



**pennsylvania**  
DEPARTMENT OF ENVIRONMENTAL PROTECTION



Bureau of Radiation Protection

# Radiation Protection Program Updates

## Division of Nuclear Safety

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# ▶ Nuclear Safety Division Responsibilities

- Provide an independent assessment of nuclear power plant operations in PA (Act 1984-147).
- Develop and maintain a radiological emergency preparedness plan (Act 1984-147).
- Monitor and report the generation of LLRW and perform the administrative duties of the Appalachian Compact Commission (Act 1998-12 & Act 1985-120).

LLRW – Low Level Radioactive Waste

# Background Information

- PA has the second largest number of nuclear power plants in the U.S. – 9 plants at 5 sites .
- PA ranks second in the nation in nuclear generating capacity.
- More than 700,000 people live within the 10-mile Emergency Planning Zone (EPZ) of the nuclear power plants in PA.
- Three states are within the 10-mile EPZ of the PA nuclear power plants (MD, OH, WV).
- There are three nuclear utilities in PA – Exelon, First Energy and Talen.
- All four types of emergencies or classes of events have been experienced in PA (Unusual Event, Alert, Site Area Emergency, General Emergency).



# PA NUCLEAR POWER REACTORS LICENSE EXPIRATION DATE

<b>Power Plant</b>	<b>Utility</b>	<b>License Expiration Date</b>
Beaver Valley Power Station, Unit1	First Energy	2036
Beaver Valley Power Station, Unit 2	First Energy	2047
Limerick Generating Station, Unit 1	Exelon	2044
Limerick Generating Station, Unit 2	Exelon	2049
Peach Bottom Atomic Power Station, Unit 2	Exelon	2033
Peach Bottom Atomic Power Station, Unit 3	Exelon	2034
Susquehanna Steam Electric Station, Unit 1	Talen	2042
Susquehanna Steam Electric Station, Unit 2	Talen	2044
Three Mile Island Nuclear Generating Station Unit 1	Exelon	2034

# PA DEP's Assets and Capabilities

- Comprehensive radiological emergency plan
- Knowledge and expertise of technical staff
- Dedicated telephone lines to nuclear power plants
- Access to utility emergency operations facilities
- Access to real-time plant parameters
- Drawings, maps, and other reference documents
- Radiological dose projection modeling
- Radiation detection instruments and matrix probes
- Field monitoring teams
- Radiological response vehicles
- Radiation measurement laboratory
- Communication equipment



# Dedicated Telephone Lines to Nuclear Power Plants



# Radiological Rapid Response Vehicles (R3Vs)





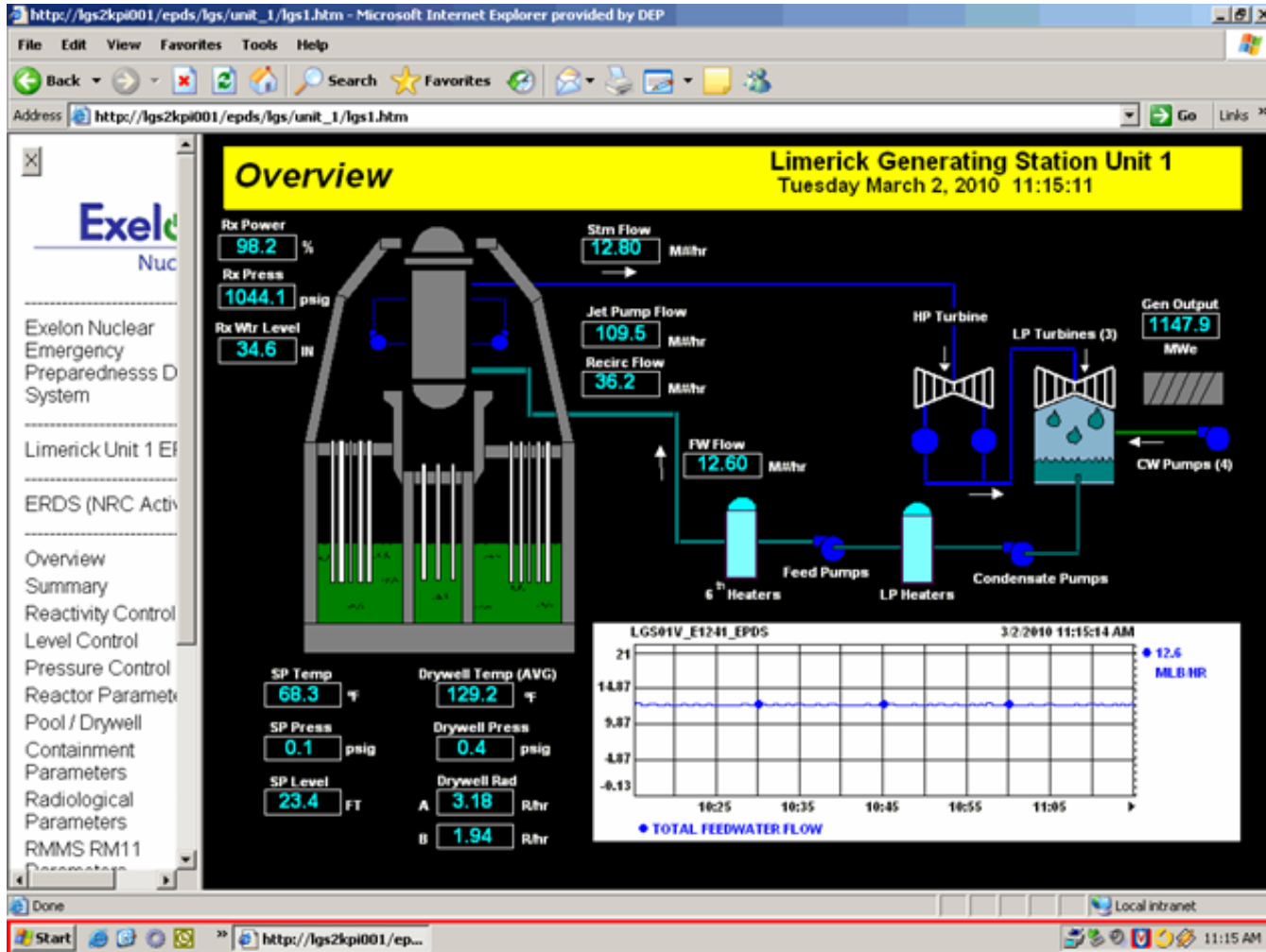
# Field Monitoring Teams (F-150s)



# Matrix Probes



# Real-time Plant Parameter Display Systems



# What is LLRW?

- LLRW is trash or other materials that have been contaminated with radioactivity such as protective clothing, paper, metal and glass items, ion exchange resins, filter media, incinerator ash, radioactive sealed sources, and some reactor components.

## Who Generates LLRW?

- Nuclear power plants
- Medical facilities
- Industrial facilities
- Government facilities
- Research facilities

# Federal Legislation

## Federal Low-Level Radioactive Waste Policy Act

- States Responsible
- Compacts Encouraged
- Exclusion of out-of-Compact Waste

# Appalachian States LLRW Compact Commission

- Appalachian States LLRW Compact Act of 1985 established the Appalachian Compact (Compact).
- Congress consented to the Compact in May 1988.
- Appalachian Compact Commission became operational in June 1990.
- Commission provides for the regional management and disposal of LLRW.
- Commission consists of 10 members from the party states of PA (4), MD (2), DE (2), WV (2).



# ▶ LLRW Disposal Facility Siting Process

Statewide Screening	1991
Regional Screening	1993
Local Screening <small>Eliminated 78% of Land</small>	1994
Volunteer Process	1996-1998
Siting Process Suspended	December 1998



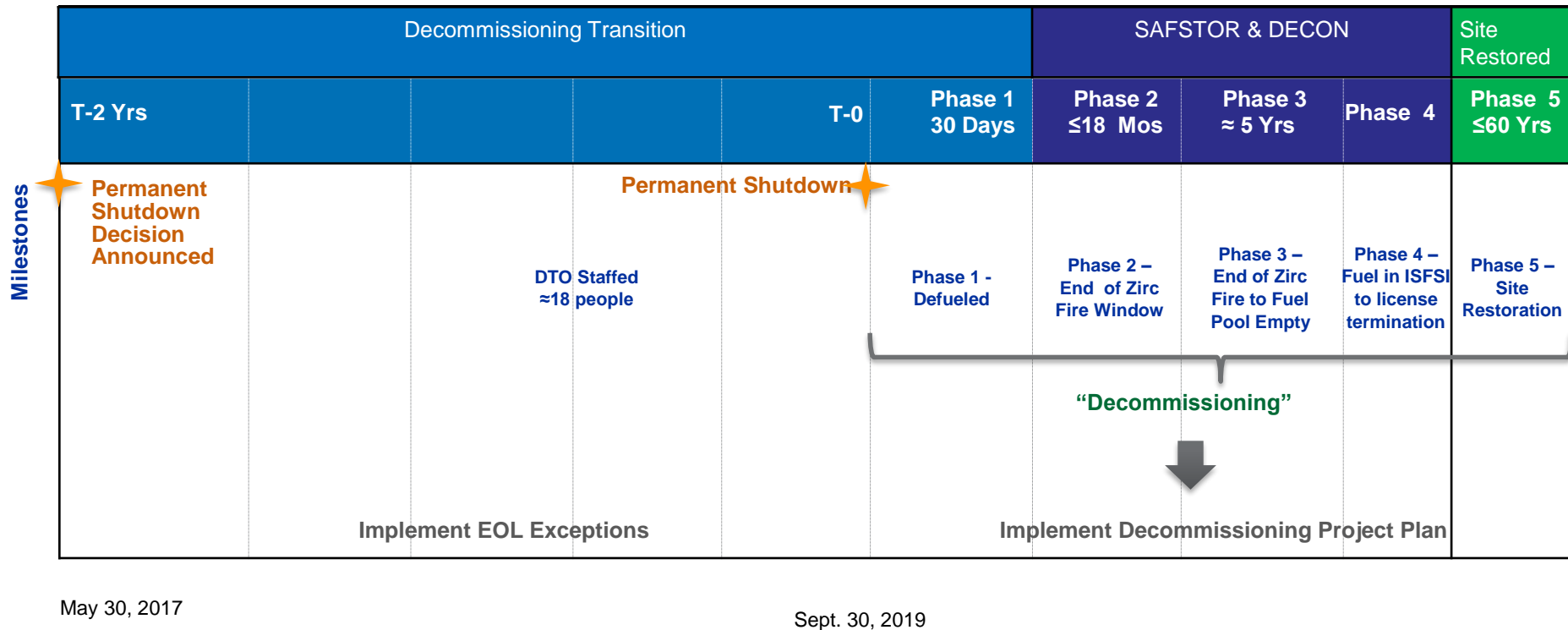
# THREE MILE ISLAND (TMI) Unit 1

## Possible Transition from Operating to Decommissioning

# Background Information

- On May 30, 2017, Exelon announced it will retire TMI-1 on or about September 30, 2019.
- On June 20, 2017, Exelon submitted a Cessation of Operation Letter to the Nuclear Regulatory Commission (NRC) certifying the company's intent.
- The final shutdown decision will be based in part, on possible PA legislative actions to help mitigate the station's severe economic challenges.
- PJM Interconnection reliability study revealed no implications for the reliability of the electric grid due to TMI-1 shutdown.
- NRC maintains regulatory authority throughout the TMI-1 decommissioning transition process.
- PA DEP will maintain an independent oversight review of TMI-1 decommissioning transition activities at current staffing level.

# TMI Decommissioning Transition Milestones



# Independent Spent Fuel Storage Installation - ISFSI

- ISFSI is constructed for the interim storage of spent nuclear fuel (SNF) at a reactor site or away from a reactor site.
- ISFSI is licensed separately from a nuclear power plant and is considered an independent installation.
- ISFSI is currently being used for storage of SNF at 4 out of 5 nuclear power plant sites in PA due to the lack of permanent repository in the U.S.



# ISFSI

## HORIZONTAL

## VERTICAL



SUSQUEHANNA  
(SSES)



PEACH BOTTOM

# Decommissioning Strategy SAFSTOR

- Under SAFSTOR or “deferred dismantling”, a nuclear plant is maintained for an extended period of time to allow for the radioactivity to decay.
- During SAFSTOR, the main components of the plant remain in place, including the reactor vessel and turbine.
- All fuel is removed from the reactor vessel and placed in dry storage on-site.
- The NRC continues to inspect the site and provides regulatory oversight of maintenance and security.



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# Questions?

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