



U.S. DEPARTMENT OF
ENERGY

OFFICE OF
**ENVIRONMENTAL
MANAGEMENT**

Transportation in Environmental Cleanup

Ellen E. Edge

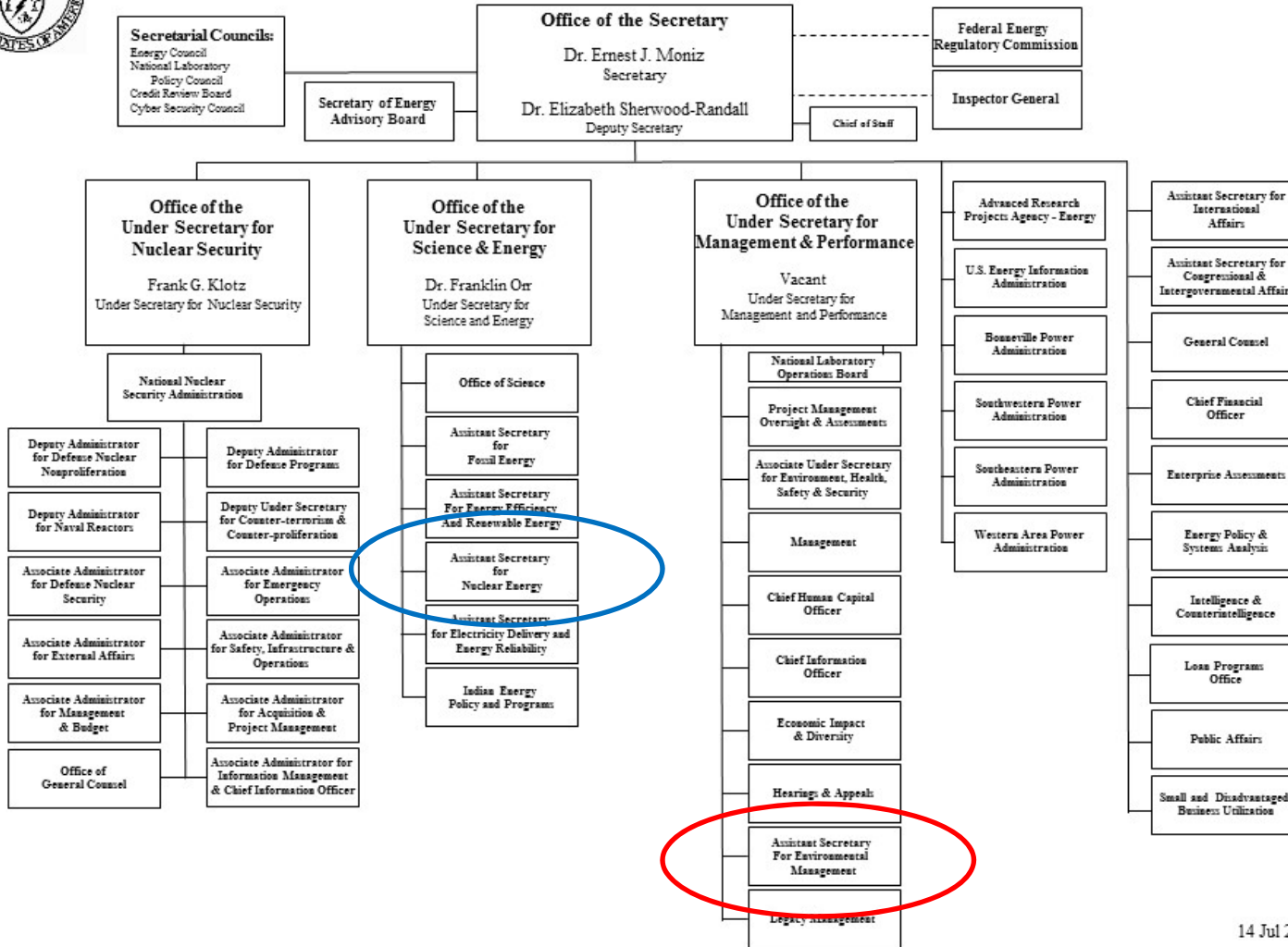
*Office of Packaging and Transportation
Office of Environmental Management*

Discussion Topics

- Background
- Environmental Management Cleanup and Transportation Activities
 - Updates by Site
 - LLW/MLLW Update
- Office of Packaging and Transportation Activities
- National Transportation Stakeholders Forum (NTSF)
- Discussion



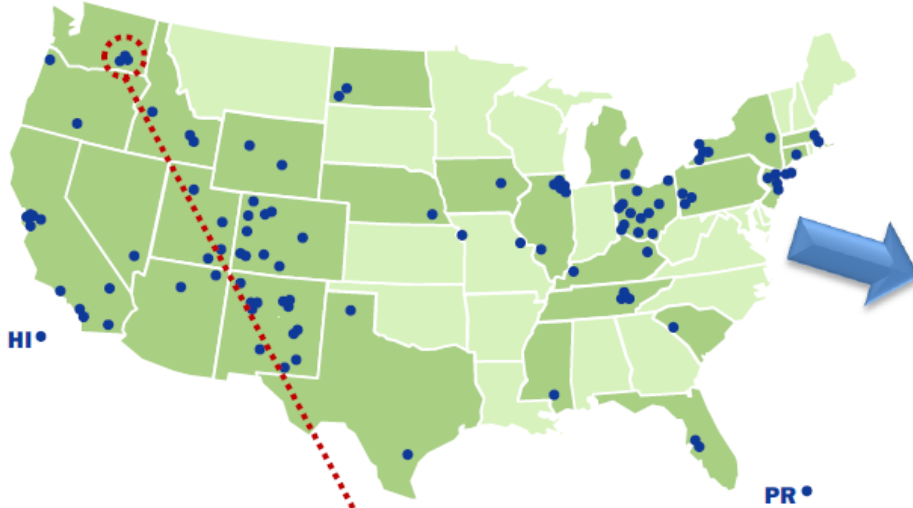
DEPARTMENT OF ENERGY



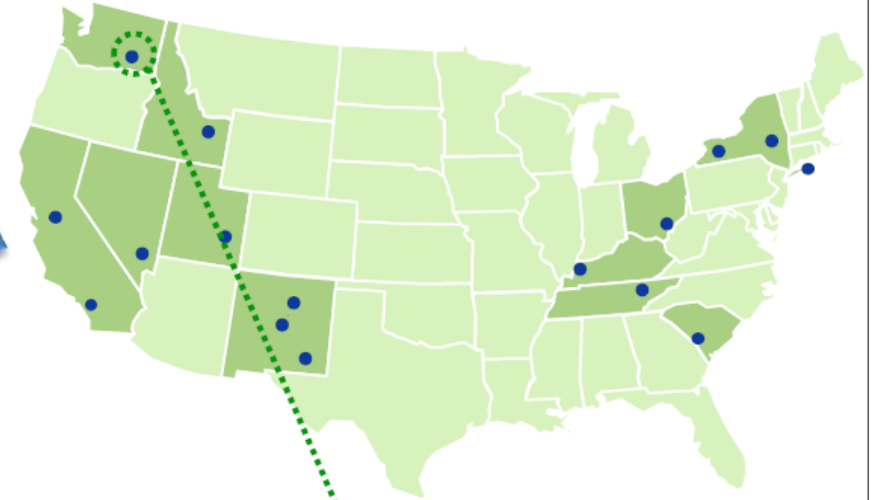
14 Jul 2015

Cleaning Up the Environmental Legacy of the Cold War

AK • EM Historical Cleanup Sites (107)



Sites Remaining Today (16)



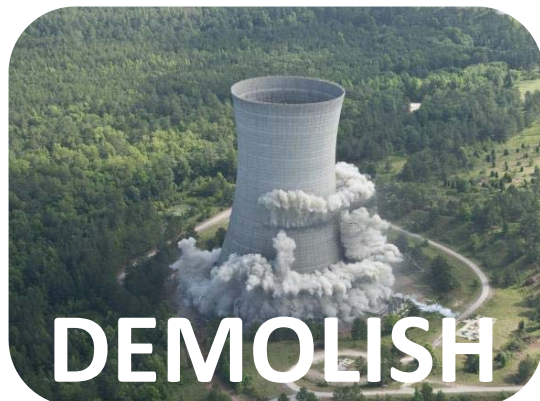
Hanford 300 Area. Pre-Cleanup



Hanford 300 Area, Post-Cleanup



EM is an operational federal program performing a wide variety of tasks to clean up the environmental legacy of the U.S. nuclear weapons complex:



Waste Management Activities Comprise Half of EM Budget

Radioactive Tank Waste
\$ 2,297M / 39%

Facility D&D
\$ 835M / 14%

Soil and Groundwater
\$ 527M / 9%



EM's FY 2016 Budget Request - \$5.818 Billion Total

Special Nuclear Materials and Used Nuclear Fuel**
\$ 967M / 17%

Transuranic & Solid Waste
\$ 779M / 13%

Site Services*
\$ 413M / 7%

*Includes Program Direction, Program Support, Technology Development & Deployment, Post Closure Administration and Community and Regulatory Support

**Includes Safeguards and Security

Waste Disposition Updates by Site

CLEANUP SITES



- Contact-handled Transuranic waste
- K-25
- Mercury



- Paducah
 - Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA)
- Portsmouth
 - X-326 process building
 - Record of Decision
- Depleted uranium hexafluoride (DUF6)



- Reduced stored legacy CH-TRU
- TRUPACT-III at Idaho Advanced Mixed Waste Treatment Project
- Closed Tank 16
- Halted production of high level waste canisters
- Salt Waste Processing Facility



- Planning underway to ship waste incidental to reprocessing wastes to disposal site
- High level waste storage pad completed
- Vertical storage casks and delivery of multi-purpose canister overpacks
- Deactivation of main plant continues



Radioactive Liquid Tank Waste

- Approximately 88 million gallons of liquid waste
- Approximately 4,000 cubic meters of solid waste derived from liquids
- Current DOE estimated cost exceeds \$50 billion
- High level waste portion of tank waste must be treated, immobilized and prepared for shipment to a geologic waste repository
- Focus on improvement of pre-treatment

Liquid Tank Waste Sites



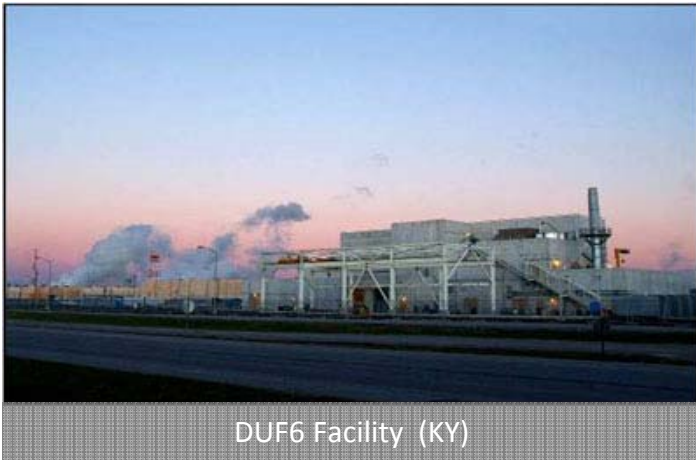
Integrated Waste Treatment Unit (ID)



Defense Waste Processing Facility (SC)



Waste Treatment and Immob. Plant (WA)



DUF6 Facility (KY)



K-West Spent (Used) Nuclear Fuel Basins (WA)

- Oak Ridge, TN
- Richland, WA
- Paducah, KY and Portsmouth, OH
- Savannah River Site, SC

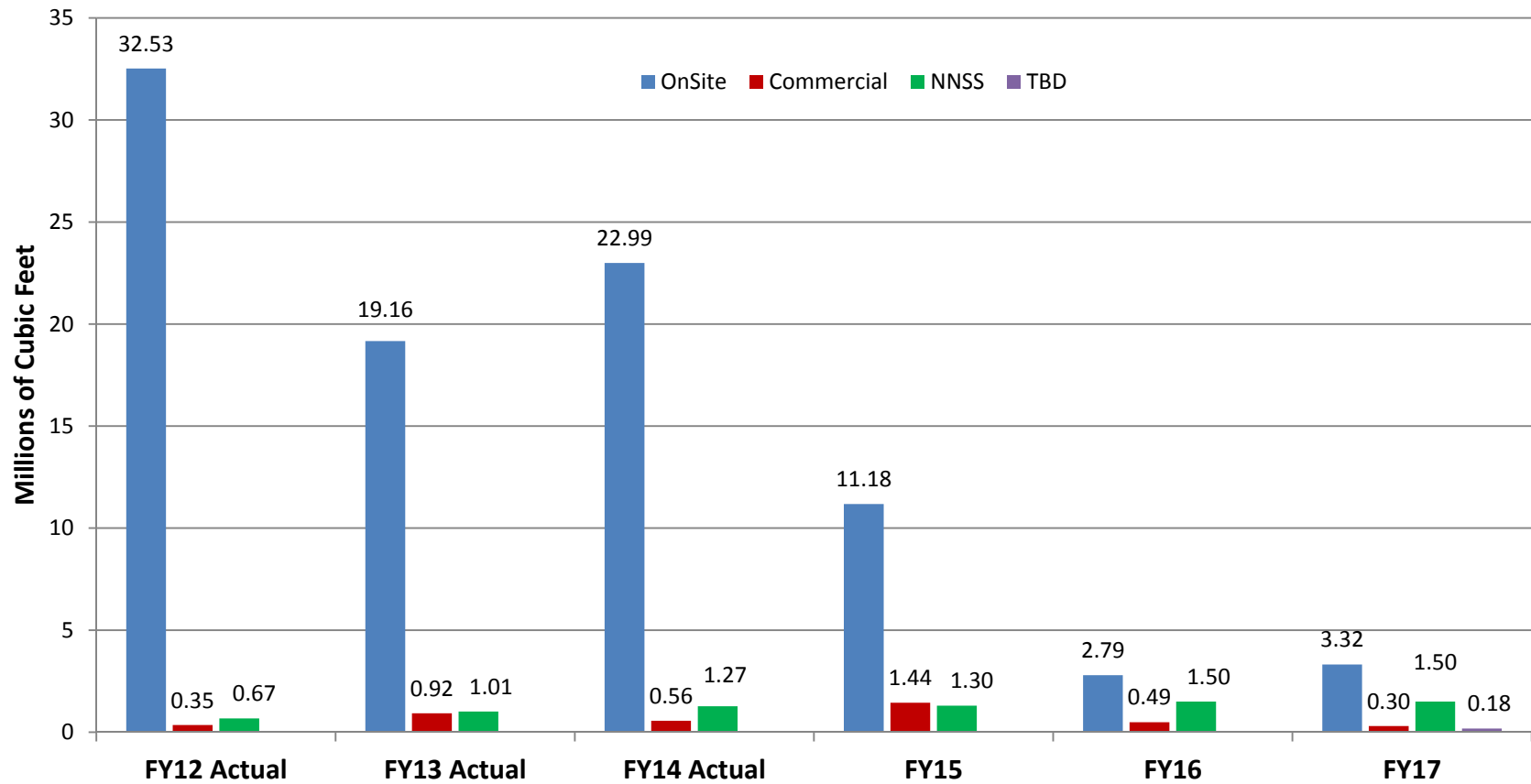
Low-Level Waste/Mixed Low-Level Waste Update

DOE's Unique Waste Management Mission

- Authority and responsibility for management of all DOE-generated waste under authority of the Atomic Energy Act, as amended
- Clear distinction between DOE and non-DOE waste in Low Level Waste Policy Amendments Act

- DOE Order 435.1, Radioactive Waste Management
- Current low level waste (LLW) disposal policy:
- Exemption documentation
- DOE on-site (~90% by volume), DOE off-site (~5% by volume), and commercial disposal (~5% by volume)
- DOE generally does not use State compact facilities for disposal of LLW/mixed low level waste

DOE LLW/MLLW Disposal Rates by Location



FY15 NNSS Disposal

Generator Site	FY 2015 Actual (ft3)	*FY 2015 Actuals + Remaining Forecast (ft3)
Portsmouth GDP (OH)	543,827	627,918
Oak Ridge Reservation (TN)	126,540	164,507
Oak Ridge NNSA/Y-12 (TN)	118,422	130,672
Los Alamos National Lab (NM)	33,282	52,861
Idaho Site (ID)	125,916	138,122
Livermore Nat'l Lab (CA)	45,684	48,572
Paducah GDP (KY)	5,465	5,465
NNSA/Nuclear Fuel Services (TN)	39,506	47,001
Onsite NNSS (NV)	13,348	13,348
Savannah River (SC)	535	1,075
Berkeley	0	0
West Valley (NY)	9,078	9,078
All other sites	<u>57,281</u>	<u>66,245</u>
Total	1,118,884	1,304,864

Forecasting supports operational planning and is updated quarterly

*Actual volumes thru 8/23/15

- EM updates DOE-wide life-cycle LLW/MLLW forecasts annually with input from other Program Offices – National Nuclear Security Administration , Office of Science, Office of Nuclear Energy, and Naval Reactors
- This information publicly available through Waste Information Management System (WIMS) maintained by the Florida International University, <http://www.emwims.org/>

The screenshot shows the WIMS website with a green header containing the title "Waste Information Management System" and navigation buttons for "Home", "Contact Us", and "Help". The main content area features a "Welcome to WIMS" section with a description of the system's functions: receiving, organizing, and displaying DOE waste forecast data; automatically generating DOE waste disposition maps; and automatically generating DOE waste pathway GIS maps. A highlighted box provides the "WIMS new web address: <http://www.emwims.org>". Below this, there is a paragraph explaining that WIMS is developed to provide DOE Headquarters and site waste managers with tools for visualizing, understanding, and managing waste streams. Another paragraph states that WIMS meets this need by providing a user-friendly online system for gathering, organizing, and presenting waste forecast data. A "Disclaimer" box notes that the information is for planning purposes only and does not represent DOE's decisions or commitments. At the bottom of the main content area, there is a link for "Contact Us" and a note that the data set reflects sites' planning data as of 4Q FY 2014.

Waste Information Management System
Home Contact Us Help

Welcome to WIMS
Waste Information Management System

Receives, organizes, and displays DOE waste forecast data
Automatically generates DOE waste disposition maps
Automatically generates DOE waste pathway GIS maps

WIMS new web address: <http://www.emwims.org>

WIMS is developed to provide DOE Headquarters and site waste managers with the tools necessary to easily visualize, understand, and manage the vast volumes, categories, and problems of forecasted waste streams.

WIMS meets this need by providing a user-friendly online system to gather, organize, and present waste forecast data from DOE sites. This system provides a method for identification of waste forecast volumes, material classes, disposition pathways, and potential choke points and barriers to final disposition.

Disclaimer: Disposition facility information presented is for planning purposes only and does not represent DOE's decisions or commitments. Any selection of disposition facility will be made after technical, economic, and policy considerations.
In most cases, data set reflects sites' planning data as of 4Q FY 2014

Have additional questions? [Contact Us](#)

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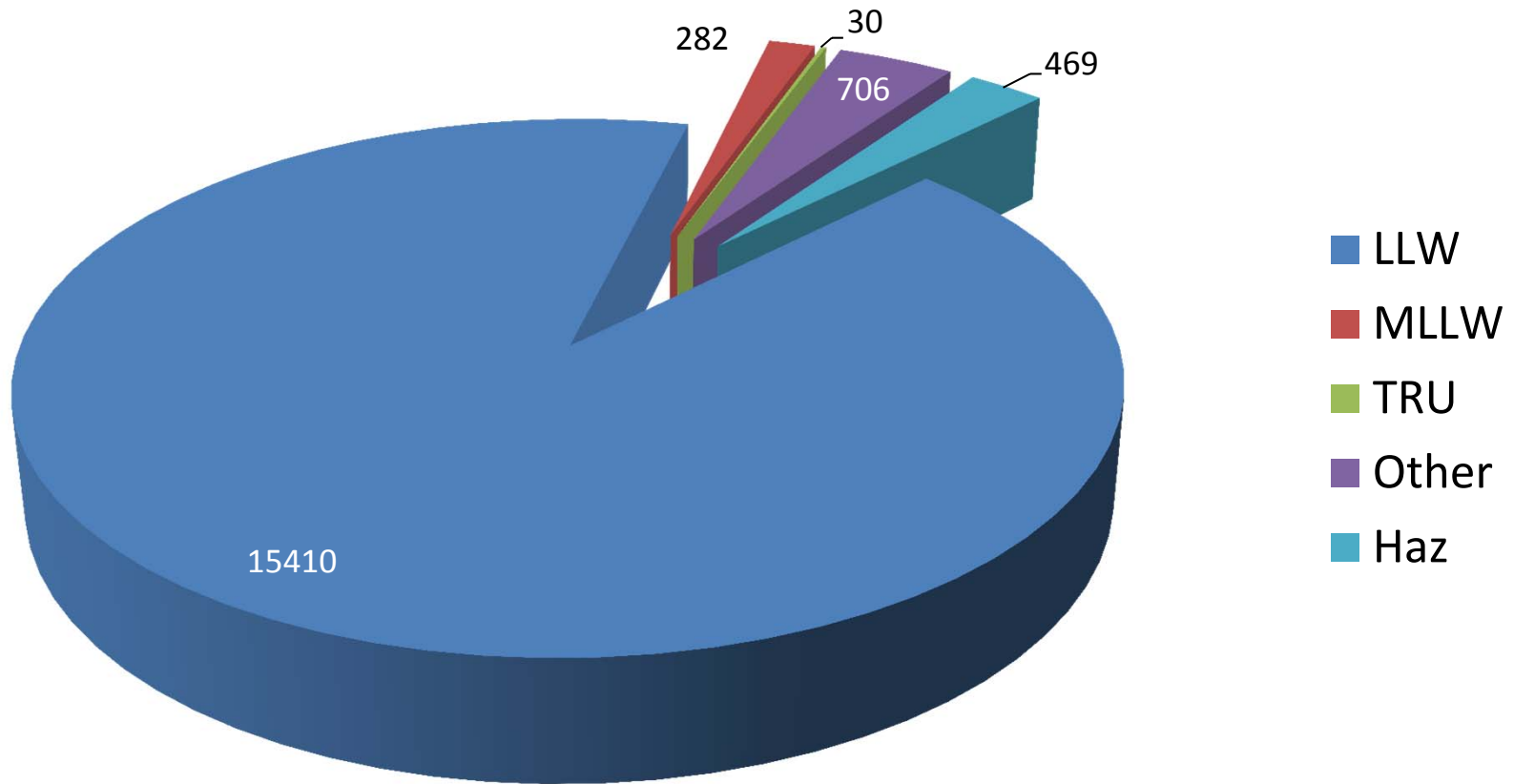


Created by [Florida International University's Applied Research Center](#) for the U.S. Department of Energy

Office of Packaging and Transportation Activities

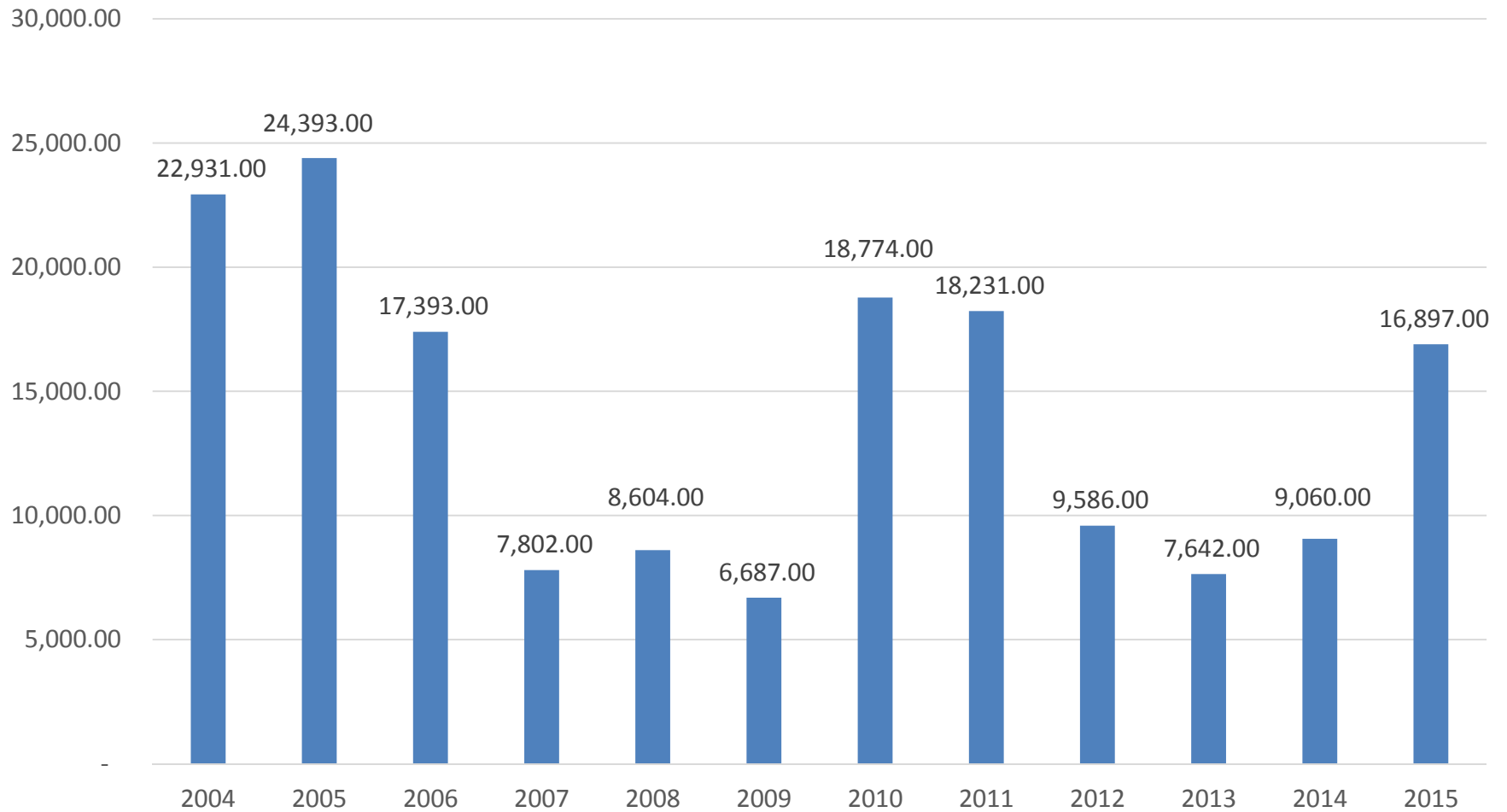


FY15 EM Shipments

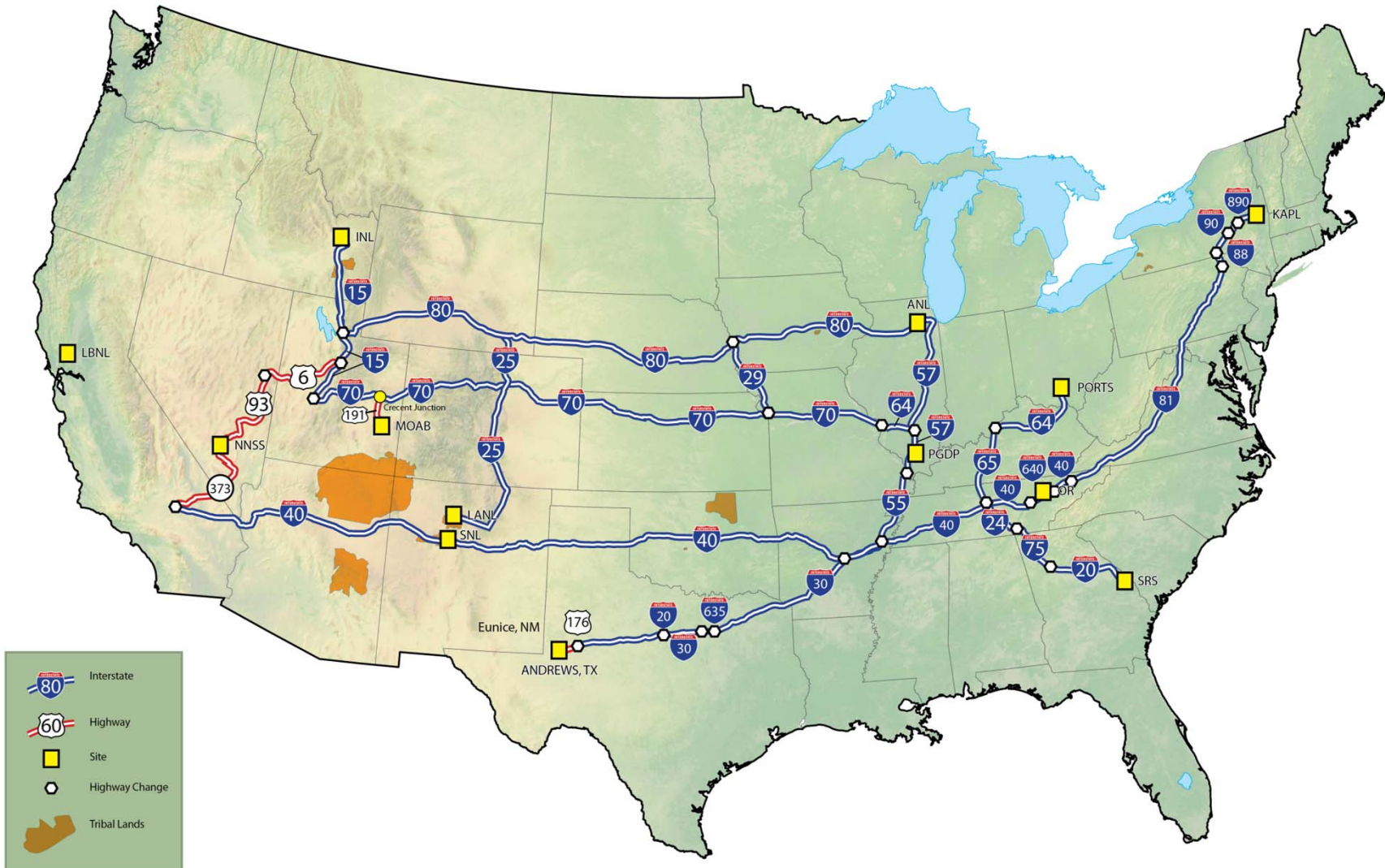


Total number of Shipments = 16,897

Historical EM Shipments



Route Map



OPT Programs and Activities

Packaging Certification

- Certificates of Compliance
- DOE Exemptions
- DOT Special Permits
- Quality Assurance
- RAMPAC

Emergency Preparedness & Outreach

- TEPP
- NTSF
- State Regional Groups
- Tribes
- Prospective Shipment Report
- Fact Sheets

Regulations & Standards Support

- Domestic Federal Agencies
- International Community
- Nongovernmental Organizations
- DOE Orders, Policy, Guidance

Transportation Risk Reduction

- Motor Carrier Evaluations
- Physical Protection
- Transportation Compliance Reviews
- Safety Metrics

Program & Site Support

- DOE/Contractor Interfaces
 - TMC
 - PMC
 - EFCOG
- Tender Negotiations
- Automated Systems

Transportation Emergency Preparedness Program

- Since 2005, TEPP has trained over 20,000 responders
- TEPP has conducted over 30 full scale exercises and drills
- Translation of MERRTT curriculum into Spanish

TEPP is a national level program for providing radiological transportation emergency preparedness activities and addressing emergency response concerns of state, tribal and local officials affected by the Department's radiological shipments.



National Transportation Stakeholders Forum (NTSF)



- Purpose
 - Engage at national level with States, Tribes, Federal agencies
 - Work through existing agreements and networks to ensure Federal, state, and tribal government participation
- Goals and Objectives
 - Information exchange
 - Input from States and Tribes about concerns, needs, or logistics
 - Emerging issues for DOE and its transportation stakeholders



- DOE chair
- Planning Committee
- Ad hoc working groups
- Membership
- Other stakeholders



Communication with External Stakeholders

- NTSF
 - NTSF Annual Meeting
 - Working groups
 - NTSF newsletter
 - NTSF wiki:
<http://ntsf.wikidot.com/>
 - Webinars
- Other communication mechanisms
 - State Regional Groups and Tribes
 - ASKPAT/public website
 - Waste Information Management System (WIMS)
 - Prospective Shipment Report



NTSF Annual Meeting 2012 – Oak Ridge tour



NTSF Annual Meeting 2010 – Chicago

Wrap Up

Summary of Principles

- Disposition of radioactive material and sources ultimately requires safe, secure, and compliant packaging and transport operations
- DOE maintains excellent performance record for safely, securely, and efficiently transporting materials
- Continued support for domestic and international safety and security efforts



- Through partnership with regulators, tribes, stakeholders and industry, we have ability to further clean up mission while mitigating impacts to environment and communities



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Backup Slides

- Completed targeted exhumation at 3.8 out of total 5.69 acres at Subsurface Disposal Area
 - Exhumations ongoing at Accelerated Retrieval Project (ARP) VIII enclosure
 - Initiated design and foundation construction for ARP IX enclosure (final enclosure)
- Continuing processing of stored legacy TRU waste at Advanced Mixed Waste Treatment Plant (AMWTP)
 - ~700 contact-handled TRU shipments certified for WIPP
 - Started retrieving waste from Pad 1 Cell 1, final cell with waste containers.
 - Completed retrieval of all waste from Pad 1 Cell 2
- Continuing start-up testing of Integrated Waste Treatment Unit for treatment of sodium bearing radioactive waste



Targeted waste exhumations at ARP VIII enclosure



Retrieval of legacy drums from AMWTP cargo container for processing (~30 of 104 cargo containers emptied)

- Responding to the AIB report
 - Phase 1 Report issued April 22, 2014 on how the radiological material was released into atmosphere
 - Phase 2 Report issued April 16, 2015; included 24 conclusions and 40 judgments of need (JONs)
- Current priorities
 - Safe storage of nitrate salt waste stream
 - Re-process improperly treated nitrate salts
 - Resumption of processing and re-packing TRU waste
 - Continue LLW/MLLW disposition



- FY15 to date, shipped over 522,000 tons of uranium mill tailings (cumulatively almost 7.7 million tons) from Moab to engineered disposal cell near Crescent Junction, Utah
- FY15 to date, extracted 9.7 million gallons of contaminated ground water and cumulatively 226.4 million gallons to date
- In response to major rockslide at Moab site rail bench last fall, installed radar monitoring unit, temporary barrier separating truck traffic from the hillside, and implemented safe work controls



- Continued soil and groundwater remediation activities including characterization and monitoring of underground nuclear test contamination, cleanup of above-ground industrial sites and surface soil contamination
- Nevada National Security Site (NNSS) continues to serve important cleanup mission as disposal facility for DOE LLW/MLLW
- Continuing working group discussions with State of Nevada on unique waste streams



Transportation Risk Reduction

- Motor Carrier Evaluation Program (MCEP)
- Transportation Safety and Operations Compliance Assurance Program (TCAP)
- Transport security and physical protection
- RADTRAN

Packaging Certification

- Department-wide program providing for certification of fissile and Type B packaging
 - Review and approval of packaging designs and issuance of DOE Certificates of Compliance
 - Curtail and/or suspend use of specific packages when warranted
 - Review and approve quality assurance programs for Type B and fissile radioactive material packaging activities
- Radioactive Material Packaging (RAMPAC), all-in-one source for information on shipping containers for radioactive materials (<http://rampac.energy.gov/>)
- Initiation of security training course

Emergency Planning

- TEPP –Transportation Emergency Preparedness Program
- NTSF – National Transportation Stakeholders Forum
- State Regional Groups
- Tribes
- Prospective Shipment Report
- Fact Sheets

Transportation Emergency Preparedness Program

- Since 2005, TEPP has trained over 20,000 responders
- More than 30 full scale exercises and drills
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TEPP is a national level program for providing radiological transportation emergency preparedness activities and addressing emergency response concerns of state, tribal and local officials affected by the Department's radiological shipments.



Regulations and Standards

- Department-wide responsibility for three transportation Directives
 - DOE O 460.1C: Packaging and Transportation Safety - *under review*
 - DOE O 460.2A: Departmental Materials Transportation and Packaging Management - *under review*
 - DOE M 460.2-1A: Radioactive Material Transportation Practices Manual - *under review*
- Developing new Order, 460.3: Physical Protection of Unclassified Irradiated Fuel in Transit - *under development*

Support

- DOE/Contractor Interfaces
 - TMC – Transportation Management Council
 - PMC – Packaging Management Council
 - EFCOG – Energy Facility Contractor Group
- Tender Negotiations
- Automated Systems
 - ATLAS
 - RADCALC

- Target Audience – Individuals responsible for security of nuclear and other radioactive material during transport.
- Objectives
 - Development and implementation of security plans
 - Assessment of readiness of transport system
 - Actionable security measures
- Content
 - Information on US-specific requirements for transport
 - Insight into international requirements
 - Activities – presentations, discussions, hands-on exercises
 - ARG-US system training
- Next Course: <http://rampac.energy.gov/education/training/default.aspx>

- Tools
 - WebTRAGIS – route planning,
 - ARG-US – package/conveyance tracking,
 - RADTRAN – risk analysis
- Integration of the tools
 - Enhanced tracking of shipments and contents
 - Prompt rerouting based on developing threats
 - Near real-time evaluation of the consequences of threat
- Outcomes
 - Enhanced security of DOE shipments
 - Improved supply chain security during transport