



COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

TIDEWATER REGIONAL OFFICE

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COMMONWEALTH OF VIRGINIA Department of Environmental Quality Tidewater Regional Office

STATEMENT OF LEGAL AND FACTUAL BASIS

Calpine Mid-Atlantic Generation, LLC
Bayview Energy Center (Cheriton), Virginia
Permit No. TRO-40602

Title V of the 1990 Clean Air Act Amendments required each state to develop a permit program to ensure that certain facilities have federal Air Pollution Operating Permits, called Title V Operating Permits. As required by 40 CFR Part 70 and 9 VAC 5 Chapter 80, Calpine Mid-Atlantic Generation, LLC has applied for a Title V Operating Permit for its Bayview Energy Center (Cheriton), Virginia facility. The Department has reviewed the application and has prepared a draft Title V Operating Permit.

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6/28/11
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6/28/11
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I. FACILITY INFORMATION

Permittee

Calpine Mid-Atlantic Generation, LLC
North Region Business Office
500 Delaware Avenue
Suite 600
Wilmington, Delaware 19801

Facility

Bayview Energy Center (Cheriton)
Route 684 (South of Route 641)
Bayview, Northampton County

County-Plant Identification Number: 51-131-00008

Source Description

NAICS Code: 221112 – Electric Power Generation

Calpine Mid-Atlantic Generation, LLC's Bayview Energy Center (formally Conectiv Delmarva Generation, Inc. Bayview Peaking Station) is comprised of six (6) reciprocating internal combustion engines (RICEs) used for peak electric power generation, each engine rated at 2,500 horsepower (21 MMBTU/hr heat input capacity) with electrical generators rated at two (2) megawatts (MW) of power output each (nominal), two (2) 50,000 gallon #2 distillate fuel oil storage tanks, six (6) 120 gallon distillate fuel oil engine day tanks, and three (3) 330 gallon lubricating oil storage tanks.

Five (5) of the six reciprocating internal combustion engine (RICE) generator sets were installed in 1963, and are existing equipment, having been installed before, and not modified since, the state's existing source rule effective March 17, 1972. Unit #6, a used I.C. engine generator set, was installed in the Bayview Energy Center facility in 1976, and has not been modified since the Chapter 50, Article 4, rule effectiveness date of August 3, 1979, Standards of Performance for New and Modified Stationary Sources, and PSD rules effective April 3, 1981. The facility was exempt based on size (each engines rated capacity was less than 3000 hp) from new source review (NSR) requirements dated March 17, 1972, as amended August 11, 1972, February 3, 1974, December 20, 1974, and August 9, 1975. The facility is capable of providing backup prime power if required. All six (6) units were rebuilt with new turbochargers before 1996. No operational changes have been made which would require NSR, and all physical changes have been either routine repairs or changes to improve combustion and reduce opacity. Thus, the six (6) RICEs are not considered to have been modified since originally installed. Because the RICEs were ordered prior to July 11, 2005 and were manufactured before April 1, 2006, the engines are not subject to the New Source Performance Standards for Stationary Compression Ignition Internal Combustion Engines (40 CFR 60, Subpart III). However, the engines are

subject to certain applicable standards and requirements in the National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines (MACT Subpart ZZZZ) for existing non-emergency, non-black start, stationary internal combustion engines greater than 500 horsepower located at an area source for HAPs. As a result of this MACT Subpart ZZZZ applicability, additional MACT Subpart ZZZZ conditions for the six (6) engine-generator units have been included in the permit.

A generator is connected to its diesel engine several minutes after startup. As the unit is brought up to operating load, the turbocharger engages, and opacity goes from a 10-15 percent range to about five (5) percent. Opacity varies with load, but five (5) percent is normally achieved at maximum steady-state load.

The Bayview Energy Center facility is a Title V major source of NO_x, SO₂, PM₁₀ and CO. This source is located in an attainment area for all criteria pollutants.

The previous 2006 Title V permit listed an engine-generator set used for emergency backup power to operate telecommunications equipment. Upon recent investigation of the diesel engine powered emergency generator, it was discovered that the emission unit is not owned by Calpine Mid-Atlantic Generation, LLC, but rather is the property of Delmarva Power who owns the adjacent communications building at Bayview. Therefore, Calpine Mid-Atlantic Generation, LLC has requested that the Bayview Energy Center Title V permit be amended for the removal of the emergency generator unit from the permit.

II. COMPLIANCE STATUS

A full compliance evaluation of this facility, including a site visit, has been conducted. In addition, all reports and other data required by permit conditions or regulations, which are submitted to DEQ, are evaluated for compliance. Based on these compliance evaluations, the facility has not been found to be in violation of any state or federal applicable requirements at this time.

III. EMISSION UNIT AND CONTROL DEVICE IDENTIFICATION

The emissions units at this facility consist of the following:

Emission Unit ID	Stack ID	Emission Unit Description	Size/Rated Capacity	Manufacturer and Date of Construction
BV10	ST10	Reciprocating Internal Combustion Engine Generator Set No. 1	21.0 MMBTU/hr nominal (2,500 rated horsepower)	General Motors (GM)/MP-36. October 1963.
BV20	ST20	Reciprocating Internal Combustion Engine Generator Set No. 2	21.0 MMBTU/hr nominal (2,500 rated horsepower)	General Motors (GM)/MP-36. October 1963.
BV30	ST30	Reciprocating Internal Combustion Engine Generator Set No. 3	21.0 MMBTU/hr nominal (2,500 rated horsepower)	General Motors (GM)/MP-36. October 1963.
BV40	ST40	Reciprocating Internal Combustion Engine Generator Set No. 4	21.0 MMBTU/hr nominal (2,500 rated horsepower)	General Motors (GM)/MP-36. October 1963.
BV50	ST50	Reciprocating Internal Combustion Engine Generator Set No. 5	21.0 MMBTU/hr nominal (2,500 rated horsepower)	General Motors (GM)/MP-36. October 1963.
BV60	ST60	Reciprocating Internal Combustion Engine Generator Set No. 6	21.0 MMBTU/hr nominal (2,500 rated horsepower)	General Motors (GM)/MP-36 1976

*The Size/Rated capacity is provided for informational purposes only, and is not an applicable requirement.

IV. EMISSIONS INVENTORY

A copy of the 2009 annual emission update is attached. Emissions are summarized in the following table.

2009 Actual Criteria Pollutant Emissions in Tons/Year					
Emission Unit	VOC	CO	SO ₂	PM ₁₀	NO _x
BV10 - BV60 (Total)	0.86	4.44	1.17	0.26	16.85

V. EMISSION UNIT APPLICABLE REQUIREMENTS – I.C. Engine

Generators (BV10 - BV60)

Limitations

The following Code of Federal Regulations has specific requirements that have been determined to be applicable:

40 CFR 63, Subpart ZZZZ National Emission Standards for Hazardous Air Pollutants
for Stationary Reciprocating Internal Combustion Engines

The following Virginia Administrative Codes that have specific emission requirements have been determined to be applicable:

9 VAC 5-80-110 Federal Operating Permits for Stationary Sources - Permit Content

9 VAC 5-50-80 New and Modified Stationary Sources - Standards of Performance
for Visible Emissions and Fugitive Dust/Emissions (applicable to
engine generator BV60)

9 VAC 5-40-80 Existing Stationary Sources - Standard for Visible Emissions

The following Virginia Administrative Codes that have specific emission requirements have been determined to be applicable:

9 VAC 5-40-100 Existing Stationary Sources - Standard for Visible Emissions and
Fugitive Dust/Emissions - Monitoring

9 VAC 5-50-100 New and Modified Stationary Sources - Standards of Performance
for Visible Emissions and Fugitive Dust/Emissions - Monitoring

9 VAC 5-40-110 Existing Stationary Sources - Standard for Visible Emissions and
Fugitive Dust/Emissions - Test methods and procedures

9 VAC 5-80-110 Federal Operating Permits for Stationary Sources - Permit Content

9 VAC 5-50-50 New and Modified Stationary Sources - Notification, Records and
Reporting

9 VAC 5-40-50 Existing Stationary Sources - Notification, Records and Reporting

Compliance Procedures

The six (6) existing compression ignition RICEs located at the facility were ordered prior to July 11, 2005 and were manufactured before April 1, 2006, thus the engines are not subject to the New Source Performance Standards for Stationary Compression Ignition Internal Combustion Engines (40 CFR 60, Subpart IIII). However, the engines are subject to certain applicable standards and requirements in the National Emission Standards for Hazardous Air Pollutants for

Reciprocating Internal Combustion Engines (MACT Subpart ZZZZ) for existing non-emergency, non-black start, stationary internal combustion engines greater than 500 horsepower located at an area source for HAPs. Therefore, the permittee is required to comply with the applicable compliance requirements outlined in 40 CFR 63, Subpart ZZZZ for the six (6) existing compression ignition RICEs. Specific requirements from Subpart ZZZZ have been included in the permit for clarity.

The source is limited by Condition III.A.1 to use low sulfur distillate fuel oil, with less than 0.5% sulfur content in the six (6) RICEs. The hourly emission limit is based on 2.64% sulfur. At maximum heat input, the SO₂ emissions will be less than 19% of the permit limit.

Monitoring, Recordkeeping, and Recording

The permittee is required to comply with the applicable monitoring, recordkeeping, and reporting requirements outlined in 40 CFR 63, Subpart ZZZZ for the for the six (6) existing compression ignition RICEs. Specific requirements from Subpart ZZZZ have been included in the permit for clarity. Combustion gas temperature monitoring is required to maintain efficient combustion during all manned and unmanned operating periods per III. B. 2 in the permit. Additional recordkeeping is required for the type and sulfur content of the fuel combusted, engine operating hours, SO₂ emission rates, visible emissions observations and visible emissions evaluations, records of combustion gas temperature monitoring alarm events, and fuel certifications from the fuel supplier for each shipment of distillate fuel oil.

Performance Tests, Other Compliance Demonstrations, and Testing

MACT Subpart ZZZZ requires an initial performance test be conducted on the six (6) RICEs in accordance with the applicable requirements listed in Table 5 of 40 CFR 63 Subpart ZZZZ within 180 calendar days after the compliance date that is specified in 40 CFR 63.6595 and according to the provisions in 40 CFR 63.7(a)(2). In addition, the permittee is required to conduct subsequent performance tests as specified in Table 3 of 40 CFR 63 Subpart ZZZZ and in accordance with the applicable requirements specified in Table 4 of 40 CFR 63 Subpart ZZZZ.

The permit requires construction of the facility in such a manner so as to allow for emissions testing at any time using appropriate test methods.

VI. GENERAL CONDITIONS

The permit contains general conditions required by 40 CFR Part 70 and 9 VAC 5-80-110 that apply to all Federal-operating permitted sources. These include requirements for submitting semi-annual monitoring reports and an annual compliance certification report. The permit also requires notification of deviations from permit requirements or any excess emissions.

Comments on General Conditions

Permit Expiration

This condition refers to the Board taking action on a permit application. The Board is the State Air Pollution Control Board. The authority to take action on permit application(s) has been delegated to the Regions as allowed by §2.1-20.01:2 and §10.1-1185 of the *Code of Virginia*, and the "Department of Environmental Quality Agency Policy Statement NO. 3-2001".

This general condition cite(s) the Article(s) that follow(s):

Article 1 (9 VAC 5-80-50 et seq.), Part II of 9 VAC 5 Chapter 80. Federal Operating Permits for Stationary Sources

This general condition cites the sections that follow:

- | | |
|-----------------|-------------------------------|
| 9 VAC 5-80-80. | Application |
| 9 VAC 5-80-140. | Permit Shield |
| 9 VAC 5-80-150. | Action on Permit Applications |

F. Failure/Malfunction Reporting

Section 9 VAC 5-20-180 requires malfunction and excess emission reporting within four (4) hours of discovery. Section 9 VAC 5-80-250 of the Title V regulations also requires malfunction reporting; however, reporting is required within two (2) days. Section 9 VAC 5-20-180 is from the general regulations. All affected facilities are subject to section 9 VAC 5-20-180 including Title V facilities. Section 9 VAC 5-80-250 is from the Title V regulations. Title V facilities are subject to both sections. A facility may make a single report that meets the requirements of 9 VAC 5-20-180 and 9 VAC 5-80-250. The report must be made within four (4) daytime business hours of discovery of the malfunction.

This general condition cites the sections that follow:

- | | |
|----------------|--|
| 9 VAC 5-40-41. | Emissions Monitoring Procedures for Existing Sources |
| 9 VAC 5-40-50. | Notification, Records and Reporting |
| 9 VAC 5-50-50. | Notification, Records and Reporting |

J. Permit Modification

This general condition cites the sections that follow:

9 VAC 5-80-50.	Applicability, Federal Operating Permit For Stationary Sources
9 VAC 5-80-190.	Changes to Permits.
9 VAC 5-80-260.	Enforcement.
9 VAC 5-80-1100.	Applicability, Permits For New and Modified Stationary Sources
9 VAC 5-80-1790.	Applicability, Permits For Major Stationary Sources and Modifications Located in Prevention of Significant Deterioration Areas
9 VAC 5-80-2000.	Applicability, Permits for Major Stationary Sources and Major Modifications Locating in Nonattainment Areas

U. Malfunction as an Affirmative Defense

The regulations contain two reporting requirements for malfunctions that coincide. The reporting requirements are listed in sections 9 VAC 5-80-250 and 9 VAC 5-20-180. The malfunction requirements are listed in General Condition U and General Condition F. For further explanation see the comments on general condition F.

This general condition cites the sections that follow:

9 VAC 5-20-180.	Facility and Control Equipment Maintenance or Malfunction
9 VAC 5-80-110.	Permit Content

VII. INAPPLICABLE REQUIREMENTS

NSPS Subpart Kb Federal New Source Performance Standards (NSPS), Subpart Kb, does not apply to fuel oil storage tanks BV100 or BV101 and the day tanks BV110 - BV115 were installed prior to the 1984 applicability date. Tanks BV120 - BV122 are exempt from this standard based on size.

9 VAC 5 Chapter 40, Article 4 - Emission Standards for General Process Operations Article 4 of Chapter 40 of the state regulations does not apply to internal combustion engines BV10 - BV60 because they do not meet the definition of process equipment (i.e. furnaces, ovens, and kilns) that the rule was intended to cover.

9 VAC 5 Chapter 40, Article 4 - Emission Standards for General Process Operations Fuel oil storage tanks BV100, BV101, and BV110 - BV115 do not have opacity monitoring requirements, although the existing source rule regulating these units indicates an opacity requirement. This is justified by comparing state requirements with NSPS Subpart Kb. The NSPS does not require an opacity limit and monitoring, so it was determined that a visible emissions standard and evaluation were not necessary in this case.

9 VAC Chapter 40, Article 8 - Emissions Standards for Fuel Burning Equipment This fuel burning emissions unit regulation does not apply to emissions units BV10 - BV60 because IC engines are excluded from its definition of "fuel burning equipment".

9 VAC 5 Chapter 40, Article 37 - Emission Standards for Petroleum Liquid Storage and Transfer Operations This regulation does not apply to storage tanks BV100, BV101, BV110 - BV115, and BV120 - BV122 because the vapor pressures of fuel oil and lubrication oil are below the article's applicability threshold of 1.5 psia for liquids in service by a storage tank.

9 VAC 5 Chapter 50, Article 4 - Standards of Performance for New and Modified Stationary Sources This regulation does not apply to existing emissions units BV10 - BV50 nor to the new emissions unit BV60, because they were installed before, and not modified after the rule's effectiveness date of August 3, 1979.

VIII. INSIGNIFICANT EMISSION UNITS

The insignificant emission units are presumed to be in compliance with all requirements of the Clean Air Act as may apply. Based on this presumption, no monitoring, recordkeeping or reporting shall be required for these emission units in accordance with 9 VAC 5-80-110.

Insignificant emission units include the following:

Emission Unit No.	Emission Unit Description	Citation	Pollutant(s) Emitted (9 VAC 5-80-720 B)	Rated Capacity (9 VAC 5-80-720 C)
BV100 & BV101	Two (2) #2 Fuel Oil Storage Tanks	5-80-720 B.2	VOC	50,000 gal. (installed prior to 1984)
BV110 - BV115	Six (6) #2 Fuel Oil Storage Tanks	5-80-720 B.2	VOC	120 gal. each
BV120 - BV122	Three (3) Lube Oil Storage Tanks	5-80-720 B.2	N/A	330 gal. each

¹The citation criteria for insignificant activities are as follows:

9 VAC 5-80-720 A - Listed Insignificant Activity, Not Included in Permit Application

9 VAC 5-80-720 B - Insignificant due to emission levels

9 VAC 5-80-720 C - Insignificant due to size or production rate

IX. CONFIDENTIAL INFORMATION

The permittee did not submit a request for confidentiality. All portions of the Title V application are suitable for public review.

X. PUBLIC PARTICIPATION

The proposed permit will be placed on public notice in the Eastern Shore News from Wednesday, May 18, 2011 to Friday, June 17, 2011.