



Status of Low-Level Radioactive Waste (LLRW) Compacts and Update on Commercial LLRW Disposal Facilities

LLRW Classification

- NRC regulations (10 CFR Part 61) has specified a waste classification system for LLRW.
- There are three (3) classes of LLRW: Class A, Class B and Class C.
- The majority of LLRW is Class A waste.

Table 1

Radionuclide	Concentration, curies per cubic meter
C-14.....	8
C-14 in activated metal.....	80
Ni-59 in activated metal.....	220
Nb-94 in activated metal.....	0.2
Tc-99.....	3
I-129.....	0.08
Alpha emitting transuranic nuclides with half-life greater than 5 years.....	*100
Pu-241.....	*3,500
Cm-242.....	*20,000
*Units are nanocuries per gram	

Table 2

Radionuclide	Concentration, curies per cubic meter		
	Col. 1	Col. 2	Col. 3
Total of all nuclides with less than 5 year half-life.....	700	*	*
H-3.....	40	*	*
Co-60	700	*	*
Ni-63.....	3.5	70	700
Ni-63 in activated metal.....	35	700	7000
Sr-90.....	0.04	150	7000
Cs-137.....	1	44	4600
*There are no limits established for these radionuclides in class B or C wastes			

10 CFR Part 61 – Licensing Requirements for Land Disposal of LLRW

- Performance objectives (Subpart C) assure safe disposal of LLRW:
 - Protection of general public
 - Protection of inadvertent intruder
 - Protection of individuals during operations
 - Stability after site closure
- Demonstrate performance via technical analysis and waste classification.

NOTE: PA equivalent regulations is contained in Title 25, Chapter 236.

Federal and State Legislation

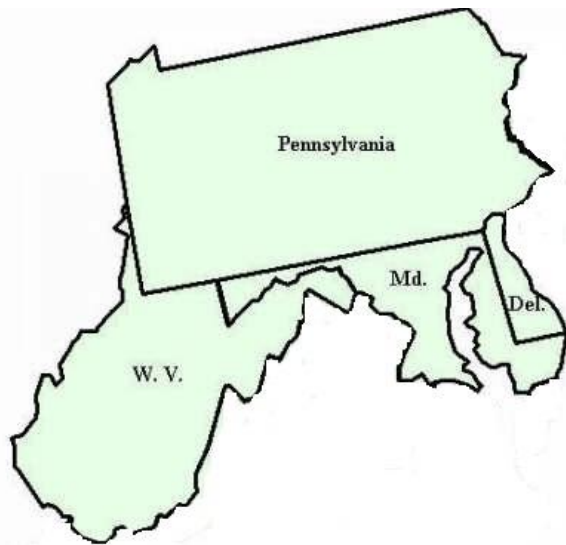
- 1980 - Federal LLRW Policy Act
- 1985 - Federal LLRW Amendment Act
- 1985 - Appalachian States LLRW Act
- 1988 - Pennsylvania LLRW Act
- 1990 - Pennsylvania LLRW Disposal Regional Facility Act

Federal Legislation

Federal
Low-Level
Radioactive Waste
Policy Act

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

Pennsylvania Responded

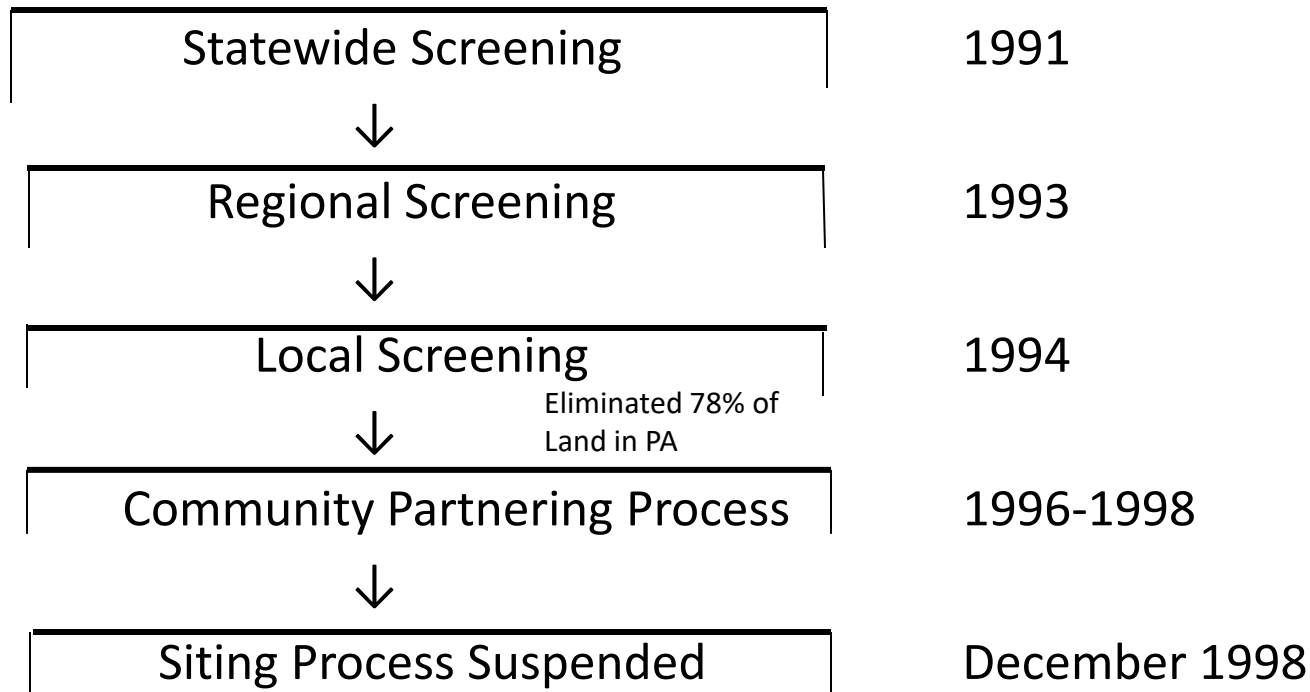


- Passed Appalachian States LLRW Compact Act in 1985 and formed a compact with Maryland, Delaware and West Virginia.
- Is initial host state for facility.
- Can legally exclude out-of-compact waste.
- Passed Pennsylvania LLRW Disposal Act in 1988.
- Passed PA LLRW Regional Facility Act in 1990.

Appalachian States LLRW Compact Commission

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

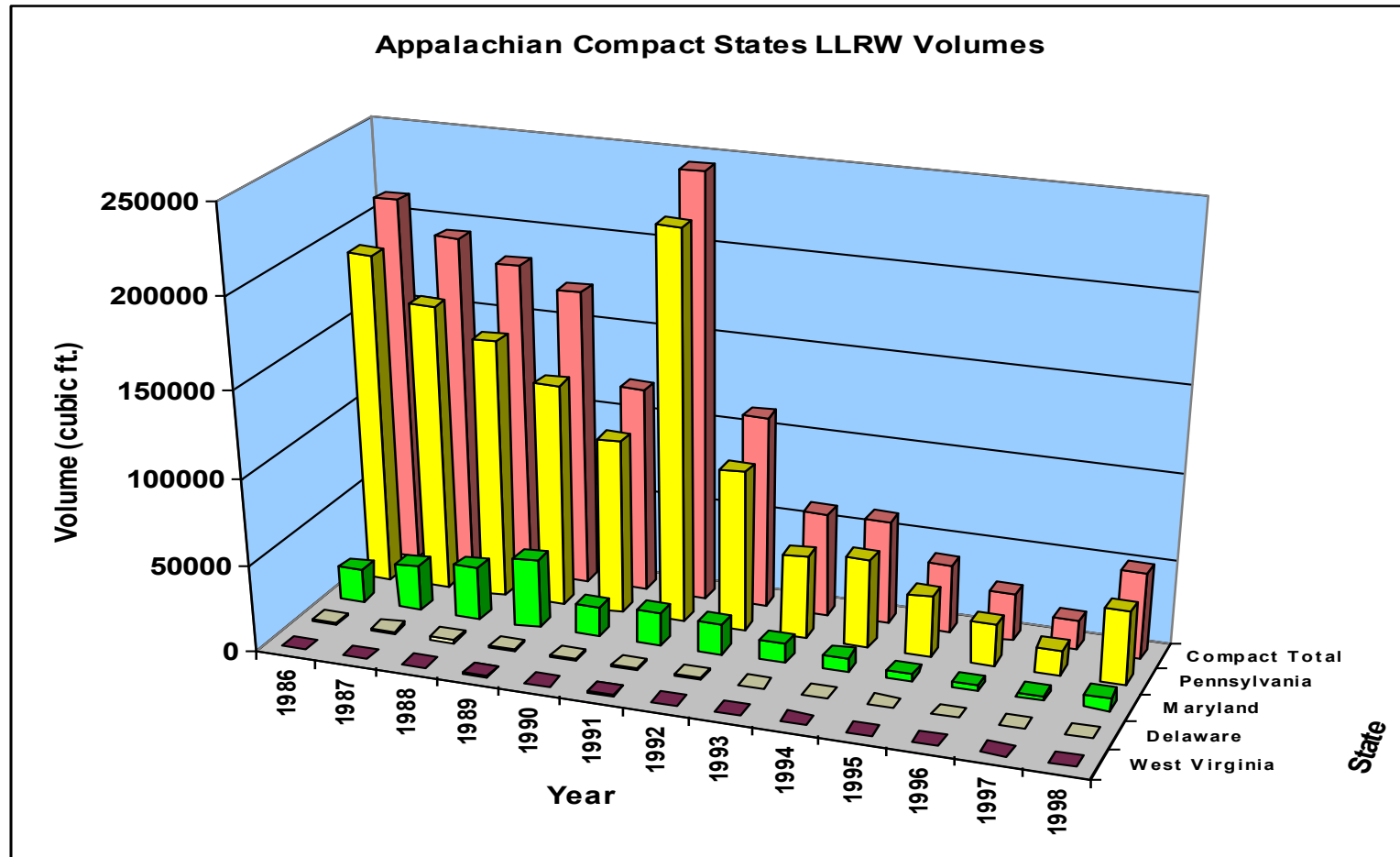
LLRW Disposal Facility Siting Process in PA



Reasons for Suspension of PA siting Process

1. Significant reduction in the amount of LLRW due to high cost of disposal.
2. High cost of developing new facilities.
3. Availability of out-of-state disposal facilities.

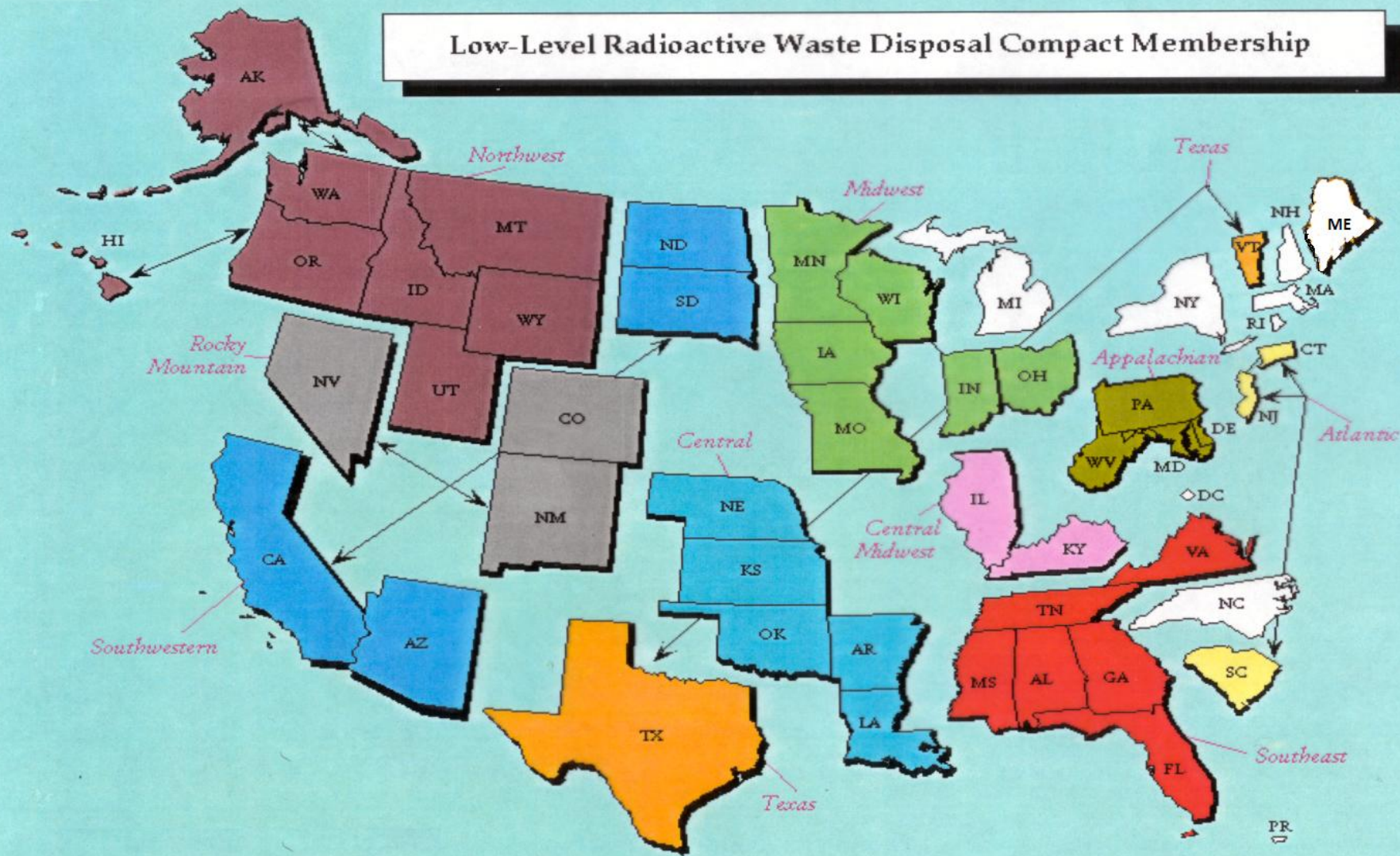
Appalachian Compact Waste Generation Trend 1986-98



This data is from the Manifest Information Management System – The Idaho National Engineering and Environmental Laboratory. Volume is in cubic feet

Status of LLRW Compacts

Low-Level Radioactive Waste Disposal Compact Membership



Status of Commercial LLRW Disposal Facilities

- **Barnwell Disposal Facility in South Carolina (Regional Facility)**
 - Accepts Class A, B and C wastes from the Atlantic Compact (CT, NJ, SC)
 - Closed to generators outside the Atlantic Compact as of July 1, 2008
 - Current projected closure date is 2038
- **Richland Facility in Washington (Regional Facility)**
 - Accepts Class A, B and C wastes from the Northwest and Rocky Mountain Compacts (11 states in 2 compacts)
 - Accepts radium sources for disposal from other compacts
 - Current projected closure date is 2056
- **Energy Solutions Facility in Utah (not a Regional Facility)**
 - Accepts Class A waste from the entire nation except the Northwest and Rocky Mountain Compacts
 - Approval for disposal of Class A radioactive sealed sources expected
 - Current projected closure date is 2050

Status of Commercial LLRW Disposal Facilities

➤ **WCS Disposal Facility in Texas (Regional Facility)**

— Two facilities: one license

- Compact facility (initially licensed for 2.3 Mft³ and 3.9 MCi)
- Federal facility for DOE waste (26 Mft³ and 5.6 MCi)

- Accepts commercial LLRW (Class A, B and C) and federal LLRW and mixed waste
- Annual limit on radioactivity of out-of-compact waste is 275,000 Ci
- No annual limit on volume of out-of-compact waste
- Volume expansion from 2.3 Mft³ to 9 Mft³ granted by TCEQ
- Disposal of Depleted Uranium (DU) and Greater-Than-Class C (GTCC) waste is being considered
- Current projected closure date is 2045

TCEQ – Texas Commission on Environmental Quality

WCS Disposal Facility in Texas



1. Access road to 1,338-acre fenced site (guard house entrance)
2. On-site rail spur and rail-unloading facility
3. Maintenance building
4. Administration buildings with analytical and radiological laboratories
5. Container Storage Building (CSB)
6. Stabilization Building (SB) (West portion) and Mixed Waste Treatment Facility (MWTF) (East portion)
7. Bulk/Bin Storage Units (BSUs) 1-3 (bin storage area [BSA-1] is covered)
8. RCRA Subtitle C landfill will expand to the East, with closed cells to the West
9. 11e (2) Byproduct material landfill
10. Federal Waste Disposal Facility (FWF) for LLW and LLMW will expand to the West
11. Compact Waste Disposal Facility (CWF) for LLW will expand to the East
12. Ten-acre storage area for low-specific-activity (LSA) waste
13. Low-level disposal operations administration building
14. Rail unloading building for emptying gondola cars