

Barnwell Disposal Capacity Projection

South Carolina Energy Office
Radioactive Waste Disposal Program
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This Table provides data on projected capacity and use of the Barnwell disposal site, in cubic feet, through the end of the Atlantic Compact commitment period, based on the assumptions that are detailed in the Notes. Based on the assumptions, the Barnwell site would have 71,130 cubic feet of capacity remaining at the end of this period.

FY	CT&NJ ¹	CT/NJ Decom ²	CT/NJ Cumulative ³	SC ¹	SC Decom ²	New Atlantic Reactors ⁴	Non- Atlantic	ANN TOTAL	CF Remaining ⁵
2001	16,353	0	16,353	5,312	0	0	104,324	125,989	
2002	9,085	0	25,438	4,661	0	0	44,013	57,759	
2003	12,719	0	38,157	3,800	0	0	49,114	65,633	
2004	15,821	0	53,978	3,348	0	0	40,346	59,515	
2005	5,035	0	59,013	3,073	0	0	35,152	43,260	
2006	11,683	0	70,696	3,485	0	0	29,821	44,989	
2007	6,000	0	76,696	3,000	0	0	31,000	40,000	1,200,000
2008	4,000	0	80,696	3,000	0	0	28,000	35,000	1,165,000
2009	17,870	0	98,566	4,000	0	0	0	21,870	1,143,130
2010	8,000	0	106,566	4,000	0	0	0	12,000	1,131,130
2011	8,000	0	114,566	4,000	0	0	0	12,000	1,119,130
2012	8,000	0	122,566	4,000	0	0	0	12,000	1,107,130
2013	8,000	0	130,566	4,000	0	0	0	12,000	1,095,130
2014	8,000	0	138,566	4,000	0	0	0	12,000	1,083,130
2015	8,000	0	146,566	4,000	0	0	0	12,000	1,071,130
2016	8,000	0	154,566	4,000	0	0	0	12,000	1,059,130
2017	8,000	0	162,566	4,000	0	0	0	12,000	1,047,130
2018	8,000	0	170,566	4,000	0	0	0	12,000	1,035,130
2019	8,000	0	178,566	4,000	0	0	0	12,000	1,023,130
2020	8,000	0	186,566	4,000	0	0	0	12,000	1,011,130
2021	8,000	0	194,566	4,000	0	0	0	12,000	999,130
2022	8,000	0	202,566	4,000	0	0	0	12,000	987,130
2023	8,000	0	210,566	4,000	0	0	0	12,000	975,130
2024	8,000	0	218,566	4,000	0	0	0	12,000	963,130
2025	8,000	0	226,566	4,000	0	0	0	12,000	951,130
2026	8,000	0	234,566	4,000	0	0	0	12,000	939,130
2027	8,000	0	242,566	4,000	0	0	0	12,000	927,130
2028	8,000	0	250,566	4,000	0	0	0	12,000	915,130
2029	8,000	0	258,566	4,000	0	0	0	12,000	903,130
2030	8,000	40,000	306,566	4,000	40,000	0	0	92,000	811,130
2031	8,000	0	314,566	4,000	0	0	0	12,000	799,130
2032	8,000	0	322,566	4,000	0	0	0	12,000	787,130
2033	8,000	0	330,566	4,000	0	0	0	12,000	775,130
2034	8,000	0	338,566	4,000	0	0	0	12,000	763,130
2035	8,000	40,000	386,566	4,000	80,000	0	0	132,000	631,130
2036	8,000	0	394,566	4,000	0	0	0	12,000	619,130
2037	8,000	0	402,566	4,000	0	0	0	12,000	607,130
2038	8,000	0	410,566	4,000	0	0	0	12,000	595,130
2039	8,000	0	418,566	4,000	0	0	0	12,000	583,130
2040	8,000	40,000	466,566	4,000	40,000	0	0	92,000	491,130
2041	8,000	0	474,566	4,000	0	0	0	12,000	479,130
2042	8,000	0	482,566	4,000	0	0	0	12,000	467,130
2043	8,000	0	490,566	4,000	0	0	0	12,000	455,130
2044	8,000	0	498,566	4,000	0	0	0	12,000	443,130
2045	8,000	40,000	546,566	4,000	40,000	0	0	92,000	351,130
2046	8,000	0	554,566	4,000	0	0	0	12,000	339,130
2047	8,000	0	562,566	4,000	0	0	0	12,000	327,130
2048	8,000	0	570,566	4,000	0	0	0	12,000	315,130
2049	8,000	0	578,566	4,000	0	0	0	12,000	303,130
2050	8,000	40,000	626,566	4,000	40,000	0	0	92,000	211,130
2051	8,000	0	634,566	4,000	0	0	0	12,000	199,130
2052	8,000	0	642,566	4,000	0	0	0	12,000	187,130
2053	8,000	0	650,566	4,000	0	0	0	12,000	175,130
2054	8,000	0	658,566	4,000	0	0	0	12,000	163,130
2055	8,000	40,000	706,566	4,000	40,000	0	0	92,000	71,130

TABLE NOTES

¹Ongoing operations waste projection

The table assumes 12,000 cubic feet per year (4,000 cubic feet per state) of waste from the Atlantic Compact region generated through normal operations of nuclear power plants, naval shipyards, and other facilities. This is less than the 14,760 cubic foot annual average for the three states over the past six years.

Atlantic waste to Barnwell, FY01 – FY06 (excluding <i>reactor pressure vessel</i> from Connecticut)	
	cubic feet
FY2001	21,664
FY2002	13,745
FY2003	16,411
FY2004	13,461
FY2005	8,108
FY2006	15,168
TOTAL	88,557
ANNUAL AVERAGE	14,760

²Decommissioning waste projection

A benchmark for the amount of decommissioning waste to plan for from each of the 13 reactors may be the total amount of decommissioning waste received at Barnwell from Connecticut Yankee's Haddam Neck plant from the time of its shut down in 1998 through 2006. (These shipments continued into December 2006, but are winding down in frequency.)

Haddam Neck was a 565 megawatt pressurized water reactor that operated for 28 years. There are 6 operating nuclear power reactors in Connecticut and New Jersey, and 7 in South Carolina.

Haddam Neck has thus far shipped 31,064 cubic feet of containerized Class A, B and C decommissioning waste and large components to Barnwell since its shut down. The table projects 40,000 cubic feet of waste per reactor, instead of 31,000, because of Haddam's Neck's comparatively small size and because reactors in the Atlantic Compact region, on average, will ship for disposal more than two steam generators.

For illustration purposes, the Table shows all decommissioning waste from each reactor received for disposal in a single year. In practice, the waste from each reactor would be received over a period of five or more years, and steam generators from the plants could be shipped for disposal at any time prior to decommissioning.

Haddam Neck Decommissioning Waste 7/1/98 – 12/31/06	
	cubic feet
16,401	Miscellaneous
3,578	Steam generator #1
3,578	Steam generator #2
7,507	Reactor pressure vessel
31,064	TOTAL

All of the nuclear power reactors now operating in the Atlantic Compact region have received or applied for renewal of their original operating licenses, and this assumption is included in the Table. It has also been contemplated by NRC staff and others that many nuclear power reactors in the United States will seek subsequent license renewals, which would allow them operate for many more years than indicated on the Table. Should some or all of the nuclear power plants in the Atlantic Compact region receive subsequent license extensions, this would delay the delivery of decommissioning waste by 20 years or more, during which time additional volumes of operational waste would be received.

³**800,000 cubic foot obligation to CT and NJ**

South Carolina has committed to reserve 800,000 cubic feet of capacity at Barnwell for use by Connecticut and New Jersey. The projections in the Table result in 707,745 cubic feet of disposal capacity being used by Connecticut and New Jersey generators.

“To be eligible for Compact membership, a state must warrant the availability of a regional disposal facility that will accommodate 800,000 cubic feet of waste from generators located within the border of the existing party states (i.e., Connecticut and New Jersey).” 10 CFR 1800.13(c)

“A portion of the Barnwell economic development funding provided by Connecticut and New Jersey must be returned to those states if “the regional disposal facility... is unavailable for disposal of 800,000 cubic feet of waste from generators within the borders of the existing states (i.e., Connecticut and New Jersey).” 10 CFR 1800.13(h) If 800,000 cubic feet is not available prior to January 1, 2009, then they are due a refund of \$2,586,000, plus interest. If 800,000 cubic feet become unavailable any time after January 1, 2009, then they are due a refund of \$1,293,000, plus interest.

⁴**Waste from New Power Reactors**

If any new nuclear power reactors are built between now and mid-century they would be eligible to ship waste to Barnwell. Large volumes of waste would not be expected from new nuclear power reactors. No waste from new power reactors or other new facilities is included in the waste projections.

⁵**Barnwell site - remaining capacity**

Under a Chem-Nuclear proposal to DHEC, the remaining disposal capacity of the site shown in the Table could be increased. On December 14, 2006, Chem-Nuclear submitted to DHEC a report that proposes a different approach to the construction of disposal trenches. Under the proposal, trenches would be progressively constructed in phases and operated based on projected waste types and volumes. On March 7, 2007, DHEC concurred with the concept described in the report. DHEC has indicated that the specific proposal must undergo a technical review. The DHEC letter states,

“As required in the SC Radioactive Material License No 097, revisions to the drawing specifications, trench qualification and phased trench construction procedures, construction details, waste disposal operations procedures and other

applicable issues associated with the proposed concept must be reviewed and approved by the Department prior to implementation.”

A DHEC status report explains:

“The estimated capacity of the site is 1.2 million cubic feet based on current disposal technology and operations methods. A progressive trench concept submitted by CNS to streamline disposal trench operations would increase remaining waste capacity to approximately 2.2 million cubic feet.” *From: Status of the Barnwell Low-Level Radioactive Waste Disposal Facility, February 2007, Department of Health and Environmental Control, Bureau of Land Management. On the web at: http://www.scdhec.net/lwm/pubs/barnwell_llwdf_status.pdf*