

MARYLAND DEPARTMENT OF THE ENVIRONMENT
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Land Management Administration • Solid Waste Program

**Coal Combustion Byproducts (CCB)
Annual Generator Tonnage Report
Instructions for Calendar Year 2011**

The following is general information relating to the requirement for reporting quantities of coal combustion byproducts that were managed in the State of Maryland during calendar year 2011. Please answer the questions on the form provided, attaching additional information and any requested supplemental information to the back of the form. Note that there were some changes to the form for this year, requiring both volume and weight of the CCBs produced. If you know one of these parameters but not the others, for example, you have the tonnage produced but not the volume, you may calculate the other parameter; however, please provide the calculations and assumptions that you used in your estimate. Questions can be directed to the Solid Waste Program at (410) 537-3315 or via email at edexter@mde.state.md.us.

I. Background. This requirement that generators of coal combustion byproducts (CCBs) submit an annual report was instituted in the Code of Maryland Regulations COMAR 26.04.10.08, that was promulgated effective December 1, 2008. The regulation requires that any non-residential generator of CCBs submit a report to the Department by March 1 of each year describing the manner in which CCBs generated within the State were managed during the preceding calendar year. Additional information and specific instructions follow. For more detailed information, please refer to COMAR 26.04.10.08.

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II. General Information and Applicability.

A. Definitions. Coal combustion byproducts are defined in COMAR 26.04.10.02B as:

"(3) *Coal Combustion Byproducts.* (a) "Coal combustion byproducts" means the residue generated by or resulting from the burning of coal.
(b) "Coal combustion byproducts" includes fly ash, bottom ash, boiler slag, pozzolan, and other solid residuals removed by air pollution control devices from the flue gas and combustion chambers of coal burning furnaces and boilers, including flue gas desulfurization sludge and other solid residuals recovered from flue gas by wet or dry methods. "

A generator of CCBs is defined in COMAR 26.04.10.02B as:

"(9) *Generator.*
(a) "Generator" means a person whose operations, activities, processes, or actions create coal combustion byproducts.
(b) "Generator" does not include a person who only generates coal combustion byproducts by burning coal at a private residence. "

Facility Name: Constellation – Brandon Shores

CCB Tonnage Report – 2011

B. Applicability. If you or your company meets the definition of a generator of CCBs as defined above, you must provide the information as required below. For the purposes of this report, “you” shall hereinafter refer to the generator defined above. Please note that COMAR 26.04.10.08 requires generators of CCBs to submit an annual report to the Department concerning the disposition of the CCBs that they generated the previous year. **THIS INCLUDES CCBS THAT WERE NOT SEPERATELY COLLECTED BUT WERE PRODUCED BY THE BURNING OF COAL AND WERE DIRECTLY CONTRIBUTED TO A PRODUCT, such as cement.** Where the amount cannot be directly measured, estimates based on the amount of coal burned can be used. The method of determining the volume of CCBs produced must be described.

III. Required Information. The following information must be provided to the Department by March 1, 2012:

A. Contact information:

Facility Name: Brandon Shores Electric Generation Station

Name of Permit Holder: Constellation Power Source Generation

Facility Address: 2030 Brandon Shores Road
Street

Facility Address: Baltimore Maryland 21226
City State Zip

County: Anne Arundel

Contact Information (Person filing report or Environmental Manager)

Facility Telephone No.: 410.787.6928 Facility Fax No.: 410.787.5577

Contact Name: John E. Murosko, P.G.

Contact Title: Program Manager, Environmental Services

Contact Address: 1005 Brandon Shores Road
Street

Contact Address: Baltimore Maryland 21226
City State Zip

Contact Email: john.murosko@constellation.com

Contact Telephone No.: 410.787.5471 Contact Fax No.: 410.787.6637

For questions on how to complete this form, please contact the Solid Waste Program at 410-537-3315

B. A description of the process that generates the coal combustion byproducts, including the type of coal or other raw material that generates the coal combustion byproducts. If the space provided is insufficient, please attach additional pages:

The Brandon Shores Generation Station consists of two coal-fired generating units with a combined nominal generating capacity of approximately 1,370 megawatts (MW). Brandon Shores is co-located on a 483-acre site with the H.A. Wagner Generating Station along Fort Smallwood Road in northern Anne Arundel County. Unit #1 was placed in commercial service in 1984, and Unit #2 was placed in commercial service in 1991. Both units are natural circulation radiant boilers manufactured by Babcock and Wilcox (B&W).

Coal is delivered to the Brandon Shores site by barge and stored in areas adjacent to Units 1 and 2. The coal is transferred to the plant storage bunkers via conveyor belts, after which the coal is pulverized and blown into the furnace where combustion of the coal is accomplished utilizing low NOx burners. The flue gas for each unit is passed through hot-side electrostatic precipitators (ESPs) to collect the particulate matter (PM) emissions, followed by selective catalytic reduction (SCR) to reduce the NOx emissions. In 2010, Brandon Shores added Wet Flue Gas Desulfurization (FGD), SO3 control, and mercury reduction by activated carbon injection. The Pulse Jet Fabric Filters (PJFF) remove the ash that is treated with activated carbon and hydrated lime. Ash is collected from the ESP and PJFF hoppers, then conveyed pneumatically to storage silos from where it is loaded into trucks for final disposition. Treated municipal wastewater is used as Wet FGD supply water and the effluent treatment includes nitrogen removal.

In 2011, approval was obtained for reinjection of high-carbon fly ash to the boilers for re-combustion and additional energy recovery, as well as to reduce ash production. The high carbon fly ash is wet-conditioned with water to produce a dustless, free flowing material that is added to the incoming coal conveyors that feed the generating units.

In 2011, the Brandon Shores Plant burned bituminous coal from Central Appalachian and South American sources.

C. The volume and weight of coal combustion byproducts generated during calendar year 2011, including an identification of the different types of coal combustion byproducts generated and the volume of each type generated. If the space provided is insufficient, please attach additional

pages in a similar format. If converting from volume to weight or weight to volume, please provide your calculations and assumptions.

Table I: Volume and Weight of CCBs Generated for Calendar Year 2011: Please note the change to this table from previous years, to include both the volume and weight of the types of CCBs your facility produces.

Volume and Weight of CCBs Generated for Calendar Year 2011				
Fly Ash	Bottom Ash	Gypsum	FGD Sludge	Waste Water Fines
Type of CCB	Type of CCB	Type of CCB	Type of CCB	Type of CCB
432,472	19,332	160,028	724	1,067
Volume of CCB, in Cubic Yards	Volume of CCB, in Cubic Yards	Volume of CCB, in Cubic Yards	Volume of CCB, in Cubic Yards	Volume of CCB, in Cubic Yards
321,109	14,354	118,821	537	792
Weight of CCB, in Tons	Weight of CCB, in Tons	Weight of CCB, in Tons	Weight of CCB, in Tons	Weight of CCB, in Tons

Additional notes:

CCBs reported in dry tons

Used conversion factor of 1 ton + 1.3468 cubic yards to calculate CY

FGD Sludge is generated from the operation of the FGD water treatment system

Waste Water Fines are from the waste water settling basin and consist largely of fly ash and bottom ash

D. Descriptions of any modeling or risk assessments, or both, conducted relating to the coal combustion byproducts or their use that were performed by you or your company during the reporting year. Please attach this information to the report.

No modeling or risk assessments have been performed during the past year.

E. Copies of all laboratory reports of all chemical characterizations of the coal combustion byproducts. Please attach this information to the report.

Attached.

F. A description of how you disposed of or used your coal combustion byproducts in calendar year 2011, identifying:

(a) The types and volume of coal combustion byproducts disposed of or used (if different than described in Paragraph C above) including any coal combustion byproducts stored during the previous calendar year, the location of disposal, mine reclamation and use sites, and the type and volume of coal combustion byproducts disposed of or used at each site:

Disposal (in dry tons)

19,700 tons/26,532 CY Fly Ash delivered to Tri-Cities Landfill in Petersburg, VA were used as structural fill to build walls and barriers in that MSW landfill.

1,753 tons/2,361 CY Fly Ash delivered to King George Landfill in King George, VA were used as daily cover in that MSW landfill.

487 tons/656 CY Fly Ash delivered to the company-owned Lot 15 CCB Landfill in Baltimore, MD for disposal.

380 tons/512 CY Bottom Ash delivered to Tri-Cities Landfill in Petersburg, VA were used as structural fill to build walls and barriers in that MSW landfill.

537 tons/724 CY FGD Sludge delivered to the company-owned Lot 15 CCB Landfill in Baltimore, MD for disposal.

792 tons/1,067 CY Waste Water Fines delivered to the company-owned Lot 15 CCB Landfill in Baltimore, MD for disposal.

Storage (in dry tons)

During the year, CCBs were temporarily stored at the H.A.Wagner/Brandon Shores site prior to offsite transport for beneficial use or disposal. At the end of 2011, there were 381 tons/513 CY Fly Ash generated at the Brandon Shores Station that remained on site in storage to be sent off site for beneficial use and/or disposal in 2012.

Beneficial Use (in dry tons)

269,042 tons/362,347 CY Fly Ash delivered to STI in Pasadena MD were processed for concrete production.

27,496 tons/37,032 CY Fly Ash delivered to Lehigh Cement in Union Bridge, MD were used in concrete production.

1,676 tons/2,257 CY Fly Ash delivered to MERG in Martinsburg, WV were used for concrete production and thermal grout.

574 tons/774 CY Fly Ash delivered to AshWorks in New Castle, DE were used for flowable fill projects in that state.

13,974 tons/18,820 CY Bottom Ash delivered to MERG in Martinsburg, WV were used for concrete production.

100,394 tons/135,210 CY Gypsum delivered to USG in Baltimore, MD were used to manufacture wallboard.

936 tons/1,260 CY Gypsum delivered to Lehigh Cement in Union Bridge, MD were used in concrete production.

15,660 tons/21,091 CY Gypsum delivered to MERG-ESSROC in Martinsburg, WV were used for concrete production.

1,095 tons/1,475 CY Gypsum delivered to USDA in Crisfield, MD for use in an agricultural research project to sequester excess nutrients.

736 tons/992 CY Gypsum delivered to BMI Keystone were sent to a PA cement kiln for use as a fluidized lime.

and (b) The different uses by type and volume of coal combustion byproducts:

Beneficial Use (in dry tons)

298,214 tons/401,636 CY Fly Ash processed for concrete production.

574 tons/774 CY Fly Ash were used for flowable fill projects.

13,974 tons/18,820 CY Bottom Ash were used for concrete production.

100,394 tons/135,210 CY Gypsum were used to manufacture wallboard.

17,332 tons/23,343 CY Gypsum were used in cement and concrete production.

1,095 tons/1,475 CY Gypsum were used in an agricultural research.

If the space provided is insufficient, please attach additional pages in a similar format.

G. A description of how you intend to dispose of or use coal combustion byproducts in the next 5 years, identifying:

(a) The types and volume of coal combustion byproducts intended to be disposed of or used, the location of intended disposal, mine reclamation and use sites, and the type and volume of coal combustion byproducts intended to be disposed of or used at each site:

Fly Ash: CPSG projects that as much as 297,000 tons/400,000 CY Fly Ash will be generated each year for the next five years. Approximately 282,000 tons/380,000 CY Fly Ash will be beneficially used in cement and/or concrete products. Approximately 15,000 tons/20,000 CY Fly Ash per year will disposed of in Constellation's Lot 15 Landfill in Baltimore City, MD.

Bottom Ash: CPSG projects that approximately 16,000 tons/21,000 CY Bottom Ash will be generated each year for the next five years, of which 12,000 tons/16,200 CY Bottom Ash will be beneficially used in cement and/or concrete products. Approximately 4,800 tons/1,300 CY Bottom Ash will be disposed of in Constellation's Lot 15 Landfill in Baltimore City, MD.

Gypsum: CPSG projects that as much as 150,000 tons/202,000 CY Gypsum will be generated each year for the next five years, all of which will be beneficially used in drywall, cement / concrete products, and or agricultural uses.

FGD Sludge: CPSG projects that as much as 6,000 tons/8,100 CY FGD Sludge will be generated each year for the next five years, all of which will be disposed of in Constellation's Lot 15 Landfill in Baltimore City, MD.

and (b) The different intended uses by type and volume of coal combustion byproducts.

Fly Ash: Approximately 282,000 tons/380,000 CY Fly Ash each year will be beneficially used in cement and/or concrete.

Bottom Ash: Approximately 12,000 tons/16,200 CY Bottom Ash each year will be beneficially used in cement and/or concrete.

Gypsum: Approximately 150,000 tons/202,000 CY Gypsum each year will be beneficially used in drywall, cement / concrete products, and or agricultural uses.

If the space provided is insufficient, please attach additional pages in a similar format.

Facility Name: Constellation - Brandon Shores

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IV. Signature and Certification. An authorized official of the generator must sign the annual report, and certify as to the accuracy and completeness of the information contained in the annual report:

This is to certify that, to the best of my knowledge, the information contained in this report and any attached documents are true, accurate, and complete.		
 Signature	<i>Constellation Power Secret Generation Co.</i> <u>Daniel L. Haught, VP Baltimore Operations</u> 410.787.6415	Date
	Name, Title, & Telephone No. <u>Daniel.haught@constellation.com</u> Your Email Address	<u>2/29/12</u>

V: Attachments (please list):

Analytical Results for Various Ash Samples _____
Summary Table _____

Brandon Shores (in dry tons)	In Maryland			Outside Maryland	
	Beneficially Used	Disposed	Temp. Storage	Beneficially Used	Disposed
Fly Ash	296,538	487	381	2,250	21,453
Bottom Ash	----	----	----	13,974	380
Gypsum	102,425	----	----	16,396	----
FGD Sludge	----	537	----	----	----
Waste Water Fines	----	792	----	----	----



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MDE

Martin O'Malley
Governor

Robert M. Summers, Ph.D.
Secretary

Anthony G. Brown
Lieutenant Governor

2011 CCB Annual Generator Report Notes:

Additional lab test results were submitted to the Department along with this generator report. Inquiries regarding these additional materials should be addressed to:

Ms. Martha Hynson
Chief, Solid Waste Operations Division
Land Management Administration
(410) 537-3315
mhynson@mde.state.md.us