRC waste from outside the region for disposal at any facility within the region, that policy should consider the requirement for legislative approval.

Commission Policy

Except as provided in this Regional Management Plan or as expressly authorized by the Commission, the Compact Act's prohibition against disposal of waste within the region other than at a regional facility shall apply notwithstanding any declaration by the federal government or any state that any radioactive material is exempt from any regulatory control.

MANAGEMENT OF NORM AND NARM WASTES

Background Information

The Commission's definition of LLRW has changed since the previous version of the Regional Management Plan was adopted. The federal Energy Policy Act of 2005 took certain naturally occurring and accelerator produced radioactive material (NARM) out of the definition of LLRW. The Compact Act now defines "low-level radioactive waste" to mean "radioactive waste not classified as (1) high-level radioactive waste, (2) transuranic waste, (3) spent nuclear fuel, or (4) by-product material as defined in section 11e(2), 11e(3), and 11e(4) of the Atomic Energy Act of 1954." (42 U.S.C. 2014). The NARM materials cited in Atomic Energy Act sections 11e(3) and 11e(4) include:[12]

(1) any discrete source of radium-226 that is produced, extracted, or converted after extraction, before, on, or after the date of enactment of this paragraph for use for a commercial, medical, or research activity;

(2) any material that has been made radioactive by use of a particle accelerator and is produced, extracted, or converted after extraction, before, on, or after the date of enactment of this paragraph for use for a commercial, medical, or research activity; and

(3) any discrete source of naturally occurring radioactive material, other than source material, that the Commission, in consultation with the Administrator of the Environmental Protection Agency (EPA), the Secretary of Department of Energy (DOE), the Secretary of the Department of Homeland Security (DHS), and the head of any other appropriate Federal agency, determines would pose a threat similar to the threat posed by a discrete source of radium-226 to the public health and safety or the common defense and security, and that is extracted or converted after extraction before, on, or after the date of enactment of this paragraph for use in a commercial, medical, or research activity.

A discrete source is defined as "a radionuclide that has been processed so that its concentration within a material has been purposely increased for use for commercial, medical, or research activities."[13] Because NARM materials are no longer considered LLRW, the Commission has no authority to regulate the regional management of NARM. Any previous policies related to NARM are no longer applicable.

[12] US Nuclear Regulatory Commission Regulatory Analysis for Final Rulemaking – Expanded Definition of Byproduct Material Established by Section 651(e) of the Energy Policy Act of 2005, March 2007.
[13] US NRC – 10 CFR 30.4.

The revised LLRW definition does not exclude non-discrete waste comprised of naturally occurring radioactive material (NORM. Therefore, waste containing NORM is LLRW under the Compact Act and is subject to the Compact Act's requirements concerning storage, treatment, and disposal of LLRW.

The party states have similar definitions for NORM. The IEMA-OHS defines NORM as:

> "Naturally occurring radioactive material" or "NORM" means materials that are undisturbed as a result of human activities and that contain any of the primordial radionuclides or radioactive elements as they occur in nature, such as radium, uranium, thorium, potassium, and their radioactive decay products. NORM does not include accelerator-produced, byproduct, source, or special nuclear material.[14]

The Kentucky Radiation Health Branch defines NORM as:

> "Naturally occurring radioactive material" (NORM) means any of the primordial radionuclides or radioactivity present in soils, rocks, and materials, that are not concentrated or disturbed as a result of human activities;[15]

When NORM becomes concentrated or disturbed from its location in nature, it is considered Technologically Enhanced Naturally Occurring Radioactive Material (TENORM).

Much of the NORM and TENORM waste consists of large volumes of waste with relatively small concentrations of radionuclides. However, in some instances, such as TENORM wastes generated during the exploration and production of oil and natural gas, the cleaning of pipes used in oil and gas production and distribution, and the treatment of drinking water and wastewater containing naturally occurring radionuclides, the concentrations of the radionuclides may be significantly increased. In larger concentrations these wastes present an increased radiation risk, not unlike that resulting from other LLRW.

The party states have similar definitions for TENORM as well. IEMA-OHS defines TENORM as:

> "Technologically enhanced naturally occurring radioactive material" or "TENORM" means naturally occurring radioactive material whose radionuclide concentrations are increased by or as a result of past or present human practices. TENORM does not include background radiation or the natural radioactivity of rocks or soils. TENORM does not include "source material" and "by-product

[14] 32 Illinois Administrative Code 622.20.
[15] Kentucky Revised Statutes Chapter 211.862.

> material" as both are defined in the Atomic Energy Act of 1954 (42 U.S.C. 2011 et seq.), as amended, and relevant regulations implemented by the NRC.[16]

The Kentucky Radiation Health Branch defines TENORM as:

> "Technologically enhanced naturally occurring radioactive material" or "TENORM" means: (a) Naturally occurring radioactive material with a radionuclide concentration that has been increased by human activities above levels encountered in the natural state; or (b) Naturally occurring radioactive material made more accessible by human activity. "TENORM" does not include the natural radioactivity of rocks or soils or source material, byproduct material, or special nuclear material as defined in 42 U.S.C. secs. 2011 et seq. and relevant federal regulations implemented by the Nuclear Regulatory Commission;[17]

TENORM waste, like other wastes, is an item of commerce and subject to the Commerce Clause of the U.S. Constitution. The Compact Act definition of LLRW includes TENORM as LLRW by virtue that it is not excluded (except for discrete radium-226 sources described above). Therefore, the Commission has the authority to limit the import and export of TENORM waste from the region as well as requiring that TENORM waste be managed according to the provisions of the Compact Act.

From a regulatory perspective, the disposal requirements will vary depending on the radionuclide(s) present, the concentration and the LLRW form. These factors along with the proposed disposal environment will be considered by the radiation protection regulatory agency in determining whether the proposed action will suitably protect public health and safety.

The Commission does not intend to regulate the interstate commerce into or out of the region for NORM materials as they occur at their naturally occurring concentration. This will mitigate concerns regarding the import or export of NORM materials such as excavated soils or rock, other building materials, or other consumer goods that contain NORM.

REGIONAL MANAGEMENT OF TENORM

The issues that relate to the regional management of LLRW will also apply to the management of TENORM waste. TENORM waste is processed, treated, and disposed of at numerous facilities throughout the country. Import and export restrictions on the interregional commerce of TENORM contaminated waste should parallel those

[16] 32 Illinois Administrative Code 622.20.
[17] Kentucky Revised Statutes Chapter 211.862.

restrictions placed on LLRW. The Commission considered limiting the access of TENORM waste to LLRW facilities in the region for the storage, treatment, and disposal (not including sealed sources returned to the manufacturer). The following discussion addresses the issues related to the regional management of TENORM.

Disposal of TENORM Waste at Facilities in the Region other than the Regional LLRW Disposal Facility

The public health and safety hazard presented by TENORM waste is a function of the radionuclides, activity, concentration, and waste form. Party state regulatory agencies may require an analysis of the public health and safety concerns for any proposed waste management activities whether it be disposal in place, disposal in a landfill, disposal in a licensed TENORM waste site or disposal at a licensed LLRW disposal facility.

In developing the policies associated with the safe management of TENORM waste, the Commission considered the impact of requiring the disposal of large volumes of waste with relatively small concentrations if radionuclides at the regional LLRW disposal facility. Rather than requiring all this material to be disposed at the regional LLRW disposal facility, a more reasoned solution would be to allow the party states' radiation protection regulatory agencies to determine the appropriate disposal requirements for TENORM waste. This would allow the radiation protection regulatory agencies to make the determination based on public health and safety concerns whether a proposed waste disposal methodology would be acceptable. These possible disposal methodologies may include disposal in place, disposal in a landfill, disposal in a licensed or permitted TENORM waste disposal facility or disposal in the regional LLRW disposal facility.

Commission Policy

It is the Commission's policy that the party state regulatory agencies may establish concentration limits for TENORM waste for disposal in a properly permitted landfill. TENORM waste with concentrations greater than the party state exemption limits shall be disposed of at the regional LLRW disposal facility.

Limiting the Export of TENORM Waste from the Region for Disposal Prior to the Opening of the Regional Disposal Facility

Based on the determination made by the Commission regarding limiting the export of LLRW there is no reason to limit the export of TENORM waste from the region for disposal prior to the opening of the regional LLRW disposal facility.

Commission Policy

The Commission's policy is to allow the unrestricted export of TENORM waste until the regional LLRW disposal facility begins operation.

Limiting the Export of TENORM Waste from the Region for Disposal After the Opening of the Regional LLRW Disposal Facility

In considering the export of LLRW from the region for disposal after the opening of the regional LLRW disposal facility, the Plan presents a discussion of the economics of LLRW disposal being dependent on the volume of wastes received and the need to ensure that wastes generated in the region that are destined for disposal end up at the regional LLRW disposal facility. To "maximize" the volume of waste received at the regional LLRW disposal facility, the Commission considered the appropriateness of prohibiting the export from the region of TENORM waste that requires disposal in a LLRW disposal facility.

Commission Policy

The Commission's policy is to prohibit the export of TENORM waste in concentrations exceeding the party state regulatory agencies' exemption limit for disposal after the regional LLRW disposal facility begins operation.

Limiting the Export of TENORM Waste from the Region for Treatment

The Plan adopted the policy allowing the export of LLRW for treatment and storage subject to the approvals required in the Compact Act. The treatment and storage of TENORM waste is functionally no different and as such, export from the region for treatment and storage should be allowed subject to the same requirements placed on LLRW.

Commission Policy

The Commission's policy is to allow the export of TENORM waste for treatment after the regional LLRW disposal facility begins operation, subject to the provisions of the Compact Act.

Limiting the Import of TENORM Waste into the Region for Disposal

The Commission adopted the policy to prohibit access to the regional LLRW disposal facility for imported waste. There is no reason the policy should be different for TENORM waste. By adopting a policy that allows the party states' regulatory agencies to authorize disposal of TENORM waste at facilities other than a licensed LLRW disposal facility, there exists the possibility that TENORM waste might be imported for disposal at non-LLRW disposal facilities located in the region. This is contrary to the intent of the Compact Act as well as past positions taken by the Commission. Therefore, the Commission considered adopting a policy that prohibits the import of TENORM waste for disposal.

Commission Policy

It is the Commission's policy to prohibit the import of TENORM waste into the region for disposal.

Limiting the Import of TENORM Waste into the Region for Treatment

There are several facilities in the region which receive items or waste that are contaminated with TENORM. Examples of these facilities are those that receive equipment, such as pumps and pipes, utilized in the exploration and production of oil and gas. These facilities are not considered "regional" for purposes of the Compact nor are they listed on any of the current interregional agreements. These facilities receive these items from people located both in and out of the region. During the treatment or storage of these items or wastes, TENORM waste requiring disposal may be produced.

To prevent TENORM waste originating outside of the region from being disposed in the region, the Commission considered the adoption of a policy requiring that all LLRW generated during treatment or storage that can be allocated back to the generator be returned to the generator or otherwise allocated to the generator for purposes of disposal. Waste generated during treatment or storage that cannot be allocated to a specific generator be attributed to the facility where the treatment or storage occurred.

Commission Policy

It is the Commission's policy to prohibit access to treatment facilities for imported TENORM wastes, except as authorized under an agreement or contract entered by the Commission subject to the provisions of the Compact Act.

Tracking Shipments of TENORM Waste

In determining the proper disposal of certain TENORM waste, the regulatory agencies may require that the waste be disposed of at a licensed LLRW disposal facility. To assure proper allocation of these wastes and to provide a mechanism for estimating future wastes of these types, shipments of TENORM waste destined for disposal at a licensed LLRW disposal facility should be tracked.

Commission Policy

The Commission's policy is to track shipments of TENORM waste with concentrations exceeding the party state regulatory agencies' exemption limit destined for disposal.

TRACKING SHIPMENTS OF LOW-LEVEL RADIOACTIVE WASTE

The Commission is authorized under the Compact Act to approve the import of LLRW from outside the Central Midwest Region to a facility in the region and the export of LLRW from the region. Until and unless the Commission grants its approval, such import or export is a violation of the Compact Act. However, it is possible that continued treatment or storage of LLRW in Illinois or Kentucky from outside the region can be of overall benefit to the Central Midwest Region. Treatment of LLRW can result in a waste form that is safer for transport, storage, or disposal, or can reduce the volume of waste that would ultimately require disposal. Economic factors may prevent every state or region in the country from establishing the full complement of treatment and storage facilities, and some form of interregional access to these facilities is desirable.

The Compact Act requires the Commission to actively exercise its authority over the import of low-level radioactive LLRW to facilities in the Central Midwest Region and export of LLRW from the region. A system that provides for tracking and accounting for LLRW will assist the Commission in making these required determinations regarding approval of import and export and assuring that neither Illinois nor Kentucky becomes responsible for disposal of LLRW from outside the region.

To assure that the provisions of the Compact Act are enforced, the generation, treatment, storage, and disposal of LLRW within the region and the export of LLRW from the region must be monitored. Without adequate monitoring, the Commission will be unable to plan for sufficient LLRW facilities to manage the region's LLRW and limit the number of such facilities. The Commission will be unable to identify and take such actions as may be necessary to protect the health and safety of the citizens of Illinois and Kentucky, or to accomplish the other purposes for which the Compact was created. In addition, the Commission will be unable to assure, as required by the Compact Act, that LLRW generated in the region is managed at regional LLRW facilities and that LLRW from outside the region is not brought to facilities in the region in violation of the Compact Act.

The Commission has already entered into bi-lateral agreements with the Commonwealth of Massachusetts, and the Midwest, Northeast, Rocky Mountain, Southeast and Southwestern Compacts regarding access to treatment and storage facilities. In addition, the Commission has signed a national agreement for access to treatment and storage facilities, which includes most of the remaining states and regions. The Commission needs to be able to monitor activities conducted under those agreements and must assure itself that LLRW generators who choose to take advantage of these agreements act in compliance with the agreements and the Compact Act.

The Commission has reviewed the tracking and reporting mechanisms currently in place in each of its party states. A significant amount of information about the generation,

treatment, storage and disposal of LLRW in the region is now being collected or could be collected under existing regulations. Further, the party states have enacted enforcement legislation, establishing penalties for violating the Compact Act's prohibitions.

In developing policy options, the Commission considered whether to implement its own tracking system or to require each of its party states to implement such a system. The Commission determined that each party state, rather than the Commission, should establish a tracking system suitable for the Compact's purposes.

In response, IEMA has developed both the technical and regulatory components of such a system. The Commission was advised at its 1996 Annual Meeting that the appropriate regulations are presently in place in Illinois. Considering this successful practical experience, the Commission adopted the following policy.

Commission Policy

The Commission encourages the party states to establish and implement, either individually or jointly, a system of LLRW tracking to facilitate enforcement of provisions of the Compact Act and to provide information to the Commission on LLRW tracking and enforcement. The Commission supports IEMA’s efforts to enforce the Compact Act, including compliance with the tracking system by entities outside the Compact region that either send LLRW into the region or receive LLRW from the region. In addition, if entities outside the Compact region fail to comply with requirements of the tracking regulations after receiving reasonable notice of those requirements, the Commission may reconsider the approvals it has given which allow those entities to make or receive shipments of LLRW that would be prohibited under the Compact without the Commission’s approval.

PART III - PUBLIC COMMENT

This Part will be completed after public comment has been received.