WESTCHESTER COUNTY
RADIOLOGICAL EMERGENCY PLAN FOR
THE INDIAN POINT ENERGY CENTER

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SECTION I
INTRODUCTION
Revision 1.0

06/11/12
SECTION I: INTRODUCTION

When the operating licenses for the Indian Point Energy Center, Units 1, 2 and 3 were issued, the Nuclear Regulatory Commission (NRC) completed to its satisfaction detailed reviews of the design and construction of each unit, as well as the procedures by which the units are operated (Unit 1 has subsequently been shutdown). These NRC reviews confirmed that each unit at the Indian Point Energy Center has a number of engineered safety features to minimize the offsite environmental impact of potential radiological releases and that Entergy Nuclear Northeast, the nuclear facility operator, (hereinafter referred to as “Entergy”) who operates the Indian Point Energy Center, has in effect many rigidly enforced safety features and programs associated with the handling of radioactive materials. Nevertheless, radioactive release incidents affecting public health and safety in Westchester County and the other three counties surrounding Indian Point may occur. Therefore, it is not only considered both prudent and appropriate to plan for such a contingency, but is required by Federal regulation in order to ensure that the offsite impact of such an occurrence is minimized.

A. AUTHORITY

The following laws, regulations and documents are relevant to authority to develop and implement this radiological emergency plan:

1. Westchester County Charter
2. New York State Radiological Emergency Preparedness Plan
3. New York State-Nuclear Regulatory Commission Agreement Article 7; Memorandum of Understanding, Paragraph 5.
4. New York State Defense Emergency Act
5. New York State General Municipal Law
6. New York State Executive Law, Article 2B as amended by Section 708, Laws of 1981
7. New York State Sanitary Code, Part 16
8. New York State Public Health Law, Section 201.
B. **SITUATION**

1. **Indian Point Energy Center (IPEC) Description**
   
a. **Site Location**

   The Indian Point Energy Center (IPEC) is located on the east bank of the Hudson River about 24 miles north of the New York City boundary line at Indian Point, Village of Buchanan in upper Westchester County, New York State. The station is about 0.8 miles southwest of the City of Peekskill, 8.3 miles south of West Point, 1.5 miles northeast of the Lovett Generating Station site, 4.6 miles north of the Bowline Point Generating Station site and 2.3 miles north of Montrose Point.

b. **Site Area Authority and Control**

   The Indian Point Energy Center is owned and operated by Entergy Nuclear Northeast.

   There are no residences within the site boundary. In addition, there are no public highways or railroads that traverse the site area.

   Entergy has the authority to determine and control all non-emergency activities occurring within the site boundary. This includes the removal and exclusion of personnel and the removal of property from the site. Additionally, Entergy is responsible for planning and implementation of the emergency response activities at the IPEC.

   The site area boundary is used for establishing effluent release limits and enables the Nuclear Facility Operator to fulfill it’s obligations with regard to the U.S. Nuclear Regulatory Commission requirements contained in 10CFR20. Access to the site is controlled for the purposes of protecting individuals from exposure to radiation or radioactive materials and to keep unauthorized persons outside the area.

c. **Regional Topography**

   The Indian Point Energy Center is surrounded on almost all sides by high ground ranging from 600 to 1,000 feet above sea level. The site is on the east bank of the Hudson River which runs northeast to southwest at this point but turns sharply northwest approximately two miles northeast of the site. The west bank of the Hudson is flanked by the steep, heavily wooded slopes of the Dunderberg and West Mountains to the northwest (elevations 1,086 feet and 1,257 feet respectively) and Buckberg Mountain to the west-southwest (elevation 793 feet). These peaks extend to the west by other names and gradually rise to slightly higher peaks.
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The general orientation of this mass of high ground is northeast to southwest. One mile northwest of the site, Dunderberg bulges to the east; north of Dunderberg and the site, high ground reaching 800 feet forms the east bank of the Hudson as the river makes a sharp turn to the northwest. To the east of the site, peaks are generally lower than those to the north and west. Spitzenberg and Blue Mountain each average about 600 feet in height and there is a weak, poorly defined series of ridges which again run mainly in a north-northeast direction. The river south of the site makes another sharp bend to the southeast and then widens as it flows in a southerly direction past Croton-on-Hudson and Haverstraw.

d. Site Description

The Indian Point Energy Center (IPEC) is approximately 239 acres in size and contains three pressurized water reactors. Unit 1 (615 MWt, 265 MWe, de-fueled and not operating), Unit 2 (3,071 MWt, 981 MWe) and Unit 3 (3,071 MWt, 981 MWe). Indian Point Unit 3 is adjacent to and south of Unit 1, and Unit 2 is adjacent to and north of Unit 1. Figure I-3 is a plot plan of all facilities at the IPEC.

The two operating plants were designed by Westinghouse Electric Corporation.

The Indian Point pressurized water reactors each contain a nuclear reactor and closed loops of pressurized water, which remove the heat energy from the reactor core and transfer the energy to a secondary water system that generates steam. The steam, in turn, drives a turbine generator set which produces electric power. This is shown in Figure I-4.

2. Westchester County Description

a. Westchester County Locale

The area within ten miles of the Indian Point Energy Center is located within four counties: approximately 37% Westchester, 27% Rockland, 21% Orange and 15% Putnam.

Geo-politically, the portion of Westchester County within the approximate ten-mile emergency planning zone varies from Peekskill, a city of 23,565 (2010 census) - 0.8 miles northeast of the site, to unpopulated parkland.

The western boundary of Westchester County runs approximately through the center of the Hudson River, the northern border coinciding with the southern border of Putnam County, the eastern border coinciding with the western border of Connecticut in the north and Long Island Sound in the south and the southern border coinciding with the northern border of New York City.
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At the extreme northwestern corner of the County is the Bear Mountain Bridge, approximately 3.8 miles north of the site; it is the only river-crossing within the ten-mile zone.

The Metro-North Hudson Line (MTA), runs north-south along the river and passes within one mile of the site.

Major highways within the Westchester portion of the ten-mile zone include Routes 9 and 9A running north-south, the Bear Mountain State Parkway, Routes 6, 35 and 202 all running east-west through Peekskill and the Taconic State Parkway running north-south, approximately seven miles east of the site.

b. Westchester County Infrastructure

Westchester’s location in the metropolitan region is one of its premier features. The county is easily accessible to and from New York City as well as Connecticut, New Jersey, Rockland and points north such as Albany.

The road network offers a system of interconnecting routes for direct travel. Alternate roads are generally available when needed - for efficiency or preference. Road maintenance is a priority and Westchester County coordinates with the NYS Department of Transportation to promote optimal conditions on the roads. The County’s SMART Commute Program provides information on ride sharing and transit as alternatives to driving alone during commute hours.

Public transportation is readily available intra-county and inter-county. Westchester’s Bee Line System provides routes throughout the county, express service into Manhattan and connections to Metro-North Railroad Stations. Express bus service between White Plains and Stamford, CT is operated by Connecticut Transit. MTA Metro-North Railroad operates three rail lines with frequent daily service between 44 Westchester stations and New York City. For longer distances, Amtrak services the Croton-Harmon, New Rochelle and Yonkers railroad stations for points north to Canada, south to Baltimore and Washington, west to Chicago and northeast to Boston.

Westchester County’s airport serves passengers in its world-class terminal with service provided by a number of major U.S. airlines. The airport handles most types of aircraft and is the largest corporate terminal in the country.

Power in Westchester County is transmitted and distributed by Consolidated Edison and by New York State Electric and Gas. The utilities offer a number of special rate programs to qualifying customers, business and residential, which result in savings in dollars and energy.
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Power programs specifically for industrial and government customers are provided by and accessed through the Westchester County Public Utility Agency and the New York Power Authority.

Westchester’s drinking water is provided by two major types of suppliers, municipal and private. The principal water source for both municipal and private suppliers is the New York City water supply system. The Catskill, Croton and Delaware systems are part of the New York City reservoir and aqueduct system and provide water to 85% of Westchester’s residents.

Seven County-operated wastewater treatment plants located along the Hudson River and Long Island Sound shores service approximately 90% of the county’s population. The remaining areas in the north county towns depend on locally-based central sewage collection and treatment districts or on subsurface sewage disposal systems located on each lot. Most solid waste is processed at the Charles Point Resource Recovery Facility in Peekskill. Recyclables are received at the County’s Material Recovery Facility which separates, processes and markets materials - a proven cost-effective method of waste management.

A more detailed description of Westchester County’s infrastructure can be found in the “Databook” maintained by the Westchester Planning Department. It may be accessed via the County’s website at:

http://planning.westchestergov.com/databook

c. Westchester County Population

In 2008, Westchester’s population was estimated to be 953,943 according to the US Census Bureau’s American Community Survey. Since the 2000 Census, Westchester's population has increased by 30,484 people or 3.3 percent, and the County’s population has increased by 9.0 percent (79,077 persons) in the eighteen years since the 1990 Census.

The population distribution within the approximate 10-mile EPZ of the IPEC, is presented in Appendix G.
C. ASSUMPTIONS

1. Background

The nature of the uranium fuel at the Indian Point Energy Center (IPEC) precludes the possibility of a nuclear explosion (a weapon-type detonation). Other types of accidents are possible, but unlikely. These accidents, should they occur, would almost certainly be contained within the reactor containment building. Nonetheless, an accidental release of radioactive materials to the offsite environment remains a remote possibility. If such a release should occur, the radioactive materials released would be comprised primarily of radioactive iodine, xenon and krypton gases. Although iodine filters will absorb most of all of the radioactive iodine released, the remaining gases vented into the atmosphere and carried by the wind into nearby areas of Westchester County could result in a potential hazard to the health and safety of the general public in the affected areas.

2. Emergency Planning Basis


The first EPZ, the plume exposure pathway emergency planning zone, is approximately ten (10) miles in radius and is designed primarily to control radiation exposures to the general public from direct radiation exposure from the plume. The principal radiation sources associated with this pathway are: (a) whole body external exposure to gamma radiation from the plume and from deposited materials and (b) inhalation exposure from the passing radioactive plume. The time of potential exposure could range in length from hours to days.

The second, the ingestion pathway EPZ, is approximately fifty (50) miles in radius, includes the 10-mile EPZ and is designed primarily to monitor contamination from any releases. The principal sources of radiation exposure from this pathway would be from ingestion of contaminated water or foods such as milk or fresh vegetables. The time of potential exposure could range in length from hours to months.
D. CONCEPT OF OPERATIONS

When considering preparedness, response and recovery for the IPEC, there are general responsibilities, which are shared by all levels of government and the Nuclear Facility Operator – Entergy Nuclear Northeast. These emergencies will initially be dealt with at the County (or local) level. In accordance with Article 2B of the Executive Law of the State of New York, the County Executive may proclaim a Local State of Emergency within any part or all of the territorial limits of the County. The County Executive may also request the Governor to declare a State of Emergency, or as a result of a disaster arising from a radiological accident, the Governor may direct the County Executive and emergency service organizations to notify the public that an emergency exists and take appropriate actions according to the New York State Plan.

The County will first utilize county resources. When resources are exhausted or additional assistance is required, such assistance will be requested and provided through the New York State Office of Emergency Management (NYSOEM). If it is necessary, the Governor will request Federal assistance. State and local resources such as airfields, command posts and communications will be made available, if possible, to support the Federal response. A liaison person for the Federal response has been designated in Part 1, Section III, of the New York State Radiological Emergency Preparedness Plan. This liaison person will be responsible for maintaining the list of resources available and maintaining communications with Federal agencies. The list of resources will be found in Part III, Section II, "Lists, Maps and Resources" of the New York State Radiological Emergency Preparedness Plan.

E. GENERAL RESPONSIBILITIES

1. County Responsibility

It is the responsibility of the government of each county to provide resources (equipment and personnel) for the effective implementation of the protective action response options required to protect the health and property of the general public and emergency workers in the event of a radiological release incident. If protective actions are required, the county will:

- Activate its emergency operations center.
- Notify municipal officials and other appropriate public officials.
- Consider initial precautionary actions.
- Delay opening of schools, if appropriate;
  or,
  shelter schools pending further determination;
  or,
  early dismissal of schools, sending students home;
  or,
  close school and evacuate students to a School Reception Center.
Close parks and recreational areas.

Initiate public information functions and participate in the Joint Information Center as a centralized source for public information and media releases.

Clear the Hudson River of pleasure craft within the 10-mile EPZ and (possibly) close the river to commercial traffic in the potentially affected area (U.S. Coast Guard authority and action).

Notify law enforcement officials and possibly establish Traffic Control Points.

Notify hospitals, nursing homes and other special facilities.

Place on stand-by transportation resources, fire and emergency medical services, field monitoring teams, Congregate Care Centers and Reception Centers and Reception Center support personnel.

Notify FAA and Metro-North (including Conrail/CSX and Amtrak).

Request/receive reports from agencies reporting to Emergency Operations Center.

Consider (in consultation with the County Executives of Orange, Putnam and Rockland Counties) the declaration of a Local State of Emergency.

In the event of a need to modify public behavior, consider (in consultation with the County Executives of Orange, Putnam and Rockland Counties) making public notification through sounding sirens followed immediately by an Emergency Alert System (EAS) radio message.

In support of a federal response, OEM will provide liaisons to any federal operations centers that may be established, and the county will make county-owned facilities, such as the airport and Westchester County Center, available to the extent requested and feasible (Note: See section I.E.2 below. The State Operations Officer is responsible for communicating with federal responders, determining needs and relaying that information to the county EOC. To date, no pre-planned requests for facility or other support services have been made to the county.)
Section I: Introduction

2. State Responsibility

It is the responsibility of the State of New York to recommend protective actions that would prevent or minimize radiation exposure to the population in the event of a radiological release incident. The State will also provide technical guidance and evaluation. Other than the extension of credit, assistance in the form of personnel, equipment, supplies, services and facilities may be provided when local resources are insufficient to cope with the effects of the emergency. The State shall take the necessary actions to respond to those instances where a county does not have the capability to implement all or part of its Radiological Emergency Preparedness Plan or the Chief Executive of a county does not elect to put such a plan into effect. The State assigns a State Liaison Officer who will coordinate the support for Federal agencies. This Liaison Officer will also be responsible to coordinate Federal support with the County when necessary. The State will continue to work closely with the Federal Government in all aspects of emergency management and will continue its role of intermediary between the Federal Government, local governments and private citizens (Ref. NYS Radiological Emergency Preparedness Plan, Part I, Section II.B.a. page II-1). The Operations Officer at the State Emergency Operations Center (EOC) is the designated State liaison to the Federal agencies, which have been requested to provide response support to the State (Ref. NYS Radiological Emergency Preparedness Plan, Part I, Section III, 1.4.).

3. Nuclear Facility Operators' Responsibility

It is the responsibility of Entergy Nuclear Northeast to provide overall assessment, evaluation and notification for response to both onsite and offsite emergency situations. The scope of their responsibility ranges from timely response action and notification in the event of minor occurrences which may lead to more serious consequences, through increasingly serious conditions, to severe events which may require immediate notification and evacuation of the public and the activation of a large emergency response organization.

4. Federal Government Responsibility

The responsibilities of the Federal government are:

(1) The Federal Emergency Management Agency has the lead responsibility for offsite nuclear emergency planning and response. This agency is charged with establishing policy for and coordinating civil emergency planning and assistance functions for Federal agencies.

(2) The U.S. Nuclear Regulatory Commission is the lead federal agency (LFA) in response to an event at a nuclear power plant, and
Section I: Introduction

is responsible for verifying that appropriate emergency plans have been implemented and for conducting investigative activities associated with a radiological emergency.

(3) The U.S. Department of Energy provides radiological assistance to the LFA and state, and is responsible for providing emergency operations to assist State and local governments in protecting the health and safety of individuals, the public, and the environment in the event of a radiological incident. This is accomplished by means of the Radiological Assistance Plan (RAP), which provides for the use of all available Federal capabilities.

(4) U.S. Environmental Protection Agency (EPA) sets standards for exposure and for certain recovery criteria (see Appendix I, 2.d and e).

(5) The Federal Aviation Administration (FAA) is responsible for restricting air-space and regulating air traffic. In the event of an emergency at IPEC, FAA may be requested to modify usual air traffic patterns and restrictions to ensure safety and security related to air traffic.

(6) The United States Coast Guard (USCG) is responsible for regulating the navigable waters of the United States. This includes the Hudson River along the borders of Westchester County. They will be responsible for restricting marine traffic on the river and for notifying boaters of emergency conditions.
FIGURE I-1
INDIAN POINT NUCLEAR POWER STATION
PLUME EXPOSURE PATHWAY
0-10 MILE EMERGENCY PLANNING ZONE

Indian Point Protective Action Areas
FIGURE I-2

INDIAN POINT NUCLEAR POWER STATION
INGESTION EXPOSURE PATHWAY
0-50 MILE EMERGENCY PLANNING ZONE
FIGURE I-3

INDIAN POINT ENERGY CENTER
SITE PLOT PLAN
FIGURE I-4

PRESSURIZED WATER REACTOR SCHEMATIC
SECTION II: PREPAREDNESS

Preparedness efforts associated with the county radiological program includes plan and procedure updates, annual training, drills and exercises, equipment maintenance and outreach efforts.

A. MISSION

The County, State and Federal governments, as well as Entergy, have the responsibility to prepare for all hazards at the Indian Point Energy Center (IPEC). A radiological emergency is a situation in which offsite protective action might be necessary to prevent or reduce radiation exposure to population as a result of an incident at a commercial power reactor.

Adequate preparation for radiological emergencies includes, but is not limited to the following:

1. Program administration (Project Management; Updating)
2. Plan and procedure development and maintenance
3. Maintaining emergency facilities and equipment
4. Conducting exercises and drills
5. Conducting annual training
6. Public Education/Awareness

B. PREPAREDNESS ACTIVITIES

The Commissioner, Department of Emergency Services is responsible for the development and administration of this plan. These responsibilities include:

1. Administration
   a. Controlling the distribution of copies of this plan.
   b. Providing for the prompt distribution of amendments and updates for this plan.
   c. Maintaining compatibility of this plan with other emergency plans.
   d. Conducting an annual review and update of this plan for the County Executive
   e. Coordinating the status of County radiological emergency response agencies and their procedures for implementing this plan.
2. Facilities and Equipment

   a. Maintaining up-to-date inventories of equipment resources that can be marshaled in the event of an emergency.

   b. Maintaining and ensuring the availability of the following:

      (1) Radiation dosimetry, including direct reading, electronic and radiation badge/dosimeter of legal record (DLR), for County emergency response personnel.

      (2) The County emergency communications network.

      (3) The County EOC in operational readiness.

      (4) An up-to-date telephone number listing that will be checked quarterly.

All other logistical elements of this plan are the primary responsibility of the individual County and local emergency response agencies.

   c. Providing for the quarterly (and after each use) testing of radiological instruments, equipment, warning systems and communications.

   d. Obtaining and maintaining supplies necessary to implement the plan, including but not limited to:

      (1) Materials for reception center operations;
      (2) Strip maps for evacuation or re-location of schools and other facilities;
      (3) Distribution of Potassium Iodide (KI) to the public and to emergency workers.

3. Exercises and Drills

   a. Conducting required drills and exercise(s) for the County emergency response agencies in conjunction with Entergy and the State of New York. Provisions will be made for the critique of the emergency drills and exercises by qualified observers. A mechanism will also be established for using the results of drills and exercises as a basis for improving this plan.
b. Pending the development of exercise scenarios by the State, NRC and FEMA before each drill and exercise, the County Office of Emergency Management (OEM) shall coordinate, with appropriate County, State and utility personnel the following information:

(1) The basic objectives of the drill or exercise and appropriate evaluation criteria.

(2) The date, time period, place and participating organizations.

(3) The simulated events.

(4) A time schedule of real and simulated initiating events.

(5) A narrative summary describing the conduct of the exercises or drills to include required simulated events.

(6) The scenario will be written to show that activities that are demonstrated will occur as a result of free play whenever possible. Free play will insure that events are occurring in the sequence desired and timing is appropriate and in sequence with the scenario.

(7) Arrangements for the observers will be completed by the Exercise Director. The arrangements will include housing, transportation, equipment and the time and place meetings are to be held for the observers. Each observer will be given a schedule of events with time and places included, observer/evaluator evaluation sheets with instructions on how to prepare and complete the sheets and the requirements for post-exercise meetings and critiques.

c. Selecting official observers and controllers from Federal, State and/or local governments to evaluate the drills and exercises.

4. Training and Technical Assistance

a. Maintaining liaison with the State and Entergy in order to fully utilize training assistance that may be provided.

b. Establishing, in connection with the State, a suitable training program that is specifically oriented toward radiological release incidents at the IPEC for all county emergency response agencies. This training program will provide for periodic retraining on, at least, an annual basis. Training and retraining programs shall be provided in the following areas:

(1) Emergency preparedness overview
Section II: Preparedness

(2) Direction and control
(3) Accident and dose assessment
(4) Radiological monitoring and decontamination
(5) Law enforcement and traffic control
(6) First aid and rescue
(7) Emergency Transportation
(8) Medical support
(9) Communications
(10) Public information and rumor control

c. Familiarizing new county emergency response personnel with this plan.
d. Providing relevant, up-to-date radiological incident emergency planning information, as appropriate, to the county emergency response agencies.

5. Public Education/Awareness

a. Developing, in conjunction with the County Public Information Officer (PIO), Entergy, the State of New York and the Federal government, a public education program to provide information about emergency planning and response to IPEC incidents.

b. Coordinating with the PIO, the State of New York and the Federal Government, an annual news media education program to acquaint the news media with the county radiological emergency plan.

c. Ensuring that the emergency information booklet is mailed to all 10-Mile EPZ residents.
d. Providing the news media with information concerning county response to radiation emergencies, and points of contact for release of public information in a radiological emergency. Unless otherwise indicated, the Joint Information Center, when operational, will serve to facilitate this purpose.
SECTION III
RESPONSE

Revision 1.0

06/11/12
SECTION III: RESPONSE

A. MISSION

The mission of the County Emergency Response Organization and the County Radiological Emergency Plan is to protect the health and safety of the general public of Westchester County in the event of a radiological incident at the Indian Point Energy Center.

In order to successfully execute the mission, it will be necessary to perform the following operations:

1. Monitor and assess the scope and magnitude of the incident.

2. Evaluate and decide which protective action response options should be initiated.

3. Implement the appropriate protective action response option or combination of options, if necessary. This includes:
   a. Initial Precautionary Operations
   b. Selective Sheltering-in-place
   c. General Sheltering-in-place
   d. Selective Evacuation
   e. General Evacuation
   f. Administration of potassium iodide (KI) to the public and to emergency workers
   g. Isolation of Ingestion Pathways and Sources

4. In addition to the operations stated above, the successful implementation of the plan will depend on the efficient and effective coordination of the plan with the REPs of other emergency response organizations. Specifically, the plan will have to be closely coordinated with the REPs of Orange, Putnam and Rockland Counties, the New York State Radiological Emergency Preparedness Plan and the Nuclear Facility Operator Site Emergency Plans. In the case of a multi-county response, inter-county actions will be coordinated through the New York State Office of Emergency Management, Region II. (Refer to the Indian Point site-specific section of the New York State Radiological Emergency Preparedness Plan).

In those instances where a County does not have the capability to implement all or part of its Radiological Emergency Preparedness Plan or the Chief Executive Officer of a County does not elect to put such a plan into effect, the Governor shall declare a State of Emergency for that County and direct State agencies to implement those parts of the plan that may be appropriate and necessary under the direction of the Disaster Preparedness Commission. State and local resources and personnel shall be utilized in carrying out these measures. The Disaster
Preparedness Commission assigns a representative to the County EOC to act at its direction in assigning missions and tasks, directing courses to control the situation, informing the public and acting in conjunction with other affected counties. These activities shall be carried out in accordance with the County's plan.

B. RESPONSE ACTIVITIES CONCEPT OF OPERATIONS

Effective implementation of the plan requires a clear understanding of the responsibilities of the people and/or organizations involved. For each emergency response activity, this section provides the following:

- Mission statement and description of the activity.
- Designation of lead responsibility.
- Designation of available assistance (primary and secondary support).

Secondary support for all response activities will be provided on an as-needed basis by all other organizations with functional responsibilities.

Table III-I summarizes the information on agency responsibilities.

The organizational structure outlined in the following paragraphs consists of existing government departments and offices and appropriate private organizations, as required for the planned emergency response or service activities. For coordination purposes, the County Emergency Response Organization consists of a "command and control" element and other specified emergency services, and is organized in a manner consistent with NIMS/ICS concepts. Each of the major emergency service functional areas will be headed by a Branch Director or titled individual from the organization who has lead responsibility. The department, organization or individual assigned to lead responsibility is responsible for obtaining agreed-upon division of responsibilities among the organizations participating in the service, exercising leadership in planning and training and reporting service performance and requirements to command and control. Participating organizations will plan for and carry out the service activities for which they are responsible.

1. Command and Control

*Mission Statement:* To assign missions and tasks, direct courses of action which control the operation whatever the emergency, inform the public and provide resource continuity for the County Emergency Response Organization.

*Lead Responsibility:* County Executive

*Primary Support:* County Commissioner of Emergency Services
Description: Command and control is established both procedurally and operationally. The county uses the National Incident Management System (NIMS)/Incident Command System (ICS) to organize and direct response activities. Operationally, the county activates an emergency operations center (EOC). The EOC is situated to include a Command Room manned by the County Executive and senior level staff. Decision-making and overall command/control is directed from the Command Room. The Operations Room of the EOC is managed by the EOC Manager who provides oversight and coordination for EOC staff. Field personnel take direction from EOC staff.

2. Alert and Notification of the Public

Mission Statement: To activate the prompt Public Alert and Notification System and to establish and maintain channels of cooperation between governmental officials and the news media through which an emergency public notification program can provide essential information to the residents of Westchester County when a protective action response may be required.

Lead Responsibility: County Commissioner of Emergency Services

Primary Support: Westchester County Executive, Director of Communications, Public Information Officer, Office of Emergency Management and 60 Control.

Secondary Support: Law Enforcement Agencies, County Commissioner/Sheriff Public Safety, County Department of Parks, Recreation and Conservation and New York State Department of Parks and Recreation, New York State Police, Civil Air Patrol and U.S. Coast Guard.

Description: Alerting of the public is accomplished primarily through a siren system. The county has backup means of alerting and notifying the public, including but not limited to an automated Emergency Notification System, an automatic telephone dialing system which provides taped messages to the public.

Notification of the public is accomplished through the Emergency Alert System (EAS) messages via radio and television broadcasts. A Joint Information Center (JIC) is established as a primary means for the issuance of public information for the media.

A JIC website is also available for the public to access both emergency information and the County will post emergency information on its website as well.
3. Evacuation

**Mission Statement:** To implement, as directed, the evacuation response option identified in order to insure the safety of the public.

**Lead Responsibility:** County Executive, in coordination with County Commissioner of Emergency Services and Commissioner of Health

**Primary Support:** County Commissioner of Public Safety and New York State Division of State Police; County Department of Transportation. Protective action recommendations are provided by IPEC.

**Secondary Support:** Local Law Enforcement Agencies, New York State Office of Emergency Management and New York State Department of Transportation; County Emergency Medical Services, private transportation companies.

**Note:** Additional Secondary Support provided on an as-needed basis by all other organizations with functional responsibilities.

**Description:** Evacuation is one of several protective action options available to the county. Evacuation areas will depend upon the wind direction and plant conditions. Most likely evacuation scenarios are for a two mile radius around the plant and five miles down wind; five mile radius and ten miles down wind; or a full ten mile radius. This is known as the “keyhole” approach.

4. Reception and Congregate Care Centers

**Mission Statement:** To provide the resources essential to support evacuated people requiring assistance in designated Reception Centers and shelters where the care and needs of these people will be met, and to operate such Reception Centers and shelters.

**Lead Responsibility:** County Commissioner of Social Services for reception centers and the American Red Cross for congregate care.

**Primary Support:** County Commissioner of Health, County Department of Parks, Recreation and Conservation, County Department of Public Works, New York State Department of Social Services, and local fire, emergency medical services and police.

**Secondary Support:** Salvation Army, County Department of Senior Programs and Services, County Office of the Disabled and the Westchester Emergency Volunteer Reserve (WEVR).

**Description:** The Reception Centers will be organized by the County Commissioner of Social Services to provide initial assistance to evacuees needing...
temporary lodging. Services provided at reception centers include activities such as registration, monitoring, decontamination (if necessary), first aid and disposition to a shelter or medical facility, as needed. These services will be provided on a priority basis, depending upon the areas that may be affected by a release. Shelters will be coordinated by the American Red Cross to provide short-term housing and food for the evacuees.

Westchester County has identified six public reception centers, all of which are approximately twenty miles from the IPEC. See the public information brochure for a location map showing all receptions centers. A map is also located in the EOC.

5. Communications

**Mission Statement:** To provide facilities and personnel to support the emergency communication needs of essential government departments, volunteer services and the public. To provide communication facilities and personnel in the County Emergency Operations Center (EOC); to interface with the IPEC, the State of New York, affected county local governments including the City of Peekskill and appropriate Federal agencies such as the Nuclear Regulatory Commission and the U.S. Department of Energy.

**Lead Responsibility:** County Commissioner of Emergency Services

**Primary Support:** County Commissioner of Public Safety, Department of Emergency Services Chief of Communications, Department of Emergency Services 60 Control

**Secondary Support:** County Fire Services, County Emergency Medical Services, County Department of Information Technology and New York State Emergency Management Office, County Nuclear Facility Liaison Officer.

**Description:** Westchester County maintains a robust emergency communications network for daily emergency service requirements, as well as communication systems specific to response to the Indian Point. Dedicated telephone (digital/analog) systems, local government radio, commercial telephone, automated digital call-outs and local emergency service radio frequencies are all part of the county communications system. The EOC is equipped with a dedicated RECs line, Executive hotline, telephones (digital/analog) and radios. Additional communication capabilities including cell phones, satellite phones, Voice over IP phones and email are also available for use during emergencies. RACES radio volunteers supplement these resources. The county 60 Control Communications Center communicates with county fire and EMS units and is the designated County Warning Point. The Department of Public Safety maintains radio communications with county law enforcement and other local law enforcement agencies.
6. Fire and Rescue Services

*Mission Statement:* To limit the loss of life and property which could result from fire or other causes, to rescue trapped and injured persons and to insure fire prevention and suppression.

*Lead Responsibility:* Deputy Commissioner, County Department of Emergency Services

*Primary Support:* Local Fire Departments and Ambulance Corps and County Emergency Medical Services

*Description:* Activities that are performed under this function include, but are not limited to the following:

a. Establishing communications with all County Fire Departments and disseminating information to them.

b. Alerting all firefighters and bringing each department to full operational capacity.

c. Coordinating resources and assistance requirements with other agencies, e.g. water resources, re-supply of firefighting equipment and law enforcement assistance.

d. Updating and verifying the inventory of county-wide firefighting resources.

e. Rendering first aid and assisting emergency transport of the injured during an evacuation or other emergency operation, as required and establishing communications with medical support facilities (hospitals).

f. Assisting in the dissemination of evacuation warnings in affected areas if called upon to do so.

7. Law Enforcement and Traffic and Access Control

*Mission Statement:* To provide traffic direction and control; to insure citizen safety; to maintain law and order; to protect public and private property during emergency operations; to provide protection for critical facilities, supplies, and evacuated areas; to control access to risk areas and to assist in the dissemination of emergency announcements.

*Lead Responsibility:* County Commissioner of Public Safety

*Primary Support:* Local Law Enforcement Agencies and New York State Police
Secondary Support: National Guard (if committed by the Governor), other State militia forces (if committed by the Governor); U.S. Coast Guard (on Hudson River); Civil Air Patrol (requested through SEMO); Federal Aviation Administration (FAA).

Description: An evacuation time estimate study and Traffic Management Plan have been developed which identify traffic control points (TCPs) to be manned in order to facilitate evacuation traffic flow. The specific points to be manned are dependent upon the evacuation scenario, and law enforcement agencies have the discretion to man any intersection based upon traffic conditions at any time or emergency classification level. Personnel required to staff key TCPs will be placed on standby at an Alert and will activate TCPs at a Site Area or General Emergency.

Access control will be established after evacuation is completed in order to secure impacted areas.

8. Public Works (Engineering)

Mission Statement: To provide overall coordination to all engineering activities for the construction, rehabilitation and repair of all essential materials and facilities in order to support and maintain emergency services.

Lead Responsibility: County Commissioner of Public Works and Transportation

Primary Support: New York State Department of Transportation

Secondary Support: County Department of Parks, Recreation and Conservation and local Public Works and Highway Departments

Description: Activities which may be required under this function include, but are not limited to, the following:

a. Coordinating debris clearance, the removal of other impediments to evacuation and emergency repairs to roads and bridges.

b. Establishing and maintaining traffic control barricades.

c. Provide assistance in transporting uncontaminated supplies of foodstuffs to the general public and water and stored feed for livestock to farmers.
9. **Public Education/Information**

*Mission Statement:* To educate the general public on how they will be notified and what their initial actions should be during a radiological emergency and to disseminate information to the public once a radiological emergency has occurred.

*Lead Responsibility:* County Public Information Officer

*Primary Support:* Department of Emergency Services, Director of Communications (OCE), New York State PIO, Entergy PIO


*Description:* Activities that are required under this function will be coordinated with the Nuclear Facility Operator, the State of New York and the Federal government and include:

a. Coordination of public education programs to familiarize the general public of Westchester County with the various aspects of the plan.

b. Preparation of press/news releases which may be issued to the news media in case of a radiological release or impending release.

c. Establishment of procedures to access the area’s Emergency Alert System for dissemination of emergency information over radio and television.

d. Establishment of a Public Inquiry Call Center to answer questions during an emergency

e. Establishment of rumor control procedures for specific information

10. **Emergency Medical Services**

*Mission Statement:* To coordinate emergency medical services and treatment for the ill and injured and to coordinate the movement of patients, equipment and personnel of hospitals, nursing homes or other special facilities that are health-related facilities. This includes establishing communications links between fixed and mobile medical support facilities, as well as coordination of support for the non-institutionalized mobility impaired and hearing impaired, as required.

*Lead Responsibility:* Department of Emergency Services, Emergency Medical Services Coordinator
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Primary Support: County Emergency Medical Services, 60 Control, County Commissioner of Public Safety, County Fire Services, local Fire Departments and Ambulance Corps, and Westchester Medical Center

Secondary Support: County Department of Transportation and Civil Air Patrol

11. Transportation

Mission Statement: To provide transportation services during an emergency situation for people without the resources to transport themselves. The services provided under this activity exclude those described in association with rescue and law enforcement operations (activities - see paragraphs g and h above).

Lead Responsibility: County Commissioner, Department of Public Works and Transportation

Primary Support: County Transportation Companies

Secondary Support: County Emergency Medical Services, County Department of General Services, County Department of Parks, Recreation and Conservation, National Guard (if committed by the Governor), other State militia organizations (if committed by the Governor), New York State Department of Environmental Conservation and Civil Air Patrol.

12. Social Services

Mission Statement: To provide short-term housing, food, clothing, registration, inquiry and rehabilitation; to furnish information or counseling in personal family problems due to the inability to re-enter areas which may require decontamination following an incident; to coordinate the movement and consolidation of persons from adult homes (non-health related) and to supervise and assist in the organization and training of emergency welfare services.

Lead Responsibility: County Commissioner, Department of Social Services

Primary Support: County Department of Mental Health and New York State Office of Emergency Management

Secondary Support: American Red Cross, Salvation Army and County Department of Senior Programs and Services
Section III: Response

13. Accident Assessment

*Mission Statement:* To assess and/or monitor the offsite consequences of a radiological emergency and to coordinate such monitoring activities. This includes the prompt offsite actions necessary to determine the potential risk to public health and safety. The Nuclear Facility Operator (NFO) has the initial responsibility for accident assessment. This will be followed by prompt, specialized radiological assessments by qualified county and state personnel. Activities that are required under this function include, but are not limited to, the following:

a. Determining the magnitude and disposition of radioactive releases into the air, earth's surface or surface water.

b. Deploying field or mobile radiological assessment resources.

c. Correlating the NFO estimates of possible offsite radiological consequences of a release with actual offsite consequences determined by field measurement.

d. Maintaining survey and sampling stations to assess the consequences of radiological releases.

*Lead Responsibility:* County Commissioner of Health

*Primary Support:* Nuclear Facility Operator and New York State Department of Health


14. Protective Response Evaluation

*Mission Statement:* To determine the proper protective action response options to be implemented based on the protective action guides and projected doses, dose rates, contamination levels and levels of airborne or waterborne radioactivity. The initial recommendations concerning protective actions to be taken will be made by the Nuclear Facility Operator. Each of the protective action response options are described in Section III.G of this plan:

*Lead Responsibility:* County Commissioner of Health

*Primary Support:* New York State Office of Emergency Management and New York State Department of Health, Nuclear Facility Operator
Secondary Support: U.S. Nuclear Regulatory Commission, Commissioner of Emergency Services

Note: Other secondary support provided on an as-needed basis by all other organizations with functional responsibilities.

15. Radiological Exposure Control

Mission Statement: To control and minimize the radiological exposure of emergency response personnel and potentially affected members of the general public.

Lead Responsibility: County Commissioner of Health

Primary Support: Radiological Dose Assessment Director and Radiological Safety Officer of the County Dose Assessment Team; New York State Department of Health; County Department of Emergency Services

Secondary Support: Provided on an as-needed basis by all other organizations with functional responsibilities, including New York State Department of Environmental Conservation.

Description: Activities that are required under this function include, but are not limited to, the following:

a. Protecting emergency personnel from excessive exposure to radiation and for decontamination of exposed individuals, if required. (See Section III.)

b. Performing radiological monitoring and decontamination of evacuees, including recording estimates of radiological exposures, if necessary. (See Section IV.D.)

c. Assessing the need for the administration of potassium iodide (KI) to the public and to emergency workers

16. IPEC Onsite Evacuation

Mission Statement: To assist IPEC in the event of an onsite evacuation.

Lead Responsibility: Entergy is responsible for directing and implementing an evacuation of the site in accordance with their onsite emergency plans. Westchester County supports that effort as necessary. Lead responsibility for the County rests with the Commissioner of Public Safety.

Primary Support: State and local law enforcement agencies
Secondary Support: Provided on an as-needed basis by all other organizations with functional role.

Description: IPEC provides Westchester County a copy of their onsite emergency plan, and has also provided a copy of IP-EP-250 which addresses release of non-essential personnel. Non-essential personnel may be released as early as an Alert. When such a decision is made by IPEC, the Westchester EOC will be notified. Upon notification, the county will provide any requested support. The Department of Public Safety will evaluate the situation for traffic control requirements. The PIO will also be notified in order to evaluate the need to incorporate information into news releases.

In the event of movement of EOF personnel to the alternate EOF, Westchester County will provide police escorts, if requested. Specific information on points and routes of egress are considered confidential and are not published in plans for security reasons.

C. DIRECTION AND CONTROL

1. Direction

The County Executive of Westchester County has the statutory authority for executing the County Radiological Emergency Plan. The County Executive may delegate to the Deputy County Executive or Commissioner of Emergency Services the authority to act on his/her behalf in carrying out these responsibilities. Figure III-1 illustrates the relationship between the various members of the County Emergency Response Organization. The County uses NIMS/ICS as an emergency management tool to facilitate effective direction of response activities.

In the City of Peekskill, the Commissioner of Public Safety/City Manager (or his/her designee) acts as the Emergency Management Director. It is the responsibility of the Commissioner to implement the City of Peekskill's Disaster Response Plan.

Other towns within the County Emergency Planning Zone may activate Emergency Operations Centers. Coordination with these local jurisdictions will be facilitated through county OEM and other county EOC staff assigned such responsibilities.

2. Control

a. Westchester County Emergency Operations Center

For radiological emergencies at the Indian Point Energy Center (IPEC), Westchester County will use its Emergency Operations Center (EOC)
located in the Hudson Valley Transportation Management Center, 200 Bradhurst Avenue, Hawthorne, New York. Once the EOC is activated, provisions will be instituted to insure 24-hour operation, if necessary. Each county agency head will establish 24-hour (12-hour shift) duty assignments.

Commissioners or other agency heads will immediately initiate their respective telephone call down procedures and then report to the EOC on notification of an emergency classification of Alert, Site Area Emergency or General Emergency.

Entergy will provide space in their Emergency Operations Facility (EOF) for the County Nuclear Facility Liaison Officer (CNFLO). Entergy has established and will maintain a communications link between the EOF and the County Emergency Operations Center for use by the CNFLO to exchange information with the County Commissioner of Health. While in the EOF, the CNFLO will also be able to communicate with the representatives of the New York State Department of Health, the Nuclear Regulatory Commission and Orange, Rockland and Putnam Counties. A description of the EOF is given in Section 7.1 of the IPEC Site Emergency Plans.

The EOF will have a considerable amount of technical information available for use by the Westchester Liaison, which includes detailed Westchester County maps showing road networks and population distributions, pre-calculated dose overlays for different radiological releases and meteorological conditions and relayed data on the prevailing radiological release rates and onsite meteorological conditions at the IPEC. The data will be analyzed at the EOF/AEOF and recommendations of protective actions will be transmitted to each County and State EOC.

b. Westchester County Emergency Communications Network

The Westchester County emergency communications network and facilities are described in Appendix E. The NFO emergency communication network and facilities are described in Section 7.2 of the IPEC Site Emergency Plan. The CNFLO will have access to the communications facilities within the EOF.

Also, the NFO will provide and maintain a communications link to the EOC for use by the CNFLO.

Both the Westchester County and the NFO emergency communications networks incorporate advance design concepts, such as emergency power sources, dedicated communications links between key points, alternate communication pathways and prearranged security procedures. Because
of the importance and sensitivity of the emergency communications networks, the technical details of these design concepts are classified on a need-to-know basis.

The New York State Radiological Emergency Communications System (RECS) interconnects Warning Points operated on a 24-hour basis, the State and the four counties surrounding the Indian Point Energy Center. This provides a reliable and compatible emergency communications system (Appendix E). There is also the SEMO Southern District Local Government Net, installed as a backup radio system between the NFO, the County EOCs and County Warning Points. The system uses the local government radio sets. Communications between contiguous states and counties in the 50-mile ingestion exposure pathway is a New York State responsibility and will be accomplished by the State Warning Point.

The New York State/Four-County Radiological Emergency Executive "hotline" is a dedicated line with stations in the Emergency Operations Centers of Rockland, Orange, Putnam and Westchester Counties and the State of New York, as well as the Indian Point Emergency Operations Facility (EOF) and Alternate Emergency Operations Facility (AEOF), for inter-county coordination of protective actions.

Communications with field radiological monitoring teams may be accomplished by any of the following means:

- Personal Cell Phones
- Nextel Phones using their Direct Connect feature
- Satellite telephones and/or
- RACES volunteers using mobile radios in vehicles, a remote base station in the EOC, and a remote handset in the Dose Assessment Room in the EOC.

The Emergency Medical communications system provides radio link between ambulances (EMS and fire), hospitals and the County EOC. This system includes fixed and mobile radio stations and operates on a 24-hour basis.

c. Release of Public Information

To insure the controlled and coordinated release of information to the public, the County Public Information Officer (PIO) is designated as the official Westchester County source for all releases of information to the news media. All other Westchester County emergency response personnel will forward all requests for information from the news media to the PIO.

The PIO, under the direction of the County Executive (CE), Director of Communications (OCE) and the Commissioner of Emergency Services
will arrange for any public announcements to be made over local radio
and/or TV stations via the Emergency Alert System (EAS). (Reference
the Indian Point Joint Information Center Procedures, bound under
separate cover.) County, State and NFO Public Information Officers shall
consult with one another prior to issuing information to the public to
insure that factual and consistent information will be available for
reporting to the public in a timely manner at both State and local levels.
Specific requests for information accrued by local jurisdiction regarding
public health and safety items not covered in the joint State-local liaison
will be referred to the State PIO.

d. **Public Inquiry**

The Westchester County PIO will participate in the Public Inquiry system
designed for any emergency at Indian Point. The Public Inquiry program
has two components. The primary component provides for the monitoring
of broadcast and print media for news accuracy. The second component
deals with response to questions, misinformation or rumors circulating
through the public. A Public Inquiry team, staffed by County personnel
will carry out the Public Inquiry function. The public inquiry call center
will be established at the Michaelian Office Building in White Plains.

Westchester County will rely upon Entergy to monitor the media and
identify rumors or misinformation.

3. **State Direction and Control**

The Governor of the State of New York may, at the request of the County
Executive or upon his/her own initiative, declare that a state of emergency exists
in the county; upon which declaration, responsibility for direction and control of
the emergency shall pass from the county government to the State government in
accordance with Article 2-b of the Executive Law of the State of New York.

It is understood that the county government generally, and the county emergency
organization specifically, shall remain in place and continue to perform their
normal and emergency functions albeit under State direction and control. (See
Figure III-2.)

D. **EMERGENCY PERSONNEL RADIOLOGICAL EXPOSURE CONTROL**

Emergency Personnel Radiological Exposure Control is necessary to monitor and
minimize the radiological exposure of County emergency response personnel. This
includes individuals engaged in accident assessment, the rescue of endangered or injured
personnel, lifesaving activities, the evacuation of affected populations and protection or
prevention of property damage or loss.
If a radiological emergency occurs at the Indian Point Energy Center, emergency operations may be necessary to protect the health and safety of the public and reduce the escalation of the radiological problem. It is possible that involved emergency response personnel may be exposed to radiation and become contaminated performing their duties.

All possible measures will be taken to limit the radiation exposure of emergency workers to those values and conditions as described below except when specific lifesaving actions or extraordinary emergency operations are required.

During a radiological emergency, the Commissioner of Emergency Services and the County Commissioner of Health are responsible for the radiological exposure control of emergency response personnel. Activities associated with this responsibility include, but are not limited to, the following:

1. Issuing, as appropriate, to Westchester County emergency response personnel direct-reading dosimeters, electronic dosimeters, radiation badges/DLR’s, chargers and KI (if directed) upon the initiation of the execution of this plan.

2. Instructing each person performing emergency service functions inside affected areas to take dosimeter readings at 15 to 20-minute intervals. Should an indicated exposure exceed 1 REM, a report shall be made to the individual's immediate superior, and the County Radiological Safety Officer, who will in turn ensure notification of the Commissioner of Emergency Services and the County Commissioner of Health. If the indicated exposure exceeds 1 REM per day or 3 REM total, a report should immediately be made to the County Commissioner of Health. In this case, the dosimeter reading should be recorded and the dosimeter zeroed to insure adequate recording of the emergency worker's exposure. Only the Commissioner of Health shall extend time in the 10-mile EPZ for exposure greater than 5 REM Total Effective Dose Equivalent (TEDE). All dosimeter reading changes shall be recorded on the individual's Exposure Record Card.

3. Assuring that personnel assigned specific missions inside affected areas which entail out-of-vehicle operations are provided with an Emergency Worker Reference Card and instructed on how to use appropriate protective equipment. Included shall be instructions regarding the availability and use of radio-protective drugs. (Further information regarding this subject may be found in Appendix C).

4. Recording the radiological doses received of all exposed emergency workers.

5. Establishing facilities for the decontamination of possibly contaminated emergency personnel.

6. Selecting rescue personnel for lifesaving activities utilizing the following criteria:

   a. Rescue personnel should be volunteers or professional rescue personnel.
b. Rescue personnel should be broadly familiar with the consequences of exposure and contamination.

c. If practical, women capable of reproduction should not take part in these actions.

d. If practical, volunteers above the age of 45 should be selected.

7. EPA 400 suggests that Emergency Worker, performing activities that protect valuable property, keep emergency radiation exposures within the following guidelines:

   a. Planned TEDE should not exceed 10 REM.

   b. Hands and forearms may receive an additional dose of up to 100 REM's (i.e., extremities).

   c. Eyes may receive an additional dose of up to 30 REM's

8. EPA 400 suggests that Emergency Worker, performing life saving activities or the protection of large populations, keep emergency radiation exposures within the following guidelines:

   a. Planned TEDE should not exceed 25 REM.

   b. Hands and forearms may receive an additional dose of up to 250 REM's (i.e., extremities).

   c. Eyes may receive an additional dose of up to 75 REM's

9. EPA 400 also suggests that Emergency Workers can exceed 25 REM TEDE on a voluntary basis if well informed of the risks.

10. EPA 400 also states that any female emergency worker who is "declared pregnant" (i.e., self-declared in writing) shall be limited to 500 mREM TEDE for the duration of her pregnancy.

E. ACTIVATION AND MOBILIZATION

Nuclear Regulatory Commission regulations (NUREG-0610) have established four classes of Emergency Classification Levels for nuclear power plants. Nuclear power plant licensees are required to provide for the prompt notification of local and state authorities whenever an initiating condition for any of the four Emergency Classification Levels exists. These definitions have been updated in the Westchester County REP effective 2009 to incorporate NRC recommended language related to security events.
These revisions are based on the challenge posed by terrorist events rather than current plant status. Nuclear accident progression considers the unlikely occurrence of multiple failures and the defense-in-depth provided by plant design. The ECL definitions incorporate the intentional harm and destruction of a hostile action that could lead to a radiological release.

The four classes of Emergency Classification Levels by increasing severity are:

Notification of Unusual Event (NUE)

Unusual events are in process or have occurred which 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 occur.

Alert

Events are in process or have occurred which involve an actual or potential substantial degradation of the level of safety of the plant or a security event that involves probable life threatening risk to site personnel or damage to site equipment because of intentional malicious dedicated efforts of a hostile act. Any releases are expected to be limited to small fractions of the EPA Protective Action Guideline exposure levels.

Site Area Emergency (SAE)

Events are in process or have occurred, which involve actual or likely major failures of plant functions needed for protection of the public or security events that result in intentional damage or malicious acts; (1) toward site personnel or equipment that could lead to the likely failure of or; (2) prevents effective access to equipment needed for the protection of the public. Any releases are not expected to exceed EPA Protective Action Guideline exposure levels beyond the site boundary.

General Emergency (GE)

Events are in progress or have occurred which involve actual or imminent substantial core degradation or melting with potential for loss of containment integrity or security events that result in an actual loss of physical control of the facility. Releases can be reasonably expected to exceed EPA Protective Guideline exposure levels offsite for more than the immediate site area.

The rationale for the Notification of Unusual Event and Alert classes is to provide early and prompt notification of minor events which could lead to more serious consequences given operator error or equipment failure or which might be indicative of more serious conditions which are not yet fully realized. A graduation is provided to assure more complete response preparations for more serious indicators.

The Site Area Emergency class reflects conditions where some significant releases are likely or are occurring, but where a core-melt situation is not indicated based on current
information. The General Emergency class involves actual or imminent substantial core degradation or melting with the potential for loss of containment. In these situations, full mobilization of emergency personnel in the near-site environs is indicated as well as the dispatch of monitoring teams and associated communications.

The plan initiation scheme presented in the following sections describes applicable notification, activation and verification phases that could result from any of the four (4) classes of ECLs.

1. Notification
   
   a. Nuclear Facility Operators' Notification Plan

   The NFO notification plan is initiated when the Indian Point Energy Center (IPEC) Emergency Director determines that an initiating condition exists for any of the four Emergency Classification Levels. Upon this determination, the NFO Emergency Director shall notify the County Warning Point by activating the New York State Radiological Emergency Communications System (RECS) (Appendix E).

   b. County Notification Plan

   Immediately following receipt of an IPEC emergency warning, the County Warning Point (DES 60 Control) will call the agencies and persons indicated in the implementation procedures. The county’s automated digital Emergency Notification System (ENS) will be used to make some of these contacts. The calls will include pertinent information received from the IPEC. The person receiving the call is responsible for making additional calls as indicated in the agency procedures. The county Warning Point is operated on a 24-hour basis. Calls from the Communication Center may be supplemented by using law enforcement personnel to personally notify agencies and persons when initial calls cannot be completed.

   The County Commissioner/Sheriff will direct the notification of local municipal officials (town, city, village) through their respective chiefs of police.

2. Activation

   Westchester County Emergency Operations Center is organized along NIMS/ICS lines and adheres to incident command principles. During the activation phase of the radiological emergency plan, the following key County emergency response personnel will proceed to their primary duty station: either the County Emergency Operations Center (EOC), the Nuclear Facility Operator’s Emergency Operations...
 Facility (NFO/EOF) or the Joint Information Center. This activation may occur at an Alert or higher classification.

a. County Personnel and Agency Representatives Reporting to EOC

   County Executive
   Commissioner of Emergency Services
   Commissioner/Sheriff of Public Safety
   Commissioner of Health
   Information Technology staff
   Commissioner of Public Works and Transportation
   Commissioner of Social Services
   Public Information Officer and staff
   Emergency Medical Services Coordinator
   Commissioner of Environmental Facilities
   Commissioner of Parks and Recreation
   Director of Community Mental Health
   Office of Emergency Management personnel
   Department of Correction

b. County Personnel Reporting to the NFO/EOF

   EOF Liaison Officer (DOH)
   County Homeland Security Representative (DPS)

d. Other Representatives Reporting to the EOC

   Schools’ Representative
   RACES Radio Officer(s)
   New York State Department of Transportation
   New York Division of State Police
   New York State Emergency Management Office
   American Red Cross
   (also representing other Volunteer Organizations Active in Disasters, e.g. Salvation Army)
   Board of Legislators Representative
   Consultants and other Expert Advisors

Upon arrival at the EOC, the first responsibility of the Commissioner of Emergency Services, or designee, is to activate and confirm the operability of the secure communications links between the County, State EOC and the NFO/EOF. After the NFO/EOF-to-EOC communications link has been operationally verified, the Commissioner of Emergency Services will through his/her staff, activate and confirm the operability of the County emergency communications network.
The County is capable of sustained EOC operations. Primaries and alternates have been designated for each EOC staff position. EOC procedures call for each EOC officer to plan shift changes for response to protracted events. Further, the Commissioner of the Department of Emergency Services, or his designee, acting as EOC Operations Manager, is responsible for confirming shift assignments and maintaining a shift organizational chart.

OEM staff is responsible for planning food and beverages for extended operations.

Upon arrival at the EOF, the County EOF Liaison Officer will confirm arrival at the EOF to the Health Department Representative in the EOC.

In the event the individual listed above for each agency does not respond, his/her alternate or designee will be immediately notified. A list of alternates will be maintained by the Health Department.
Unified Command Group may include: County Executive or Deputy CE, Department of Emergency Services, Department of Public Safety, Department of Transportation,
3. Verification

During the verification phase of the County Radiological Emergency Response Plan, the County Executive and the County Commissioner of Emergency Services will, either personally or through their staffs, confirm the activation and availability of emergency response personnel and resources.

4. Preliminary Public Information Release

The County Commissioner of Emergency Services will coordinate with the Director of Communications and EOC Public Information Officer, to initiate the appropriate public notification procedures to inform the general public of the existence and nature of the emergency. This initial notification of the public will be coordinated with public information personnel in the other involved jurisdictions through the Joint Information Center and existing joint information system. It will be followed by periodic information updates, as discussed in Section C, D.2.c and the Indian Point Joint Information Center Procedures. Contact with radio station for Emergency Alert System messages is via telephone.

The County PIO will also notify the State PIO, who in turn will notify the FEMA PIO of actions taken.

F. ASSESSMENT AND EVALUATION OF PROTECTIVE ACTION RESPONSE OPTIONS

1. Assessment

The County Commissioner of Health (CCH) has three (3) primary resources to use during the assessment phase of the County Radiological Emergency Preparedness Plan. In assessing the impact that potential radiological release incidents at the Indian Point Energy Center (IPEC) can have on the general public of Westchester County, the CCH will have previously-developed accident analysis data and information, relayed data on the prevailing radiological release rates and onsite meteorological conditions at the IPEC and nuclear safety specialists from the County and State Health Departments, the NFO, the NRC and the U.S. Department of Energy as described in Appendix J, who will provide both diagnostic and prognostic assessments.

a. Previously-Developed Data

The CCH will have available evacuation timetables for different areas of the County. As referenced in Appendix A, evacuation timetables are available for various contingencies such as adverse weather conditions or the loss of a primary evacuation route.
b. **Relayed Meteorological and Radiological Data**

Relayed data from the meteorological monitors at and around IPEC will be available to the COUNTY. This information, when integrated with data from the National Weather Service, can be used to determine the actual and projected meteorological conditions for the County.

The COUNTY will also have available relayed data from numerous fixed radiation monitors at and around IPEC and mobile radiation monitoring teams which will be deployed by the NFO to the NFLO, who will in turn provide the data in hard copy to the EOC and by the U.S. Department of Energy through the RAP and FRMAP programs as described in Appendix J.

c. **Incident Diagnosis and Prognosis**

The COUNTY will coordinate assessment of the incident with nuclear safety specialists from the State Health Department, the Nuclear Facility Operator, the Nuclear Regulatory Commission and the U.S. Department of Energy who will be providing an on-going diagnosis and prognosis of the incident. This assessment will identify events that have occurred or are in progress that might result in major failures of plant functions that normally protect the general public. The NFO will provide information on estimates of time required to repair the release projections and the corrective actions being taken.

The COUNTY has established procedures for dose assessment. These procedures are on file in the Does Assessment Room within the County EOC.

Dose Assessment calculations are performed by a staff made up of professional engineers and other technical staff assigned to the Westchester County Health Department. In accordance with instructions from the Radiological Dose Assessment Director, the Field Monitoring Team Coordinator directs the Field Monitoring Team to location points. (See also Field Monitoring Procedures Manual, bound under separate cover.)

After completed, calculations are reported to a Radiological Dose Assessment Director. After verification by the Coordinator the assessment information is reported to the County Health Commissioner and the County Commissioner of Emergency Services and after evaluation to the County Executive. The County Executive will discuss the assessment data with State officials, officials of other counties over the dedicated “Executive Hotline” and if necessary with licensee officials. Once coordination is completed, decisions will be made on what protective actions will be taken.
The assessment teams' leader will be designated the Radiological Dose Assessment Director (RDAD). The RDAD will report to the Commissioner of Health and will keep in contact with the New York State EOC. The RDAD will follow the instructions that are on file at the Assessment Room of the County EOC. These instructions include:

1. Receiving meteorological reports.
2. Calculating formulas - worksheets for distances of 1, 2, 5 and 10 miles.
5. Identifying Potential or Actual Source Term\(^1\)
7. Activating, directing and receiving information from Field Monitoring Teams.
8. Means of communicating with State and Licensee Dose Assessment personnel.

2. Evaluation

   a. Input Parameters and Boundary Conditions

   The evaluation phase of the Westchester County Radiological Emergency Plan determines the protective action response options that should be implemented in order to successfully execute the primary mission of the Plan. To accomplish this goal, the plan has incorporated the Protective Action Guidelines (PAGs) developed by the Environmental Protection Agency (EPA) for determining appropriate responses during radiological emergencies. The EPA PAGs are presented in Table III-2.

   In evaluating which of the protective action response options to implement, the Commissioner of Emergency Services and CCH will integrate the following input data and boundary conditions to establish a basis for the decision-making process:

\(^1\) The County Dose Assessment Group uses the source term and release rates provided by the NFO which is then confirmed with the State. The County follows the dose assessment methodology provided by the Nuclear Facility Operator.
Section III: Response

(1) EPA PAGs

Current road and meteorological conditions received from the County and local law enforcement agencies, State and County Department of Transportation, County and local Highway Departments, the New York Division of State Police, the Nuclear Facility Operator and the National Weather Service.

(3) Time requirements for the implementation of the protective action response options.

(4) Plant status including incident diagnosis and prognosis received from the Nuclear Facility Operator, the State Department of Health, the County Department of Health, the Nuclear Regulatory Commission and the U.S. Department of Energy.

b. Critical Time Frames

Once the input parameters and boundary conditions have been established, the OEM and CCH will proceed to identify the critical time frames necessary to successfully complete the mission of the plan for a particular incident. Specifically, the critical time frames to be identified for a particular incident are the implementation time frames for the various protective action response options and the time frame for the safe termination of the incident.

The implementation time frame for a particular protective action response option has two components: notification time and execution time. "Notification Time" refers to the time required to notify the population-at-risk and to deploy whatever emergency response personnel and equipment is necessitated by the particular protective action response option.

"Execution Time" refers to the time after notification that is required for the completion of the particular protective action response option. When the notification time requirements for different County areas have been established, the critical time frame for the General Evacuation Response Option will have been identified.
c. **Projected Doses**

After the decision bases and critical time frames have been established, the County Health Department will determine the projected doses for a particular area by extrapolating projected dose rates (CDE-thyroid and TEDE) over the critical time frames for the various protective action response options and for the estimated duration of the incident. These values, when added to any doses already received in the area since the beginning of the incident, represent the projected doses for the particular county area within the time frames of interest. The projected doses approaching the PAG levels are an indication of the increasing desirability of implementing one or more of the plan protective action response options.

Besides utilizing data from radiological monitors to determine projected doses, the COUNTY will also utilize the results of the diagnostic and prognostic assessments of the incident discussed in Section C.7.a.(3).

Unless otherwise directed, dose projections will be for a 4-hour period.

d. **Decision Process**

Based upon the information from previous paragraphs (1), (2) and (3) above, the County Executive can make a decision as to the protective action response option to be implemented. This decision may be coordinated with the Commissioner of the New York State Department of Health, the Chairman of the Disaster Preparedness Commission, the Nuclear Facility Operator and with the Chief Executives of Orange, Rockland and Putnam Counties.

An example of one potential implementation sequence for the protective action response options is presented in Table III-3. As discussed in Section C.7.a.(3), the projected doses shown in Table III-3 can be based either on radiological monitoring data or on results from the diagnostic and prognostic assessment of the incident.

G. **PROTECTIVE ACTION RESPONSE OPTIONS**

In this section, the following protective action response options are described:

1. Initial Precautionary Operations
2. Selective Sheltering-in-place
3. General Sheltering-in-place
4. General Evacuation
5. Immediate General Emergency
6. Administration of KI to Emergency Workers and the Public
7. Isolation of Ingestion Pathways and Sources
8. Re-Entry
The protective action response options provide the County Executive (CE) with the capability to successfully execute the primary mission of the plan. These protective action response options are complementary and functionally additive. This allows the County Executive to implement more than one of the protective action response options at the same time for a particular radiological release incident. In addition, the County Executive can implement the protective action response options for the specific population-at-risk.

1. **Initial Precautionary Operations**

   The implementation and execution of the initial precautionary operations will be in accordance with the procedures and may include the following:

   a. The temporary closing of tourist areas such as parks and campgrounds in those Westchester County areas within approximately ten miles of the Indian Point Energy Center (IPEC).

   b. The temporary closing of all elementary and secondary schools in Westchester County within approximately ten miles of IPEC.

   c. The recommending of temporary suspension of non-critical patient admissions to FDR Veterans Administration Hospital and the Hudson Valley Hospital Center at Peekskill/ Cortlandt. Agreements presently exist to facilitate such an inter-hospital transfer of patients.

   f. Activation of the Emergency Alert System (EAS) to achieve a heightened awareness of a radiological emergency at Indian Point and to recommend public attention to future EAS or news broadcasts.

2. **Selective Shelter-in-place**

   The Selective Shelter-in-place Response Option gives the County Executive the capability of implementing effective protective action for individuals who could not be safely evacuated if a Selective or General Evacuation was necessary. This would include individuals who have been designated medically unable to withstand the physical and/or psychological stress of an evacuation as well as those individuals who require constant, sophisticated medical attention.

   The primary locations for implementing the Selective Shelter-in-place Response Option include FDR Veterans Administration Hospital in Montrose, the Hudson Valley Hospital Center of Peekskill/ Cortlandt and the Sing Sing Correctional Facility.
3. **General Sheltering-in-place**

The General Shelter-in-place Response Option gives the County Executive the capability to implement an effective protective action for the general public in the event of a puff-type radiological release incident at IPEC. In addition, for those situations requiring evacuation and where evacuation cannot be implemented because of time constraints and/or impediments to highway movement, General Shelter-in-place may be implemented in lieu of evacuation.

(A puff-type radiological release is defined as a concentrated release of radionuclides of short, limited duration.) For an incident of this type, the most effective protective response action is immediate, temporary shelter-in-place for the general public in the affected areas. The viability of this response option is extremely dependent on existing meteorological conditions at the time of the incident.

The implementation and execution of the General Shelter-in-place Response Option will include notifying the general public of Westchester County in the affected areas around IPEC to remain indoors and close their windows, etc. (See Appendix D for information.) The public will also be advised to monitor future EAS and news broadcasts for possible protective action recommendations.

The decision to initiate this option will be made by the County Executive. The Director of Communications (OCE) and / or the Lead PIO, will coordinate the notification of the general public.

4. **General Evacuation**

The General Evacuation Response Option provides the CE with the capability to efficiently evacuate the general public from any or all areas within the 10-mile EPZ.

The evacuation time estimate study for Westchester County’s portion of the ten mile EPZ is summarized in Appendix A and a complete copy is on file in the EOC. The evacuation study details the evacuation routes, traffic control points, traffic capacities and the total evacuation time requirements for evacuating different areas of the county. These evacuation times represent the estimated time required to evacuate a particular area after the general public has been notified that an evacuation is necessary. Alternate routes will be selected and announced via EAS in the event of loss of primary route/routes during adverse weather conditions. Various evacuation scenarios have been developed and are detailed in Appendix A. These include:

- Summer, midday, midweek
- Summer, midday, weekend
- Summer, evening, midweek/weekend
- Winter, midday, midweek
- Winter, midday, weekend
Winter, evening, midweek/weekend

Each of the above scenarios is developed for both good weather and rain and also for snow in winter scenarios. Additionally, two special events are studied:

- Autumn, midday weekend, West Point Football
- Spring, midday, midweek, West Point Graduation

The implementation and execution of the General Evacuation Response Option of the plan will include the following:

a. The notification of all members of the general public in the areas to be evacuated of the situation and the officially recommended course of action. (See Appendix F.) This notification will include information on when and how far to evacuate, what evacuation routes to use, reception centers and how to notify authorities if any relocation assistance is needed. This operation will be directed by the CE and assisted by the other County emergency response organizations.

b. The establishment of traffic control points at key intersections along the evacuation routes. The final traffic control point will be located beyond the boundary of the 10-mile EPZ. This operation will be coordinated by the County Commissioner/Sheriff of Public Safety (CCPS) assisted by the Westchester County local law enforcement agencies and the New York State Police.

c. The evacuation of non-mobile residents and hard-to-move (medical) residents who are without access to other transportation. This operation will be coordinated by the Hospitals representative in the EOC assisted by the County Department of Transportation (DOT), the County Office for the Disabled and County Emergency Medical Services.

d. The monitoring of the evacuation routes and the facilitating of the evacuation traffic flow. This operation will be coordinated by the Department of Public Safety (DPS) assisted by the county and local police, and the New York State Police.

e. The establishment of incoming traffic control points and security patrols for evacuated areas. This operation will be coordinated by the DPS assisted by the Westchester County local law enforcement agencies and the New York State Police.

f. Any or all patients from special facilities for whom evacuation would have a minimal medical risk will also be evacuated. This operation will be directed by the Hospitals representative in the EOC and other appropriate County officials in conjunction with the special facilities' administrators. The Commissioner of Emergency Services will coordinate whatever assistance is requested by the Hospital’s representative in the EOC.
5. Immediate General Emergency

By mutual agreement, Orange, Putnam, Westchester, and Rockland Counties, and New York State have agreed to issue an initial default protective action decision to shelter in place five miles around, until the four County Executives can consult with health authorities and coordinate an evacuation decision.

6. Administration of KI to Emergency Workers and the Public

Appendix C of this plan details the county plans and procedures for administration of KI to emergency workers and the public. The county Commissioner of Health is responsible for determining when to take this action. Upon Declaration of a General Emergency at IPEC by the licensee, the Commissioner of Health will order the administration of KI to emergency workers and those members of the general public in the impacted (or potentially impacted) area.

7. Isolation of Ingestion Pathways and Sources

The State of New York, through the Commissioner of Health with assistance from designated agencies is responsible for the implementation and execution of the isolation of the Ingestion Pathways and Sources Response Option contained in the State of New York Radiological Emergency Preparedness Plan.

The Isolation of Ingestion Pathways and Sources Response Option gives NY State and Westchester County the capability of implementing effective protective actions to ensure that the potential for individuals to receive radiological doses in excess of recommended limits through the various ingestion pathways is minimized. This would involve control of radioactively-contaminated drinking water and foodstuffs.

The implementation and execution of the isolation of the Ingestion Pathways and Sources Response Option will conform to the Isolation of Ingestion Pathways Guidelines contained in the State of New York Radiological Emergency Preparedness Plan and will include the following:

a. Upon receipt of radiation monitoring results which indicate contamination of a drinking water supply or foodstuffs (ingestion of which could exceed recommended limits), the Commissioner of Health shall immediately quarantine such foodstuffs and ban the drinking of water as an initial precaution.

b. Based upon additional examination, if isotopic concentrations exceed those specified in Tables III-4 and III-5, the County Commissioner of Health (CCH) shall coordinate the appropriate actions to be taken with the New York State Department of Health, as indicated in these tables.

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c. OEM with the CDPW shall coordinate arrangements necessary for the distribution of uncontaminated supplies of drinking water and food, as necessary.

8. Re-Entry

Authorization for any re-entry of members of the general public into previously evacuated areas shall originate with the Commissioner of Health and the County Executive.
<table>
<thead>
<tr>
<th>TABLE III-1</th>
<th>EMERGENCY RESPONSIBILITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>L-LEAD RESPONSIBILITY</strong></td>
<td>Command and Control</td>
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<tr>
<td></td>
<td>COUNTY EXECUTIVE</td>
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<tr>
<td></td>
<td>COUNTY COMMISSIONER OF EMERGENCY SERVICES</td>
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<tr>
<td></td>
<td>COUNTY PUBLIC INFORMATION OFFICER</td>
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<td></td>
<td>COUNTY COMMISSIONER/SHERIFF OF PUBLIC SAFETY</td>
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<tr>
<td></td>
<td>COUNTY COMMISSIONER OF DEPT. OF PARKS, RECREATION AND CONSERVATION</td>
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<tr>
<td></td>
<td>COUNTY COMMISSIONER OF EMERGENCY SERVICES</td>
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<tr>
<td></td>
<td>COUNTY COMMISSIONER OF HEALTH</td>
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<tr>
<td></td>
<td>COUNTY EMERGENCY MEDICAL SERVICES DIRECTOR</td>
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<tr>
<td></td>
<td>COUNTY COMMISSIONER OF DEPT. OF ENVIRONMENTAL FACILITIES</td>
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<tr>
<td></td>
<td>COUNTY COMMISSIONER OF DEPT. OF MENTAL HEALTH</td>
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<tr>
<td></td>
<td>COUNTY COMMISSIONER OF PUBLIC WORKS and TRANSPORTATION</td>
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<tr>
<td></td>
<td>CIVIL AIR PATROL</td>
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<tr>
<td></td>
<td>COUNTY TRANSPORTATION COMPANIES</td>
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<td>COUNTY COMMISSIONER OF SOCIAL SERVICES</td>
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<tr>
<td></td>
<td>CREDIT OFFICE FOR THE AGING</td>
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<tr>
<td></td>
<td>COUNTY OFFICE FOR THE DISABLED</td>
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<td></td>
<td>LOCAL LAW ENFORCEMENT AGENCIES</td>
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<td></td>
<td>LOCAL FIRE DEPARTMENTS AND AMBULANCE CORPS</td>
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<td></td>
<td>LOCAL PUBLIC WORKS AND HIGHWAY DEPARTMENTS</td>
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<td>NYS DEPARTMENT OF HEALTH</td>
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<tr>
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<td>NYS EMERGENCY MANAGEMENT OFFICE</td>
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<td></td>
<td>NYS DEPARTMENT OF SOCIAL SERVICES</td>
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<td></td>
<td>NYS DEPARTMENT OF TRANSPORTATION</td>
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<td></td>
<td>NYS DEPARTMENT OF ENVIRONMENTAL CONSERVATION</td>
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<tr>
<td></td>
<td>NYS DIVISION OF STATE POLICE</td>
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<tr>
<td></td>
<td>NYS DEPARTMENT OF PARKS AND RECREATION</td>
</tr>
<tr>
<td></td>
<td>NATIONAL GUARD ** (STATE MILITIA)</td>
</tr>
<tr>
<td></td>
<td>UNITED STATES DEPARTMENT OF ENERGY</td>
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<tr>
<td></td>
<td>UNITED STATES NUCLEAR REGULATORY COMMISSION</td>
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<tr>
<td></td>
<td>AMERICAN RED CROSS</td>
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<tr>
<td></td>
<td>NUCLEAR FACILITY OPERATOR</td>
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<td></td>
<td>US COAST GUARD</td>
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<td></td>
<td>SCHOOLS COORDINATOR</td>
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<td></td>
<td>FEDERAL AVIATION ADMINISTRATION</td>
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<td></td>
<td>FEDERAL EMERGENCY MANAGEMENT AGENCY</td>
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<tr>
<td></td>
<td>RADIO AMATEUR EMERGENCY SERVICE (RACES)</td>
</tr>
<tr>
<td></td>
<td>U.S. ENVIRONMENTAL PROTECTION AGENCY (USEPA)</td>
</tr>
</tbody>
</table>
### TABLE III-2

**EPA PROTECTIVE ACTION GUIDELINES**

<table>
<thead>
<tr>
<th>PROJECTED EXPOSURE DOSE (REM) TO THE POPULATION</th>
<th>RECOMMENDED ACTIONS¹</th>
</tr>
</thead>
</table>
| TEDE < 1 OR CDE-Thyroid < 5                   | 1. No protective action required. County/State may issue an advisory to seek shelter and await further instructions or to voluntarily evacuate.  
                                             | 2. Monitor environmental radiation levels. |
| TEDE 1 to < 5 OR CDE-Thyroid 5 to < 25        | 1. Conduct mandatory evacuation of populations in the predetermined area.²  
                                             | 2. Seek shelter for remainder of plume EPZ and await further instructions.  
                                             | 3. Monitor environmental radiation levels.  
                                             | 4. Control access. |
| TEDE ≥ 5 OR CDE-Thyroid ≥ 25                 | 1. Conduct mandatory evacuation of populations in the predetermined area.²  
                                             | 2. Monitor environmental radiation levels and adjust area for mandatory evacuation based on these levels.  
                                             | 3. Control access. |

**NOTE:** Total Effective Dose Equivalent (TEDE)

Committed Dose Equivalent (CDE)-Thyroid

¹ These actions are recommended for planning purposes. Protective action decisions at the time of the incident must take into consideration the impact of existing constraints.

² Seeking shelter would be an alternative if evacuation was not immediately possible.
### EXAMPLE IMPLEMENTATION SEQUENCE

<table>
<thead>
<tr>
<th>PROJECTED DOSE COMMITMENT</th>
<th>PROTECTIVE ACTION RESPONSE OPTIONS IMPLEMENTED</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>EPA 400-R-92-001 Limits</td>
<td>Initial Precautionary Operations</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>EPA 400-R-92-001 limits &lt;1 REM TEDE OR &lt;5 REM CDE-Thyroid</td>
<td>General Shelter-in-place Isolation of Ingestion Pathways Selective Evacuation Selective Shelter-in-place</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>1 to &lt; 5 REM TEDE OR 5 to &lt;25 REM CDE-Thyroid</td>
<td>General Evacuation Selective Evacuation Selective Shelter-in-place General Shelter-in-place Isolation of Ingestion Pathways</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>≥ 5 REM TEDE or ≥ 25 REM CDE-Thyroid</td>
<td>General Evacuation Selective Evacuation Selective Shelter-in-place General Shelter-in-place Isolation of Ingestion Pathways</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Keys:**
- (<) = Less than
- (>) = Greater than
- (≥) = Greater than or equal to

This implementation sequence assumes a radiological release incident that develops over a period of time. In addition, it assumes arbitrarily that the projected doses are for an area within 2 miles of the IPEC or 5 miles downwind, projected over a 4-hour period.

---

REV 1.0  
06/11/12
TABLE III-4

RECOMMENDED PROTECTIVE ACTION TO AVOID WHOLE BODY AND THYROID DOSE FROM EXPOSURE TO A GASEOUS PLUME
U.S. ENVIRONMENTAL PROTECTION AGENCY

EPA 400-R-92-001
Manual of Protective Action Guides
and Protective Actions
For Nuclear Incidents

A. PAGs for the Early Phase of a Nuclear Incident

<table>
<thead>
<tr>
<th>Protective Action for General Public</th>
<th>PAG (projected dose)</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evacuation (or shelter-in-place\textsuperscript{a})</td>
<td>1-5 REM\textsuperscript{b} TEDE or 5-25 REM CDE-Thyroid</td>
<td>Evacuation (or, for some situations, shelter-in-place\textsuperscript{a}) should normally be initiated at 1 REM.</td>
</tr>
</tbody>
</table>

\textsuperscript{a}Shelter-in-place may be the preferred protective action when it will provide protection equal to or greater than evacuation, based on consideration of factors such as source term characteristics, and other site-specific conditions.

\textsuperscript{b}The sum of the effective dose equivalent resulting from exposure to external sources and the committed effective dose equivalent incurred from all significant inhalation pathways during the early phase. Committed dose equivalents to the thyroid and to the skin may be 5 and 50 times larger, respectively.

Although the PAG is expressed as a range of 1-5 rem, it is emphasized that, under normal conditions, evacuation of members of the general population should be initiated for most incidents at a projected dose of 1 rem. (It should be recognized that doses to some individuals may exceed 1 rem, even if protective actions are initiated within this guidance.) It is also possible that conditions may exist at specific facilities that warrant consideration of values other than those recommended for general use here.

Shelter-in-place may be preferable to evacuation as a protective action in some situations. Because of the higher risk associated with evacuation of some special groups in the population (e.g. those who are not readily mobile), shelter-in-place may be the preferred alternative for such groups as a protective action at projected doses up to 5 rem. In addition, under unusually hazardous environmental conditions use of shelter-in-place at projected doses up to 5 rem to the general population (and up to 10 rem to special groups) may become justified. Shelter-in-place may also provide protection equal to or greater than evacuation due to the nature of the source term and/or in the presence of other site-specific conditions. Illustrative examples of situations or groups for which evacuation may not be appropriate at 1 rem include: a) the presence of severe weather, b) competing disasters, c) institutionalized persons who are not readily mobile, and d) local physical factors which impede evacuation.
### TABLE III-4 (continued)

**RECOMMENDED PROTECTIVE ACTION TO AVOID WHOLE BODY AND THYROID DOSE FROM EXPOSURE TO A GASEOUS PLUME**

**U.S. ENVIRONMENTAL PROTECTION AGENCY**

**EPA 400-R-92-001**

**B. Guidance on Dose Limits for Workers Performing Emergency Services**

<table>
<thead>
<tr>
<th>Dose limit&lt;sup&gt;a&lt;/sup&gt; (REM) TEDE</th>
<th>Activity</th>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>all</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>protecting valuable property</td>
<td>lower dose not practicable</td>
</tr>
<tr>
<td>25</td>
<td>life saving or protection of large populations</td>
<td>lower dose not practicable</td>
</tr>
<tr>
<td>&gt;25</td>
<td>lifesaving or protection of large populations</td>
<td>only on a voluntary basis to persons fully aware of the risks involved</td>
</tr>
</tbody>
</table>

<sup>a</sup>Total Effective Dose Equivalent (TEDE): Sum of external effective dose equivalent and committed effective dose equivalent to non-pregnant adults from exposure and intake during an emergency situation. Workers performing services during emergencies should limit dose to the lens of the eye to three times the listed value and doses to any other organ (including skin and body extremities) to ten times the listed value. These limits apply to all doses from an incident, except those received in unrestricted areas as members of the public during the intermediate phase of the incident.
TABLE III-5

RECOMMENDED DERIVED INTERVENTION LEVEL (DIL) OR CRITERION FOR EACH RADIONUCLIDE GROUP \(^{(a),(b)}\)

All Components of the Diet

<table>
<thead>
<tr>
<th>Radionuclide Group</th>
<th>Bq/kg</th>
<th>(pCi/kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sr-90</td>
<td>160</td>
<td>4300</td>
</tr>
<tr>
<td>I-131</td>
<td>170</td>
<td>4600</td>
</tr>
<tr>
<td>Cs-134 + Cs-137</td>
<td>1200</td>
<td>32,000</td>
</tr>
<tr>
<td>Pu-238 + Pu-239 + Am-241</td>
<td>2</td>
<td>54</td>
</tr>
</tbody>
</table>

Ru-103 + Ru-106 \(^{(c)}\) \[ \frac{C_3}{C_6} + \frac{C_6}{<1} \quad \frac{C_3}{C_6} + \frac{C_6}{<1} \]

<p>| | | |</p>
<table>
<thead>
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<tbody>
<tr>
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</tbody>
</table>

Notes:

a. The DIL for each radionuclide group (except for Ru-103 + Ru-106) is applied independently (see discussion in Appendix D of “ACCIDENTAL RADIOACTIVE CONTAMINATION OF HUMAN FOOD AND ANIMAL FEEDS: RECOMMENDATIONS FOR STATE AND LOCAL AGENCIES”, Radiation Programs Branch, division of mammography Quality and Radiation Programs, Office of Health and Industry Programs, U.S. Department of Health and Human Services, food and drug Administration, August 13, 1998). Each DIL applies to the sum of the concentrations of the radionuclides in the group at the time of measurement.

b. Applicable to foods as prepared for consumption. For dried or concentrated products such as powered milk or concentrated juices, adjust by a factor appropriate to reconstitution, and assume the restitution water is not contaminated. For spices, which are consumed in very small quantities, use a dilution factor of 10.

c. Due to the large difference in DILs for Ru-103 and Ru-106, the individual concentrations of Ru-103 and Ru-106 are divided by their respective DILs and then summed. The sum must be less than one. \( C_3 \) and \( C_6 \) are the concentrations, at the time of measurement, for Ru-103 and Ru-106, respectively (see discussion in Appendix D).
FIGURE III-2
COUNTY RADIOLOGICAL EMERGENCY RESPONSE ORGANIZATIONAL RELATIONSHIPS

Westchester County Executive

- NY SEMO
- NYS Dept of Social Services
- NYS Parks & Recreation
- NYS Disaster Preparedness Commission
- Civil Air patrol

Misc Agencies

- Other County E.O.C.s
- F.E.M.A.
- Enlarged IPEC Emergency Coordinator
- US Dept of Energy
- US Nuclear Regulatory Commission
- US Environmental Protection Agency
- NYS EOC (Albany)
- NYS Environmental Facilities
- Parks, Recreation & Conservation

Other VOADs

- Salvation Army
- Salvation Army

Consultants

- Local heads of Government
- Public Information Officer

Schools Coordinator

- American Red Cross
- Other VOADs

Department of Health

- Administrators of Special Facilities
- NYS Health Dept.
- RACES Radio Officer
- US Coast Guard
- W.C. Haz-Mat Team
- Local Fire Departments

Department of Emergency Services

- Office of Emergency Medical Services
- County Transportation Companies
- NY State Dept. of Transportation
- Office of Transportation
- Local Govt. Dept. of Public Works
- Office of the Aging

Department of Transportation

- Division of Fire Services
- NY State Dept. of Public Works
- Office of the Disabled
- Environmental Facilities
- Parks, Recreation & Conservation

Department of Public Works

- Division of Fire Services
- W.C. Haz-Mat Team
- NY State Police
- Other VOADs

Department of Social Services

- Other County Departments
- Department of Public Safety
- Other VOADs

Division of Emergency Medical Services

- Local EMS Agencies
STATE CONCEPTUAL RESPONSE ORGANIZATIONAL STRUCTURE AFTER GUBERNATORIAL DECLARATION OF STATE DISASTER EMERGENCY

**GOVERNOR**
Determines need for State assistance and leadership to locals.

**DISASTER PREPAREDNESS COMMISSION (DPC)**
Creates temporary organization to coordinate and support all available resources. Local, State, Federal and Private Organizations. Selects the SCO.

**STATE COORDINATING OFFICER (SCO)**
Individual selected by the DPC to head emergency management efforts on site.

**STATE EMERGENCY MANAGEMENT OFFICE**

**STATE AGENCIES**
Appropriate support as provided for by the State Disaster Plan or selected by the Disaster Preparedness Commission.

**COUNTY, CITY, TOWN, VILLAGE**
All local resources and emergency service organizations available to the local level.

**FEDERAL AGENCIES**
Any Federal agencies that are able to respond prior to Presidential Declaration.

**VOLUNTARY PRIVATE AGENCIES**
American Red Cross, Salvation Army, Mennonites, CAP, etc.

**PRIVATE BUSINESS, INDUSTRY**
Any private resources available to support State efforts.

Notes: 1. Subject to Section 21.3(F) Article 2.B Executive Law
SECTION IV
INTERMEDIATE AND LATE PHASE OPERATIONS
Revision 1.0

04/12/16
SECTION IV: INTERMEDIATE AND LATE PHASE OPERATIONS

A. Purpose

The purpose of this section is to consolidate, and describe the details of, intermediate and late phase actions associated with a radiological incident at the Indian Point Energy Center. This section addresses ingestion pathway, recovery, re-entry and return operations which are unique to radiological emergencies. This section also outlines the authority and role of the County Executive to order, relax or rescind protective actions including implementing actions that allow safe re-entry to places of residence and/or employment for the members of the general public who have been previously relocated. Federal and State roles are also discussed in order to ensure an integrated response and recovery effort.

B. Summary of Key Roles and Responsibilities

1. Federal

If requested by New York State, federal technical, advisory, and other required assistance will be provided in accordance with the National Response Framework. New York State will provide appropriate alert and notification to federal agencies. The State may request activation of the U.S. Department of Energy's Radiological Assistance Program (RAP) Teams. Federal agencies may assist in developing a monitoring and sampling plan in coordination with State and local counterparts. Federal assets may also be deployed to conduct radiation monitoring and assessment and provide other technical and laboratory assistance including assistance with ingestion, reentry, relocation and recovery activities. Federal agencies may develop public advisories in coordination with local and State government and participate in Joint Information Center operations.

2. State

The New York State Commissioner of Health has the primary responsibility for determining protective actions based on radiological conditions and communicating the recommended actions to the counties including areas requiring relocation and food embargoes. The Commissioner of Health is also responsible for making recommendations based on the radiological conditions for modifying, relaxing or discontinuing protective actions. The Director of the State Office of Emergency Management, the operating arm of the DPC, coordinates State and Federal assistance and programs in support of and in concert with local jurisdictions. The New York State Department of Environmental Conservation (DEC) is the lead agency in the late/recovery phase. State activities during the intermediate and late phase of an incident at the Indian Point Energy Center include developing and implementing monitoring and sampling plans, analyzing samples at the State DOH laboratory, and developing and implementing protective action decisions in coordination with the County.
Section IV: Relocation, Re-Entry, Return and Recovery

The State will develop public advisories and participate in Joint Information Center operations. The State will implement market level monitoring to ensure effectiveness of embargos and provide guidance on remedies for those who have suffered economic losses. The State will also coordinate use of federal radiological assets. The state will also provide assistance to counties through the normal request for assistance process that is currently used during disasters.

3. County

The County will establish local priorities, communicate those priorities to the State, and provide support for State led monitoring and assessment efforts, as requested. The County Executive, in coordination with the State, will determine appropriate protective action decisions and undertake operations to implement, modify or relax those protective actions recommended by the State within the County. The County may participate in any Joint Information Center operations and the development of public advisories and information.

The County will ensure notification to County and local agencies and officials. The Cornell Cooperative Extension Office, and other County agencies as required, will assist State led intermediate and late phase efforts including providing information and assistance to State agencies needed for developing and implementing the ingestion pathway sampling plans. This assistance can include:

- Maintenance of ongoing monitoring programs (i.e., public water supply)
- Providing information on local agriculture, producers and their premises locations
- Guiding State/Federal responders
- Supporting State response for ingestion concerns
- Assisting in gathering and transporting samples, if requested, and
- Assisting the State in selecting and implementing, modifying or reducing appropriate protective actions

During intermediate and late phase response operations, the County will request a representative from the County Cooperative Extension Office to participate in the EOC and serve as a liaison with the agricultural community. If the County Cooperative Extension cannot assist, the County will request assistance from the state.

In order to accomplish the roles and responsibilities assigned during intermediate and late phase operations, the County may need to submit requests to the State for equipment and personnel support as they would during any other response operations when local resources are exhausted.
C. Ingestion Pathway Actions

The State of New York is responsible for the isolation of ingestion pathways as described in the New York State Comprehensive Emergency Management Plan, Radiological Hazards Annex for Fixed Nuclear Facilities. Protective actions will be recommended to ensure that the potential for individuals to receive radiological doses in excess of recommended limits through the various ingestion pathways is minimized. This would involve control of radioactively contaminated drinking water and food. The New York State Department of Agriculture and Markets, USDA, and Cornell Cooperative Extension maintain databases for farms and food stuffs within and beyond the 10 mile EPZ.

The County Department of Health, along with assistance from other agencies, will coordinate its activities with the New York State Departments of Health, Agriculture and Markets, and Environmental Conservation to implement these actions.

Upon receipt of radiation monitoring results that indicate contamination of a drinking water supply or food (ingestion of which could exceed recommended limits), the State Commissioner of Health will ban or order limits on the consumption of contaminated water and the State Commissioner of Agriculture and Markets will immediately quarantine contaminated food.

The State Health Commissioner, in cooperation with the County, shall make all arrangements necessary to ensure that available supplies of drinking water and foodstuffs are not contaminated. The NYS Department of Agriculture and Markets, USDA and other agricultural services will ensure farmers are kept notified of the situation and advised of actions to be taken.

1. Milk Pathway

The primary protective action for the milk pathway is to place milk animals on stored feed and water to limit their intake of any radioactive contaminants. Initial precautionary advisories to place lactating animals on stored feed to prevent contamination of milk will usually occur early in the plume phase, as early as a Site Area Emergency for animals within the 10 mile plume EPZ. At the General Emergency, advisories to place lactating animals on stored feed within the 50 mile EPZ may be issued. Public information advisories will be issued by the State providing instructions to the public.

If laboratory analysis of milk and dairy products indicates that the projected dose may equal or exceed the PAG, the State Commissioners of Health and Agriculture and Markets will order quarantine or seizure of milk and impacted dairy products and order their destruction.
2. **Other Agricultural Products**

Other agricultural products such as fruits and vegetables, meat and meat products are also subject to the FDA PAGS. The State will take the lead in coordinating restrictions on consumption and use of other agricultural products. Immediate action will be taken to isolate contaminated products and prevent their introduction into commerce.

The State will lead efforts to:
- Establish liaison with the food industry
- Determine the types of products produced in affected areas
- Embargo food pending evaluation
- Conduct a sampling program
- Establish procedures for collecting and disposing of contaminated products

The County will provide assistance to the state as requested.

3. **Water Sources**

The County contains numerous public water supplies that could be impacted by radiological contamination. The New York City Department of Environmental Protection (NYCDEP) owns and operates a number of major water supplies within the 50 mile EPZ. The NYSDOH Bureau of Water Supply Protection maintains a database of water supplies. NYCDEP and the County will share information with the State to ensure an accurate and complete list of public water supplies is available. If the projected dose from consuming water from a New York water source equals or exceeds the FDA PAG for food, the state will recommend protective actions such as reduction in daily intake or use of alternate drinking water sources.

The County will coordinate with the State on the following response options:
- Identifying public water supplies that may be affected by the release
- Establishing liaison with the water supply operators
- Ensuring the collection and analysis of samples by appropriate authorities, and
- Alerting and advising individuals, the public or water supply operators of sources that may be contaminated.
D. General Intermediate and Late Phase Operations

Intermediate and Late phase operations will conform to the guidelines contained in the New York State Comprehensive Emergency Management Plan, Radiological Hazards Annex for Fixed Nuclear Facilities. These actions will include the following:

- The New York State Department of Health (NYSDOH) will direct the areas for obtaining radiation surveys until contamination levels in an evacuated area are within acceptable contamination action limits as established by the NY State Commissioner of Health. The County Department of Health may assist the State in radiation surveys.
- The State, in coordination with the counties, will authorize reentry under controlled conditions into restricted areas that have been contaminated.
- The State will provide guidance on the control conditions necessary for workers to reenter the restricted zone, including instructions for monitoring and decontamination, to the counties for coordinated implementation.
- The State Department of Environmental Conservation, in coordination with the County, will develop a waste disposal plan.
- State Department of Environmental Conservation, in coordination with the county, will develop a monitoring and sampling plan for waste water treatment plants and solid waste facilities.
- The State will take actions to assess and mitigate the effects of an evacuation on public health, critical infrastructure and sanitation within the evacuated area.
- The County will notify traffic/access control points of the areas for which reentry is authorized; of personnel authorized to re-enter; and changes to the traffic/access control perimeter which may be required.
- The State and Counties will prepare and issue announcements to the communications media (e.g., newspapers, radio and television stations) and to Reception/Congregate Care Centers specifying the areas that may be re-occupied.
- The County with assistance from the state will provide continuation of security for restricted areas, including those areas for which reentry has been approved, to prevent unauthorized entry and vandalism.
- The County will assume responsibility for transportation for those individuals who need to reenter the restricted area.
- The County and the State will provide for distribution of drinking water and foodstuffs, if necessary, following the isolation of ingestion pathways sources.
- The State will establishment a long-term radiation-monitoring program for any contaminated County areas and coordinates this monitoring program with the county.
- The CDC in coordination with New York State Department of Health and the County will establish a long-term medical monitoring program for both the general public and emergency workers.
- The State in coordination with the County, will establish long-term housing for any segment of the population which may have been permanently relocated.
E. **Relocation**

Following a release of radioactive material to the environment, it will be necessary to locate and define any areas in which radioactive materials were deposited. Once those contaminated areas are identified, a determination will have to be made as to whether or not individuals occupying these areas will receive radiation exposures in excess of the relocation PAG. If this is the case, these individuals will need to be relocated.

In accordance with the provisions of the State REP Plan, the following activities will be undertaken:

- Sample results will be evaluated by the State, charted and compared to the relocation PAG.
- The State in coordination with the County will define the restricted zone perimeter which includes a buffer zone identified by clearly defined boundaries such as geopolitical boundaries, major roads or neighborhood boundaries.
- Individuals not previously evacuated from the restricted zone will be relocated by the County in coordination with the State.
- Individuals previously evacuated from a restricted zone will be relocated by the County in coordination with the State.

F. **Reentry**

Individuals who have been evacuated or relocated from a restricted zone may be allowed to reenter under controlled conditions to perform additional emergency response activities or carry out specific types of personal business. The control conditions under which reentry may be permitted may include:

- Use of a specified access control point(s) to issue dosimetry and train reentering individuals on its use;
- Use of stay times (as used here, the amount of time a person can safely stay in a restricted zone without exceeding their exposure limit), depending on the location of the reentry destination;
- Use of a health physicist escort or other personnel escort trained in the use of dosimetry; and
- Provision of monitoring and decontamination for exiting individuals.

Following the delineation of a restricted zone, continuous access control will be maintained. Access to a restricted zone (reentry) may be allowed for the following reasons:

- Retrieval of valuables;
- Periodic security inspections;
- Maintenance of essential services;
- Maintenance of property or care of farm animals;
- Decontamination and recovery efforts; or
- Other appropriate circumstances as presented.
During reentry activities, it will be necessary to ensure that individual radiation exposures are controlled and that the spread of contamination is kept to a minimum. The State will make recommendations, in concert with the County, on areas safe to re-enter based upon such factors as levels of contamination, length of stay, personal protective equipment needed and other exposure control measures. Toward that end, the following measures will be coordinated by the State and County:

- Access control points will be established at or near the boundary of the Restricted Zone in accordance with county traffic and access control plans and may include a combination of state, county and local law enforcement resources;
- Individuals seeking to re-enter will be required to complete an Application for Re-entry (Attachment 1);
- Dosimetry packets, the same as or similar to packets provided to emergency workers, will be provided to those authorized to re-enter;
- Information regarding the individual’s destination, estimated length of stay, and objectives will be recorded;
- If available, maps will be provided to individuals entering the Restricted Zone along with recommendations of areas to avoid;
- Measures will be instituted for persons exiting the Restricted Zone to provide for the monitoring and decontamination of individuals, vehicles and equipment as well as procedures for the collection and processing of dosimetry; and
- Individual radiation exposures will be collected by the State and County and relayed to appropriate authorities.

G. Return

There are two types of return scenarios – areas from which people were evacuated during the initial phase, but were later deemed to be uncontaminated; and secondly, areas which were in fact contaminated but for which monitoring and sampling later confirmed are now safe for unrestricted occupancy.

While areas safe for return based on radiological status will be identified by the State, the County is responsible for ensuring that other services and conditions are suitable to support return. Therefore, the County will be responsible for issuing return orders. The County will coordinate with municipal jurisdictions to ensure proper municipal services are in place for return.

The following activities may be undertaken by the County to assist the general public during the return process. These include:
- Prepare and issue announcements to the public through the media and at reception centers (if still open) and congregate care centers, specifying which areas are designated for return in conjunction with the State Disaster Preparedness Commission, and the other three counties.
- Provide transportation for transit-dependent individuals.


H. Recovery

The long term recovery phase will involve continued coordination among federal, State and County agencies for the restoration of essential services and protection of public health. Recovery phase starts after the emergency condition has been stabilized, emergency response operations have ended, the release deposition has been characterized, the public health threats have been addressed and a long term monitoring plan has been developed. Recovery will involve continued and extensive field sampling, damage and impacts assessments, decontamination efforts and coordination of federal assistance and nuclear insurance benefits. The New York State Department of Environmental Conservation is the lead agency in the recovery phase for the State and the Environmental Protection Agency is the Federal Lead Agency.

A State recovery organization will be created to guide radiological recovery actions and decisions. Cleanup goals are negotiated with Federal, State and Local partners. The recommended process for developing cleanup goals are described in the EPA PAG manual. Cleanup goals will be developed including factors such as feasibility, cost, and health effects/risk. Areas cannot be reoccupied until the potential exposures are at least below EPA intermediate phase PAGs.

Recovery efforts will focus on those areas contaminated at levels above the relocation PAG. If decontamination efforts are successful, the boundary of the Restricted Zone may be adjusted allowing the return of additional population. Recovery efforts will include:

- Scrubbing and/or flushing of hard surfaces;
- Soaking and/or plowing of soil; and
- Removal of soil from locations where radioactive materials have concentrated

The implementation of long-term recovery operations is the primary responsibility of the State of New York in coordination with the Federal Government and will conform to the guidelines contained in the New York State Comprehensive Emergency Management Plan, Radiological Hazards Annex for Fixed Nuclear Facilities. The County will provide support to the State upon request and will coordinate and monitor recovery efforts within its jurisdiction. These activities include:

- Assessing needs of their affected areas with NYSOEM assistance
- Directing operations in their jurisdictions
- Coordinating with state to relax protective actions as recommended by the Commissioner of Health
- Assisting in maintaining access control
- Assisting in developing return orders
## ATTACHMENT 1

### APPLICATION FOR REENTRY

<table>
<thead>
<tr>
<th>Application Date/Time: <strong><strong><strong>/</strong></strong><em>/</em></strong>_   <em><strong>:</strong></em> □ am □ pm</th>
</tr>
</thead>
</table>

### PERSONAL INFORMATION

<table>
<thead>
<tr>
<th>Name: Last______________________</th>
<th>First____________________</th>
<th>MI________</th>
<th>Age:________</th>
</tr>
</thead>
<tbody>
<tr>
<td>Home Address:</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Telephone: (home) <strong><strong><strong>/</strong></strong><em>/</em></strong>_</th>
<th>(work) <strong><strong><strong>/</strong></strong><em>/</em></strong>_</th>
<th>(mobile) <strong><strong><strong>/</strong></strong><em>/</em></strong>_</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Purpose for access to restricted area:</th>
</tr>
</thead>
</table>

### REENTRY RESTRICTIONS/CONTROLS

Access Control Point for Entry:  

Authorized exposure for reentry:  

Authorized stay-time for access to restricted area:  

Escort required: □ YES □ NO  

Briefing provided by:

```
Carefully follow the limits for radiation exposure and time allowed in the restricted areas  
Do not Eat, Drink, Smoke, or Chew in an area suspected to be contaminated.  
```

When your reentry activity is completed report to the following Personnel Monitoring Center for monitoring/decontamination of you and your vehicle:  

<table>
<thead>
<tr>
<th>Facility Name:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facility Address:</td>
</tr>
</tbody>
</table>

### REENTRY APPROVAL

Agency:  

Name (print):  

Title:  

Signature:  

### APPLICANT'S ACKNOWLEDGEMENT:

I understand I am entering a restricted area which may result in radiation exposures above normal ranges. I have read and understand the information contained in the dosimetry packet provided. I hereby release the County, State and other government response agencies from responsibilities associated with any increased risk associated with my reentry.  

<table>
<thead>
<tr>
<th>Name:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Signature:</td>
</tr>
<tr>
<td>Date:</td>
</tr>
</tbody>
</table>

**REV 1.0**  
**04/12/16**
APPENDIX A
EVACUATION TIME ESTIMATE
FOR
WESTCHESTER COUNTY

Revision 0.0

08/06/10
APPENDIX A

EVACUATION TIME ESTIMATES FOR WESTCHESTER COUNTY

The following evacuation time estimates have been extracted from the documents prepared by KLD Associates, Inc., entitled “Indian Point Energy Center, Development of Evacuation Time Estimates”, dated May 2003, and “Indian Point Energy Center, Development of Evacuation Time Estimates, Addendum for New Protective Action Areas”, dated June 2008. They are based on 14 scenarios as defined by ETE Table 5-1.

Complete copies of the ETE documents are on file at the Westchester County Emergency Operations Center.
TABLE A-1

EVACUATION TIME ESTIMATE STUDY EXCERPTS

<table>
<thead>
<tr>
<th>KLD ID NUMBER</th>
<th>COUNTY</th>
<th>NAME</th>
<th>DESCRIPTION</th>
<th>2000 POPULATION</th>
<th>2008 POPULATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Westchester</td>
<td>Briarcliff Manor</td>
<td>The Village of Briarcliff Manor.</td>
<td>7,844</td>
<td>8,247</td>
</tr>
<tr>
<td>6</td>
<td>Westchester</td>
<td>Ossining</td>
<td>The Town and Village of Ossining.</td>
<td>29,440</td>
<td>28,877</td>
</tr>
<tr>
<td>8</td>
<td>Westchester</td>
<td>Town of New Castle</td>
<td>The Town of New Castle west of Hardscrabble Road.</td>
<td>4,777</td>
<td>4,884</td>
</tr>
<tr>
<td>14</td>
<td>Westchester</td>
<td>Croton-on-Hudson</td>
<td>The Village of Croton-on-Hudson.</td>
<td>7,589</td>
<td>7,976</td>
</tr>
<tr>
<td>16</td>
<td>Westchester</td>
<td>Verplanck</td>
<td>The Hamlet of Verplanck.</td>
<td>1,273</td>
<td>1,345</td>
</tr>
<tr>
<td>18</td>
<td>Westchester</td>
<td>Buchanan</td>
<td>The Village of Buchanan.</td>
<td>2,184</td>
<td>2,290</td>
</tr>
<tr>
<td>19</td>
<td>Westchester</td>
<td>Montrose</td>
<td>The Hamlet of Montrose.</td>
<td>3,534</td>
<td>3,731</td>
</tr>
<tr>
<td>23</td>
<td>Westchester</td>
<td>City of Peekskill</td>
<td>The City of Peekskill.</td>
<td>22,446</td>
<td>25,327</td>
</tr>
<tr>
<td>24</td>
<td>Westchester</td>
<td>Town of Cortlandt</td>
<td>The Town of Cortlandt excluding the Hamlets of Verplanck and Montrose, and</td>
<td>23,890</td>
<td>25,215</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>the Villages of Buchanan and Croton-on-Hudson; including Camp Smith and the</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>FDR VA Hospital.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>Westchester</td>
<td>Town of Yorktown</td>
<td>The Town of Yorktown.</td>
<td>36,333</td>
<td>38,307</td>
</tr>
<tr>
<td>29</td>
<td>Westchester</td>
<td>Town of Somers</td>
<td>The Town of Somers west of State Route 118 and Wood Street.</td>
<td>3,972</td>
<td>4,478</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>Total Population:</strong></td>
<td><strong>143,282</strong></td>
<td><strong>150,677</strong></td>
</tr>
</tbody>
</table>
### TABLE A-1

#### EVACUATION TIME ESTIMATE STUDY EXCERPTS

**Table 5-1. Evacuation Scenario Definitions**

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Season</th>
<th>Day of Week</th>
<th>Time of Day</th>
<th>Weather</th>
<th>Special</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Summer</td>
<td>Midweek</td>
<td>Midday</td>
<td>Good</td>
<td>None</td>
</tr>
<tr>
<td>2</td>
<td>Summer</td>
<td>Midweek</td>
<td>Midday</td>
<td>Rain</td>
<td>None</td>
</tr>
<tr>
<td>3</td>
<td>Summer</td>
<td>Weekend</td>
<td>Midday</td>
<td>Good</td>
<td>None</td>
</tr>
<tr>
<td>4</td>
<td>Summer</td>
<td>Weekend</td>
<td>Midday</td>
<td>Rain</td>
<td>None</td>
</tr>
<tr>
<td>5</td>
<td>Summer</td>
<td>Midweek, Weekend</td>
<td>Evening</td>
<td>Good</td>
<td>None</td>
</tr>
<tr>
<td>6</td>
<td>Winter</td>
<td>Midweek</td>
<td>Midday</td>
<td>Good</td>
<td>None</td>
</tr>
<tr>
<td>7</td>
<td>Winter</td>
<td>Midweek</td>
<td>Midday</td>
<td>Rain</td>
<td>None</td>
</tr>
<tr>
<td>8</td>
<td>Winter</td>
<td>Midweek</td>
<td>Midday</td>
<td>Snow</td>
<td>None</td>
</tr>
<tr>
<td>9</td>
<td>Winter</td>
<td>Weekend</td>
<td>Midday</td>
<td>Good</td>
<td>None</td>
</tr>
<tr>
<td>10</td>
<td>Winter</td>
<td>Weekend</td>
<td>Midday</td>
<td>Rain</td>
<td>None</td>
</tr>
<tr>
<td>11</td>
<td>Winter</td>
<td>Weekend</td>
<td>Midday</td>
<td>Snow</td>
<td>None</td>
</tr>
<tr>
<td>12</td>
<td>Winter</td>
<td>Midweek, Weekend</td>
<td>Evening</td>
<td>Good</td>
<td>None</td>
</tr>
<tr>
<td>13</td>
<td>Autumn</td>
<td>Weekend</td>
<td>Midday</td>
<td>Good</td>
<td>West Point Football</td>
</tr>
<tr>
<td>14</td>
<td>Spring</td>
<td>Midweek</td>
<td>Midday</td>
<td>Good</td>
<td>West Point Graduation</td>
</tr>
</tbody>
</table>
### Table A-1
EVACUATION TIME ESTIMATE STUDY EXCERPTS

Table F-1. Time to Clear the Indicated Area of 100 Percent of the Evacuating Population for Westchester Portion of Region R1

<table>
<thead>
<tr>
<th>KLD ID NUMBER</th>
<th>Protective Action Area</th>
<th>Scenario</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>Briarcliff Manor</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Ossining</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Town of New Castle</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Croton-on-Hudson</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Verplanck</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Buchanan</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Montrose</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>City of Peekskill</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>Town of Cortlandt</td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>Town of Yorktown</td>
<td></td>
</tr>
<tr>
<td>29</td>
<td>Town of Somers</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Region ETE:</strong></td>
<td>5:00</td>
</tr>
</tbody>
</table>
### Table F-2. Time to Clear the Indicated Area of 100 Percent of the Evacuating Population for Westchester Portion of Region R2

<table>
<thead>
<tr>
<th>KLD ID NUMBER</th>
<th>Protective Action Area</th>
<th>Scenario</th>
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<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Briarcliff Manor</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Ossining</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>8</td>
<td>Town of New Castle</td>
<td></td>
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<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Croton-on-Hudson</td>
<td></td>
<td>5:25</td>
<td>6:00</td>
<td>6:30</td>
<td>7:00</td>
<td>4:00</td>
<td>5:30</td>
<td>6:00</td>
<td>6:50</td>
<td>4:40</td>
<td>5:00</td>
<td>5:25</td>
<td>4:00</td>
<td>4:40</td>
<td>5:30</td>
</tr>
<tr>
<td>16</td>
<td>Verplanck</td>
<td></td>
<td>5:00</td>
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<td>4:50</td>
<td>3:30</td>
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<td>3:30</td>
<td>4:20</td>
<td>5:00</td>
</tr>
<tr>
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<td>City of Peekskill</td>
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<td>4:50</td>
<td>5:40</td>
</tr>
<tr>
<td>24</td>
<td>Town of Cortlandt</td>
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<td>4:30</td>
<td>5:05</td>
<td>5:50</td>
</tr>
<tr>
<td>28</td>
<td>Town of Yorktown</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>29</td>
<td>Town of Somers</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Region ETE:</td>
<td></td>
<td>5:50</td>
<td>6:20</td>
<td>6:30</td>
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<td>6:30</td>
<td>7:30</td>
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<td>4:30</td>
<td>7:50</td>
<td>5:50</td>
</tr>
</tbody>
</table>
### TABLE A-1
**EVACUATION TIME ESTIMATE STUDY EXCERPTS**

**Table F-3. Time to Clear the Indicated Area of 100 Percent of the Evacuating Population for Westchester Portion of Region R3**

<table>
<thead>
<tr>
<th>KLD ID NUMBER</th>
<th>Protective Action Area</th>
<th>Scenario 1</th>
<th>Scenario 2</th>
<th>Scenario 3</th>
<th>Scenario 4</th>
<th>Scenario 5</th>
<th>Scenario 6</th>
<th>Scenario 7</th>
<th>Scenario 8</th>
<th>Scenario 9</th>
<th>Scenario 10</th>
<th>Scenario 11</th>
<th>Scenario 12</th>
<th>Scenario 13</th>
<th>Scenario 14</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Briarcliff Manor</td>
<td>7:05</td>
<td>7:55</td>
<td>8:30</td>
<td>9:10</td>
<td>5:30</td>
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<td>9:05</td>
<td>6:10</td>
<td>6:45</td>
<td>7:50</td>
<td>5:20</td>
<td>6:10</td>
<td>7:10</td>
</tr>
<tr>
<td>6</td>
<td>Ossining</td>
<td>6:20</td>
<td>7:00</td>
<td>8:30</td>
<td>9:10</td>
<td>4:50</td>
<td>6:20</td>
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<td>6:20</td>
<td>4:35</td>
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</tr>
<tr>
<td>8</td>
<td>Town of New Castle</td>
<td>7:05</td>
<td>8:00</td>
<td>6:20</td>
<td>6:55</td>
<td>5:35</td>
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<td>5:20</td>
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<td>7:15</td>
</tr>
<tr>
<td>14</td>
<td>Croton-on-Hudson</td>
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<td>9:10</td>
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<td>6:10</td>
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<td>6:00</td>
<td>4:30</td>
<td>5:10</td>
<td>6:10</td>
</tr>
<tr>
<td>16</td>
<td>Verplanck</td>
<td>5:50</td>
<td>6:30</td>
<td>5:00</td>
<td>5:30</td>
<td>4:10</td>
<td>5:50</td>
<td>6:30</td>
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<td>4:00</td>
<td>4:50</td>
<td>5:50</td>
</tr>
<tr>
<td>18</td>
<td>Buchanan</td>
<td>6:00</td>
<td>6:50</td>
<td>5:00</td>
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<td>4:00</td>
<td>6:00</td>
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<td>5:10</td>
<td>5:30</td>
<td>3:50</td>
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<td>6:00</td>
</tr>
<tr>
<td>19</td>
<td>Montrose</td>
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<td>4:45</td>
<td>6:10</td>
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</tr>
<tr>
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<td>5:50</td>
<td>7:00</td>
</tr>
<tr>
<td>24</td>
<td>Town of Cortlandt</td>
<td>7:20</td>
<td>8:20</td>
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<td>7:30</td>
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<td>7:20</td>
<td>9:00</td>
<td>6:10</td>
<td>6:30</td>
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<td>Town of Yorktown</td>
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</tr>
<tr>
<td>29</td>
<td>Town of Somers</td>
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<td>8:30</td>
<td>5:55</td>
<td>6:40</td>
<td>7:30</td>
</tr>
</tbody>
</table>

Region ETE: 7:40 8:30 8:30 9:10 6:30 7:40 8:30 9:50 7:00 7:30 9:00 6:30 8:40 7:40
APPENDIX B
LETTERS OF AGREEMENT
(On File at the Office of Emergency Management)

Revision 1.0

01/06/16
APPENDIX C
IODINE PROPHYLAXIS
Revision 0.0

08/06/10
APPENDIX C

IODINE PROPHYLAXIS

A. NEW YORK STATE AND WESTCHESTER COUNTY POLICY

The New York State Department of Health (NYSDOH) endorses the 2001 US. Food and Drug Administration (FDA) recommendations on potassium iodide (KI) as outlined in "Guidance on Potassium Iodide as a Thyroid Blocking Agent in Radiation Emergencies," December, 2001. The State and County Departments of Health maintain that under certain specified conditions of use, KI is a safe and effective means by which to prevent radioactive iodine uptake by the thyroid gland, thereby reducing the risk of thyroid cancer in the event of a radiological emergency.

The recommendation to take KI by emergency workers and the general public will be issued on the authority of the Westchester County Commissioner of Health, or by the New York State (NYS) Commissioner of Health, or by the designee of either, during a radiological emergency where the potential to exceed the new FDA dose limits may be exceeded by the general public.

The NYS and Westchester County Departments of Health stress that KI provides protection only for the thyroid from radioactive iodines. It has no impact on the uptake by the body of other radioactive materials and provides no protection against external irradiation of any kind. Both agencies emphasize that the use of KI should be as an adjunct to recommended protective actions such as evacuation, sheltering-in-place, and control of foodstuffs.

The availability of potassium iodide is not an authorization for its use. No person will be considered to have been advised to use it without the approval of the Commissioner of Health or his/her surrogate.

All persons to whom potassium iodide is issued will be provided instructions on the use of KI.

B. PROCUREMENT OF KI SUPPLY

For Emergency Workers: Carter-Wallace Labs of New Jersey and Anbex, Inc. of New York City have been authorized by the FDA to produce KI in tablet form for use during radiological emergencies. Each tablet is 130-Milligram dosage and packed 14 tablets per container or foil strip. Westchester County maintains KI supplies for emergency workers. The Westchester County Office of Emergency Management (OEM) is responsible for, and has distributed KI to, response agencies with backup supplies maintained by OEM. KI is supplied to the County by the New York State Emergency Management Office (SEMO).
Appendix C: Iodine Prophylaxis

For the general public, the FDA approved over the counter formulation of KI includes a 130-mg, and 65 mg tablets and liquid KI.

During 2005, updated supplies of KI were received by Westchester from SEMO. Sufficient KI doses exist to provide at least one dose per 10-mile Plume Exposure Emergency Planning Zone (EPZ) resident, plus KI for members of the business community, transients, school, daycare center and nursery school populations. Additional KI will be requested from SEMO, as required.

C. KI DOSE

New York State will follow the FDA's lower radioactive exposure thresholds for KI prophylaxis as well as the new doses of KI for neonates, infants, and children, lower than those previously recommended in 1982.

Westchester County has adopted the New York State Policy on KI, provided at Attachment 1. Dose recommendations contained in that document are as follows:

<table>
<thead>
<tr>
<th>Age Group</th>
<th>KI dose (mg)</th>
<th># ml liquid (65 mg/ml)</th>
<th># of 65 mg tablets</th>
<th># of 130 mg tablets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adults over 40 yrs</td>
<td>130</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Adults over 18 through 40 yrs</td>
<td>130</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Pregnant or lactating women</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adolescents over 12 through 18 yrs who weigh at least 150 pounds</td>
<td>130</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Adolescents over 12 through 18 yrs who weigh less than 150 pounds</td>
<td>65</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Children over 3 through 12 yrs</td>
<td>65</td>
<td>1</td>
<td>1</td>
<td>1/2</td>
</tr>
<tr>
<td>Over 1 month through 3 years</td>
<td>32</td>
<td>1/2</td>
<td>1/2</td>
<td>1/4</td>
</tr>
<tr>
<td>Birth through 1 month</td>
<td>16</td>
<td>1/4</td>
<td>1/4</td>
<td>1/8</td>
</tr>
</tbody>
</table>

The County stocks 130 mg tablets, Sixty-Five mg tablets and liquid KI.

The FDA has noted that absolute precision in dosing is generally not critical to safety or efficacy, and has emphasized in their guidance document that across populations at risk for radioactive iodine exposure, the overall benefits of KI far exceed the risks of overdosing, especially in children.

D. DISTRIBUTION

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08/06/10
1. Pre-distribution

a. The County emergency worker supply of KI is stored at the same locations as the dosimeters. Each County agency will use their respective dosimeter distribution procedures for the bottles/sleeves of KI. Prior distribution of an adequate supply to captive populations will be/has been accomplished by the County OEM.

A back-up emergency worker supply is stored under specifications from the manufacturer by OEM. Potassium iodide should be stored at controlled room temperature between 15 and 30 degrees C (59 - 80 degrees F). The container must be tightly closed and protected from light. This backup supply allows for persons that may not usually be classified as an emergency worker (e.g. farmers that may need to care for livestock during an extended release period) to receive KI. Inventory accountability for the supply of KI will be the responsibility of those agencies/personnel to which/whom the KI was distributed.

b. It is Westchester County’s policy to pre-distribute KI to the resident and transient population of the ten mile emergency planning zone to the maximum extent possible. Four KI distribution days were conducted in Westchester County during June 2002. These events were well publicized and covered by the media. One (1) 130mg tablet was distributed for each member of the household. The distribution included a fact sheet on the makeup of KI, how it works, directions on when to take it, possible side effects and information on the means to receive KI.

The County is considering additional means to ensure most, if not all residents of the EPZ receive KI and instructions on its use, as a preparedness measure. A mass direct mailing effort is one option being considered.

c. School and day care populations: Westchester County makes KI available to all educational institutions (public, private and parochial; faculty, staff and students). Licensed daycare centers located within the 10-mile EPZ have received a letter from the New York State Office of Children and Family Services (OCFS) instructing them to contact OEM to obtain their necessary allocation of KI. The State has conducted outreach to the school districts on the KI program and has provided some KI supplies directly to the schools. In addition, the County OEM is in the process of pro-actively distributing at the school district level.

d. Hospitals and Nursing Homes: It is Westchester County policy to pre-distribute KI to all hospitals and nursing homes within the ten-mile emergency planning zone. Sufficient KI for patients and staff have been or will be distributed.

e. KI has also been offered to businesses within the 10-mile EPZ. During 2002, 3,520 KI pills were distributed to businesses. This is an ongoing process.
Note: The state and federal government are responsible for pre-distribution of KI to state and federal facilities. The State has provided KI to Sing Sing Correctional Facility.

2. Post-Accident Distribution

If the decision to administer KI is made by the State or County Commissioner of Health, those residents not having KI in their possession must be instructed on where they can obtain the appropriate doses. This information will be disseminated via the Emergency Alert System (EAS) and through other media advisories. The EAS is used any time there is a need to modify public behavior in response to emergency situations. However, it cannot be emphasized enough, that taking the primary protective action of sheltering-in-place or evacuation must remain the first priority. Any effort to distribute KI to the general public during or immediately after an event, must be done in a manner which does not interfere with these primary protective actions.

Emergency workers will be notified to take KI through emergency service communications channels.

For post-accident distribution, multiple locations are being stockpiled with KI supplies. In order to facilitate post-event distribution, KI supplies have been stockpiled at selected emergency service locations, including reception centers. Emergency personnel and county volunteers will man the KI distribution stations at the time of emergency.

KI distribution stations will be located beyond the ten-mile EPZ to ensure that evacuation times are not impacted.

In identifying potential locations for KI distribution, locations where sought that were along major evacuation routes where traffic could be quickly routed off the main roads. Signage (put up only at the time of emergency) and public information materials will direct only those needing KI pills to detour through these designated facilities. Evacuees will not leave their vehicles, but will be dispensed pills and instruction sheets by personnel manning these locations.

In addition to the KI distribution stations referenced above, the County will also make KI available at reception centers. Reception center distribution will be performed by reception center staff once a member of the public has completed registration.

EAS messages (and/or Press releases) have been drafted to support this process.

E. DECISION TO ADMINISTER KI
1. To have the greatest effect in decreasing the uptake of radioactive iodine by the thyroid gland, these doses of KI should be administered up to four hours before or immediately after exposure. KI given with radioactive iodine results in a 97% block of the radioactive iodine uptake by the thyroid (Becker and Zanzonico, 1997). Uptake is blocked by 90% if KI is administered 12 hours prior to exposure. The blocking efficiency of KI is reduced to 85% if taken one hour after exposure, to 50% at 3 hours and 5 to 10% at 6 hours.

2. The use of KI is only indicated in emergencies where the public is likely to be exposed to radioactive iodine. To have the greatest effect in decreasing the uptake of radioactive iodine by the thyroid gland, KI should be administered immediately before or after exposure. In the event of accident at the Indian Point Energy Center, State and County Departments of Health will be assessing and evaluating the situation. The County Commissioner of Health, in consultation with the State Commissioner of Health and the County Executive will determine if the administration of KI is warranted. Advisories to the public will be issued via the Emergency Alert System (EAS).

3. There will be only one trigger level to recommend KI – 5 REM to the thyroid. This trigger level applies to the general public, emergency workers and captive populations. Radioiodine would only be present in the environment in sufficient quantities to exceed 5 REM child thyroid dose (CDE\textsubscript{T}), if a General Emergency had been declared. This assumption is based on the fact that radioiodine can only be present in quantities capable of producing 5 REM CDE\textsubscript{T} in the presence of significant core damage and loss of containment, which are criteria that would constitute a General Emergency. Upon declaration of a General Emergency, members of the public that are directed to take protective action (evacuate or shelter in place) and emergency workers shall also be directed to take KI.

F. RECORDKEEPING

1. Westchester County will maintain records of all advisories to the general public on the administration of KI.

2. The County Commissioner of Health shall maintain a log of all County emergency workers who ingest KI.

3. Captive populations will use a KI registry form that contains the following information: name, social security number, facility, and date taken.

4. Upon termination of the event, the County will forward copies of all records (including reports of side effects from KI) to the New York State Department of Health (NYSDoH), Bureau of Environmental Protection. Long term follow up activities will be coordinated by the NYSDoH.
ATTACHMENT 1

NEW YORK STATE POTASSIUM IODIDE POLICY
Implementation of the Use of Potassium Iodide (KI) as a Protective Action for the Public
The following individuals and organizations participated in the development of this position paper, and agree to its purpose and contents. All participants agree to implement the guidance contained herein, to the extent possible.

**Constellation Energy Group (Nine Mile Point)**

James D. Jones
Name: _________________________  Signature: _________________________  Date: _________________________

**Entergy Nuclear Northeast (J.A. FitzPatrick and Indian Point Energy Center)**

Michael Slobodien
Name: _________________________  Signature: _________________________  Date: _________________________

**Constellation Energy Group (R.E. Ginna Station)**

Sherri Kennedy
Name: _________________________  Signature: _________________________  Date: _________________________

**New York State Emergency Management Office**

Andrew Feeney
Name: _________________________  Signature: _________________________  Date: _________________________

**New York State Health Department**

Adela Salame-Alfie, Ph.D.
Name: _________________________  Signature: _________________________  Date: _________________________
EXECUTIVE SUMMARY

Licensee and State members of the Potassium Iodide (KI) Task Force (KI Task Force) developed this position paper to detail the decision process by which several recommendations regarding KI distribution will be made. The Task Force agreed that upon declaration of a General Emergency by the licensee, a recommendation to evacuate and take KI would be made simultaneously. It was also agreed that a single trigger level would be used (projected dose of 5 rem to the child thyroid). This paper discusses several approaches to determine doses/iodine concentrations and whether one approach was selected over the others due to effectiveness, timeliness, ease of implementation, etc.

The following six specific recommendations were agreed upon by the KI Task Force:

1. “Upon declaration of a General Emergency, the following will be directed to ingest KI:
   - members of the public that are directed to evacuate
   - captive populations within the evacuated area
   - members of the public that would otherwise have been evacuated but are directed to shelter-in-place because evacuation is not feasible.”

2. “If evacuation is recommended at an ECL other than a General Emergency, or for any other reason, a direction to ingest KI as described in recommendation No. 1 will not be made. Ingestion of KI will be recommended only upon declaration of a General Emergency.”

3. “Upon declaration of a General Emergency, members of the public that are directed to shelter-in-place in order to reduce dose shall be directed to ingest KI. Members of the public who are directed to monitor the Emergency Alert System will not be directed to ingest KI.”

4. “Upon declaration of a General Emergency, all emergency workers located within the 10-mile EPZ will be directed to take KI (one 130-mg tablet every 24 hours). This recommendation will be made at the same time as the recommendation to ingest KI is made to the general public.”

5. “Members of the public and captive populations who are directed to take KI shall be directed to ingest KI in the dosage recommended by the US FDA. If a scheme of graded dosing is not possible, one 130-mg tablet per person may be ingested with minimal risk for those over one year of age. Dose to neonates should be limited to 16 mg, if possible.”

6. “As part of a pre-distribution effort, each member of the public should be offered a quantity of KI tablets equivalent to the following:

   Maximum ETE (in days-rounded up) x 1 age and/or weight dependent dose/day

   Alternatively, one bottle of liquid KI may be offered per family.”

The group recognizes that a strong public information campaign and clear messages during the emergency are key to a successful KI implementation program. Some implementation guidance is provided at the end of the document.

REV 0.0  C-10
08/06/10
1. Purpose

The purpose of this paper is to document a technical assessment of issues associated with the distribution of Potassium Iodide (KI) to the general public, emergency workers and captive populations, and to provide implementation guidance for:

- Usage
  - General Public
  - Emergency Workers
  - Captive Populations
- Dosage and frequency
- Pre-distribution criteria

2. Regulatory Requirements and Guidance

2.1 Applicable regulations

The US Nuclear Regulatory Commission (NRC) amended emergency planning regulations to require that States consider including the prophylactic use of KI as a protective measure for the general public in the plume exposure pathway Emergency Planning Zone (EPZ) in 66 FR 5427 on 19 Jan 2001. (Ref. 1)

The Federal Emergency Management Agency (FEMA) provided notice that the Federal Radiological Preparedness Coordinating Committee (FRPCC) revised its 1985 Federal policy regarding KI use in 67 FR 1355 on 10 Jan 2002. (Ref. 2)

2.2 Current guidance

The US Food and Drug Administration (FDA) issued guidance on the use of KI in radiation emergencies in December 2001 (Ref. 3). This document concludes “Short-term administration of KI at thyroid blocking doses is safe…” (Ref. 3 IV.A.) and indicates KI dosage is dependent on age and “Predicted Thyroid Exposure” (Ref. 3 IV.B.). This document states that “The recommendation should be interpreted with flexibility as necessary to allow optimally effective and safe dosing…” Additionally, “…the overall benefits of KI far exceed the risks of overdosing…” (Ref. 3 IV.B.).

2.3 New York State Position

In 2002, New York State, in its consideration of the subject CFR, chose to incorporate KI as an adjunct to the current range of protective actions for the public. The New York State Revised KI Policy was issued in April 2002.

2.4 Upcoming Guidance
This Position Paper will be revised as necessary to accommodate any new Federal guidance and availability of KI in different dosages.

3. **Assumptions**

- For optimal protection against inhaled radioiodine, KI should be administered before or immediately coincident with passage of the radioactive cloud. Effectiveness drops off rather quickly as time since radioiodine exposure increases. The effectiveness drops to about 50% if KI is taken two hours after exposure, and continues to decrease as time after exposure increases. (Ref. 3. V.).

- The recommended daily dose protects the user from radioiodine uptake for approximately 24 hours.

- KI should be taken until the person is no longer exposed to radioiodine.

- Radioiodine would only be present in the environment in sufficient quantities to exceed 5 rem child thyroid dose (CDE$_T$), which is the minimum dose at which KI is recommended, if a General Emergency (GE) had been declared at the facility from which the source term originates. This assumption is based on the fact that radioiodine can only be present in quantities capable of producing 5 rem child CDE$_T$ in the presence of significant core damage and loss of primary containment, which are criteria that constitute a General Emergency.

- There will only be one trigger level to recommend KI: 5 rem to the child thyroid (CDE$_T$). This trigger level applies to the general public, emergency workers and captive populations.

4. **Implementation Analysis**

This section presents six recommendations as well as the rationale, benefits and risks associated with each.

Recommendations are presented for when to issue a KI recommendation, dosage, and criteria for pre-distribution.

These analyses apply to members of the public, emergency workers and captive populations.

4.1 **Task Force Recommendation # 1**

“Upon declaration of a General Emergency, the following will be directed to ingest KI:

- members of the public that are directed to evacuate
- captive populations within the evacuated area
- members of the public that would otherwise have been evacuated but are directed to shelter-in-place because evacuation is not feasible.”
Analysis:

Three methods were investigated to arrive to this recommendation:

- Use of a dose value,
- Use of deterministic methods, and
- Use of emergency classification.

Each analysis is described separately.

4.1.1 Using Dose Value

This analysis examines a method that utilizes projected dose to the thyroid as an indication of recommendation of KI use by the public (specifically, Committed Dose Equivalent to the child thyroid (CDE$_T$)). In accordance with FDA Guidance (Ref. 3), child CDE$_T$ $\geq$ 5 rem is the indication at which KI use should be recommended.

To date, none of the New York State nuclear power facilities utilize real-time iodine monitoring. Hence, releases of radiiodine to the environment during an emergency are inferred from either grab samples or back calculated from field data. Both of these methods require several steps that need, at a minimum:

- Allocation and briefing of personnel,
- Assembling equipment and procedures to enter the field to collect and analyze samples,
- Reporting the results to an emergency facility,
- Performing calculations to determine child CDE$_T$,
- Relaying dose assessment information to the state/county,
- Decision-making by the state/county, and
- Dissemination of recommendations to the public.

These steps are routinely performed during emergency drills, and our experience indicates that it may take anywhere from 30-90 minutes to calculate the child CDE$_T$ once a decision has been made to obtain a sample. Additionally, the emergency facilities that implement this analysis may take up to 60 minutes to activate after declaration of an emergency.

Normally, the calculation of the child CDE$_T$ takes place after the completion of protective action recommendations (PARs) based on “plant conditions”. The PARs for a General Emergency are to evacuate people within two-miles around and five miles downwind of the site, and advise all remaining ERPAs to monitor the Emergency Alert System.
Given the above:

- Child CDE\(_T\) would likely be calculated and provided to the County and the State within 105-165 minutes after the declaration of the GE.

- If the County decides that the use of KI is appropriate, given the time the county takes to make the decision and prepare public information messages, this instruction could be provided to the public in 150-210 minutes after the declaration of the GE.

### 4.1.2 Use of Deterministic Methods

In this case, methods that determine child CDE\(_T\) utilizing parameters such as containment high range monitor status, gross core damage estimate, and/or reactor pressure vessel and containment integrity were considered. Unfortunately, the data needed to make even rough estimations of these parameters would typically be assessed after the GE-related recommendations. Hence, the time-delay risks of such a method still apply.

**Benefits of these methods**

Administration of KI would occur only in the presence of radioiodine in quantities that meet or exceed the “Predicted thyroid exposure guidance" in Reference 3.

**Risks of these methods**

- Administration of KI would occur (up to 3-4 hours) after the release of radioiodine, decreasing the effectiveness of the prophylaxis by more than 75%.

- Administration of KI would likely occur after other protective actions (that is evacuation) have already been recommended to the public. It is unknown if the public would comply with instructions to bring KI with them.

- Members of the public may delay evacuation in order to locate their KI.

- If two separate protective actions are issued to the public (for example, an order to evacuate not accompanied by a recommendation to take KI), compliance with the respective recommendations is unknown. It is possible that the public will not differentiate between the protective actions and, when told to evacuate, may take KI as well. The risk is that the public sees these as two separate protective actions, potentially providing confusion and non-compliance.

### 4.1.3 Use of Emergency Classification
This analysis examines a method that would use the emergency classification level as the indication for KI use. Specifically, the indication for KI use is a declaration of a General Emergency.

- The General Emergency classification is currently used to determine evacuation PARs.

- If KI use was always implemented concurrently with the “plant condition” protective action recommendations, the public would receive the recommendation to take KI at the same time they received the order to evacuate; that is, within an hour of the declaration of the General Emergency.

- By definition, the declaration of a General Emergency presumes that “Events are in process or have occurred which involve actual or imminent substantial core degradation or melting with potential for loss of containment integrity. Releases can be reasonably expected to exceed EPA Protective Action Guideline exposure levels offsite for more than the immediate site area.” (Ref. 7).

- The EPA Protective Action Guideline (PAG) is to evacuate populations whose actual or projected exposure level equals or exceeds 5 rem Committed Dose Equivalent to the (adult) thyroid (Ref. 8).

- New York State nuclear power plant licensees calculate CDE$_T$ to the child thyroid, and provide this number to the counties and state for comparison against the PAG’s (Ref. 9).

- Hence, when the licensee recommends evacuation due to a General Emergency declaration, a child CDE$_T \geq 5$ rem either exists or is anticipated to exist at the site boundary or beyond. Though there are exceptions to this (such as GE’s declared due to security issues or electrical problems) all GE’s have the potential to exceed the 5 rem child CDE$_T$ level. Calculations performed by New York State on a variety of plant conditions postulated to exist during a GE provide confirmation of this (Ref. 6).

- Given the above, it can be reasonably assumed that the radiological conditions present within the context of a General Emergency will result in meeting or exceeding the child CDE$_T \geq 5$ rem, which is also the thyroid exposure at which the FDA recommends the use of prophylactic KI.

Benefits of this method

- The recommendation to take KI could be issued earlier than the other indication methods, concurrently with the recommendation to evacuate or shelter-in-place. This would likely occur prior to the presence of radioiodine in the environment, thus providing maximum loading dose of stable iodine to the thyroid.

- Compliance with taking KI is more likely since all protective actions are being implemented at once. Also, people would be more likely to have access to pre-distributed KI.
Risks to this method

- KI could be ingested without significant radioiodine ever being present in the environment. For example, the accident may not result in a release of radioiodine to the environment. Hence the public incurs the risk of taking KI without benefit.

Risk Analysis

- The risk of taking KI is minor (Ref. 10).
- A GE condition carries a risk of radioiodine release to the public.
- KI should be taken as soon as possible once the risk of radioiodine exposure is present.
- Using projected child CDE$_T$ as the basis for a recommendation to take KI could significantly delay KI administration.
- Providing the public with a recommendation to take KI concurrent with an order for evacuation or sheltering-in-place provides the earliest and most effective thyroid protection with the greatest likelihood of compliance.

4.4 Task Force Recommendation # 2

"If evacuation is recommended at an ECL other than a General Emergency, or for any other reason, a direction to ingest KI as described in recommendation No. 1 will not be made. Ingestion of KI will be recommended only upon declaration of a General Emergency.”

Analysis

- The recommendation to take KI should be given to any persons likely to be exposed to radioiodine in quantities that may exceed the “Predicted thyroid exposure guidance” presented in Reference 3.

- This analysis suggests that persons who are ordered to evacuate due to plant conditions or due to subsequently determined projected dose may exceed the predicted thyroid dose, and should take KI.

- For the population that has been told to evacuate for any reason other than the declaration of a General Emergency the risk of radioiodine exposure is low.

- Populations who took, or were recommended to take KI coincident with the recommendation to evacuate at an emergency classification level (ECL) other than a General Emergency, or for any other reason, are at risk of depleting their pre-distributed KI supply, making it unavailable in the event of radioiodine exposure.
4.5 Task Force Recommendation #3

“Upon declaration of a General Emergency, members of the public that are directed to
shelter-in-place in order to reduce dose shall be directed to ingest KI. Members of the
public who are directed to monitor the Emergency Alert System will not be directed to
ingest KI.”

Analysis

- Upon declaration of a General Emergency, the licensee will automatically recommend evacuation for the area two miles around and five miles downwind from the plant.

- In cases where a General Emergency is the first ECL declared ("fast-breaker"), resources and facilities would not be in place to allow for orderly evacuation. It is therefore likely that the population will not be directed to evacuate, but will be directed to shelter-in-place (in order to reduce dose).

- If it has been determined that an impediment to evacuation exits (i.e., lack of transportation resources, inclement weather, or road impediment) then the county or state may decide to shelter-in-place for the purpose of reducing dose rather than evacuate.

- Given the analysis in section 4.1.3, it can be reasonably assumed that the radiological conditions present within the context of a General Emergency will result in meeting or exceeding the child CDE$_T \geq 5$ rem, which is also the thyroid exposure at which the FDA recommends the use of prophylactic KI.

- For the population that has not been evacuated and has been told to monitor the Emergency Alert System in order to maintain a heightened state of awareness, the risk of radioiodine exposure is low. The reasons for this are:
  - Due to the distance from the reactor, this population is at significantly less risk from radiation exposure from all sources, versus persons closer to the reactor.
  - Monitoring the Emergency Alert System in order to maintain a heightened state of awareness is used for projected doses of $< 1$ rem TEDE or $< 5$ rem CDE$_T$. Hence this population is not at risk of significant exposures to radioiodine.

- Populations that have not been evacuated, who took, or were recommended to take KI coincident with the direction to monitor the Emergency Alert System are at risk of depleting their pre-distributed KI supply, making it unavailable in the event of radioiodine exposure.
4.6 Task Force Recommendation # 4

“Upon declaration of a General Emergency, all emergency workers located within the 10-mile EPZ will be directed to take KI (one 130 mg tablet every 24 hours). This recommendation will be made at the same time as the recommendation to ingest KI is made to the general public.”

Analysis

- Though current trigger levels for emergency worker KI use vary within New York State, all methods use trigger levels greater than the 5 rem child CDE_T that is associated with the general public.

- The KI Task Force has agreed that there will be one trigger level to recommend KI, and that trigger level will be 5 rem child CDE_T.

- Most emergency workers are members of the public, and many will encounter the evacuating public, who will have been told to take their KI. Additionally, emergency workers have access to the same public information that would be instructing the public to take KI. These emergency workers:
  - May not differentiate themselves from the public in the presence of instructions regarding KI.
  - May not comply with directions that differ from those being broadcast to the public.

- Since emergency workers are likely to move about between evacuated and non-evacuated areas within the EPZ, all emergency workers within the EPZ will be directed to take KI. This includes licensee emergency workers as well as county, state, and local emergency workers.

- Using the same arguments as in section 4.1, if current methods are continued, emergency workers would receive a recommendation to take KI while in the field. This method:
  - Is likely to result in a recommendation to take KI after exposure to radioiodine has already occurred.
  - Has potential delays due to the communications lag present when contacting several hundred emergency workers in the field.

- Directing emergency workers to take KI in the absence of radioiodine has the same risks and benefits detailed in section 4.1.
4.7 Task Force Recommendation # 5

“Members of the public and captive populations who are directed to take KI shall be directed to ingest KI in the dosage recommended by the US FDA. If a scheme of graded dosing is not possible, one 130-mg tablet per person may be ingested with minimal risk for those over one year of age. Dose to neonates should be limited to 16 mg, if possible.”

Analysis

The FDA guidance (Ref. 3) contains a number of age dependent doses. These recommendations are the lowest effective dose. Emergency planners and others should understand that absolute precision in dosing is generally not critical to safety or efficacy. Higher doses (e.g., up to 130 mg) would be equally effective and, particularly among school-age children, extremely safe (Ref. 10).

In addition to 130 mg tablets, KI is now FDA-approved and available in 65 mg tablets and liquid (65 mg/ml).

<table>
<thead>
<tr>
<th>Threshold Thyroid Radioactive Exposures and Recommended Doses of KI for Different Risk Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>KI dose (mg)</td>
</tr>
<tr>
<td>----------------</td>
</tr>
<tr>
<td>Adults over 40 yrs</td>
</tr>
<tr>
<td>Adults over 18 through 40 yrs</td>
</tr>
<tr>
<td>Pregnant or lactating women</td>
</tr>
<tr>
<td>Adolescents over 12 through 18 yrs who weigh at least 150 pounds</td>
</tr>
<tr>
<td>Adolescents over 12 through 18 yrs who weigh less than 150 pounds</td>
</tr>
<tr>
<td>Children over 3 through 12 yrs</td>
</tr>
<tr>
<td>Over 1 month through 3 years</td>
</tr>
<tr>
<td>Birth through 1 month</td>
</tr>
</tbody>
</table>

A scheme of graded dosing may be difficult to implement during a radiological emergency involving large numbers of people. If local emergency planners conclude that graded dosing is logistically impractical, for populations at risk for radiiodine exposure, the overall benefits of taking up to 130 mg of KI instead of the lower doses recommended for certain age groups far exceed the small risks of overdosing. However, where feasible, adherence to FDA guidance should be attempted when dosing infants. Ideally, neonates should receive the lowest dose (16 mg) of KI. Excess iodine intake can lead to transient iodine-induced hypothyroidism in neonates, which can impact intellectual development. Individuals who are intolerant of KI at protective doses, as well as neonates, pregnant, and lactating women, should be given priority.
with regard to other protective measures (i.e., sheltering-in-place, evacuation, and control of the food supply) (Ref. 10).

This analysis recognizes:

- Potential confusion relating these doses to the public.

- Practical issues associated with delivering doses based on fractions of a tablet. This would require sectioning KI tablets in order to achieve a desired delivered dose.

- Likely lack of compliance regarding dose given the above issues.

Benefits to this method

- Instructions to follow the FDA recommendations if possible, but allowing up to 130 mg for persons over one year of age, and limiting neonates to 16 mg are easily related in public information material.

- Simple instructions are more likely to be complied with.

Risks to this method

This recommendation may provide a dose to children significantly in excess of the FDA requirements. In light of potential developmental consequences of even transient hypothyroidism, neonates who receive KI should be medically monitored and thyroid hormone therapy given in cases where hypothyroidism develops. This action should be incorporated into the State and county plans.

Risk Analysis

- The risk associated with excessive KI is less than the risk of exposure to radioiodine (Ref. 3).

- The public is more likely to comply with simple dose instructions.

- The FDA has indicated that the use of a single 130-mg dose for all members of the public is safe, regardless of age (Ref. 10).

4.8 Task Force Recommendation # 6

"As part of a pre-distribution effort, each member of the public should be offered a quantity of KI tablets equivalent to the following:

Maximum ETE (in days-rounded up) x 1 age and/or weight dependent dose/day."
Alternatively, one bottle of liquid KI may be offered per family."

Analysis

- The public should be provided with sufficient KI to assure that thyroid prophylaxis is available to accommodate an expected duration of exposure to radioiodine.

- Given that evacuation of the public is the preferred method of preventing exposure, in an incident that could result in the release of radioiodine, the public could be expected to be exposed for a period of time equal to the greatest Evacuation Time Estimate (ETE) for the facility in question.

- One dose of KI protects the thyroid for approximately 24 hours (one day).

It is possible that impediments to evacuation may prevent the egress of portions of the population that would otherwise be evacuated (examples are road impediments such as heavy snowfall or transportation resource shortfalls), however, those conditions are accommodated in each nuclear facility’s ETE.

- Given the above, pre-distribution efforts should provide sufficient KI in accordance with the following:

  \[
  \text{Maximum ETE (in days-rounded up)} \times \text{1 age and/or weight dependent dose/day} = \# \text{KI tablet(s) per person that should be pre-distributed}
  \]

  Example: At Nine Mile Point, the maximum amount of time it would take to evacuate any member of the public is 8 hours, 20 minutes, as indicated in that facility’s ETE (Ref. 4). Rounded up, that is equivalent to 1 day. Plugging this into the above formula:

  \[
  1 \text{ day} \times 1 \text{ age and/or weight dependent dose/day} = 1 \text{ age and/or weight dependent dose}
  \]

  In this example, one tablet of the appropriate dosage should be offered per person in a pre-distribution method. If 65 mg tablets are not available, 130 mg tablets may be offered. Alternatively, one bottle of liquid KI per family may be offered.

5. **Implementation Considerations**

This section provides suggestions for implementing the recommendations contained above.

5.1 Licensee actions
The Part 1 Notification Fact Sheet item 7.B. should be modified to read, “Evacuate and implement the KI plan for the following ERPA’s”. This action was completed 5 May 2003.

5.2 County and State actions

- Emergency plans should be modified to include:
  - The addition of KI as a protective action for the public.
  - The above protective action may be implemented for the evacuating public and those directed to shelter-in-place upon declaration of a General Emergency.
  - The recommended dose will be in accordance with FDA guidance. If a scheme of graded dosing is not possible, one 130-mg tablet per person may be ingested with minimal risk for those over one year of age. Dose to neonates should be limited to 16 mg, if possible.
  - Dose should be repeated every 24 hours while the person is exposed to radioiodine.
  - All emergency workers located within the 10-mile EPZ will be instructed to take KI upon declaration of a General Emergency (that is, concurrent with the recommendation to the evacuating population).
  - KI distribution policies and procedures, both pre- and post-event.

- Public information plans should be modified to include:
  - KI purpose, dose, distribution methods (pre- and post-event) and precautions (consistent with NYS and FDA guidance) in public education materials.
  - Incorporation of KI protective action details into EAS follow-up messages.
6. **Glossary/Acronyms**

*CDE*₆ (Committed Dose Equivalent to the thyroid) - the radiation dose due to radioiodine in the thyroid over the 50-year period following exposure. In this document, *CDE*₆ is used to refer to the committed dose equivalent to the child thyroid.

*CFR* (Code of Federal Regulations) -

*Day* - 24 hour period

*ECL* (Emergency Classification Level) - one of four classes used to describe emergencies at nuclear power plants.

*EAS* (Emergency Alert System) - broadcasting facilities that have been authorized by the Federal Communications Commission to operate in a controlled manner during a war, state of public peril or disaster, or other national emergency.

*EPZ* (Emergency Planning Zone) - the 10-mile radius around a nuclear power plant used for emergency planning purposes.

*Evacuation* - the urgent removal of people from an area to avoid or reduce high-level, short-term exposure, usually from the plume or from deposited radioactivity. Evacuation may be a preemptive action taken in response to a facility condition rather than an actual release.

*ETE* (Evacuation Time Estimate) - the time it is estimated to take to evacuate a certain area taking into consideration population size, road conditions, etc.

*FEMA* (Federal Emergency Management Agency) - the federal agency responsible for coordinating federal response to an emergency.

*FR* (Federal Register)

*FRPCC* (Federal Radiological Preparedness Coordinating Committee)

*GE* (General Emergency) - the most serious of four NRC emergency classes. Classification as a general emergency indicates that events are in progress or have occurred which involve actual or imminent substantial core degradation or melting with potential loss of containment integrity. Releases can reasonably be expected to exceed EPA Protective Action Guide exposure levels offsite for more than the immediate site area.

*Maintain a heightened state of awareness* - go inside and monitor EAS.

*Neonate* - infant under 1 month of age
NRC (Nuclear Regulatory Commission) - the federal agency that licenses and regulates nuclear power plants. The NRC would be the lead federal agency for responding to an emergency at a nuclear power plant.

PAG (Protective Action Guide) - the projected dose to reference man, or other defined individual, from an accidental release of radioactive material at which a specific protective action to reduce or avoid that dose is warranted.

Shelter-in-Place - a protective action where people go indoors, close all doors and windows, turn off all sources of outside air, and remain indoors until officially notified that it is safe to go out.

US FDA (United States Food and Drug Administration) - the federal agency, which among other things, is responsible for evaluating and approving drugs.
Appendix C: Iodine Prophylaxis

7. References

(Ref. 1) 66 FR 5427 (19 Jan 2001).

(Ref. 2) 67 FR 1355 on (10 Jan 2002).


(Ref. 4) Nine Mile Point / James A. FitzPatrick Nuclear Facility Development of Evacuation Time Estimates, August 2003


(Ref. 6) (NYSDOH RASCAL calculation).

(Ref. 7) NUREG-0654 FEMA REP 1: Appendix 1.

(Ref. 8) EPA 400-R-92-001, Manual or Protective Action Guides and Protective Actions for Nuclear Incidents, USEPA, May 1992, Table 2-2 footnote b.


APPENDIX D
SHELTER-IN-PLACE
Revision 1.0

09/19/12
APPENDIX D

SHELTER-IN-PLACE

The Sheltering-in-place Response Option gives the County the capability to implement an effective protective action for the general public in the event of a puff-type radiological release incident at the Indian Point Energy Center (IPEC). In addition, for those situations requiring evacuation and where evacuation cannot be implemented because of time constraints and/or impediments to highway movement (e.g. severe winter weather), Sheltering may be implemented in lieu of evacuation.

If the Sheltering-in-place Response Option is implemented, the general public and special facility administrators should be informed of the following:

1. Remain indoors and close all windows and doors.

2. Turn off all fans, air conditioning equipment and other sources of outside air, while maintaining a safe indoor temperature.

3. Close blinds and drapes.

4. Extinguish fires in fireplaces and close flues.

5. Keep listening to the radio for heightened awareness of a radiological emergency and for possible changes in protective actions announced via the Emergency Alert System.

Selective Sheltering-in-place

Sheltering-in-place may be preferable to evacuation as a protective action in some situations. Because of the higher risk associated with evacuation of some special groups in the population (e.g., those who are not readily mobile), Sheltering may be the preferred alternative for such groups as a protective action at projected doses up to 5 rem. In addition, under unusually hazardous environmental conditions use of Sheltering-in-place at projected doses up to 5 rem to the general population (and up to 10 rem to special groups) may become justified. Sheltering may also provide protection equal to or greater than evacuation due to the nature of the source term and/or in the presence of temporal or other site-specific conditions. Illustrative examples of situations or groups for which evacuation may not be appropriate at 1 rem include: a) the presence of severe weather, b) competing disasters, c) institutionalized persons who are not readily mobile, and d) local physical factors which impede evacuation.
Alignment of Public Protective Actions for Nuclear Power Plant Incidents with Updated Guidance

November 2005
The following individuals and organizations participated in the development of this position paper, and agree to its purpose and contents. All participants agree to implement the guidance contained herein, to the extent possible.

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Entergy Nuclear Northeast (J.A. FitzPatrick and Indian Point Energy Center)
Michael J. Slobodien, Director, Emergency Programs

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Constellation Energy Group (R.E. Ginna Station)
Timothy Laurson, Director of Nuclear Emergency Preparedness and Training Support

______________________________
New York State Emergency Management Office
Andrew Feeney, First Deputy Director

______________________________
New York State Health Department
Adela Salame-Alfie, Ph.D., Director, Bureau of Environmental Radiation Protection
Executive Summary

The purpose of this position paper is twofold. First, it reconciles different terminology used by Licensees, State and County officials when issuing protective action recommendations during a radiological emergency at a nuclear power plant, and second, it establishes a consistent criteria that can be used for making such recommendations. This issue was prompted by the issuance of NRC Regulatory Information Summary (RIS) 2004-13, “Consideration of Sheltering in Licensee’s Range of Protective Action Recommendations”, and the identification of inconsistent definitions of protective actions within the Licensee, State and County emergency plans.

The table below summarizes the agreed upon definitions for the protective actions.

<table>
<thead>
<tr>
<th>Decision/Protective Action</th>
<th>Expected Public Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Need for Protective Actions</td>
<td>No action</td>
</tr>
<tr>
<td>Evacuate specified ERPAs</td>
<td>Evacuate if located in the specified ERPAs</td>
</tr>
</tbody>
</table>
| Shelter-in-place specified ERPAs or designated populations | Shelter-in-place if located in the specified ERPAs or designated populations:  
|                                                      | • Go indoors                                                   |
|                                                      | • Limit outside sources of air                                 |
|                                                      | • Make preparation to evacuate                                |
|                                                      | • Listen to EAS                                                |
| Monitor the EAS                                      | Continue listening to EAS for additional information           |
| Implement the KI plan                                | Follow provided direction regarding the use of KI              |

1. Purpose

The terminology used in the protective actions recommended by nuclear power plant licensees differs from that recommended by current regulatory guidance. In addition, definitions of certain protective actions vary between Licensee, State and county emergency plans. The purpose of this position paper is to recommend a strategy that will align the protective actions and terminology used by the Licensee, State, and counties.

2. Regulatory Requirements and Guidance

2.1 10 CFR 50.47(b)(10) states that licensees are to develop a range of protective actions for the public in the plume exposure pathway Emergency Planning Zone (EPZ) and that in developing this range of protective actions, consideration is to be given to sheltering (Ref. 1).

2.2 NUREG-0654 FEMA-REP 1 section J.9 states that “Each state and local organization shall establish a capability for implementing protective measures based upon protective action guides and other criteria. This shall be consistent with the
recommendations of the EPA regarding exposure from the passage of radioactive plumes…” (Ref. 2).

2.3 NUREG-0654 FEMA-REP 1 Supplement 3 states that an actual or projected severe core damage or loss of control of the facility should require a recommendation to evacuate a 2-mile radius and 5 miles downwind unless conditions make evacuation dangerous, and advise the remainder of plume EPZ to go indoors to monitor EAS broadcasts. Notes: (3) If there are very dangerous travel conditions initially shelter rather than evacuate the population until conditions improve, (4) Transit-dependent persons should be advised to remain indoors until transportation resources arrive if possible, (5) Shelter may be the appropriate action for controlled releases of radioactive material from the containment if there is assurance that the release is short term (puff release) and the area near the plant cannot be evacuated before the plume arrives (Ref. 3).

2.4 NRC Regulatory Information Summary (RIS) 2004-13, “Consideration of Sheltering in Licensee’s Range of Protective Action Recommendations,” states that sheltering may be the appropriate action for controlled releases of radioactive material from the containment, if there is assurance that the release is short term (puff release) and the area near the plant cannot be evacuated before the plume arrives. Also sheltering may be appropriate (when available) for areas not designated for immediate evacuation because: (1) it positions the public to receive additional instructions; and (2) it may provide protection equal to or greater than evacuation. Additionally, a licensee’s emergency plan, implementing procedures, and notification forms need to include the consideration of sheltering consistent with Federal guidance (Ref. 4).

2.5 NRC RIS 2004-13 Supp. 1, “Consideration of Sheltering in Licensee’s Range of Protective Action Recommendations” confirms NRC’s position that licensees must develop a range of protective actions that includes the consideration of sheltering and states that NRC will begin evaluating the use of enforcement action for licensees in noncompliance (Ref. 5).

2.6 Nuclear Energy Institute (NEI) Guidance, “Range of Protective Actions for Nuclear Power Plant Incidents” describes the industry perspective on protective actions (Ref. 6).

2.7 NRC RIS 2005-08, Endorsement of NEI Guidance “Range of Protective Actions for Nuclear Power Plant Incidents” states the NRC’s endorsement of NEI’s recommendations for use of specific protective actions, including sheltering as an alternative to evacuation for short term releases or when impediments to evacuation exist (Ref. 7).

2.8 EPA 400-R-92-001 “Manual of Protective Action Guides and Protective Actions for Nuclear Incidents” states that sheltering may be appropriate (when available) for areas not designated for immediate evacuation because: 1) it positions the public to receive
additional instructions; and 2) it may provide protection equal to or greater than evacuation (Ref. 8).

3. Definitions

3.1 A “General Emergency” is defined as actual or projected severe core damage or loss of control of the facility.

3.2 “All remaining ERPAs monitor the Emergency Alert System (EAS)” is an action that:

- Will always and only be used in conjunction with a recommendation for evacuation or shelter-in-place
- Is not intended to provide dose reduction
- May involve a variety of actions, including:
  - Listening to EAS
  - Collecting medications, important papers, etc.
  - Packing (in case it is later recommended to evacuate)
- Does not mean shelter-in-place
- Although it may be advisable to go indoors to monitor EAS in order to minimize traffic and other outdoor congestion, it is not required that the public go indoors in order to monitor EAS

3.3 “Shelter-in-place” is an action that:

- May be recommended by the licensee for short duration releases (defined as a release of one hour or less duration) during a General Emergency
- May be recommended by offsite response agencies for persons who should be evacuated but cannot because of impediments such as:
  - Transportation resource shortfalls
  - Dangerous travel conditions
  - Long mobilization times (special populations such as prisons, nursing homes, etc.)
- Would only be recommended during a General Emergency
- Would be taken for the purpose of reducing dose
- May involve a variety of actions, including:
  - Going indoors
  - Limiting outside sources of air
  - Making preparation to evacuate
  - Listening to EAS

3.4 “Evacuation” is an action that:

- Is defined as the urgent removal of people from an area to avoid or reduce high-level, short-term exposure, usually from the plume or deposited activity
Appendix D: Shelter-In-Place

4. Implementation Considerations

This section provides suggestions for aligning the protective actions described above.

4.1 Licensee actions

- The New York State Radiological Emergency Data Form, Part 1, item 6 should be modified to read as follows (See Appendix C):
  - A. No Need for Protective Actions outside the site boundary
  - B. Evacuate and implement the KI Plan for the following ERPAs and all remaining ERPAs monitor the Emergency Alert System …
  - C. Shelter-in-place and implement the KI Plan for the following ERPAs and all remaining ERPAs monitor the Emergency Alert System …
  - A “Note” should be added to 6B which states that “Offsite authorities should consider ‘shelter-in-place and take KI’ if evacuation is not feasible.” This statement acknowledges that during an emergency, licensees are typically unaware of emergent impediments to evacuation because that information is obtained and acted upon by offsite officials.

- Licensee emergency plans should be revised to include the protective action recommendation of “shelter-in-place” for short duration releases during a General Emergency. A short duration release is defined as a release of radioactive materials less than one hour in duration.

- Licensee emergency plans may be revised to reflect arrangements that have been made with State and/or county officials to identify and accommodate special evacuation circumstances.

- Licensees may consider additional actions for long-term impediments to evacuation per their site emergency plan and procedures.

4.2 County and State actions

- Emergency plans should be revised to include:
  - Shelter-in-place as a protective action for the public.
• Implementation of the shelter-in-place protective action when persons who should be evacuated cannot. See decision tree in Appendix B for additional information.

• A concurrent recommendation to ingest KI will be made if the public is directed to shelter-in-place during a General Emergency.

♦ Public information plans should be revised as follows:

• Incorporate information on the purpose of monitoring EAS, and actions to take while monitoring EAS into public education materials and press releases.

• Incorporate “Monitor the EAS” into EAS follow-up messages.

• Incorporate the purpose of shelter-in-place, and actions to take in order to shelter-in-place, into public education materials. See Appendix D for references for additional information on recommended actions.

• Incorporate shelter-in-place protective action details into EAS follow-up messages and press releases.

• Incorporate KI protective action details, as they relate to a recommendation to shelter-in-place, into public information materials, press releases, and EAS follow-up messages.

5. References

(Ref 1) 10 CFR 50.47(b)(10): A range of protective actions including sheltering, evacuation and prophylactic use of iodine have been developed for the plume exposure pathway EPZ for emergency workers and the public. Guidelines for the choice of protective actions during an emergency, consistent with Federal guidance, are developed and in place and protective actions for ingestion pathway EPZ appropriate to the locale have been developed.


6. **Appendices**

   - **Appendix A** - Protective Action Decision Tree for Licensees
   - **Appendix B** - Protective Action Decision Tree for Off-site Response Agencies
   - **Appendix C** - New York State Radiological Emergency Data Form, Part 1 (Rev. 9/05)
   - **Appendix D** – References for Shelter-in-Place Recommended Actions
APPENDIX A

Protective Action Recommendation Decision Tree for Licensees

GENERAL EMERGENCY PROTECTIVE ACTION RECOMMENDATIONS

Can release duration be accurately determined AND will the release be of short duration (less than 1 hour total)?

YES

Recommend shelter-in-place (and implement KI plan) at least 2 miles around and 5 miles downwind. Advise the remaining EPZ population to monitor EAS.

NO

Recommend evacuation of the population (and implementation of the KI plan) at least 2 miles around and 5 miles downwind. 1-2 Recommend that the remaining EPZ population monitor EAS.

1 OFFSITE AUTHORITIES SHOULD CONSIDER SHELTERING-IN-PLACE & TAKING KI IF EVACUATION IS NOT FEASIBLE (See appendix B).

2 THE LICENSEE MAY CONSIDER ADDITIONAL ACTIONS FOR LONG-TERM IMPEDIMENTS TO EVACUATION PER THEIR SITE EMERGENCY PLAN AND PROCEDURES.

Continuously assess plant, meteorological and radiological conditions

Revise initial PARs as needed based on EPA PAGs, field data and changing meteorological conditions.
APPENDIX B

Protective Action Decision Tree for Off-Site Response Agencies

INITIAL CONSIDERATIONS
(Assumes General Emergency has been declared and the licensee has made a recommendation to evacuate)

- Resource Shortfalls
- Evacuation Impediments
- Special Populations

- Are transportation resources and/or facilities in operation to allow evacuation?
  - NO
  - YES
  - SHELTER IN PLACE

- Do any of these impediments exist?
  - 1. Severe Weather
  - 2. Blocked evacuation Routes
  - 3. Transportation Issues
  - NO
  - YES
  - Does the impediment apply to the entire population selected for evacuation?
    - NO
    - YES

- Does a Special Population exist that cannot be readily evacuated?
  - NO
  - YES
  - Specify the population where shelter-in-place needs to be applied

- Continue to reassess the considerations

- EVACUATE
APPENDIX D

References for Shelter-in-Place Recommended Actions

http://www.redcross.org/services/disaster/beprepared/shelterinplace.html

http://www.nationalterroralert.com/readyguide/shelterinplace.htm

http://www.cfrpc.org/shelter.html

http://www.bt.cdc.gov/radiation/shelter.asp

http://www.ci.west-sacramento.ca.us/cityhall/departments/fire/sip.cfm

http://www.pep-c.org/shelter1in1place/

http://www.fema.gov/hazards/nuclear/radiolo.shtml
APPENDIX E
WESTCHESTER COUNTY
EMERGENCY COMMUNICATIONS NETWORK
Revision 0.0

08/06/10
WESTCHESTER COUNTY EMERGENCY COMMUNICATIONS NETWORK

In the event of a Radiological Emergency at the Indian Point Energy Center (IPEC), the Radiological Emergency Communications System (RECS) will enable the IPEC staff to promptly notify State and County emergency response organizations. In addition, the RECS will provide for all additional communications between the IPEC Emergency Operations Facility and the Emergency Operations Centers for the State of New York and Orange, Putnam, Rockland and Westchester Counties.

The Westchester County Emergency Communications Network operates from either the Department of Emergency Services, 60 Control (County Warning Point) in Valhalla, N.Y. or the County Emergency Operations Center (EOC) at the Hudson Valley Traffic Management Center, Hawthorne, N.Y. The CWP in Valhalla is manned on a 24-hour-a-day basis.

1. NEW YORK STATE RADIOLOGICAL EMERGENCY COMMUNICATIONS SYSTEM (RECS) FOR THE INDIAN POINT ENERGY CENTER

a. INTRODUCTION

This specification defines the configuration and functional requirements for a dedicated telephone network to be used for vital communications pertaining to radiological emergencies at the Indian Point Energy Center in Buchanan, N.Y. The network connects emergency facilities at IPEC to County Warning Points and EOC's of the surrounding counties and to State emergency operating centers in Albany, N.Y.

The system consists of dedicated (not switched) transmission facilities providing multi-party communications in a conferencing mode.

b. SYSTEM CONFIGURATION

(1) Site Locations

A station set and associated accessories are provided at each of the following locations:

(a) New York State Offices

(i) State Emergency Operations Center (State EOC)
State Emergency Management Office
1220 Washington Avenue
Suite 101
Albany, New York 12226
Appendix E: Westchester County Emergency Communications Network

(ii) State Emergency Communications Center (SECC)
State Emergency Management Office
State Campus, Building #22
1220 Washington Avenue
Albany, New York 12226

(iii) State Department of Health (State DOH)
Bureau of Environmental Radiation Protection
547 River Street at Flannigan Sq
Troy, New York 12180

(b) New York State SEMO Region II

New York State Region II Office
171 Cheney
Poughkeepsie, New York 12601

(c) Indian Point Energy Center

Contact: Manager Emergency Planning

(i) Unit 2 - Control Room (CR-2) (24 hour)
Entergy Nuclear Northeast
Indian Point Energy Center
Buchanan, New York 10511

(ii) Unit 3 - Control Room (CR-3) (24 hour)
Entergy Nuclear Northeast
Indian Point Energy Center
Buchanan, New York 10511

(iii) Emergency Operation Facility Center (EOF)

Buchanan Service Center
Entergy Nuclear Northeast
Buchanan, New York 10511

(iv) Alternate EOF

Entergy Nuclear Northeast
440 Hamilton Ave., 12th floor
White Plains, NY
Appendix E: Westchester County Emergency Communications Network

(d) **Orange County**

Contact: County Office of Emergency Management

(i) Orange County EOC  
22 Wells Farm Road  
Goshen, NY 10924

(ii) Orange County Warning Point (Orange WP) (24 hour)  
Orange County Sheriff’s Office  
County Jail  
40 Erie Street  
Goshen, New York 10924

(e) **Rockland County**

Contact: County Office of Fire and Emergency Services

(i) Rockland County EOC  
Fire Training Center  
Pomona, New York 10970

(ii) Rockland County Warning Point (Rockland WP) (24 hour)  
Sheriff’s Radio Division  
Fire Training Center  
Pomona, New York 10970

(f) **Putnam County**

Contact: Director, Bureau of Emergency Services

(i) Putnam County EOC  
Putnam County Bureau of Emergency Services  
112 Old Route Six  
Carmel, New York 10512

(ii) Putnam County Warning Point  
Putnam County Sheriff’s Department  
3 County Center  
Carmel, New York 10512
Appendix E: Westchester County Emergency Communications Network

(g) Westchester County

Contact: Office of Emergency Management

(i) Westchester County Emergency Operations Center
Hudson Valley Transportation Management Center
200 Bradhurst Avenue
Hawthorne, New York 10532-1619

(ii) Westchester County Warning Point (Westchester WP) (24-hour)
Westchester County 60 Control
Department of Emergency Services
4 Dana Road
Valhalla, New York 10532

(h) Peekskill City

Contact: Police Commissioner

Peekskill City Warning Point (Peekskill CD)
Police Headquarters
Nelson Avenue
Peekskill, New York 10566

(2) Layout

Figure E-1 identifies the network configuration. Figure E-1 is not intended to represent an exact routing plan for the network. However, the star configuration shown is required so that communications with more than one county will not be lost in the event of failure in one section. The central office is the location for any centralized hotline elements such as conference bridge, ring generators, etc.

(3) Voice Recording

All voice traffic on the RECS will be recorded for accountability purposes. Recorders will be located at the New York State Emergency Operations Center in Albany, New York. Since all voice traffic is on a conference basis, each of the recorders will receive all voice communications on the RECS from the State, counties and NFO.
(4) **Functional Operation**

All calls on the RECS will be on a conference basis as follows:

(a) RECS Line calls are initiated by the NFO only;

(b) When phone rings PICK UP handset and remain off-hook;

(c) MONITOR the telephone speaker;

(d) TO TALK, press the handset push-to-talk button;

(e) When the conference is completed, HANG-UP the handset.

2. **WESTCHESTER COUNTY EMERGENCY COMMUNICATIONS NETWORK**

The Emergency Communications Network utilizes telephone lines, both dedicated and commercial, and radio communications as described below:

a. **Department of Public Safety Communication Center**

(1) The Center utilizes a radio system and a telephone "hot line."

(a) The radio system includes communications links to:

   (i) Department of Public Works (in part)
   (ii) County corrections facilities
   (iii) Some park and recreational areas
   (iv) Court and offices of the District Attorney

   All utilize repeater systems.

(b) The telephone "hot line" system facilitates simultaneous communication links with the following:

   (i) Forty-three (43) city, town and village police departments
   (ii) New York State Police (Hawthorne)
   (iii) Greenwich, Connecticut local police department

(2) The Center in Hawthorne has auxiliary power generating capabilities including a 14-day supply of fuel.
3. **WESTCHESTER COUNTY DEPARTMENT OF EMERGENCY SERVICES**
   (VALHALLA, N.Y.)

   a. Fire and EMS Emergency Communications Center (ECC). The ECC is capable of communicating with all fire and EMS agency within the County.

   b. The County maintains a Voice over Internet Protocol (VoIP) telecommunications systems in the EOC to communicate directly to the County’s Emergency Communications Center, Department of Health and all 911 receiving hospitals within the County.

4. **EMERGENCY OPERATIONS CENTER (EOC) COMMUNICATIONS**

   a. The County Emergency Operations Center (EOC) located in Hawthorne, as well as the alternate EOC in White Plains, has limited communications capabilities. It has the New York State Executive Hotline, the New York State Radiological Emergency Communications System (RECS) and radio communications.

   The EOC is capable of maintaining communication with the EMS and with county hospitals. Space in the EOC is set aside for the American Red Cross and the Radio Amateur Civil Emergency Service (RACES), a radio organization of ham radio operators. RACES is of great importance in the event of an emergency in that it can be utilized to maintain communications between emergency organizations and workers including field monitoring teams, police, the American Red Cross, etc.

   The EOC has an emergency Uninterrupted Power Supply (UPS) and diesel generator to supply all backup power needs.

   NYSPIN terminals exist at the County Warning Point.

   b. Westchester County has two mobile communications vehicles at its disposal. These vehicles are equipped with much the same radio communications capabilities as the EOC, allows coordinating efforts to be made at the scene of an emergency. The mobile communications van may be dispatched to near-scene locations to facilitate communications between local emergency services agencies and the county EOC. These units also utilize a mobile radio bridging system that allows for communications interoperability with multiple disparate radio systems.

   c. The County Public Safety Communications Center, EOC and alternate EOC have the capability to maintain telephone communication with the New York State Warning Point in Albany.

   d. All frequencies are controlled and filed and maintained at EOC and at the emergency facilities.
Communication between the Westchester County EOC and the Radiological Field Monitoring Teams (FMT) is provided through the use of local radios operating on a FM frequency with a base station adjacent to the Dose Assessment Room of the EOC. Each FTM is equipped with a Nextel (Phone and Direct Connect) with Public Safety Priority. Each team is provided with a satellite phone to ensure an additional layer of redundancy.

Backup communications are primarily provided through the use of RACES radios and cell and satellite phones. This is detailed in Attachment 1 to the *Field Monitoring Procedures Manual*. 

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**e.**
FIGURE E-1: RECS FORM
Figure E-2: RECS and Executive Hotline System Diagram
FIGURE E-3: COMMUNICATIONS DIAGRAM

REDACTED
APPENDIX F
PUBLIC ALERT AND NOTIFICATION
Revision 1.1

11/05/14
APPENDIX F
PUBLIC ALERT AND NOTIFICATION

This Appendix presents a review of those prompt notification systems that have been established in the ten-mile Emergency Planning Zone (EPZ). NUREG-0654 requires the ability to promptly notify the public that an emergency situation exists and to take protective actions. This notification capability is required within the Plume EPZ, approximately a 10-mile radius around the reactor site.

Appendix 3 of NUREG-0654 discusses the primary requirements concerning public notification and for notification systems.

1. PUBLIC NOTIFICATION SYSTEMS
   a. INTRODUCTION

This document provides an overview of the Public Alert and Notification System (ANS) for the 10-mile EPZ area centered on the Indian Point Energy Center. It describes the purpose, design criteria, configuration, implementation and testing schedule of the Indian Point ANS.

(1) Background

IPEC has installed an Alert and Notification System (ANS) in the approximate 10-mile EPZ area surrounding the Indian Point Energy Center. The 10-mile EPZ area is the Plume Exposure Pathway Emergency Planning Zone (EPZ). The purpose of the ANS is to provide initial alert to the general public within the EPZ of an emergency at the Indian Point Plants. The intention of the alert signal is to instruct the public to monitor the Emergency Alert System (EAS) messages being broadcast on public media (radio/TV) for more specific information.

The responsibility for the activation of the ANS resides with the county governments who have jurisdiction in the 10-mile EPZ area. The ANS is segmented into four parts along county boundaries with the alerting devices in each segment controlled by the respective county authorities.

The Public Alert System is composed mainly of sirens and is augmented with tone alerts radios (TARs). Tone alert radios are an enhancement to the Indian Point Alert and Notification System. The radios have been distributed to supplement siren alerting for residents in EPZ areas where acoustic coverage is reduced, as well as to special facilities in the EPZ.

The tone alert radios are pre-tuned to a local EAS broadcast station that transmits EAS messages. The tone alert radios are activated automatically when an EAS message is broadcast by a commercial radio station in conjunction with siren soundings.
Entergy Nuclear is responsible for the administrative maintenance of the tone alert radio program. These activities include:

- Maintaining records of tone alert radios currently distributed by Entergy,
- Providing replacement radios to recipients as requested,
- Ensuring sufficient supplies of replacement radios,
- Identifying facilities that should be offered tone alert radios,
- Surveying tone alert radio holders annually to verify operability of tone alert radios, and to provide instructions on the use of the tone alert radios

b. SYSTEM CONFIGURATION

The siren system has 77 sirens in Westchester County. Table F-1 lists the location of the sirens.

(1) Alerting Device Distribution

For effective coverage of the Indian Point EPZ, the ANS contains 172 omni-directional electronic stationary sirens of which 77 are located in Westchester County. The distribution is as follows:

<table>
<thead>
<tr>
<th>County</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Westchester</td>
<td>77</td>
</tr>
<tr>
<td>Rockland</td>
<td>56</td>
</tr>
<tr>
<td>Orange</td>
<td>23</td>
</tr>
<tr>
<td>Putnam</td>
<td>16</td>
</tr>
<tr>
<td>TOTAL</td>
<td>172</td>
</tr>
</tbody>
</table>

(2) Control and Communication

The communication control system uses eleven (11) communication control units (CCU) with an attached computer, running the control and monitor software. Each unit includes a CCU, computer, LCD monitor, printer, keyboard, track ball, batteries, and uninterruptible power supply, all within a rack-mounted enclosure.

Two (2) of the eleven (11) CCU’s are located in Westchester County. They are located:

- in the REDACTED
- the REDACTED

Six (6) CCU’s are located in the following counties:

- two (2) CCU’s located in Putnam County
- two (2) CCU’s located in Orange County, and
- two (2) CCU’s located in Rockland County.

Each county has complete activation control and monitoring over the sirens used to alert their county from all CCU’s located within their county. Westchester County’s and Rockland County’s CCU’s have the capability of controlling all 172 sirens in all four Counties. The ability to activate another County’s sirens is only exercised at that County’s request.
There are three (3) CCU units located at Indian Point Energy Center that have complete control and monitoring capabilities over all sirens in the system.

All CCU’s, computers, and associated equipment have battery back-up power capable of providing a minimum of twenty-four (24) hours of operation in case of primary power failure. The system incorporates reliable communication and post-activation polling times of less than 3 minutes (using the IP communication path).

Using the four towers in simulcast mode, essentially 100% coverage is obtained from any one of the eleven (11) CCU locations to all siren sites. All radio communication equipment has battery backup for at least twenty-four (24) hours of operation in case of primary power loss. This simulcast radio system uses one REDACTED pair that the Indian Point Energy Center is licensed for and conforms to the existing license ERP output power for both the repeaters and the mobile units (sirens and CCU’s). The 220 MHz radio system eliminates the single points of siren communication failures since every CCU can communicate to every siren in the system.

To further increase the RF system reliability, all activation transmission messages are sent out multiple times. By sending out multiple redundant activation messages, the probability of all desired sirens correctly activating, even in the presence of random radio interference.

A wireless data network that uses cellular data modems provides independent, redundant communications between all CCU’s and sirens. Several methods are employed to prevent unauthorized access to the siren system via these wireless links. Data is extensively checked and is encrypted using 128 bit AES. The modems are programmed to respond only to other modems within an assigned block of static IP addresses.

c. **SIREN PLACEMENT GUIDELINES**

The following guidelines on siren sound levels are employed in the siren placement for the Indian Point ANS:

1. For non-residential areas, sirens are placed so that 60dB (C) will be the minimum outdoor siren-sound level in the area.

2. For residential areas with population density below 2,000 persons/square mile, sirens are placed so that 65dB (C) will be the minimum outdoor siren-sound level in the area. This is to provide effective indoor as well as outdoor coverage.

3. For populated areas with population density above 2,000 persons/square mile and for cities, sirens are placed so that 75dB (C) will be the minimum outdoor siren-sound level in the area for effective indoor as well as outdoor coverage.
The maximum sound level received by any member of the public is no more than 123dB (C).

The above guidelines provide adequate outdoor, as well as indoor coverage under most circumstances.

d. ALERT AND NOTIFICATION SYSTEM TESTING AND MAINTENANCE

Entergy is responsible for testing and maintenance of the siren system. Procedures detailing the testing and maintenance of the system are on file at Entergy. The siren system testing program is as follows. The success of any test will be confirmed by feedback reported to the control station. If unsatisfactory performance is reported, a technician is dispatched by the NFO to diagnose and repair the problem.

1. Bi-Weekly Silent Test - A bi-weekly “Silent” test is initiated from either the County EOC or WP to ensure that the transmission path and the siren audio drivers are functional.

2. Full Alert Siren Test - The entire siren system is tested at least annually to ensure operability. The sirens are sounded from either a County EOC or WP as if it were a real actuation. In this test the sirens emit a constant tone for approximately 4 minutes.

3. Preventive Maintenance – The NFO conducts a preventive maintenance program for the entire siren system including sirens, control stations and repeaters. Adjustments or repairs are made as needed according to the manufacturer's specifications. Procedures detailing the maintenance and the maintenance frequency are on file at the NFO.

e. PUBLIC NOTIFICATION

1. Emergency Alert System (EAS)

The Emergency Alert System (EAS) is a network of radio stations designed to give information to the public in the event of any emergency, including a radiological emergency at Indian Point.

(i) System Description/Capabilities

   (i) Consists of radio stations whose broadcast area includes Westchester County (see Warning Point Resource Binder for current stations).

   (ii) Stations should follow procedures developed for use by broadcasters to select the best EAS monitoring assignment according to specific EAS Operational (local) Area planning while considering constraints imposed by particular geographic and technical phenomena in those areas. Any detailed EAS Operational Plans developed voluntarily at the local level should be used in lieu of these procedures.

2. Other Notification Capabilities

   Westchester County uses an automated callout system for selected emergency worker notifications and general public notification.

   This system is developed by Dialogic Communications Corporation (DCC) and is known as The Communicator. This system has two applications as follows.
(a) Emergency Worker Notification

The Westchester County Emergency Notification System (ENS) is used to perform automated callout of the EOC staff. Pre-recorded messages are available for both drill scenarios and real events, one for each emergency classification level. The system can be activated by the Warning Point or authorized Department of Emergency Services personnel. This activation can be done remotely by those authorized. The system has 16 lines and is programmed with the home, office, mobile and pager numbers for EOC staff. The system is able to log successfully completed calls and print a report of calls completed.

(b) Community Notification System

This feature of the Communicator is utilized for larger public notifications. It has three T-Systems connected to it with 72 lines. An additional tool used in conjunction with the system is GeoCast (GIS system) with which you can “drop and draw” specific geographic areas of the county to be notified. It is also capable of notifying special population groups such as schools and nursing homes.

The GeoCast automatic dialing system will also be used in the event of siren failure. A distance of approximately one mile radius around the failed siren(s) will be selected. A recorded message will be played for all populations within the selected area which advises them to tune to local EAS radio and TV stations for emergency information. This system is web-based and can be activated by OEM staff from any location.
## List of Sirens for the New System

<table>
<thead>
<tr>
<th>New Siren Number</th>
<th>Main Road</th>
<th>Intersecting Road</th>
<th>Municipality</th>
</tr>
</thead>
<tbody>
<tr>
<td>301</td>
<td>S. Highland Ave.</td>
<td>Archer and Nelson Ave.</td>
<td>Ossining</td>
</tr>
<tr>
<td>302</td>
<td>Pleasantville Road</td>
<td>Central Drive and Mulberry</td>
<td>Ossining</td>
</tr>
<tr>
<td>303</td>
<td>Croton Ave. and Route 133</td>
<td>Route 9A</td>
<td>Ossining</td>
</tr>
<tr>
<td>304</td>
<td>Croton Dam Road</td>
<td>Cherry Hill Circle</td>
<td>Ossining</td>
</tr>
<tr>
<td>305</td>
<td>No. Highland Ave. and Rt. 9</td>
<td>Audabon Drive</td>
<td>Ossining</td>
</tr>
<tr>
<td>306</td>
<td>56 Grace Lane --North East of 9-A</td>
<td>Croton Dam Road</td>
<td>New Castle</td>
</tr>
<tr>
<td>307</td>
<td>165-169 Somerstown Pike</td>
<td>Surrey Lane</td>
<td>Yorktown</td>
</tr>
<tr>
<td>308</td>
<td>200 Barnes St.--Near Rt.134 &amp; T.S.P.</td>
<td>Syska Road</td>
<td>Yorktown</td>
</tr>
<tr>
<td>309</td>
<td>Spring Valley Road</td>
<td>Teatown Road</td>
<td>Yorktown</td>
</tr>
<tr>
<td>310</td>
<td>G.E. Training Center - Fowler Ave.</td>
<td>Hillcrest Ave.</td>
<td>Ossining</td>
</tr>
<tr>
<td>311</td>
<td>Old Post Road</td>
<td>Maple St. and Rt. 129 (cemetary)</td>
<td>Croton</td>
</tr>
<tr>
<td>312</td>
<td>Croton Point Park</td>
<td>Croton Point Park Parking lot</td>
<td>Croton</td>
</tr>
<tr>
<td>313</td>
<td>180 No. Riverside Ave.</td>
<td>Old Post Road</td>
<td>Croton</td>
</tr>
<tr>
<td>314</td>
<td>66 Colabaugh Pond</td>
<td>Woodale Ave.</td>
<td>Cortlandt</td>
</tr>
<tr>
<td>315</td>
<td>Mt. Airy Road</td>
<td>Glengary Rd. at highline crossing</td>
<td>Cortlandt</td>
</tr>
<tr>
<td>316</td>
<td>Rt. 129 and Fox Run Road</td>
<td>Short Hill Road</td>
<td>Cortlandt</td>
</tr>
<tr>
<td>317</td>
<td>Hanover St</td>
<td>Croton Heights Road</td>
<td>Yorktown</td>
</tr>
<tr>
<td>318</td>
<td>1353 Baldwin Road</td>
<td>Baptist Church Road</td>
<td>Yorktown</td>
</tr>
<tr>
<td>319</td>
<td>Underhill Ave. (W-59 on Hanover and Church)</td>
<td>Front St.</td>
<td>Yorktown</td>
</tr>
<tr>
<td>320</td>
<td>Hunter Brook Road</td>
<td>Baptist Church Road</td>
<td>Yorktown</td>
</tr>
<tr>
<td>321</td>
<td>Crompond Rd. Rt 202</td>
<td>Mohansic Ave.</td>
<td>Yorktown</td>
</tr>
<tr>
<td>322</td>
<td>Old Crompond Road</td>
<td>Ave A - Quarry Acres</td>
<td>Yorktown</td>
</tr>
<tr>
<td>323</td>
<td>Furnace Dock Road</td>
<td>Maple Ave.</td>
<td>Cortlandt</td>
</tr>
<tr>
<td>324</td>
<td>Washington St.</td>
<td>Montrose Station Road</td>
<td>Cortlandt</td>
</tr>
<tr>
<td>325</td>
<td>Broadway</td>
<td>Bleakley Ave and 1st Ave.</td>
<td>Buchanan</td>
</tr>
<tr>
<td>326</td>
<td>Washington St. - near Armory</td>
<td>Sherman Ave.</td>
<td>Peekskill</td>
</tr>
<tr>
<td>327</td>
<td>Washington St.</td>
<td>Hudson Ave.</td>
<td>Peekskill</td>
</tr>
<tr>
<td>328</td>
<td>116 Lakeview Drive</td>
<td>Pemart Ave.</td>
<td>Peekskill</td>
</tr>
<tr>
<td>329</td>
<td>Military Road</td>
<td>Route 202 &amp; 6</td>
<td>Cortlandt</td>
</tr>
<tr>
<td>330</td>
<td>Dogwood Road</td>
<td>28 Gallows Hill Road</td>
<td>Cortlandt</td>
</tr>
<tr>
<td>331</td>
<td>Crompond Road</td>
<td>Locust Ave.</td>
<td>Yorktown</td>
</tr>
<tr>
<td>332</td>
<td>Cortlandt Town Center - Rt 6</td>
<td>Renee Gate Street</td>
<td>Cortlandt</td>
</tr>
<tr>
<td>333</td>
<td>Woodland Ave.</td>
<td>3482 Heyward Ave - Mohegan Water Tanks</td>
<td>Yorktown</td>
</tr>
<tr>
<td>334</td>
<td>Old Yorktown Road - Rte 132</td>
<td>Suncrest Ave.</td>
<td>Yorktown</td>
</tr>
<tr>
<td>335</td>
<td>Mill St. and Rt. 6</td>
<td>North Ridge Road</td>
<td>Yorktown</td>
</tr>
<tr>
<td>336</td>
<td>11 St. (ballfield)</td>
<td>Broadway</td>
<td>Verplanck</td>
</tr>
<tr>
<td>337</td>
<td>Hudson Ave.</td>
<td>Wells St.</td>
<td>Peekskill</td>
</tr>
<tr>
<td>338</td>
<td>Jack Road</td>
<td>N Camp Road</td>
<td>Cortlandt</td>
</tr>
<tr>
<td>339</td>
<td>Lee Blvd.</td>
<td>Hill Blvd.</td>
<td>Yorktown</td>
</tr>
<tr>
<td>New Siren Number</td>
<td>Main Road</td>
<td>Intersecting Road</td>
<td>Municipality</td>
</tr>
<tr>
<td>------------------</td>
<td>--------------------------</td>
<td>---------------------------------------</td>
<td>----------------</td>
</tr>
<tr>
<td>340</td>
<td>Curry St.</td>
<td>Tulip Drive</td>
<td>Yorktown</td>
</tr>
<tr>
<td>341</td>
<td>Lafayette St.</td>
<td>Greenlawn Road</td>
<td>Peekskill</td>
</tr>
<tr>
<td>342</td>
<td>Townsend Road</td>
<td>Lexington Ave.</td>
<td>Cortlandt</td>
</tr>
<tr>
<td>343</td>
<td>Camp Field Reservoir</td>
<td>Lindbergh Place</td>
<td>Peekskill</td>
</tr>
<tr>
<td>344</td>
<td>253 Locust Ave.</td>
<td>Enrico Drive</td>
<td>Peekskill</td>
</tr>
<tr>
<td>345</td>
<td>210 Seward St.</td>
<td>Hendrick Hudson HS - Rear</td>
<td>Buchanan</td>
</tr>
<tr>
<td>346</td>
<td>Croton Ave</td>
<td>Jacob St.</td>
<td>Cortlandt</td>
</tr>
<tr>
<td>347</td>
<td>C.V.V.F.D. Firehouse/Spypond Rd.</td>
<td>Highland Drive</td>
<td>Cortlandt</td>
</tr>
<tr>
<td>348</td>
<td>9 Crugers Road extension</td>
<td>Dutch St.</td>
<td>Montrose</td>
</tr>
<tr>
<td>349</td>
<td>Furnace Dock Road</td>
<td>Rt. 9A</td>
<td>Cortlandt</td>
</tr>
<tr>
<td>350</td>
<td>317 Furnace Dock Road</td>
<td>Sniffen Mountain Rd.</td>
<td>Cortlandt</td>
</tr>
<tr>
<td>351</td>
<td>State St. &amp; Ossining Fire Police Headquarters</td>
<td>St. Paul's St.</td>
<td>Ossining</td>
</tr>
<tr>
<td>352</td>
<td>3256 Stony St.--North of 202 &amp; South of Rt. 6</td>
<td>Judy Road</td>
<td>Yorktown</td>
</tr>
<tr>
<td>353</td>
<td>8 Barger St.</td>
<td>Peekskill Hollow Road</td>
<td>Cortlandt</td>
</tr>
<tr>
<td>354</td>
<td>2789 Hemlock St.</td>
<td>Hickory Drive off of Granite Springs Road</td>
<td>Yorktown</td>
</tr>
<tr>
<td>355</td>
<td>Rt. 202 / 35 Crompond road</td>
<td>Mercer Rd. - Yorktown HS</td>
<td>Yorktown</td>
</tr>
<tr>
<td>356</td>
<td>124 Granite Springs Road</td>
<td>Curry St.</td>
<td>Yorktown</td>
</tr>
<tr>
<td>357</td>
<td>Lexington Ave. / Red Mill Road</td>
<td>Strawberry Road</td>
<td>Yorktown</td>
</tr>
<tr>
<td>358</td>
<td>Old Yorktown Road - Rt. 132</td>
<td>Main St.</td>
<td>Yorktown</td>
</tr>
<tr>
<td>359</td>
<td>Van Cortlandt Circle</td>
<td>Ridge St. in Schrub Oak</td>
<td>Yorktown</td>
</tr>
<tr>
<td>360</td>
<td>96 Elm Road</td>
<td>Alder Road west of 9A in Briarcliff Manor (college)</td>
<td>Ossining</td>
</tr>
<tr>
<td>361</td>
<td>Darby Street, End of</td>
<td>French Hill Road</td>
<td>Yorktown</td>
</tr>
<tr>
<td>362</td>
<td>1374 White Hill Road</td>
<td>Mark Road - Wilkens Farm</td>
<td>Yorktown</td>
</tr>
<tr>
<td>363</td>
<td>1518 Washington St.</td>
<td>Watch Hill Road</td>
<td>Cortlandt</td>
</tr>
<tr>
<td>364</td>
<td>522 Illington Road</td>
<td>Rt 134</td>
<td>Yorktown</td>
</tr>
<tr>
<td>365</td>
<td>1355 Journeys End Road</td>
<td>Blinn Road</td>
<td>Yorktown</td>
</tr>
<tr>
<td>366</td>
<td>Poplar Street</td>
<td>Forest Court</td>
<td>Yorktown</td>
</tr>
<tr>
<td>367</td>
<td>Broad Street</td>
<td>Sara Court</td>
<td>Yorktown</td>
</tr>
<tr>
<td>368</td>
<td>RT 118</td>
<td>500 East of Birdsall Drive</td>
<td>Yorktown</td>
</tr>
<tr>
<td>369</td>
<td>Lake Road</td>
<td>Crow Hill Road</td>
<td>Yorktown</td>
</tr>
<tr>
<td>370</td>
<td>Riverside Ave.</td>
<td>Croton Point Ave.</td>
<td>Croton</td>
</tr>
<tr>
<td>371</td>
<td>Orchard Rd.</td>
<td>Pleasantville Road</td>
<td>Briarcliff Manor</td>
</tr>
<tr>
<td>372</td>
<td>Episcopal Church at Montrose Point Road</td>
<td>Sunset Road</td>
<td>Montrose</td>
</tr>
<tr>
<td>373</td>
<td>Main Street - Rt 6</td>
<td>Dayton Lane</td>
<td>Cortlandt</td>
</tr>
<tr>
<td>374</td>
<td>Dale Ave.</td>
<td>Frederick St - Lake Allendale</td>
<td>Peekskill</td>
</tr>
<tr>
<td>375</td>
<td>Springvale Road</td>
<td>Spring Place Road</td>
<td>Crugers</td>
</tr>
<tr>
<td>376</td>
<td>Radcliffe Drive</td>
<td>Whatton Drive</td>
<td>Yorktown</td>
</tr>
<tr>
<td>377</td>
<td>South Highland Ave.</td>
<td>Glenwood Drive</td>
<td>Ossining</td>
</tr>
</tbody>
</table>
FIGURE F-1
SCHEMATIC OF NEW SIREN SYSTEM
APPENDIX G
POPULATION
Revision 0.0

08/06/10
APPENDIX G

TABLE G-1: EMERGENCY RESPONSE PLANNING AREA POPULATION*

<table>
<thead>
<tr>
<th>OLD ERPA NUMBER</th>
<th>AREA NAME</th>
<th>2000 POPULATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Buchanan</td>
<td>2,171</td>
</tr>
<tr>
<td>2</td>
<td>City of Peekskill</td>
<td>22,459</td>
</tr>
<tr>
<td>3</td>
<td>Verplanck</td>
<td>1,273</td>
</tr>
<tr>
<td>4</td>
<td>Montrose and Blue Mountain Res.</td>
<td>3,534</td>
</tr>
<tr>
<td>5</td>
<td>Mount Airy Section, Town of Cortlandt</td>
<td>957</td>
</tr>
<tr>
<td>6</td>
<td>Croton-on-Hudson</td>
<td>7,589</td>
</tr>
<tr>
<td>7</td>
<td>Camp Smith Military Reservation</td>
<td>185</td>
</tr>
<tr>
<td>8</td>
<td>Annsville, Van Cortlandville, Crompond and Continental Village</td>
<td>11,156</td>
</tr>
<tr>
<td>9</td>
<td>Toddville and Quarry Acres in the Town of Cortlandt</td>
<td>4,486</td>
</tr>
<tr>
<td>10</td>
<td>Mohegan Lake and Shrub Oak</td>
<td>8,021</td>
</tr>
<tr>
<td>11</td>
<td>Northeastern Yorktown and Jefferson Valley</td>
<td>18,086</td>
</tr>
<tr>
<td>12</td>
<td>Southwestern Yorktown and Teatown</td>
<td>3,102</td>
</tr>
<tr>
<td>13</td>
<td>Southeastern Yorktown and Kitchawan</td>
<td>7,124</td>
</tr>
<tr>
<td>14</td>
<td>Granite Springs and Amawalk, Town of Somers</td>
<td>2,688</td>
</tr>
<tr>
<td>15</td>
<td>Southwestern Somers</td>
<td>1,284</td>
</tr>
<tr>
<td>21</td>
<td>Western New Castle and Milkwood</td>
<td>4,785</td>
</tr>
<tr>
<td>22</td>
<td>Ossining</td>
<td>29,454</td>
</tr>
<tr>
<td>47</td>
<td>VA Hospital, Montrose</td>
<td>332</td>
</tr>
<tr>
<td>48</td>
<td>Crugers and Oscawana</td>
<td>3,483</td>
</tr>
<tr>
<td>49</td>
<td>Furnace Woods, Pleasantside, Peekskill Heights</td>
<td>2,820</td>
</tr>
<tr>
<td>50</td>
<td>Quaker Bridge, Town of Cortlandt</td>
<td>471</td>
</tr>
<tr>
<td>51</td>
<td>Briarcliff Manor and Mount Pleasant</td>
<td>8,368</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td><strong>143,828</strong></td>
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* As developed by NYSEMO, per 2000 census.
### TABLE G-2: COUNTY POPULATION


Westchester County and Municipalities with Town Totals

<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Westchester County</td>
<td>923,459</td>
<td>874,866</td>
<td>866,599</td>
<td>48,593</td>
<td>56,860</td>
<td>6%</td>
<td>7%</td>
</tr>
<tr>
<td>North</td>
<td>264,794</td>
<td>246,449</td>
<td>226,549</td>
<td>18,345</td>
<td>38,245</td>
<td>7%</td>
<td>17%</td>
</tr>
<tr>
<td>Central</td>
<td>227,499</td>
<td>213,474</td>
<td>210,131</td>
<td>14,025</td>
<td>17,368</td>
<td>7%</td>
<td>8%</td>
</tr>
<tr>
<td>South</td>
<td>431,166</td>
<td>414,943</td>
<td>429,966</td>
<td>16,223</td>
<td>1,200</td>
<td>4%</td>
<td>0%</td>
</tr>
<tr>
<td>Cities</td>
<td>427,122</td>
<td>405,690</td>
<td>413,176</td>
<td>21,432</td>
<td>13,946</td>
<td>5%</td>
<td>3%</td>
</tr>
<tr>
<td>Towns</td>
<td>279,384</td>
<td>266,228</td>
<td>230,320</td>
<td>13,156</td>
<td>49,064</td>
<td>5%</td>
<td>21%</td>
</tr>
<tr>
<td>Villages</td>
<td>216,953</td>
<td>202,948</td>
<td>223,103</td>
<td>14,005</td>
<td>-6,150</td>
<td>7%</td>
<td>-3%</td>
</tr>
<tr>
<td><strong>CITIES</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mount Vernon</td>
<td>68,381</td>
<td>67,153</td>
<td>66,713</td>
<td>1,228</td>
<td>1,668</td>
<td>2%</td>
<td>3%</td>
</tr>
<tr>
<td>New Rochelle</td>
<td>72,182</td>
<td>67,265</td>
<td>70,794</td>
<td>4,917</td>
<td>1,388</td>
<td>7%</td>
<td>2%</td>
</tr>
<tr>
<td>Peekskill</td>
<td>22,441</td>
<td>19,536</td>
<td>18,236</td>
<td>2,905</td>
<td>4,205</td>
<td>15%</td>
<td>23%</td>
</tr>
<tr>
<td>Rye City</td>
<td>14,955</td>
<td>14,936</td>
<td>15,083</td>
<td>19</td>
<td>-128</td>
<td>0%</td>
<td>-1%</td>
</tr>
<tr>
<td>White Plains</td>
<td>53,077</td>
<td>48,718</td>
<td>46,999</td>
<td>4,359</td>
<td>6,078</td>
<td>9%</td>
<td>13%</td>
</tr>
<tr>
<td>Yonkers</td>
<td>196,086</td>
<td>188,082</td>
<td>195,351</td>
<td>8,004</td>
<td>735</td>
<td>4%</td>
<td>0%</td>
</tr>
<tr>
<td><strong>BEDFORD</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18,133</td>
<td>16,906</td>
<td>15,137</td>
<td>1,227</td>
<td>2,996</td>
<td>7%</td>
<td>20%</td>
<td></td>
</tr>
<tr>
<td>38,467</td>
<td>37,357</td>
<td>35,705</td>
<td>1,110</td>
<td>2,762</td>
<td>3%</td>
<td>8%</td>
<td></td>
</tr>
<tr>
<td>Buchanan</td>
<td>2,189</td>
<td>1,970</td>
<td>2,041</td>
<td>219</td>
<td>148</td>
<td>11%</td>
<td>7%</td>
</tr>
<tr>
<td>Croton-on-Hudson</td>
<td>7,606</td>
<td>7,018</td>
<td>6,889</td>
<td>588</td>
<td>717</td>
<td>8%</td>
<td>10%</td>
</tr>
<tr>
<td>Cortlandt (tov)</td>
<td>28,672</td>
<td>28,369</td>
<td>26,775</td>
<td>303</td>
<td>1,897</td>
<td>1%</td>
<td>7%</td>
</tr>
<tr>
<td><strong>EASTCHESTER</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>31,318</td>
<td>30,867</td>
<td>32,648</td>
<td>451</td>
<td>-1,330</td>
<td>1%</td>
<td>-4%</td>
<td></td>
</tr>
<tr>
<td>Bronxville</td>
<td>6,543</td>
<td>6,028</td>
<td>6,076</td>
<td>515</td>
<td>467</td>
<td>9%</td>
<td>8%</td>
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</table>
## Appendix G: Population

<table>
<thead>
<tr>
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<th></th>
<th></th>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Tuckahoe</td>
<td>6,211</td>
<td>6,302</td>
<td>6,076</td>
<td>-91</td>
<td>135</td>
<td>-1%</td>
<td>2%</td>
</tr>
<tr>
<td>Eastchester (tov)</td>
<td>18,564</td>
<td>18,537</td>
<td>20,305</td>
<td>27</td>
<td>-1,741</td>
<td>0%</td>
<td>-9%</td>
</tr>
<tr>
<td>GREENBURGH</td>
<td>86,764</td>
<td>83,816</td>
<td>82,881</td>
<td>2,948</td>
<td>3,883</td>
<td>4%</td>
<td>5%</td>
</tr>
<tr>
<td>Ardsley</td>
<td>4,269</td>
<td>4,272</td>
<td>4,183</td>
<td>-3</td>
<td>86</td>
<td>0%</td>
<td>2%</td>
</tr>
<tr>
<td>Dobbs Ferry</td>
<td>10,622</td>
<td>9,940</td>
<td>10,053</td>
<td>682</td>
<td>569</td>
<td>7%</td>
<td>6%</td>
</tr>
<tr>
<td>Elmsford</td>
<td>4,676</td>
<td>3,938</td>
<td>3,361</td>
<td>738</td>
<td>1,315</td>
<td>19%</td>
<td>39%</td>
</tr>
<tr>
<td>Hastings-on-Hudson</td>
<td>7,648</td>
<td>8,000</td>
<td>8,573</td>
<td>-352</td>
<td>-925</td>
<td>-4%</td>
<td>-11%</td>
</tr>
<tr>
<td>Irvington</td>
<td>6,631</td>
<td>6,348</td>
<td>5,774</td>
<td>283</td>
<td>857</td>
<td>4%</td>
<td>15%</td>
</tr>
<tr>
<td>Tarrytown</td>
<td>11,090</td>
<td>10,739</td>
<td>10,648</td>
<td>351</td>
<td>442</td>
<td>3%</td>
<td>4%</td>
</tr>
<tr>
<td>Greenburgh (tov)</td>
<td>41,828</td>
<td>40,579</td>
<td>40,289</td>
<td>1,249</td>
<td>1,539</td>
<td>3%</td>
<td>4%</td>
</tr>
<tr>
<td>HARRISON (t/v)</td>
<td>24,154</td>
<td>23,308</td>
<td>23,046</td>
<td>846</td>
<td>1,108</td>
<td>4%</td>
<td>5%</td>
</tr>
<tr>
<td>LEWISBORO</td>
<td>12,324</td>
<td>11,313</td>
<td>8,871</td>
<td>1,011</td>
<td>3,453</td>
<td>9%</td>
<td>39%</td>
</tr>
<tr>
<td>MAMARONECK</td>
<td>28,967</td>
<td>27,706</td>
<td>29,017</td>
<td>1,261</td>
<td>-50</td>
<td>5%</td>
<td>0%</td>
</tr>
<tr>
<td>Larchmont</td>
<td>6,485</td>
<td>6,181</td>
<td>6,308</td>
<td>304</td>
<td>177</td>
<td>5%</td>
<td>3%</td>
</tr>
<tr>
<td>Mamaroneck Village (MKT)</td>
<td>11,341</td>
<td>10,294</td>
<td>10,281</td>
<td>1,047</td>
<td>1,060</td>
<td>10%</td>
<td>10%</td>
</tr>
<tr>
<td>Mamaroneck (tov)</td>
<td>11,141</td>
<td>11,231</td>
<td>12,428</td>
<td>-90</td>
<td>-1,287</td>
<td>-1%</td>
<td>-10%</td>
</tr>
<tr>
<td>MOUNT KISCO (v/t)</td>
<td>9,983</td>
<td>9,108</td>
<td>8,025</td>
<td>875</td>
<td>1,958</td>
<td>10%</td>
<td>24%</td>
</tr>
<tr>
<td>MOUNT PLEASANT</td>
<td>43,221</td>
<td>40,590</td>
<td>39,298</td>
<td>2,631</td>
<td>3,923</td>
<td>6%</td>
<td>10%</td>
</tr>
<tr>
<td>Briarcliff Manor (MTP)</td>
<td>686</td>
<td>604</td>
<td>795</td>
<td>82</td>
<td>-109</td>
<td>14%</td>
<td>-14%</td>
</tr>
<tr>
<td>Pleasantville</td>
<td>7,172</td>
<td>6,592</td>
<td>6,749</td>
<td>580</td>
<td>423</td>
<td>9%</td>
<td>6%</td>
</tr>
<tr>
<td>Sleepy Hollow</td>
<td>9,212</td>
<td>8,152</td>
<td>7,994</td>
<td>1,060</td>
<td>1,218</td>
<td>13%</td>
<td>15%</td>
</tr>
<tr>
<td>Mount Pleasant (tov)</td>
<td>26,151</td>
<td>25,242</td>
<td>23,760</td>
<td>909</td>
<td>2,391</td>
<td>4%</td>
<td>10%</td>
</tr>
<tr>
<td>NEW CASTLE</td>
<td>17,491</td>
<td>16,648</td>
<td>15,425</td>
<td>843</td>
<td>2,066</td>
<td>5%</td>
<td>13%</td>
</tr>
<tr>
<td>NORTH CASTLE</td>
<td>10,849</td>
<td>10,061</td>
<td>9,467</td>
<td>788</td>
<td>1,382</td>
<td>8%</td>
<td>15%</td>
</tr>
<tr>
<td>NORTH SALEM</td>
<td>5,173</td>
<td>4,725</td>
<td>4,569</td>
<td>448</td>
<td>604</td>
<td>9%</td>
<td>13%</td>
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</table>
### TOWNS AND VILLAGES (cont.)

<table>
<thead>
<tr>
<th>Municipality</th>
<th>Population</th>
<th>Change</th>
<th>Percent Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>OSSINING</td>
<td>36,534</td>
<td>34,124</td>
<td>30,680</td>
</tr>
<tr>
<td>Briarcliff Manor (OST)</td>
<td>7,010</td>
<td>6,466</td>
<td>6,320</td>
</tr>
<tr>
<td>Ossining Village</td>
<td>24,010</td>
<td>22,582</td>
<td>20,196</td>
</tr>
<tr>
<td>Ossining (tov)</td>
<td>5,514</td>
<td>5,076</td>
<td>4,164</td>
</tr>
<tr>
<td>PELHAM</td>
<td>11,866</td>
<td>11,903</td>
<td>12,978</td>
</tr>
<tr>
<td>Pelham</td>
<td>6,400</td>
<td>6,413</td>
<td>6,848</td>
</tr>
<tr>
<td>Pelham Manor</td>
<td>5,466</td>
<td>5,490</td>
<td>6,130</td>
</tr>
<tr>
<td>POUND RIDGE</td>
<td>4,726</td>
<td>4,550</td>
<td>4,009</td>
</tr>
<tr>
<td>RYE</td>
<td>43,880</td>
<td>39,524</td>
<td>38,896</td>
</tr>
<tr>
<td>Mamaroneck Village (RYE)</td>
<td>7,411</td>
<td>7,031</td>
<td>7,335</td>
</tr>
<tr>
<td>Port Chester</td>
<td>27,867</td>
<td>24,728</td>
<td>23,565</td>
</tr>
<tr>
<td>Rye Brook</td>
<td>8,602</td>
<td>7,765</td>
<td>7,996</td>
</tr>
<tr>
<td>Scarsdale (v/t)</td>
<td>17,823</td>
<td>16,987</td>
<td>17,650</td>
</tr>
<tr>
<td>SOMERS</td>
<td>18,346</td>
<td>16,216</td>
<td>13,133</td>
</tr>
<tr>
<td>YORKTOWN</td>
<td>36,318</td>
<td>33,467</td>
<td>31,988</td>
</tr>
</tbody>
</table>

Source: United States Census Bureau. Prepared by the Westchester County Department of Planning.

(tov) - Town Outside of a village(s)  
(v/t) - Coterminal Village/Town (having the same border or covering the same area)  
(RYE) - The portion of the Village of Mamaroneck within the Town of Rye  
(OST) - The portion of the Village of Briarcliff Manor within the Town of Ossining  
(MPT) - The portion of the Village of Briarcliff Manor within the Town of Mount Pleasant  
(MKT) - The portion of the Village of Mamaroneck within the Town of Mamaroneck
## TABLE G-3: 2008 POPULATION ESTIMATE

<table>
<thead>
<tr>
<th>PROTECTIVE ACTION AREA</th>
<th>2008 POPULATION ESTIMATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Briarcliff Manor</td>
<td>8,691</td>
</tr>
<tr>
<td>Buchanan</td>
<td>2,260</td>
</tr>
<tr>
<td>City of Peekskill</td>
<td>24,607</td>
</tr>
<tr>
<td>Croton-on-Hudson</td>
<td>7,878</td>
</tr>
<tr>
<td>Montrose</td>
<td>3,683</td>
</tr>
<tr>
<td>Ossining</td>
<td>29,022</td>
</tr>
<tr>
<td>Town of Cortlandt</td>
<td>24,886</td>
</tr>
<tr>
<td>Town of New Castle</td>
<td>4,853</td>
</tr>
<tr>
<td>Town of Somers</td>
<td>4,350</td>
</tr>
<tr>
<td>Verplanck</td>
<td>1,325</td>
</tr>
<tr>
<td>Yorktown</td>
<td>37,816</td>
</tr>
<tr>
<td><strong>TOTAL EPZ POPULATION</strong></td>
<td><strong>149,371</strong></td>
</tr>
</tbody>
</table>
APPENDIX H
LISTING OF FACILITIES IN WESTCHESTER COUNTY
Revision 0.0

08/06/10

DELETED
THESE FACILITIES ARE LISTED IN RESPECTIVE PROCEDURES AND MULTIPLE EOC DATABASES
APPENDIX I

RADIOLOGICAL MONITORING AND ASSESSMENT RESOURCES
APPENDIX I

RADIOLOGICAL MONITORING AND ASSESSMENT RESOURCES

The capability for monitoring the area around the Indian Point Energy Center for released radioactivity; for following and predicting its movement and spread; and for assessing its potential health hazard presently exists under programs established by Entergy, the U.S. Nuclear Regulatory Commission, the U.S. Department of Energy, the New York State Government and County Governments. The existing and planned resources are described in this Appendix.

1. NUCLEAR FACILITY OPERATOR

The Nuclear Facility Operator (NFO) has extensive monitoring and assessment capabilities consisting of operating and planned systems and equipment.

a. Meteorological Radiological Plant Parameter Data Acquisition System (MRPDAS)

(1) MRPDAS Computer System

The MRPDAS Computer System provides real-time meteorological and plant parameter data (e.g., radiation levels, temperatures) to the county so that proper accident assessments can be made during and immediately after a radiological emergency.

The system takes input from site-related meteorological and radiological instrumentation and provides information to assessment teams at the county emergency operations center.

(a) Calculates the dispersion path of radioactive material if released into the atmosphere by the plant.

(b) Obtains meteorological information from a backup meteorological tower when the primary tower is out of service, thus providing assurance that basic meteorological information is available during and immediately following an accidental airborne radioactivity release and providing an input to the assessment of the consequences of accidental radioactive releases to the atmosphere.

(c) Provides simultaneous real-time meteorological data and transport and diffusion estimates in the vicinity of the site to the licensee, emergency response organizations and the NRC Staff, on demand.

(d) Utilizes site-located radiological instruments.
(e) Produces the present location and shape of the plume (Class A static model) and predicts its future shape and travel (Class B dynamic model). The primary value of the MRPDAS System for making protective action response decisions is the ability to produce this information.

(2) Radiological and Meteorological Instruments with Telemetric Capability

An Environmental Radiation Monitoring System consisting of 16 monitors has been installed at locations around the Indian Point Site. These devices continuously radio and telemeter radiation level readings to a dedicated central data processor. The users interrogate the central location and obtain data directly.

b. NUCLEAR ENVIRONMENTAL MONITORING

The existing Nuclear Environmental Monitoring (NEM) program has the responsibility for gathering and documenting ongoing radiological and meteorological readings in the 10-mile EPZ. In addition to access to the data available from the systems described in preceding paragraphs 1 and 2 and the operational responsibility for the equipment described in paragraph 2.b, the NEM program is responsible for the equipment represented in the Indian Point Wind Sector Map in the EOC, for teams of trained technicians utilizing special portable equipment to the emergency sampling sites (also in the Wind Sector Map) and for directing Emergency Offsite Monitoring Teams in an emergency.

(1) Offsite NEM Equipment

(a) Environmental Radiation Monitoring System - Refer to paragraph 1.b.

(a) Windsets - Refer also to paragraph 1.b. Additional windsets are deployed in the area around IPEC. Each installation contains a two-channel chart recorder that receives and records wind speed and direction. Charts from this equipment are periodically retrieved by the NEM program.

(c) Thermoluminescent Dosimeters (TLD's) - TLD's deployed as shown in the Indian Point Wind Sector Map in EOC, sensitive to Gamma radiation, are gathered and read periodically by the NEM program.

(d) Air Samplers deployed as shown in the Wind Sector Map are constantly in operation passing ambient air through a series of filters capable of trapping radioactive iodine and other radioisotopes in the air. The filters are periodically removed and analyzed by the NEM program. Activated charcoal filters are used for training, drills and exercises. Silver Zeolite
portable equipment to gather data from any of the 61 pre-designated emergency sampling locations around the Indian Point Site shown on the Wind Sector Map in the EOC. Readings taken by these teams are relayed back to the site via radio, using commercial telephones as backup. A partial list of the equipment utilized by these teams is presented in paragraph 4.

c. **EMERGENCY OFFSITE MONITORING TEAMS**

Entergy has trained volunteers from their staff in the operation of radiological monitoring equipment. In general, personnel utilized for this work have prior experience and have demonstrated capabilities working in areas of radioactivity exceeding normal levels. The volunteers would supplement and assist the radiation monitoring teams already assigned to the monitoring task in the event of an emergency at either Unit 2 or Unit 3.

Kits containing necessities including the following radiological equipment are maintained in a ready state and would be utilized by the teams:

1. **RO-20 Ion Chamber, or Equivalent** - This device uses a display meter to indicate the level of Gamma radiation. (Since Gamma is normally present as background radiation, readings recorded by volunteers must be evaluated by trained personnel.)

2. **H809C Air Sampler** - This device is basically a blower with a filter holder in the inlet, utilized to take samples of ambient air and pass the air through fiberglass and activated charcoal filters. These filters remove and absorb any radioisotopes from the air. Activated charcoal filters are used for training, drills and exercises. Silver Zeolite filters are used for actual response. Both types are carried by field monitoring teams.

3. **Eberline RM-14 Radiation Monitor, or equivalent** - This device is used to measure the radioactivity of filters produced by an Air Sampler (paragraph b, above).

4. **Personnel Protection Equipment** - Includes ANTI-C clothing and special respirators for use in radiation environments.

5. **Support Equipment and Supplies** - Includes spare filters, a stop watch, a filter holder, instruction kits, spare batteries, tools and spare rolls of chart paper.

2. **FEDERAL RADIOLOGICAL MONITORING AND ASSESSMENT CAPABILITIES**

The Federal Radiological Emergency Response Plan (FRERP) has been implemented consolidating the Federal response to a wide range of potential radiological emergencies.
The FRERP is intended to facilitate and clarify the Federal role and mechanisms for providing support to State and local governments in a major radiological emergency.

The Federal Emergency Management Agency has the responsibility for coordinating Federal response to nuclear incidents. SEMO will request all federal radiological assistance through FEMA. The coordination of the logistical support necessary for this operation will be the responsibility of SEMO and FEMA.

a. FEDERAL RADIOLOGICAL MONITORING AND ASSESSMENT PLAN (FRMAP)

The Federal Monitoring and Assessment Plan (FRMAP) was developed by the U.S. DOE under 44 CFR Part 351 issued by FEMA on March 11, 1982. FRMAP is part of the FRERP and replaces the Interagency Radiological Assistance Plan (IRAP) originally published in 1965 to provide Federal technical assistance and response to radiological emergency incidents. Major provisions of the FRMAP are:

- Federal agencies will develop plans and procedures to implement the FRMAP.

- The participating agencies; NRC, EPA, USDA, HHS, DOE, DOD, and DOC will maintain facilities, equipment, and personnel to carry out their responsibilities.

- DOE will coordinate all Federal offsite monitoring and assessment operations during the emergency phase, while EPA will assume this role in the intermediate and long term phases.

- Federal response will be in support of and integrated with that of the State and local government.

b. MAJOR DOE RESOURCES

U.S. DOE radiological assistance will be requested for emergencies classified as Site Area or General Emergencies. Data from the DOE teams will be coordinated with other data in the EOF and transmitted from there to the State EOC. The DOE teams will be the primary source of information on aerial monitoring of the plume. Aircraft of the Aerial Measuring System (AMS) are maintained to be ready to apply state-of-the-art remote sensing equipment to map large areas that may have been affected by an accidental release. A computer based system, the Atmospheric Release Advisory Capability (ARAC) uses actual weather diffusion, and deposition of any radioactivity released to the environment.

The information supplied by this monitoring mode includes:

- exposure rates and radionuclide concentrations in the plume
- isotopic identification of radionuclide releases
- delineation of plume extent
- extent of ground deposition

c. **RADIOLOGICAL ASSISTANCE PROGRAM (RAP)**

The function of the Radiological Assistance Program (RAP) is to respond, on an emergency basis, with appropriate scientific and medical advice and technical assistance to incidents involving loss of control over radioactive materials. RAP teams from the Brookhaven National Laboratory can respond to any site in NYS within 4 to 6 hours.

RAP advance teams at Knolls Atomic Power Laboratory (KAPL), environmental Measurements Laboratories (EML) and the West Valley Demonstration Project may also be able to respond to the nearest nuclear site location.

d. **ENVIRONMENTAL PROTECTION AGENCY (EPA) MILK MONITORING NET**

The EPA milk monitoring net is a part of the EPA's Environmental Radiation Ambient Monitoring System (ERAMS). ERAMS maintains a continuing surveillance of radioactivity in the U.S. to identify the accumulation of long lived radionuclides in the environment. ERAMS is also designed to provide short term evaluation of large scale environmental nuclear releases. During ingestion pathway incidents, ERAMS data may be utilized to collect and analyze additional milk samples marketed in areas receiving fluid milk from the affected milk shed. The results are provided to the State EOC and give them a back-up system to determine the effectiveness of preventive actions taken to reduce projected dose.

e. **OTHER EPA PROGRAMS**

- Assist in developing recommendations regarding measures to protect the public health and safety.
- Assess the nature and extent of the environmental radiation hazard.
- Assist DOE in monitoring radioactivity in the environment during the emergency phase; assume primary responsibility for same in long term phase.

f. **FOOD AND DRUG ADMINISTRATION (FDA) ANALYTICAL CAPABILITIES**

FDA manages a program whereby representative samples of foods in a typical diet are taken from various locations throughout the country. These foods, including
dairy products are then examined for their radionuclide content, commonly tritium S-90, Cs-137 and K-40. Under emergency conditions, FDA facilities can be used to analyze milk samples taken by FDA regional field staff.

g. **DEPARTMENT OF HEALTH AND HUMAN SERVICES**

- Guidance to State and local officials on the use of radio-protective substances, including dosage, and on projected doses that warrant such measures.
- Guidance to State on protective action guides for food and animal feeds.

h. **DEPARTMENT OF AGRICULTURE**

- Provide the State with advice on the minimization of losses to agricultural resources from radiation effects.
- Procurement of food.
- Inform and assist farmers and others in returning to pre-emergency conditions.
- Assist in the implementation of protective measures to minimize contamination through food ingestion.
- Assist in the collection of samples within the 50 mile EPZ.

i. **ACTIVATION OF DOE TEAMS**

USDOE Radiological assistance will be requested for emergencies classified as Site Area or General Emergencies. Data from the DOE teams will be coordinated with other data in the EOF and transmitted from there to the State EOC. The DOE teams will be the primary source of information on aerial monitoring of the plume. The information supplied by this monitoring mode includes:

- exposure rates and radionuclide concentrations in the plume
- isotopic identification of radionuclides releases
- delineation of plume extent
- extent of ground deposition

Radiological Assistance teams operating from Brookhaven National Laboratory can respond to any site in the State within 4 to 6 hours if air transport is used. (If air transport cannot be used due to weather conditions, motor vehicles will be used. The use of motor vehicles may add about 3 hours to response time for an incident at Indian Point.
Aerial monitoring capabilities are expected to arrive from Andrews AFB, Maryland. This capability is expected to be functional for 4 hours after take-off.

RAP advance teams at Knolls Atomic Power Laboratory (KAPL), Environmental Measurements Laboratories (EML) and the West Valley Demonstration Project, may be able to respond in a shorter time frame depending upon the site of the emergency. KAPL teams can respond to any nuclear power site in the State within 5 hours. EML team can respond to Indian Point within 2 to 3 hours.

3. NEW YORK STATE AND COUNTY GOVERNMENTS

The Radiological Monitoring and Assessment Resources of the State and Counties within the 10-mile EPZ have been evaluated, inventoried and summarized.

Present Monitoring and Assessment capabilities are available through the New York State Emergency Management Office and Department of Health and the appropriate County Emergency Management and Health Departments.

Sufficient county personnel shall be provided training in radiological field monitoring so that a total of six field teams are available for response to a radiological emergency (2 teams per shift 1 backup team and spare personnel). Each team, shall consist of three persons:

a. Field Team Supervisor
b. Monitor
c. Record Keeper/Communicator

The Westchester County Department of Health has been provided with six radiological monitoring emergency kits to be used by county field monitoring teams. The contents of each kit are shown in Table I-1. A map of radiological sampling points is enclosed in each field monitoring kit and a map is posted on the wall in the Assessment Room of the EOC.

Offsite meteorological data is obtained from the licensee, and is available to the County EOC either from the EOF/AEOF, or via MRPDAS.

The Dose Assessment Coordinator from the Westchester County EOC directs Field Monitoring Teams by the use of mobile radios to any location in order to obtain required field data. It is estimated that field data can be relayed to the EOC Assessment Center within 20 minutes after arrival at field monitoring sites.

There are six field monitoring teams made up of three individuals. The training given to these teams consists of (1) the use of air sampling and air sampling equipment; (2) use of mobile radios; (3) portable radiation detection equipment; (4) use of personal dosimetry and KI.

Personnel rosters and training records are filed separately in the Westchester County EOC.
The Westchester County Field Monitoring Teams may be augmented by RACES communications.

Table I-1: Field Monitoring Team Radiological Monitoring Emergency Kit Contents

1. One CDV-700 with Headphones
2. One RO-20 or equivalent
3. One RM-14 Radiation Monitor or equivalent
4. One HP-210 Detection Probe
5. One Eberline SH-4A Probe/Sample Holder
6. One Radeco Air Pump Model H-809C or equivalent
7. One Radeco Paper Filter/Cartridge Holder for Air Pump
8. Six Silver Zeolite and Charcoal Filters
9. One Box of 24 Paper Filters
10. Three Model 611, 0-5 R Direct Reading Dosimeters
11. Three Model 742, 0-200 R Direct Reading Dosimeters
12. One Dosimeter Charger
13. Three “New Jersey” Decontamination Suit Kits (Includes)
14. One Coverall with Hood
15. One Pair of PVC Gloves
16. One Pair Latex Gloves - Extra Large
17. One Pair of PVC Boots
18. One Motorola Mobile Radio with Microphone
19. One Power Cable for Radio
20. One Magnetic Base Antenna
21. Twelve (12) D-Size Batteries (Includes Replacement Batteries)
22. One Eveready Lantern with Battery
23. One Stop Watch
24. One Screwdriver
25. Two Pencils
26. Two Wax Marking Pencils
27. One Roll of Masking Tape
28. Assorted Sizes of Plastic Sampling Bags
29. Two Water Sample Bottles
30. One Dozen Pairs of Disposable Gloves
31. Twenty Large Plastic Bags for Contaminated Items
32. One Emergency Vehicle ID Placard
33. One Westchester County Road Atlas
34. One Sector/Radius Grid Map
35. One Clipboard
36. Fuses
37. Field Monitoring Team Procedures Manual (Includes):
   - Basic Protocol
   - Radiological Sampling
   - List of Fixed Field Monitoring Sites
   - Guidelines for Use of KI
   - Phone Numbers of Response Personnel
   - List of Offsite Monitoring Teams
   - Packet of Operating Instructions for Survey Equipment
   - Air Sampling Check List
   - Sampling Check List
38. One spare 6 volt gel cell battery (for RM-14)
APPENDIX J
EMERGENCY RESPONSE PLANNING AREAS:
DEFINITION OF BOUNDARIES AND WESTCHESTER POPULATION BY ERPA
Revision 0.0

DELETED

08/06/10
APPENDIX K
Public Information

Revision 1.0
06/11/12
Public information requirements for response to an Indian Point Energy Center radiological emergency include both pre-event (preparedness phase) and functions performed during an emergency. This section of the plan identifies both areas of public information requirements.

1. **PREPAREDNESS PHASE PUBLIC INFORMATION**

The Lead PIO shall assist in the development and implementation of a public education program to familiarize the public residing in the 10-mile emergency planning zone surrounding the Indian Point Energy Center and transients in this area with emergency preparedness plans, including siren notification systems, protective actions, emergency response planning area designations and other radiological emergency planning considerations.

Public education activities will include, but not necessarily be limited to the following:

a. Develop and distribute planning information for residents of the 10-mile EPZ to include information on the County’s Special Needs Registry and an "800" telephone number for seeking additional information.

b. Develop and distribute emergency planning materials targeted for transients.

The Westchester Department of Emergency Services annually distributes emergency information stickers/posters to transient locations within the ten mile emergency planning zone. These stickers/posters provide information on siren sounding; identify the local EAS station; and direct the public to refer to additional information in telephone books. A sample is provided at Figure K-1.

c. Participate in annual joint media education sessions (coordinated by Entergy).

d. Provide speakers on emergency planning.

2. **PUBLIC INFORMATION CONCEPT OF OPERATIONS**

Westchester County has designated the County Communications Director/Chief Advisor as the County's lead spokesperson for the release of information to the public and the news media during an emergency. The release of all information to the public and the media will be coordinated via a joint information system (in accordance with NIMS/ICS concept of operations). The public information staff is part of the command function in the EOC and report to the County Executive.
Appendix K: Public Information

The joint information system consists of a Joint Information Center (JIC) located at the Hudson Valley Traffic Management Center in Hawthorne, New York, supplemented by Public Information operations at each of the four County Emergency Operations Centers. Each of these key locations is linked via telephone, video-conferencing and a shared web-based public information computer network. The JIC is operated by NYS OEM and includes Entergy public information staff.

News media briefings will be conducted regularly during an emergency to provide accurate and timely information to the media concerning the nature and scope of the accident, onsite accident mitigation activities, governmental offsite response activities and recommended public protective actions. Details concerning news media briefings are contained in the Hawthorne Joint Information Center Procedures Manual.

When notified of an Unusual Event via the Office of Emergency Management or the County Warning Point, the County Communications Director will assess the event from a public information view. Public information functions may be activated at the discretion of the Director of Communications, if it is envisioned that the event may generate great public interest or a need to share emergency-related information with the general public. For example, this may be the case for security related events at Indian Point. The Communications Director will notify the EOC Lead PIO and will assure they, or a qualified alternate, are available to stand by for possible escalation to a more severe event.

When notified of an Alert or higher emergency classification, the County EOC Lead PIO and PIO staff will report to their assigned positions the County EOC. The Westchester County EOC Lead Public Information Officer and staff will operate out of the EOC Public Information Work Room.

The EOC PIO staff will coordinate with the state operated JIC, also located at the Hudson Valley Traffic Management Center in Hawthorne. The JIC is operated to facilitate a coordinated public information process or system. Coordination is accomplished via numerous communications methods, including shared web-based information; some physical co-location at the JIC; video-conferencing; and telephonic communications. The County Executive and/or other County Spokesperson will participate in JIC press conferences.

EAS messages will be developed in the EOC by PIO staff, with final approval by the County Executive(s). EAS message content will be reviewed with and coordinated among the other counties via the Executive Hotline. Message formulation will be facilitated over the Public Information portal within the DisasterLAN web-based internet computer application.
PIO staff may be assigned responsibility for recording the content of EAS messages and ensuring its proper transmittal and broadcast by the EAS station. An EAS encoder is available in the EOC to permit direct activation and broadcast of EAS messages from the EOC. Telephone communications are also available between the primary EAS station, WHUD, and the EOC. The EAS station also has call-back numbers to verify authenticity, when necessary.

PIO staff will also be responsible for preparing and issuing follow up news releases. News releases may be issued through a variety of means including, but not limited to, posting on the internet, group emails, faxing directly to the media and posting in the JIC.

Individuals who may serve as county spokespersons, include but are not limited to:

The County Executive  
County Director of Communications/Chief Advisor  
EOC Lead PIO

In addition to the above, additional senior managers may be made available to speak to specific technical issues. These individuals may include the Commissioners of Emergency Services, Health and Public Safety, or their designated representatives.

Public Inquiry

The County will staff a public inquiry telephone bank to address public questions and concerns. This function will be initiated as early as an Alert. Public Inquiry personnel will operate from the Michaelian Office Building in White Plains. A public information staff member will supervise this operation and facilitate coordination with the EOC. Public inquiry personnel will be trained and will have access to the EOC application in order to have up-to-date information on county response actions. Any recurring rumors or frequently asked questions, will be relayed by the Public Inquiry Call Center supervisor to the Lead PIO in the county EOC. The Lead PIO will ensure such items are addressed in news releases and will coordinate with the State, Entergy and other counties via the PIO conference line and through posting to the PIO module of the DisasterLAN system.

The Westchester County Public Inquiry telephone number will be disseminated to the public via news releases at the time of emergency and will be announced during media briefings. The public will be instructed to call this number to obtain emergency information, confirm information or to clarify suspected rumors.

A Public Inquiry team member will respond to the specific inquiry of the caller, if possible. If additional information is required before a response can be given, the call could be referred to the appropriate party for response and a call back made, if necessary.
Media Inquiry

Media inquiries will be addressed by the County Director of Communications and staff. A specific telephone number has been identified for this purpose in the EOC. This telephone number will be circulated to the media via the website, in news releases and announced during press briefings.

Media Monitoring

Westchester County will rely primarily on NYS OEM and Entergy to perform the media monitoring function. In addition, county PIO staff may monitor local news media via televisions and radios located in the PIO workroom of the EOC.

NYS OEM and Entergy will coordinate a broader media monitoring function out of the JIC. An audio/visual room at the JIC will be used to monitor and record news broadcasts and bulletins carried by radio and television stations throughout the emergency. These broadcasts, as well as news reports in the print media and internet websites, will be reviewed for accuracy. This off-air monitoring and recording capability will provide the opportunity for prompt identification of inaccurate or incorrect information. Any reports requiring correction will be brought to the attention of the appropriate State, county or utility representative. Corrections will be made during briefings at the JIC, or by directly contacting the responsible station or publication.
Siren Information

If you hear a siren which sounds for 4 minutes, you are being notified of an emergency in your area. Turn on your radio to an Emergency Alert System (EAS) station for the most timely and accurate information.

EAS messages are broadcast on WHUD-FM radio (100.7) and most local radio stations.

Additional information can be found in the yellow pages of a local telephone directory.

Westchester County
Office of Emergency Management
Figure K-2: JIC Information Flow/Dissemination Diagram

PLANT Information from EOC/Computer Display → Entergy Technical Advisor/Radiological Advisor (phone, computer) → Entergy Spokesperson/Writer (direct, phone, computer) → Entergy News Releases (email, fax, web-posted, internal distribution)

NYS OEM Information from EOC/Computer Display → NYS OEM Lead PIO/Spokesperson (direct, phone, computer) → NYS OEM News Releases (email, fax, web-posted, internal)

JIC PIO Hotline Coordinator (phone, video, computer) → JIC Unified Command (NYS OEM, Entergy, counties via video/hotline)

Joint Media Briefings by NYS OEM, Counties, Entergy (JIC, video stream real time, historic video stream)

EAS Messages (direct broadcast, email, fax, web-posted, internal distribution)

County News Releases (email, fax, web-posted, internal distribution)

Public & Media Inquiry
APPENDIX L
SUPPORTING PLANS AND DOCUMENTS

Revision 0.0
06/11/12
APPENDIX L
SUPPORTING PLANS AND DOCUMENTS

PLANS

1. Rockland County Radiological Emergency Preparedness Plan
2. Putnam County Radiological Emergency Preparedness Plan
3. Orange County Radiological Emergency Preparedness Plan
8. U.S. Coast Guard Captain of the Port, New York, Radiological Emergency Response Plan
10. Indian Point Energy Center Emergency Plan, 12/22/11
11. Indian Point Joint Information Center Plan, 08/11/11

REFERENCE DOCUMENTS

1. Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness In Support of Nuclear Power Plants (NUREG-0654/FEMA-REP-1, Rev. 1)
2. NUREG-0396/EPA 520/1-78-016 Planning Basis for the Development of State and Local Government Radiological Emergency Response Plans in Support of Light Water Nuclear Power Plants
4. FEMA REP Manual, October 2011
APPENDIX M
PLAN DISTRIBUTION

Revision 1.0
06/11/12
APPENDIX M

PLAN DISTRIBUTION

The Westchester County Radiological Emergency Plan (REP) will be reviewed at least annually and updated as required. The County Office of Emergency Management (OEM) will maintain a list of plan holders, both Controlled and Uncontrolled copies. Electronic copies of plan Implementing Procedures will be maintained in the Westchester County Incident Management System (WIMS), as well as on the County computer network.

A Controlled Copy will be provided in print and/or electronic format and will be updated by County OEM as changes are made to the document. A Controlled Copy will include both Volume 1 and Volume 2 of the County REP Plan.

An Uncontrolled Copy will be provided in electronic format only, with the exception of designated libraries which will receive the plan in print. Uncontrolled Copy plans will be replaced with the latest version on an annual basis, or after any significant plan revision. Uncontrolled Copy plans will contain Volume 1 of the County REP Plan. Plans available in the public domain may be redacted, as required.

A redacted version of the Uncontrolled Copy Plan is posted on the Westchester County official website for viewing by the general public and other interested parties.

Controlled Copy Plan Distribution

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Uncontrolled Copy Plan Distribution

Office of the County Executive
County Board of Legislators, Chair

Westchester Library System (WLS), on behalf of the following Westchester County libraries: Croton, Montrose, Ossining, Briarcliff, Peekskill, Yorktown, Chappaqua, Somers, White Plains
APPENDIX N
GLOSSARY OF TERMS

Revision 1.0

04/12/16
Appendix N: Glossary of Terms

APPENDIX N

GLOSSARY OF TERMS

Brief definitions of many of the terms used in this plan are given here. For more exact and detailed information, standard reference works can be consulted.

Absorbed Dose: The quantity of energy absorbed from ionization per unit mass of tissue. The "rad" is the unit of absorbed dose.

Airborne Radioactive Material: Any radioactive material dispersed into the air in the form of dusts, fumes, mists, vapors or gases.

Alpha Detector: Instrument designed specifically to detect alpha radiation.

Alpha Particles: Positively charged particles identical with the nuclei of helium atoms. They penetrate tissues to usually less than 0.1 mm (1/250 inch) but create dense ionization and heavy absorbed doses along these short tracks.

Background Radiation: Radiation arising from material other than the one directly under consideration. Cosmic rays and natural radioactivity are always present and man-made sources may also contribute to the background radiation level.

Beta Particles: Electrons ejected from the nuclei of atoms; extremely tiny bits of matter travelling at nearly the speed of light. Their range in air can be several feet. In heavier material, such as the human body, they expend their energy within about 2 mm (1/10 inch).

Buffer Zone: An area adjacent to a restricted zone, to which residents may return, but for which protective measures are recommended to minimize exposure to radiation.

Committed Dose Equivalent (CDE): The dose equivalent to organs or tissues of reference that will be received from an intake of radioactive material by an individual during the 50-year period following the intake. (Organ Dose). (EPA 400 defines CDE as the CDE plus DDE for the organ of interest).

Committed Effective Dose Equivalent (CEDE): The sum of the products of the weighting factors applicable to each of the body organs or tissues that are irradiated and the committed dose equivalent to these organs or tissues. (Internal Whole Body Dose).

Contamination (Radioactivity): Deposition of radioactive material in any place where it may alarm persons, spoil experiments or make products or equipment unsuitable or unsafe for some specific use. The presence of unwanted radioactive matter.

Decay: Disintegration of the nucleus of a radionuclide in a radioactive process.
Appendix N: Glossary of Terms

Decay Product: A nuclide, either radioactive or stable, resulting from the disintegration of a radioactive material.

Decontamination: The reduction or removal of contaminating radioactive material from a structure, area, object or person.

Deep Dose Equivalent (DDE): Applies to external whole-body exposure, is the dose equivalent at tissue depth of 1 cm (1000 mg/square cm). (External Whole Body Dose.)

Dose Equivalent: The product of the absorbed dose in tissue, the quality factor, and all other necessary modifying factors at the location of interest. Measured in rem.

DOE: U.S. Department of Energy provided monitoring and assessment resources to assist state and county response efforts.

Dose: The quantity of energy absorbed from ionization per unit mass of tissue. The "rad" is the unit of absorbed dose.

Dose Equivalent: A quantity that expresses all types of nuclear radiation on a common scale to indicate relative biological effects. The "rem" is the unit of dose equivalent.

Dose Rate: Absorbed dose delivered per unit time, as rads per second or rads per hour.

Dosimeter: A device that measures radiation dose, such as a film badge or ionization chamber.

Emergency Director: The individual responsible for directing onsite actions during an emergency at the nuclear plant site. (This position occupied by the Shift Supervisor until relieved by a higher ranking individual.)

Early Phase: The beginning of a radiological incident when immediate decisions for effective use of protective actions are required and must therefore be based primarily on the status of the radiological incident and the prognosis for worsening conditions. When available, predictions of radiological conditions in the environment based on the condition of the source or actual environmental measurements may be used. Protective actions based on the federally defined protective action guides (PAGs) may be preceded by precautionary actions during the period. This phase may last from hours to days. This phase may also be referred to as the plume or emergency phase.

Emergency Operations Center (EOC): A location at the headquarters of each offsite response agency or some other designated location that may be used to direct the action taken by designated agencies under its jurisdiction during an emergency at the Indian Point Energy Center.

Emergency Operations Facility (EOF): A facility operated by the licensee for the purpose of evaluating and controlling emergency situations and coordinating emergency responses.
Emergency Planning Zone (EPZ): The area surrounding the nuclear plant site for which planning has been done to assure that prompt and effective actions can be taken to protect the public in the event of a radiological incident. The EPZ is usually a radius of about ten (10) miles for the plume exposure pathway and a radius of about fifty (50) miles for the ingestion exposure pathway.

Emergency Worker: An individual who has an essential mission within or outside the plume exposure pathway emergency planning zone to protect the health and safety of the public who could be exposed to ionizing radiation from the plume or from its deposition. Some examples of emergency workers are: radiation monitoring personnel; traffic control personnel; evacuation; vehicle drivers; fire and rescue personnel, including ambulance crews; medical facilities personnel; emergency operations center personnel; personnel carrying out backup alerting procedures; and essential services or utility personnel undertaking missions during the plume phase.

Evacuation: The process of removing people from a hazardous or potentially hazardous area to a safe area.

Evacuation Time Estimate: The roadway travel time required to leave the plume exposure emergency planning zone after mobilization has been completed.

Exposure: A measure of the ionization produced in air by X-ray or Gamma radiation. The "Roentgen" is the unit of exposure. The term "dose" sometimes used interchangeably with exposure, actually refers to absorbed radiation.

Federal Radiological Monitoring and Assessment Center (FRMAC): An operating center, usually located at an airport or other large facility near the impacted area from which federal field monitoring and assessment assistance is directed and coordinated.

Gamma Rays: Electromagnetic radiation comparable to light. They are similar to X-rays except for their origin. They are emitted with energies characteristic of each nuclide and many are highly penetrating. Although their intensity decreases exponentially with the thickness of the absorbing material, they can travel hundreds of feet in air and penetrate completely through the body.

General Population: People permanently residing within the plume exposure emergency planning zone (not including residents of nursing homes and long-term health care facilities).

Geiger-Muller Counter (Geiger-Muller Tube): A radiation detection and measuring instrument. It consists of a gas-filled (Geiger-Muller) tube containing electrodes, between which there is an electrical voltage but no current flowing. When ionizing radiation passes through the tube, a short intense pulse of current passes from the negative electrode to the positive electrode and is measured or counted. The number of pulses per second measures the intensity of radiation. It is also often known as a Geiger Counter.
HOSTILE ACTION: For the purposes of this plan, an act toward a nuclear power plant or its personnel that includes the use of violent force to destroy equipment, take hostages, and/or intimidate the licensee to achieve an end. This includes attack by air, land, or water using guns, explosives, projectiles, vehicles, or other devices used to deliver destructive force. Other acts that satisfy the overall intent may be included.

Incident: An occurrence that results in the loss of control of radioactive materials and involves a potential hazard to life, health or property.

Ingestion Exposure Pathway (50-Mile EPZ): For planning purposes, the area within about a fifty (50) mile radius surrounding a nuclear plant site. The principal exposure from this pathway would be from the ingestion of contaminated water or foods.

Intermediate Phase: The period beginning after releases have been terminated and reliable environmental measurements are available for use as a basis for decisions on protective actions. This phase may overlap the early phase and late phase and may last from weeks to months.

Internal Radiation: Radiation (including Alpha and Beta particles and Gamma radiation) resulting from radioactive substances within the body.

Isotopes: Forms of the same element having identical chemical properties but differing in their atomic masses. A radioisotope is an unstable isotope of an element that decays or disintegrates spontaneously, emitting radiation.

Late Phase: The period beginning when recovery actions designed to reduce radiological levels in the environment to acceptable levels are commenced and ending when all recovery actions have been completed. This phase may extend from months to years. A PAG level, or dose to avoid, is not used for long-term cleanup.

Millirem (mrem): One-thousandth (1/1000) of a Rem.

Milliroentgen (mR): One-thousandth (1/1000) of a Roentgen.

Monitoring, Radiological: The operation of locating and measuring radioactive contamination by means of survey instruments that can detect and measure (as dose rates) ionizing radiations.

Nuclear Reactor: A device in which a fission chain reaction can be initiated, maintained and controlled. Its essential component is a core with fissionable fuel.

Occupationally Exposed Worker: Individuals who must enter restricted areas to perform essential services during the post plume phase. These workers will not be considered emergency workers, but will be subject to the Occupationally Exposed Worker standards of OSHA and the NRC which define 5 REM per year as the exposure standard.

Office of Emergency Management (CDOEM): Previously known as the Office of Disaster and Emergency Services (CDDES) in Westchester County.
Peripheral Bus System: A bus system that will provide transportation links among general public reception centers to facilitate the reuniting of transit-dependent families.

Plume Exposure Pathway (10-Mile EPZ): For planning purposes, the area within a ten (10) mile radius surrounding a nuclear plant site. The principal exposure sources from this pathway are: (a) whole body exposure to Gamma radiation from the plume and from deposit material, and (b) inhalation exposure from the passing radioactive plume.

Protective Action Guide: Projected dose to an individual in the general population that warrants the implementation of protective action.

RAD: The unit of absorbed dose in body tissue or other material.

Radiation Area: Any accessible area in which the level of radiation is such that a major portion of an individual's body could receive, in any one hour, a dose in excess of 5 millirem, or in any 5 consecutive days, a dose in excess of 100 millirem.

Radiation Badge/Dosimeter of Legal Record (DLR): The device issued to emergency workers that accurately detects and stores the individual’s total radiation exposure. The readout of this device will be used as the legal record of the individual’s exposure.

Radioactivity: The property of certain nuclides of spontaneously emitting nuclear particles or Gamma or X-ray radiation, or of undergoing spontaneous nuclear fission.

Radioassay: The analysis of any substance (food, water, soil, etc.) to determine the presence and magnitude of radioactive contamination.

Radiological: A general term referring to processes that involve nuclear radiation.

Reception Center: A pre-designated facility outside the plume exposure emergency planning zone (generally a school), at which evacuees can receive directions to congregate care centers, reunite with others, receive general information and, if necessary, receive radiological monitoring and decontamination.

Recovery: The process of reducing radiation exposure rates and concentrations of radioactive material in the environment to levels safe enough for the public to return to an area for unconditional occupancy or use.

Reentry: This term refers to post-plume reentry. Certain individuals who have been evacuated or relocated from a restricted zone may be allowed to reenter under controlled conditions to perform additional response activities or carry out specific types of business.

Release: Escape of radioactive materials into the environment.

Relocation: The removal or continued exclusion of people from contaminated areas, perhaps permanently, to avoid chronic radiation exposure. Not to be confused with evacuation.
**REM:** The unit of radiation dose affecting body tissue. It is equal to the absorbed dose (measured in rads) multiplied by the quality factor (which takes into account the effectiveness of different types of radiation) and by other multiplying factors. For Beta and Gamma radiation the quality factor is 1. Radiation Equivalent Man.

**Restricted Zone:** An area of controlled access from which the population has been evacuated or relocated, or is being asked to shelter-in-place.

**Return:** Reoccupation of areas cleared for unrestricted residence/use by previously evacuated or relocated populations. Evacuated areas must be below radiation protection criteria for relocation before the evacuated or relocated persons are allowed to permanently return to their homes or businesses.

**Roentgen (R):** The unit of radiation exposure in air. Roentgens are the units for quantities of X-ray or Gamma radiation measured by detection and survey meters.

**Scenarios:** Time-based characterizations of plume exposure emergency planning zone populations and their variations by time-of-day, day-of-week and season.

**School Loop Bus System:** A bus system linking each general public reception center with its associated school reception center to facilitate the reuniting of transit-dependent parents and their school children (activated for school-in-session scenario).

**School Reception Center:** A pre-designated facility outside the plume exposure emergency planning zone that will be a host facility for evacuating schools until children are picked up by their families.

**Shelter:** A structure or other location offering shielding from nuclear radiation in the environment.

**Shelter-in-place:** A protective action taken to reduce exposure to a short-term release of radiation. It involves going indoors, closing windows and doors and limiting the intake of outside air.

**Shielding:** Any material or barrier that attenuates radiation.

**Site Boundary:** Area surrounding the nuclear plant site, in which the NFO has the authority to determine and control all activities including exclusion or removal of personnel and property from the area.

**Source Term:** A particular type or amount of radionuclide originating at the source of a nuclear incident. In its broadest sense, "source term" also describes the conditions and mode of emission.
Appendix N: Glossary of Terms

Survey Meter: A portable instrument used in radiological monitoring to detect and measure ionizing radiation.

Thermoluminescent Dosimeter (TLD): A dosimetry badge worn by workers in the nuclear industry or research, used to measure possible exposure to ionizing radiation. It is characteristic of thermoluminescent material that radiation causes internal changes which make the material, when subsequently heated, give off an amount of light directly proportional to the radiation dose, which can be measured.

Thyroid Exposure: Exposure of the thyroid gland to radiation from radioactive isotopes of iodine which have been either absorbed or ingested.

Total Effective Dose Equivalent (TEDE): Whole body dose - the sum of the deep dose equivalent (for external exposure) and the committed effective dose equivalent (for internal exposure).

Total Organ Dose Equivalent-Thyroid (TODE-Thyroid): CDE Thyroid - thyroid dose - the sum of the CDE for the thyroid and the deep dose equivalent.

Transient Population: Those people who are only temporarily in, but do not permanently reside in, the plume exposure emergency planning zone.

Transit-Dependents: People who do not have access to an automobile for the purpose of leaving the plume exposure emergency planning zone at the time of an evacuation.

Whole Body Counter: A device used to identify and measure the radiation in the body (body burden) of human beings and animals; it uses heavy shielding to keep out background radiation and ultra-sensitive scintillation detectors and electronic equipment.

Whole Body Exposure: Exposure of the whole body to radiation.
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HOSTILE ACTION AND OTHER SECURITY RELATED EVENTS AT INDIAN POINT

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HOSTILE ACTION AND OTHER SECURITY RELATED EVENTS AT INDIAN POINT

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