



APR 29 2011

Gerardo C. Rios, Chief
Permits Office
Air Division
U.S. EPA - Region IX
75 Hawthorne St.
San Francisco, CA 94105

**Re: Proposed ATC / Certificate of Conformity (Significant Mod)
District Facility # N-645
Project # N-1101175**

Dear Mr. Rios:

Enclosed for your review is the District's engineering evaluation of an application for Authorities to Construct for DTE Stockton, LLC 2526 W. Washington St., Stockton, which has been issued a Title V permit. DTE Stockton, LLC is requesting that Certificates of Conformity, with the procedural requirements of 40 CFR Part 70, be issued with this project. This modification will convert the existing coal-fired electrical generating station to biomass firing, and will include removal of both existing boilers and installation of a single new boiler serving the same generating equipment.

Enclosed is the engineering evaluation of this application with a copy of the current Title V permit and proposed Authorities to Construct # N-645-8-5, '-9-5, '-10-5, '-11-5, '-34-4, '-36-0, '-37-0, '-38-0, and '-39-0 with Certificates of Conformity. After demonstrating compliance with the Authority to Construct, the conditions will be incorporated into the facility's Title V permit through an administrative amendment.

Please submit your written comments on this project within the 45-day comment period that begins on the date you receive this letter. If you have any questions, please contact Mr. Jim Swaney, Permit Services Manager, at (559) 230-5900.

Seyed Sadredin
Executive Director/Air Pollution Control Officer

Northern Region
4800 Enterprise Way
Modesto, CA 95356-8718
Tel: (209) 557-6400 FAX: (209) 557-6475

Central Region (Main Office)
1990 E. Gettysburg Avenue
Fresno, CA 93726-0244
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Southern Region
34946 Flyover Court
Bakersfield, CA 93308-9725
Tel: 661-392-5500 FAX: 661-392-5585

Mr. Gerardo C. Rios
Page 2

Thank you for your cooperation in this matter.

Sincerely,

A handwritten signature in black ink, appearing to read "D. Warner", with a long horizontal flourish extending to the right.

David Warner
Director of Permit Services

Enclosures

c: Frank DeMaris, Permit Services



APR 29 2011

Mike Tollstrup, Chief
Project Assessment Branch
Air Resources Board
P O Box 2815
Sacramento, CA 95812-2815

**Re: Proposed ATC / Certificate of Conformity (Significant Mod)
District Facility # N-645
Project # N-1101175**

Dear Mr. Tollstrup:

Enclosed for your review is the District's analysis of an application for Authorities to Construct for the facility identified above. The applicant is requesting that Certificates of Conformity with the procedural requirements of 40 CFR Part 70 be issued with this project. This modification will convert the existing coal-fired electrical generating station to biomass firing, and will include removal of both existing boilers and installation of a single new boiler serving the same generating equipment.

Enclosed is the engineering evaluation of this application with a copy of the current Title V permit and proposed Authorities to Construct # N-645-8-5, '-9-5, '-10-5, '-11-5, '-34-4, '-36-0, '-37-0, '-38-0, and '-39-0 with Certificates of Conformity. After demonstrating compliance with the Authorities to Construct, the conditions will be incorporated into the facility's Title V permit through an administrative amendment.

Please submit your written comments on this project within the 30-day comment period that begins on the date you receive this letter. If you have any questions, please contact Mr. Jim Swaney, Permit Services Manager, at (559) 230-5900.

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Mr. Mike Tollstrup
Page 2

Thank you for your cooperation in this matter.

Sincerely,

A handwritten signature in black ink, appearing to read "David Warner", with a long horizontal flourish extending to the right.

David Warner
Director of Permit Services

Enclosures

c: Frank DeMaris, Permit Services



APR 29 2011

Mr. Stephen Sorrentino
DTE Stockton, LLC
2625 W. Washington St.
Stockton, CA 95203

**Re: Proposed ATC / Certificate of Conformity (Significant Mod)
District Facility # N-645
Project # N-1101175**

Dear Mr. Sorrentino:

Enclosed for your review is the District's analysis of an application for Authorities to Construct for the facility identified above. The applicant is requesting that Certificates of Conformity with the procedural requirements of 40 CFR Part 70 be issued with this project. This modification will convert the existing coal-fired electrical generating station to biomass firing, and will include removal of both existing boilers and installation of a single new boiler serving the same generating equipment.

After addressing any EPA comments made during the 45-day comment period, the Authorities to Construct will be issued to the facility with Certificates of Conformity. Prior to operating with modifications authorized by the Authorities to Construct, the facility must submit an application to modify the Title V permit as an administrative amendment, in accordance with District Rule 2520, Section 11.5.

If you have any questions, please contact Mr. Jim Swaney, Permit Services Manager, at (559) 230-5900.

Thank you for your cooperation in this matter.

Sincerely,

David Warner
Director of Permit Services

Enclosures

c: Frank DeMaris, Permit Services

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Executive Director/Air Pollution Control Officer

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APR 29 2011

Mr. Thomas A. Enslow
Adams Broadwell Joseph & Cardoza
520 Capitol Mall, Suite 350
Sacramento, CA 95814-4721

**Re: Proposed ATC / Certificate of Conformity (Significant Mod)
District Facility # N-645
Project # N-1101175**

Dear Mr. Enslow:

Enclosed for your review is the District's analysis of an application for Authorities to Construct for the facility identified above. The applicant is requesting that Certificates of Conformity with the procedural requirements of 40 CFR Part 70 be issued with this project. This modification will convert the existing coal-fired electrical generating station to biomass firing, and will include removal of both existing boilers and installation of a single new boiler serving the same generating equipment.

Enclosed is the engineering evaluation of this application with a copy of the current Title V permit and proposed Authorities to Construct # N-645-8-5, '-9-5, '-10-5, '-11-5, '-34-4, '-36-0, '-37-0, '-38-0, and '-39-0 with Certificates of Conformity. After demonstrating compliance with the Authorities to Construct, the conditions will be incorporated into the facility's Title V permit through an administrative amendment.

Please submit your written comments on this project within the 30-day comment period that begins on the date you receive this letter. If you have any questions, please contact Mr. Jim Swaney, Permit Services Manager, at (559) 230-5900.

Thank you for your cooperation in this matter.

Sincerely,

David Warner
Director of Permit Services

Enclosures

c: Frank DeMaris, Permit Services

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**NOTICE OF PRELIMINARY DECISION
FOR THE ISSUANCE OF AUTHORITY TO CONSTRUCT AND
THE PROPOSED SIGNIFICANT MODIFICATION OF FEDERALLY
MANDATED OPERATING PERMIT**

NOTICE IS HEREBY GIVEN that the San Joaquin Valley Air Pollution Control District solicits public comment on the proposed modification of DTE Stockton, LLC for its electrical generating station at 2526 W. Washington St., Stockton, California. This modification will convert the existing coal-fired electrical generating station to biomass firing, and will include removal of both existing boilers and installation of a single new boiler serving the same generating equipment.

The District's analysis of the legal and factual basis for this proposed action, project #N-1101175, is available for public inspection at http://www.valleyair.org/notices/public_notices_idx.htm and the District office at the address below. This will be the public's only opportunity to comment on the specific conditions of the modification. If requested by the public, the District will hold a public hearing regarding issuance of this modification. For additional information, please contact Mr. Jim Swaney, Permit Services Manager, at (559) 230-5900. Written comments on the proposed initial permit must be submitted within 30 days of the publication date of this notice to DAVID WARNER, DIRECTOR OF PERMIT SERVICES, SAN JOAQUIN VALLEY AIR POLLUTION CONTROL DISTRICT, 1990 E. GETTYSBURG AVE, FRESNO, CA 93726-0244.

San Joaquin Valley Air Pollution Control District Authority to Construct Application Review Biomass-Fired Power Plant

Facility Name: DTE Stockton, LLC
Mailing Address: 2526 W. Washington St.
Stockton, CA 95203
Contact Person: Steven Sorrentino
Telephone: (734) 302-4893
Fax: (734) 302-4802
E-Mail: sorrentinos@dteenergy.com
Application #: N-645-8-5, '-9-5, '-10-5, '-11-5, '-34-4, '-36-0, '-37-0, '-38-0, '-39-0
Project #: N-1101175
Deemed Complete: May 11, 2010

Date: April 28, 2011
Engineer: Frank DeMaris
Lead Engineer: Rupi Gill

I. Proposal

DTE Stockton, LLC ("DTE") recently acquired the 54 MW coal-fired electrical generating station, formerly known as POSDEF Power Corporation, operating under Permit to Operate (PTO) N-645 with a total of 19 distinct permit units. The POSDEF facility was originally permitted in 1985 under the new source review rule in effect in San Joaquin County. DTE requests Authority to Construct (ATC) permits that will allow it to convert the facility to a biomass-fired generating station. Toward this end, the existing circulating fluidized bed (CFB) boilers (N-645-14 and N-645-16) will be removed from service, to be replaced by a single stoker-type boiler better suited to reliable biomass combustion. Existing fuel receiving and handling operations will be consolidated into a receiving and storage operation and a fuel handling operation, while the existing limestone receiving and day tanks will be converted to handle trona as an alternative acid gas control mechanism.

In addition, DTE has applied for an ATC to modify the PTO for the existing 43,000 gallon per minute (gal/min) cooling tower, unit N-645-34-2. This unit was originally permitted in 1992 when the exemption threshold for a cooling tower was reduced from 75,000 gal/min to the current threshold of 10,000 gal/min. Since the cooling tower was a previously-exempt unit that lost its exemption, it was not subject to new source review at the time it was originally permitted. Furthermore, the District did not calculate PM₁₀ emissions from cooling towers at this time, so the only potential emissions ascribed to the cooling tower were VOC, at the limit of 28.5 lb/day, from various chemical additives in the water. However, in the following few years the manufacturer of those chemicals reformulated them, phasing out products with significant VOC content and replacing them with lower VOC content formulations. For approximately 15 years the facility has operated with these lower VOC products and actual VOC emissions well below the limit specified in the PTO. Therefore, the proposal to modify the cooling tower permit is not a change in the hours of operation, production rate, or method of operation of the cooling tower that would require a change in a permit condition, nor is it a structural change or addition to the cooling tower, nor any other change that meets the

definition of a “modification” in District Rule 2201. Instead, the proposed revision to the VOC emission limit is simply a matter of updating the permit condition to reflect the current operational reality; this update is made necessary by the manufacturer’s reformulation of the various cooling tower chemicals. Pursuant to District Policy APR-1110, *Use of Revised Generally Accepted Emission Factors*, the revision of a generally accepted emission factor (such as the VOC content in a particular coating or product) is not a modification subject to new source review (NSR). Therefore, in accordance with APR-1110, the update to the cooling tower VOC emission limit will be processed as a non-NSR modification not subject to the provisions of District Rule 2201.

DTE is a thermal electricity generating station serving a generator with a net electrical output (gross output minus the parasitic load) of 49.9 MW. Since the net electrical output is less than 50 MW, DTE is not subject to the licensing requirements of the California Energy Commission (CEC). POSDEF was not licensed by CEC when it was constructed, and CEC licensing is not required for the proposed conversion from coal to biomass.

As part of the conversion to biomass, many of the existing permit units will be removed from service as either irrelevant to biomass operation or unnecessary to DTE’s business plan. The list of permit units to be removed from service is summarized in Table 1.

Unit	Description
N-645-2	Coal and coke receiving, handling, and storage operation
N-645-3	Boiler A coal and coke feed system
N-645-4	Boiler B coal and coke feed system
N-645-7	Coal and coke main storage silo
N-645-14	280 MMBtu/hr coal-fired CFB boiler A
N-645-16	280 MMBtu/hr coal-fired CFB boiler B
N-645-20	Emergency coal and coke feed hopper
N-645-23	Emergency coal and coke stockpile
N-645-24	79 MMBtu/hr natural gas-fired auxiliary boiler
N-645-31	Fly ash reinjection system
N-645-35	Coal and coke reclaim conveyor and storage operation

The following condition will be included on the boiler ATC to ensure the validity of this assumption:

N-645-36-0 (Biomass-fired boiler):

- *Prior to initial startup of the equipment authorized by this ATC, permittee shall permanently remove from service, and surrender the operating permit for, units N-645-2, -3, -4, -7, -14, -16, -20, -23, -24, -31, and -35. [District Rule 2201]*

It must be noted that N-645-37-0 and '-39-0 are mutually-exclusive biomass receiving and storage operations representing alternative handling conveyor and stockpile configurations. The alternative configurations include different numbers of transfer points that can produce emissions, and different stockpile areas, so the condition language establishing the required daily emission limitations is different as well. For simplicity and cleanliness in evaluation and implementation, the two alternatives will be evaluated as mutually-exclusive ATCs and the following conditions will be included on the ATCs to ensure the validity of this assumption:

N-645-37-0 (Biomass Receiving and Storage):

- *Upon implementation of this Authority to Construct, ATC N-645-39-0 shall be cancelled. [District Rule 2201]*

N-645-39-0 (Alternative Biomass Receiving and Storage):

- *Upon implementation of this Authority to Construct, ATC N-645-37-0 shall be cancelled. [District Rule 2201]*

DTE received their Title V Permit on April 13, 2001. This modification can be classified as a Title V significant modification pursuant to Rule 2520, Section 3.20, and can be processed with a Certificate of Conformity (COC). Since the facility has specifically requested that this project be processed in that manner, the 45-day EPA comment period will be satisfied prior to the issuance of the ATCs, and the following condition will be included on each ATC:

N-645-8-5, '-9-5, '-10-5, '-11-5, '-34-4, '-36-0, '-37-0, '-38-0, '-39-0 (All new and modified units):

- *This Authority to Construct serves as a written certificate of conformity with the procedural requirements of 40 CFR 70.7 and 70.8 and with the compliance requirements of 40 CFR 70.6(c). [District NSR Rule]*

II. Rules

Rule 2201	New and Modified Stationary Source Review Rule (9/21/06)
Rule 2520	Federally Mandated Operating Permits (67/21/01)
Rule 2540	Acid Rain Program (11/13/97)
Rule 2550	Federally Mandated Preconstruction Review for Major Sources of Air Toxics (6/18/98)
Rule 4001	New Source Performance Standards (4/14/99)
Rule 4002	National Emissions Standards for Hazardous Air Pollutants (5/20/04)
Rule 4101	Visible Emissions (2/17/05)
Rule 4102	Nuisance (12/17/92)
Rule 4201	Particulate Matter Concentration (12/17/92)
Rule 4202	Particulate Matter Emission Rate (12/17/92)
Rule 4203	Particulate Matter Emissions from Incineration of Combustible Refuse (12/17/92)
Rule 4301	Fuel Burning Equipment (12/17/92)
Rule 4304	Equipment Tuning Procedures for Boilers, Steam Generators, and Process Heaters (10/19/95)
Rule 4305	Boilers, Steam Generators, and Process Heaters – Phase 2 (8/21/03)
Rule 4306	Boilers, Steam Generators, and Process Heaters – Phase 3 (10/16/08)
Rule 4320	Advanced Emission Reduction Operations for Boilers, Steam Generators, and Process Heaters Greater than 5.0 MMBtu/hr (10/16/08)
Rule 4351	Boilers, Steam Generators, and Process Heaters – Phase 1 (8/21/03)

Rule 4352 Solid Fuel Fired Boilers, Steam Generators, and Process Heaters (5/18/06)
Rule 4801 Sulfur Compounds (12/17/92)
Rule 7012 Hexavalent Chromium – Cooling Towers (12/17/92)
Rule 8011 General Requirements (8/19/04)
Rule 8021 Construction, Demolition, Excavation, Extraction, and Other Earthmoving Activities (8/19/04)
Rule 8031 Bulk Materials (8/19/04)
Rule 8041 Carryout and Trackout (8/19/04)
Rule 8051 Open Areas (8/19/04)
Rule 8061 Paved and Unpaved Roads (8/19/04)
Rule 8071 Unpaved Vehicle/Equipment Traffic Areas (9/16/04)
CH&SC 41700 Health Risk Assessment
CH&SC 42301.6 School Notification
Public Resources Code 21000-21177: California Environmental Quality Act (CEQA)
California Code of Regulations, Title 14, Division 6, Chapter 3, Sections 15000-15387: CEQA Guidelines

III. Location

This facility is located at 2526 W. Washington St. in Stockton, California, within the Port of Stockton. The District has determined that this facility is not within 1,000 feet of the outer boundary of the nearest K-12 school. Therefore, the school notification requirements of California Health & Safety Code 42301.6 do not apply to this application.

IV. Process Description

DTE is currently operating a 49.9 MW (net) coal-fired electrical generating station that uses two 280 MMBtu/hr CFB combustors. The existing coal receiving operations will be converted to handle biomass, the coal storage silos and day tanks will be removed, the limestone receiving and day tanks will be converted to handle trona for acid gas control, and the existing combustors will be removed to make way for a single stoker-type combustor. The existing emergency engines and cooling tower will not be modified.

Biomass fuel, consisting primarily of agricultural biomass but possibly including urban wood waste, almond shells, and other biomass sources, will be delivered to the site by trucks. These trucks will be unloaded into truck unloading hoppers at the truck unloading station along West Washington Road. Conveyors with 3/4 covers will transport the fuel from the receiving area to a screen to remove oversize pieces, then through an electromagnet to remove metal, and finally to the biomass storage piles. A reclaim conveyor will reclaim biomass fuel from the storage piles and transfer it to enclosed conveyors, which will carry it to the four biomass metering bins. These metering bins are the last step before the fuel enters the boiler fuel feed system.

The combustor is a stoker-type unit, meaning that fuel is burned on a grate as opposed to being burned in suspension or in a fluidized bed. The combustor is equipped with a vibrating grate, upon which fuel from the charging hopper is spread using a number of distribution devices. The vibrating grate consists of a series of grate elements in a horizontal arrangement. Half of the horizontal grate elements are fixed and half oscillate to move fuel along the grate toward the ash discharge. Combustion air is fed into the combustion chamber through ports

located under each grate section, while overfire air enters the combustion chamber through additional ports spaced around the combustion chamber and arranged to ensure optimal mixing and complete combustion. Bottom ash, essentially all unburned fuel residue that is too massive to become entrained in the flue gas as fly ash, is removed from the stoker grate at the opposite end from the fuel charging hopper. Pursuant to the source category description presented in Section 2.2 of *Emission Factor Documentation for AP-42 Section 1.1: Bituminous and Subbituminous Coal Combustion* (where much of the information on solid fuel-fired boilers is available), this unit is classified as a spreader stoker.

For startup operations, the combustor is equipped with a 100 MMBtu/hr natural gas-fired startup burner. This will be used to gradually heat the boiler when starting up, in order to ensure the unit is not physically damaged by heat stresses, and to bring the combustion chamber up to sufficiently high temperature to allow the biomass fuel to ignite. Once the biomass fuel is ignited, the combustor will be gradually transitioned to firing exclusively on biomass fuel. The startup burner will also be utilized to complete combustion of any remaining solid fuel residue when shutting the unit down.

Emissions from the combustor will be controlled by a variety of mechanisms, which are detailed in Section VI of this document. Fly ash and bottom ash from the combustor will be routed to separate fly ash and bottom ash silos, currently permitted as N-645-12-4. Fly ash will be periodically loaded out from the silo into trucks for sale as a commodity. Load out will be accomplished through a telescoping spout using water spray to reduce PM₁₀ emissions.

SO_x and acid gas emissions from the combustor will be controlled using trona injection. Trona is a mined mineral form of sodium carbonate and is received at the site as a coarse powder delivered by trucks, which are unloaded to the limestone receiving silos, converted to trona use, by screw conveyor. Trona from the silos will be routed by enclosed conveyor to the existing limestone day tanks, also converted to trona use, and then to an enclosed pulverizer where the coarse powder is ground to a fine dust to maximize the surface area. Trona is then injected pneumatically into the flue gas immediately downstream of the combustion chamber, where it reacts with SO_x and other acidic gases such as hydrogen chloride (HCl). The resulting sulfate particulate is readily removed in the multiclone and electrostatic precipitator (ESP).

While HCl is controlled by trona injection, this control may not be sufficient to ensure that DTE is not a major source of hazardous air pollutants. In order to ensure that DTE remains below the major source threshold for HCl, DTE proposes to supplement trona injection with a wet scrubber to remove additional HCl from the exhaust stream. Water is sprayed into the scrubber tower in fine droplets which absorb the highly water-soluble HCl. To preserve the pollution control efficiency, a caustic such as sodium hydroxide is used to maintain the pH balance of the scrubbing solution as it is recirculated through the scrubber.

Finally, the combustor will be served by the existing steam turbine generator and a 43,000 gal/min cooling tower. Water is routed through the combustion chamber in water tubes to make saturated steam, then routed through the combustion chamber again in the superheater section, and then passed repeatedly (with some reheating) through a turbine connected to an electrical generator to make electricity. Spent steam is then condensed in a heat exchanger/condenser and returned to the boiler. Water on the other side of the heat exchanger/condenser is routed to the cooling tower in a secondary loop.

V. Equipment Listing

Pre-Project Equipment Description:

N-645-8-4: LIMESTONE RECEIVING SILO #1 CONTROLLED WITH A FABRIC FILTER BAGHOUSE

N-645-9-4: LIMESTONE RECEIVING SILO #2 CONTROLLED WITH A FABRIC FILTER BAGHOUSE

N-645-10-4: 3.5 TON LIMESTONE/DAY TANK #1 CONTROLLED WITH A FABRIC FILTER BAGHOUSE

N-645-11-4: 3.5 TON LIMESTONE/DAY TANK #2 CONTROLLED WITH A FABRIC FILTER BAGHOUSE

N-645-34-2: 43,000 GALLONS PER MINUTE COOLING TOWER

N-645-36-0, N-645-37-0, N-645-38-0, and N-645-39-0 are all new permit units so there is no pre-project equipment to describe.

Post-Project Equipment Description:

N-645-8-5: TRONA RECEIVING SILO #1 CONTROLLED BY A FABRIC FILTER BAGHOUSE

N-645-9-5: TRONA RECEIVING SILO #2 CONTROLLED BY A FABRIC FILTER BAGHOUSE

N-645-10-5: 3.5 TON TRONA DAY TANK #1 CONTROLLED BY A FABRIC FILTER BAGHOUSE

N-645-11-5: 3.5 TON TRONA DAY TANK #2 CONTROLLED BY A FABRIC FILTER BAGHOUSE

N-645-34-4: 43,000 GALLON PER MINUTE COOLING TOWER

- N-645-36-0: 54 MW (GROSS) ELECTRICAL GENERATING STATION WITH A 699 MMBTU/HR STOKER BOILER EQUIPPED WITH A 100 MMBTU/HR NATURAL GAS-FIRED STARTUP BURNER, MULTICLONE AND ELECTROSTATIC PRECIPITATOR, TRONA INJECTION AND WET SCRUBBER, OXIDATION CATALYST, AND SELECTIVE CATALYTIC REDUCTION
- N-645-37-0: BIOMASS RECEIVING OPERATION WITH THREE TRUCK UNLOADING HOPPERS, A DISC SCREEN AND HOGGER, AND ASSOCIATED CONVEYORS, AND BIOMASS STORAGE OPERATION WITH UP TO 5.5 ACRES OF BIOMASS STORAGE PILES
- N-645-38-0: BIOMASS FUEL HANDLING OPERATION WITH BIOMASS METERING BINS, RECLAIM CONVEYORS, AND OTHER ASSOCIATED CONVEYORS
- N-645-39-0: BIOMASS RECEIVING OPERATION WITH THREE TRUCK UNLOADING HOPPERS, A DISC SCREEN AND HOGGER, AND ASSOCIATED CONVEYORS, AND BIOMASS STORAGE OPERATION WITH UP TO 2.1 ACRES OF BIOMASS STORAGE PILES

In addition, the following permit units will be cancelled as a result of this project:

N-645-2-5, '-3-5, '-4-5, '-7-8, '-14-10, '-16-10, '-20-4, '23-3, '-24-8, '-31-2, and '-35-4.

VI. Emission Control Technology Evaluation

The combustion of biomass fuel in the boiler will result in emissions of NO_x, SO_x, PM₁₀, CO, and VOC, while ammonia injection will result in ammonia "slip" emissions. Operation of the other permit units will result in PM₁₀ emissions.

N-645-37-0 (Biomass Receiving and Storage)

N-645-38-0 (Biomass Handling)

N-645-39-0 (Alternative Biomass Receiving and Storage):

PM₁₀ emissions from the fuel receiving, handling, and storage operation will be controlled in a variety of ways. The biomass material itself will be chipped wood with substantial moisture content, and will already have been screened to remove fine particles that might become entrained in the atmosphere. PM₁₀ will also be controlled using water sprays or other fugitive dust controls as necessary during high wind events to prevent visible emissions.

Note that, in contrast with operations such as aggregate processing plants which also have material stockpiles that can be sources of fugitive dust emissions, DTE will not be required to use water sprays continuously to control emissions. Stockpiles of organic material such as wood chips have the potential to spontaneously combust under certain conditions, which include excessive moisture. Aggregate stockpiles, on the other hand, have no such risk of spontaneous combustion. Therefore, fugitive dust controls will only be required when prevailing conditions, such as high winds, make it likely that visible emissions will result from the biomass stockpiles. Furthermore, the focus of the fugitive dust controls will be on preventing visible emissions, as opposed to maintaining moisture content or some other specified parameter.

N-645-8-4, '-9-4 (Trona Receiving Tanks)

N-645-10-4, '-11-4 (Trona Day Tanks):

PM₁₀ emissions from the trona receiving tanks and day tanks will be controlled by bin vent filters on the storage silos, while total enclosure of the trona conveying, pulverizing, and injection system will prevent further emissions beyond the storage silo.

N-645-34-4 (Cooling Tower):

Operation of the cooling tower results in the emission of PM₁₀ and trace amounts of VOC. The VOC comes from various chemicals (biocides, corrosion inhibitors, etc.) normally added to the cooling water to reduce or eliminate various operational and maintenance problems. These chemicals contain varying proportions of VOC, which evaporate over time as the cooling tower water is repeatedly heated and cooled in the condenser and cooling tower. These VOC emissions can be reduced by the use of products with lower VOC contents. In addition, as water in the cooling tower evaporates and condenses, solids dissolved in the water (measured as total dissolved solids, or "TDS") are liberated and borne aloft on the counter-current air flow. These PM₁₀ emissions can be reduced using drift eliminators, but the cooling tower was not required to have such a control device when it was originally installed, and has not been required to install one since.

N-645-36-0 (Biomass-Fired Boiler), SO_x:

SO_x emissions from fuel combustion are the result of fuel-bound sulfur being oxidized in the combustion process. DTE proposes to control SO_x emissions using a dry powder trona injection system. The trona powder adsorbs the gaseous SO₂ or SO₃, reacting with it to produce a sulfate that can be removed from the flue gas with the rest of the PM₁₀. Trona also has a similar affect on other acid gases, particularly HCl. However, because HCl is a hazardous air pollutant, DTE also proposes to use a wet scrubber for additional HCl control to ensure that the boiler is not a major source of hazardous air pollutants.

N-645-36-0 (Biomass-Fired Boiler), PM₁₀:

PM₁₀ emissions from the combustor will be controlled using a combination of a multiclone and an ESP. In a multiclone, the flue gas is routed through several drastic course changes which cause suspended particulate matter to collide with the multiclone walls and fall out of suspension. In an ESP, the flue gas passes through the corona induced by an array of charged wires. Passing through the corona induces a charge on the particulate matter within the flue gas, which causes the particle to be drawn in the direction of an oppositely-charged collector plate, which it impacts and adheres to. When enough the material collected begins to interfere with the collection efficiency, the plates are rapped to cause the collected dust to fall off into a collection hopper.

N-645-36-0 (Biomass-Fired Boiler), CO and VOC:

CO and VOC emissions from the combustor are primarily the result of incomplete combustion. However, highly efficient combustion that minimizes CO and VOC emissions also tends to maximize NO_x emissions. DTE has proposed to control CO and VOC emissions using proper combustion supplemented by an oxidation catalyst. This catalyst uses excess oxygen in the flue gas to oxidize CO and VOC to CO₂ and gaseous H₂O.

N-645-36-0 (Biomass-Fired Boiler), NO_x:

Any operation that combusts fuel has the potential to result in NO_x emissions, which can come from the oxidation of fuel-bound nitrogen ("fuel NO_x") or from the oxidation of nitrogen in the combustion air at high temperature ("thermal NO_x"). Fuel NO_x is largely, although not directly, proportional to the fuel nitrogen content, and therefore essentially fixed in the design phase. Thermal NO_x is a function of several variables, including peak combustion temperature, the residence time at peak temperature, nitrogen concentration, and oxygen concentration or flame stoichiometry. Combustion modifications can be useful in adjusting these variables by reducing the peak temperature, nitrogen concentration, and stoichiometry. For example, by injecting some combustion air below the grate and the rest of the combustion air through the overfire air ports above the grate, the combustion zone can be expanded and the peak temperature reduced.

NO_x can also be controlled using add-on control devices such as selective non-catalytic reduction (SNCR) or selective catalytic reduction (SCR). These techniques are similar in that they inject ammonia or urea into the flue gas in order to reduce NO_x to molecular nitrogen and water. SNCR requires high temperatures, between 1600 °F and 2100 °F, while SCR uses a catalyst to allow the same reaction to take place between 480 °F and 800 °F. SNCR has been used on biomass-fired boilers since the mid-1980s, so this control technology is well-known and widely applied. SCR is a well-known technology for controlling NO_x from gaseous or liquid fuel-fired boilers, but use on solid fuel-fired units is much more recent.

The District has recently sent draft ATCs for public notice requiring both SNCR and SCR for biomass-fired boilers. However, none of these ATCs have been issued, and in at least one case the application has been cancelled. Furthermore, DTE has provided data from the SCR vendor strongly indicating that ammonia slip from an SNCR system may be oxidized across an oxidation catalyst, resulting in much lower net NO_x control from the SNCR than would be the case in the absence of an oxidation catalyst. The SCR vendor also argues that the oxidation catalyst is required both to comply with the CO and VOC emission limits and to allow the SCR catalyst an acceptable life, since the oxidation catalyst provides additional particulate control ahead of the SCR catalyst and is much sturdier and better able to withstand the rigors of operational use and cleaning than the SCR catalyst. Therefore, DTE proposes to use only combustion controls and SCR to control NO_x emissions.

NO_x Control Evaluation Period:

DTE's proposal to achieve an extremely low emission rate using SCR provides an opportunity to determine the lowest achievable emission rate that is appropriate for this control. Since the District is in "extreme" non-attainment of the 8-hour ozone National Ambient Air Quality Standard (NAAQS), and since the 2007 Ozone Attainment Plan puts a premium on NO_x emission reductions, the District has recently allowed sources proposing novel NO_x control techniques an evaluation period in which to establish the lowest achievable emission rate applicable to their NO_x controls.

Therefore, the District has determined that DTE will be allowed a 24-month evaluation period in which to demonstrate that compliance with the target NO_x emission limit can be achieved, or that the target NO_x emission limit is not achievable. Although lower target NO_x limits have been proposed in other projects, the applicant has supplied data and vendor statements raising additional issues not previously considered. Specifically, the control system vendor has observed that earlier low NO_x emission limits assumed the sequential use of both SNCR and

SCR, along with reasonable NO_x control efficiencies for both systems. However, the first of these projects (C-1090203) proposed to control CO and VOC using only good combustion techniques, while the second (N-1094135) proposed to comply with the same technologically feasible emission limits for CO and VOC using an oxidation catalyst. The control system vendor has opined that ammonia slip from the SNCR system would be oxidized to NO_x across the oxidation catalyst, with each ppmv of ammonia producing approximately 1 ppmv of NO_x. The result would be to drastically reduce the effective control efficiency of the SNCR system, either through oxidation of ammonia slip or through reductions in ammonia injection leading to substantial reductions in control efficiency.

As an alternative, DTE's control system vendor has proposed to use only the SCR system, but to design and operate it so as to achieve 90% control efficiency even at the end of the catalyst life. The control system vendor has observed that the uncontrolled emissions from DTE's Woodland facility are approximately 0.33 lb/MMBtu, and the proposed SCR system would reduce that to 0.033 lb/MMBtu on average. Since the target emission rate will presumably become the basis of an enforceable emission limit at the end of the evaluation period, the vendor has further proposed a margin for compliance of approximately 20%, resulting in an average emission rate of 0.040 lb/MMBtu. This average will not be enforceable during the evaluation period, but has been used in calculating the quarterly mass emission limits that are enforceable. In addition, a firm NO_x emission limit of 0.065 lb/MMBtu will be established; any emissions in excess of the firm limit will be subject to enforcement action. At the end of the evaluation period, the District will review the operational and emissions data to determine whether reasonably consistent compliance with the target limit has been demonstrated. DTE will then be required to submit an ATC application to modify the permit and establish the firm emission limit associated with the SCR.

Commissioning Period:

Power plant construction typically occurs in multiple phases, each of which is followed by a period of testing and calibration for the equipment just constructed or installed. DTE has proposed a commissioning period during which it would operate up to twelve hours per day at a maximum heat input of 660 MMBtu/hr.

VII. General Calculations

A. Assumptions

- Maximum heat input rate is 699 MMBtu/hr
- Annual average heat input rate is 641 MMBtu/hr
- F-factor for biomass combustion is 9,240 dscf/MMBtu (0% O₂)
- F-factor for biomass combustion is 1,830 dscf/MMBtu (100% CO₂)
- Startups and shutdowns may require 12 hours per day and 24 hours per year
- Annual operating time is 8,424 hours per year including startups and shutdowns
- For non-combustor operations, annual operating time is 8,760 hr/yr
- Biomass fuel receiving is 2,732 tons per day and 470,080 tons per year
- Biomass fuel combustion is 1,951 tons per day and 470,080 tons per year
- Trona receiving is 75 tons per day for each silo
- Trona receiving is 3 tons per day for each day tank
- Cooling tower drift rate is 0.01%
- Facility-wide NO_x emissions are limited to 215,657 lb/yr
- Other assumptions will be stated as they are made

A word about the heat input rate is in order. For a solid fuel-fired boiler, the nominal heat input rate is based on the fuel mass loading rate and an assumed fuel higher heating value. The maximum heat input rate assumed above is the product of the fuel loading rate and the worst-case heating value, while the annual average heat input rate is the product of the same fuel loading rate and the average heating value of all solid fuels combusted over the year. The maximum heat input rate will be used to calculate the potential to emit on a daily basis, while the average heat input rate is an operational limitation that can be used to calculate potential emissions on an annual basis. The effect of using the average heat input rate to calculate potential annual emissions will be made enforceable in a permit condition limiting actual emissions of each pollutant on an annual basis.

B. Emission Factors

N-645-36-0 (Biomass-Fired Boiler):

Table 2 shows the proposed control devices, commissioning period emission limit, startup & shutdown emission limit, expected emission factor (if applicable), and firm emission limit for each pollutant:

Table 2: Boiler Emission Control Device Summary					
Pollutant	Control Device(s)	Limits (lb/MMBtu)			
		Commission	Startup	Expected	Firm
NO _x	Proper combustion, SCR	0.84	0.74	0.04	0.065
PM ₁₀	Multiclone & ESP	0.15	0.078	N/A	0.0214
SO _x	Trona injection	0.27	0.27	0.025	0.054
CO	Oxidation catalyst	0.76	0.67	N/A	0.09
VOC	Oxidation catalyst	0.078	0.068	N/A	0.009

In addition, the applicant has proposed an ammonia slip limit of 40 ppmvd @ 3% O₂. This concentration can be converted to a lb/MMBtu format as follows:

$$EF = \frac{(40/10^6) \times (1 \text{ lb-mol}/379.5 \text{ ft}^3) \times (17 \text{ lb/lb-mol}) \times (9,240 \text{ ft}^3/\text{MMBtu})}{(20.95 \div (20.95 - 3.00))}$$
$$EF = 0.019 \text{ lb/MMBtu}$$

N-645-37-0 (Biomass Receiving and Storage)

N-645-38-0 (Biomass Handling)

N-645-39-0 (Alternative Biomass Receiving and Storage):

Units '-37-0 and '-39-0 will encompass the biomass receiving operation and the two biomass storage stockpiles. Emissions from these units will be calculated using the predictive equation presented in Section 13.2.4 of EPA document AP-42. Note that this equation calculates an emission factor for a single drop or transfer operation.

$$EF = (k) \times (0.0032) \times (U/5)^{1.3} \div (M/2)^{1.4} \quad \text{where:}$$

k = 0.35, (particle size factor for PM₁₀ from AP-42, Chapter 13.2.4)
U = 8.1 mi/hr, (average wind speed, Stockton Airport meteorological station)
M = 28%, (applicant's stated moisture content¹)

Therefore,

$$EF = (0.35) \times (0.0032) \times (8.1/5)^{1.3} \div (28/2)^{1.4} = 0.000052 \text{ lb-PM}_{10}/\text{ton}$$

DTE has submitted a detailed breakdown of its fuel handling system, both the proposed and alternative configurations, establishing the total number of transfer points and the expected fraction of fuel that will pass through each. This analysis, included in Appendix K of this document, makes use of the emission factor from the drop equation calculated above and establishes daily and annual emissions in several areas of the receiving and storage operations, allowing appropriate emission factors to be established on a daily and annual average basis for each area. These emission factors are summarized in Table 3:

¹ This predictive equation has been used to estimate emissions from similarly moist biomass fuels in other recent projects as well, such as C-1090203.

Table 3: Fuel Handling Emission Factors					
Unit	Area	Basis	Throughput (ton)	PE	EF (lb/ton)
N-645-37-0	Truck Unloading	Daily	2,732	0.142 lb	0.000520
		Annual	470,080	0.0301 ton	0.000128
	Disc Screening	Daily	2,732	0.429 lb	0.000157
		Annual	470,080	0.0412 ton	0.000175
	North Stockpile	Daily	2,732	0.125 lb	0.0000458
		Annual	470,080	0.0263 ton	0.000112
West Stockpile	Daily	2,732	0.125 lb	0.0000458	
	Annual	470,080	0.0263 ton	0.000112	
N-645-39-0	Truck Unloading	Daily	2,732	0.360 lb	0.000132
		Annual	470,080	0.0337 ton	0.000143
	Disc Screening	Daily	2,732	0.553 lb	0.000202
		Annual	470,080	0.0497 ton	0.000211
	Stockpile	Daily	2,732	0.561 lb	0.000205
		Annual	470,080	0.0478 ton	0.000203
N-645-38-0	Plant Area	Daily	1,951	0.397 lb	0.000203
		Annual	470,080	0.0533 ton	0.000227

In the alternative biomass receiving and storage scenario (N-645-39-0), the applicant included a number of transfer points in the stockpile area that more properly belong to the plant area (N-645-38-0). When these transfer points are assigned to the plant area, it is clear that the alternative biomass receiving and storage scenario does not significantly affect the emissions from the fuel handling operation in the plant area (N-645-38-0).

Note that in Table 3 the annual average emission factors, on a lb/ton basis, are in some cases slightly greater than the daily average emission factors. This is the result of certain assumptions about fuel movements to various minor parts of the process (such as truck dumping directly to the inactive stockpile), or multiple passes through additional transfer points, that happen too infrequently to include in the daily average but which account for a measurable fraction of the total fuel movement over the entire year. The net result is that over an annual average a small portion of the fuel will go through some additional transfer points not included in the daily emission calculations, resulting in a higher emission factor (in lb/ton) on an annual average basis.

In addition to the fuel handling emission factors calculated above, this operation will also emit pollutants from the fuel storage piles, particularly when windy conditions prevail. Emissions from the storage piles can be estimated using an equation presented in Table A9-9.E of the 1993 CEQA Air Quality Handbook from South Coast Air Quality Management District (the "CEQA Handbook"), as follows:

$$E = (1.7) \times (G \div 1.5) \times [(365 - H) \div 235] \times (I \div 15) \times (J) \quad ; \text{ where}$$

E = emission factor, in lb-acre-day

G = silt content (2% assumed)

H = number of days with at least 0.01 inches of precipitation per year (38.5)

I = percent of time unobstructed wind speed at mean pile height exceeds 12 mph (5%)

J = fraction of total PM that is PM₁₀ (0.5)

$$E = (1.7) \times (2 \div 1.5) \times [(365 - 38.5) \div 235] \times (23 \div 15) \times (0.5) = 2.4 \text{ lb/acre-day}$$

Note that this is the uncontrolled emission factor for stockpile emissions. DTE has proposed to use water sprays as required to prevent visible emissions, which is expected to provide 90% control from the uncontrolled emission factor, as follows:

$$E_{\text{control}} = (2.4 \text{ lb/acre-day}) \times (1 - 0.90) = 0.24 \text{ lb/acre-day}$$

N-645-8-5, '-9-5 (Trona Receiving Tanks)

N-645-10-5, '-11-5 (Trona Day Tanks):

No emission factor exists specifically for trona receiving. However, since the trona is received in a coarse powder form, at an assumed moisture content of 0.25%, and is transferred through a screw conveyor from the truck to the top of the silo and then dropped in (with emissions controlled by a bin vent filter for 99% CE), the drop equation can be used to estimate an emission factor:

$$EF = (0.35) \times (0.0032) \times (8.1/5)^{1.3} \div (0.25/2)^{1.4} = 0.039 \text{ lb-PM}_{10}/\text{ton}$$

Therefore, the controlled emission factor is

$$EF = (0.039 \text{ lb-PM}_{10}/\text{ton}) \times (1 - 0.99) = 0.00039 \text{ lb-PM}_{10}/\text{ton}$$

Emission factors for all proposed emission sources are summarized in Table 4:

Table 4: Emission Factors				
Unit	Emission Unit	Pollutant	EF	Source
N-645-36-0	Steady-State	NO _x	0.065 lb/MMBtu	Applicant
		SO _x	0.054 lb/MMBtu peak 0.025 lb/MMBtu avg	Applicant
		PM ₁₀	0.0214 lb/MMBtu	Applicant
		CO	0.09 lb/MMBtu	Applicant
		VOC	0.009 lb/MMBtu	Applicant
		NH ₃	0.019 lb/MMBtu	Applicant
	Startup	NO _x	0.74 lb/MMBtu	Applicant
		SO _x	0.27 lb/MMBtu	Applicant
		PM ₁₀	0.078 lb/MMBtu	Applicant
		CO	0.67 lb/MMBtu	Applicant
		VOC	0.068 lb/MMBtu	Applicant
		NH ₃	0.019 lb/MMBtu	Applicant
	Commissioning	NO _x	0.84 lb/MMBtu	Applicant
		SO _x	0.27 lb/MMBtu	Applicant
		PM ₁₀	0.15 lb/MMBtu	Applicant
		CO	0.76 lb/MMBtu	Applicant
		VOC	0.078 lb/MMBtu	Applicant
	Startup burners	NO _x	0.1 lb/MMBtu	AP-42 Table 1.4-1
		SO _x	0.00285 lb/MMBtu	APR-1720
		PM ₁₀	0.0076 lb/MMBtu	AP-42 Table 1.4-1
CO		0.084 lb/MMBtu	AP-42 Table 1.4-1	
VOC		0.0055 lb/MMBtu	AP-42 Table 1.4-1	
N-645-37-0	Receiving	PM ₁₀	See Table 3	AP-42, 13.2.4
	Storage piles	PM ₁₀	0.24 lb/acre-day	CEQA Handbook
N-645-38-0	Fuel handling	PM ₁₀	See Table 3	AP-42, 13.2.4
N-645-34-4	Drift	PM ₁₀	0.01%	Applicant
N-645-8-5 N-645-9-5 N-645-10-5 N-645-11-5	Trona handling	PM ₁₀	0.00039 lb/ton	AP-42, 13.2.4

C. Emission Calculations

1. Pre-Project Potential to Emit (PE1)

N-645-8-4, '-9-4 (Limestone Receiving Tanks):

These units do not currently have a daily emissions limitation (DEL) because they were originally permitted under a county-level new source review rule that did not require a DEL for these units. However, the absence of an explicit emission limit does not mean that these units do not currently have the potential to emit air pollutants into the atmosphere. Therefore, in accordance with District Policy APR-1110, *Use of Revised Generally Accepted Emission Factors*, PE1 will be calculated using the available data. These limestone silos are identical, so PE1 is the same for both units.

$$PE1 = (75 \text{ ton/day}) \times (0.00039 \text{ lb-PM}_{10}/\text{ton}) = 0.0 \text{ lb-PM}_{10}/\text{day}$$

$$PE1 = (75 \text{ ton/day}) \times (0.00039 \text{ lb-PM}_{10}/\text{ton}) \times (365 \text{ day/yr}) = 11 \text{ lb-PM}_{10}/\text{yr}$$

N-645-10-5, '-11-5 (Limestone Day Tanks):

These units do not currently have a daily emissions limitation (DEL) because they were originally permitted under a county-level new source review rule that did not require a DEL for these units. However, the absence of an explicit emission limit does not mean that these units did not have the potential to emit air pollutants into the atmosphere. Therefore, in accordance with District Policy APR-1110, *Use of Revised Generally Accepted Emission Factors*, PE1 will be calculated using the available data. These limestone silos are identical, so PE1 is the same for both units.

$$PE1 = (3 \text{ ton/day}) \times (0.00039 \text{ lb-PM}_{10}/\text{ton}) = 0.0 \text{ lb-PM}_{10}/\text{day}$$

$$PE1 = (3 \text{ ton/day}) \times (0.00039 \text{ lb-PM}_{10}/\text{ton}) \times (365 \text{ day/yr}) = 0 \text{ lb-PM}_{10}/\text{yr}$$

N-645-36-0 (Biomass-Fired Boiler)

N-645-37-0 (Biomass Receiving and Storage)

N-645-38-0 (Biomass Handling)

N-645-39-0 (Alternative Biomass Receiving and Storage):

These are new emissions units, so PE1 = 0 for all pollutants.

N-645-34-2 (Cooling Tower):

The cooling tower is currently in existence and operating. Condition 1 on the PTO limits VOC emissions to 28.5 lb/day, but the cooling tower is being evaluated as a non-NSR modification. Pursuant to APR-1110, the pre-project emissions for this unit will be calculated using the revised emission factors from the reformulated chemicals.

DTE indicates it will continue using a corrosion inhibitor with a VOC content of 0.4% by weight and a density of 10.1 lb/gal. The facility normally uses 600 gal/yr of this corrosion inhibitor, but to ensure an adequate margin for compliance and refrain from expanding the emission limitation from the current lb/day basis, has proposed 20 gal/day of the corrosion inhibitor, a rate equivalent to 7,300 gal/yr.

$$PE1_{\text{VOC}} = (20 \text{ gal/day}) \times (10.1 \text{ lb/gal}) \times (0.004 \text{ lb/lb}) = 0.8 \text{ lb/day}$$

$$PE1_{\text{VOC}} = (0.8 \text{ lb/day}) \times (365 \text{ day/yr}) = 292 \text{ lb/yr}$$

PM₁₀ is not limited by PTO condition, but the applicant has provided data on the cooling tower design and operational parameters, so pre-project PM₁₀ emissions can be calculated based on a TDS content of 4,278 mg/L and a drift rate of 0.01%.

$$PE1_{PM10} = (4,278 \text{ mg/L}) \times (1 \text{ lb}/453.6 \text{ g}) \times (1 \text{ g}/1,000 \text{ mg}) \times (3.785 \text{ L}/\text{gal}) \times (43,000 \text{ gal}/\text{min}) \times (1,440 \text{ min}/\text{day}) \times (0.0001)$$

$$PE1_{PM10} = 221.0 \text{ lb}/\text{day}$$

$$PE1_{PM10} = (221.0 \text{ lb}/\text{day}) \times (365 \text{ day}/\text{yr}) = 80,665 \text{ lb}/\text{yr}$$

Unit	NO _x	SO _x	PM ₁₀	CO	VOC	NH ₃
N-645-8-5	0.0	0.0	0.0	0.0	0.0	0.0
N-645-9-5	0.0	0.0	0.0	0.0	0.0	0.0
N-645-10-5	0.0	0.0	0.0	0.0	0.0	0.0
N-645-11-5	0.0	0.0	0.0	0.0	0.0	0.0
N-645-34-4	0.0	0.0	221.0	0.0	0.8	0.0

Unit	NO _x	SO _x	PM ₁₀	CO	VOC	NH ₃
N-645-8-5	0	0	11	0	0	0
N-645-9-5	0	0	11	0	0	0
N-645-10-5	0	0	0	0	0	0
N-645-11-5	0	0	0	0	0	0
N-645-34-4	0	0	80,665	0	292	0

2. Post-Project Potential to Emit (PE2)

N-645-7-5, '-8-5 (Trona Receiving Tanks)

N-645-9-5, '-10-5 (Trona Day Tanks)

N-645-34-4 (Cooling Tower):

No changes are proposed for these units, so PE2 is equal to PE1 for all pollutants.

N-645-37-0 (Biomass Receiving and Storage):

Emissions from the biomass fuel receiving operation are calculated based on the quantity of material processed in each area on both a daily and annual basis. .

$$PE2 = ([0.000052 + 0.000157 + 0.0000458 + 0.0000458] \text{ lb-PM}_{10}/\text{ton}) \times (2,732 \text{ ton}/\text{day})$$

$$PE2 = 0.8 \text{ lb-PM}_{10}/\text{day}$$

$$PE2 = ([0.000128 + 0.000175 + 0.000112 + 0.000112] \text{ lb-PM}_{10}/\text{ton}) \times (470,080 \text{ ton}/\text{yr})$$

$$PE2 = 248 \text{ lb-PM}_{10}/\text{yr}$$

Emissions from the biomass storage piles are calculated based on the area of the storage piles.

$$\text{PE2} = (5.5 \text{ acre}) \times (0.24 \text{ lb-PM}_{10}/\text{acre-day}) = 1.3 \text{ lb-PM}_{10}/\text{day}$$
$$\text{PE2} = (1.3 \text{ lb-PM}_{10}/\text{day}) \times (365 \text{ day/yr}) = 475 \text{ lb-PM}_{10}/\text{yr}$$

Total emissions from the biomass fuel receiving and storage operation are calculated by summing the emissions calculated above.

$$\text{PE2} = (0.8 \text{ lb-PM}_{10}/\text{day}) + (1.3 \text{ lb-PM}_{10}/\text{day}) = 2.1 \text{ lb-PM}_{10}/\text{day}$$
$$\text{PE2} = (248 \text{ lb-PM}_{10}/\text{yr}) + (475 \text{ lb-PM}_{10}/\text{yr}) = 723 \text{ lb-PM}_{10}/\text{yr}$$

N-645-38-0 (Biomass Handling):

Emissions from the fuel handling operation are calculated based on the quantity of fuel handled on a daily or annual basis.

$$\text{PE2} = (0.0000.000203 \text{ lb-PM}_{10}/\text{ton}) \times (1,951 \text{ ton/day}) = 0.4 \text{ lb-PM}_{10}/\text{day}$$
$$\text{PE2} = (0.000227 \text{ lb-PM}_{10}/\text{ton}) \times (470,080 \text{ ton/yr}) = 107 \text{ lb-PM}_{10}/\text{yr}$$

N-645-39-0 (Alternative Biomass Receiving and Storage):

Emissions from the alternative biomass fuel receiving operation are calculated based on the quantity of material processed in each area on both a daily and annual basis.

$$\text{PE2} = ([0.000132 + 0.000202 + 0.000205] \text{ lb-PM}_{10}/\text{ton}) \times (2,732 \text{ ton/day})$$
$$\text{PE2} = 1.5 \text{ lb-PM}_{10}/\text{day}$$

$$\text{PE2} = ([0.000143 + 0.000211 + 0.000203] \text{ lb-PM}_{10}/\text{ton}) \times (470,080 \text{ ton/yr})$$
$$\text{PE2} = 262 \text{ lb-PM}_{10}/\text{yr}$$

Emissions from the biomass storage piles are calculated based on the area of the storage piles.

$$\text{PE2} = (2.1 \text{ acre}) \times (0.24 \text{ lb-PM}_{10}/\text{acre-day}) = 0.5 \text{ lb-PM}_{10}/\text{day}$$
$$\text{PE2} = (0.5 \text{ lb-PM}_{10}/\text{day}) \times (365 \text{ day/yr}) = 183 \text{ lb-PM}_{10}/\text{yr}$$

Total emissions from the biomass fuel receiving and storage operation are calculated by summing the emissions calculated above.

$$\text{PE2} = (1.5 \text{ lb-PM}_{10}/\text{day}) + (0.5 \text{ lb-PM}_{10}/\text{day}) = 2.0 \text{ lb-PM}_{10}/\text{day}$$
$$\text{PE2} = (262 \text{ lb-PM}_{10}/\text{yr}) + (183 \text{ lb-PM}_{10}/\text{yr}) = 445 \text{ lb-PM}_{10}/\text{yr}$$

N-645-36-0 (Boiler):

Emissions from the boiler must be calculated separately for the commissioning period because the emission control devices will be installed and properly calibrated in stages over the course of the commissioning period. Emissions during the commissioning period are calculated as follows, based on 12 hours of operation per day at a maximum firing rate of 660 MMBtu/hr:

$$PE2 = (0.84 \text{ lb-NO}_x/\text{MMBtu}) \times (660 \text{ MMBtu/hr}) \times (12 \text{ hr/day}) = 6,652.8 \text{ lb-NO}_x/\text{day}$$

$$PE2 = (0.27 \text{ lb-SO}_x/\text{MMBtu}) \times (660 \text{ MMBtu/hr}) \times (12 \text{ hr/day}) = 2,138.4 \text{ lb-SO}_x/\text{day}$$

$$PE2 = (0.15 \text{ lb-PM}_{10}/\text{MMBtu}) \times (660 \text{ MMBtu/hr}) \times (12 \text{ hr/day}) = 1,188.0 \text{ lb-PM}_{10}/\text{day}$$

$$PE2 = (0.76 \text{ lb-CO}/\text{MMBtu}) \times (660 \text{ MMBtu/hr}) \times (12 \text{ hr/day}) = 6,019.2 \text{ lb-CO}/\text{day}$$

$$PE2 = (0.078 \text{ lb-VOC}/\text{MMBtu}) \times (660 \text{ MMBtu/hr}) \times (12 \text{ hr/day}) = 617.8 \text{ lb-VOC}/\text{day}$$

It must be noted that commissioning activities that involve firing the boiler, whether on biomass or natural gas, are properly understood to be part of the boiler construction phase rather than a boiler operational phase. In other words, it is not possible to construct a boiler of this size, commonly referred to as a "field-erected" boiler, without the extensive period of refractory cure, tuning, and test-firing known as the commissioning period. Since firing the boiler during the commissioning period is a construction activity, rather than an operational activity, these emissions are not subject to the emission limits in the various prohibitory rules. However, to help ensure that commissioning activities are carried out as expeditiously as practicable, emissions during the commissioning period will still be counted against the annual emission limits for which DTE has provided offsets.

During normal operations, DTE expects to operate the facility with up to 24 hours of startup and shutdown and 8,400 hours of normal operation per year. Daily emissions are based on 12 hours of startup or shutdown and 12 hours of normal operation per day. All startup/shutdown operation is at 699 MMBtu/hr to reflect the worst-case potential emissions from combustion of the fuel with highest heating value, while normal annual operation is at 641 MMBtu/hr, which assumes average fuel heat content and represents the projected actual emissions from this facility. In addition, the applicant has proposed several long-term emission limits for specific pollutants, which will be enforceable, in a practical manner, using continuous emissions monitoring system (CEMS) data.

For NO_x:

As shown in the portion of this document devoted to discussion of Rule 4301 (Fuel Burning Equipment), the boiler is subject to a flat limit of 140 lb/hr for NO_x emissions. For comparison, the proposed startup emission limit and heat input rating can be used to calculate hourly emissions during startup as follows:

$$PE2 = (0.74 \text{ lb-NO}_x/\text{MMBtu}) \times (699 \text{ MMBtu/hr}) = 517.26 \text{ lb-NO}_x/\text{hr}$$

Since this exceeds the 140 lb-NO_x/hr limit from Rule 4301, the rule limit will be used to calculate the contribution during startup and shutdown operation. It is noted that compliance with this rule limit is expected to be feasible, since startup operation will initially revolve around the 100 MMBtu/hr natural gas-fired startup burner, and long before the boiler reaches its maximum rated heat input the SCR catalyst would have reached sufficiently high temperature to become effective in reducing NO_x emissions.

$$\text{PE2} = (0.065 \text{ lb/MMBtu}) \times (12 \text{ hr/day}) \times (699 \text{ MMBtu/hr}) + (140 \text{ lb/hr}) \times (12 \text{ hr/day})$$
$$\text{PE2} = 2,225.2 \text{ lb/day}$$

The applicant has proposed to limit NO_x emissions to 215,350 pounds per year, enforceable using CEMS data. The purpose of this limit is to ensure there is no net increase in NO_x emissions from this facility, thereby reducing the project's NO_x offset liability to 0 lb/yr. Detailed analysis of the offset requirements is provided in the portion of this document, in Section VIII, devoted to discussion of the offset requirements under District Rule 2201 (New and Modified Stationary Source Review Rule).

$$\text{PE2} = 215,350 \text{ lb/yr}$$

For SO_x:

Daily SO_x emissions are calculated using the short-term emission limit of 0.054 lb/MMBtu, which represents the worst-case fuel sulfur content, for steady-state operation and the startup emission limit of 0.27 lb/MMBtu for startup operation.

$$\text{PE2} = [(0.054 \text{ lb/MMBtu}) \times (12 \text{ hr/day}) + (0.27 \text{ lb/MMBtu}) \times (12 \text{ hr/day})] \times (699 \text{ MMBtu/hr})$$
$$\text{PE2} = 2,717.7 \text{ lb/day}$$

For annual emissions, the long-term expected emission limit of 0.025 lb/MMBtu is used for steady-state operation. This represents the expected fuel sulfur content on a 30-day rolling average basis.

$$\text{PE2} = [(0.025 \text{ lb/MMBtu}) \times (641 \text{ MMBtu/hr}) \times (8,400 \text{ hr/yr})] + [(0.27 \text{ lb/MMBtu}) \times (24 \text{ hr/yr}) \times (699 \text{ MMBtu/hr})]$$
$$\text{PE2} = 139,140 \text{ lb/yr}$$

For PM₁₀:

$$\text{PE2} = [(0.0214 \text{ lb/MMBtu}) \times (12 \text{ hr/day}) + (0.078 \text{ lb/MMBtu}) \times (12 \text{ hr/day})] \times (699 \text{ MMBtu/hr})$$
$$\text{PE2} = 833.8 \text{ lb/day}$$

$$\text{PE2} = [(0.0214 \text{ lb/MMBtu}) \times (641 \text{ MMBtu/hr}) \times (8,400 \text{ hr/yr})] + [(0.078 \text{ lb/MMBtu}) \times (24 \text{ hr/yr}) \times (699 \text{ MMBtu/hr})]$$
$$\text{PE2} = 116,535 \text{ lb/yr}$$

For CO:

$$PE2 = [(0.09 \text{ lb/MMBtu}) \times (12 \text{ hr/day}) + (0.67 \text{ lb/MMBtu}) \times (12 \text{ hr/day})] \times (699 \text{ MMBtu/hr})$$

$$PE2 = 6,374.9 \text{ lb/day}$$

$$PE2 = [(0.09 \text{ lb/MMBtu}) \times (641 \text{ MMBtu/hr}) \times (8,400 \text{ hr/yr})] + [(0.67 \text{ lb/MMBtu}) \times (24 \text{ hr/yr}) \times (699 \text{ MMBtu/hr})]$$

$$PE2 = 495,836 \text{ lb/yr}$$

For VOC:

$$PE2 = [(0.009 \text{ lb/MMBtu}) \times (12 \text{ hr/day}) + (0.068 \text{ lb/MMBtu}) \times (12 \text{ hr/day})] \times (699 \text{ MMBtu/hr})$$

$$PE2 = 645.9 \text{ lb/day}$$

$$PE2 = [(0.009 \text{ lb/MMBtu}) \times (641 \text{ MMBtu/hr}) \times (8,400 \text{ hr/yr})] + [(0.068 \text{ lb/MMBtu}) \times (24 \text{ hr/yr}) \times (699 \text{ MMBtu/hr})]$$

$$PE2 = 49,600 \text{ lb/yr}$$

For NH₃:

Ammonia emissions are associated with certain short-term health risks, so ammonia slip from the SCR system must be calculated and taken into consideration as part of the health risk assessment.

$$PE2 = (0.019 \text{ lb/MMBtu}) \times (24 \text{ hr/day}) \times (699 \text{ MMBtu/hr}) = 318.7 \text{ lb/day}$$

$$PE2 = [(0.019 \text{ lb/MMBtu}) \times (641 \text{ MMBtu/hr}) \times (8,400 \text{ hr/yr})] + [(0.019 \text{ lb/MMBtu}) \times (24 \text{ hr/yr}) \times (699 \text{ MMBtu/hr})]$$

$$PE2 = 102,622 \text{ lb/yr}$$

Alternatively, this boiler will operate using a natural gas-fired startup burner rated at 100 MMBtu/hr during startup and shutdown operations. A comparison of emission factors easily demonstrates that potential emissions from the startup burner are less than potential emissions when firing biomass during startup. Therefore, emissions from the startup burner are subsumed into the overall startup emissions and do not require separate calculation. For convenience, the emission factors are compared in Table 7 below:

Table 7: Startup Emission Factors (lb/MMBtu)					
Fuel	NO _x	SO _x	PM ₁₀	CO	VOC
Biomass	0.74	0.27	0.078	0.67	0.068
Natural gas	0.1	0.00285	0.0076	0.084	0.0055
Biomass > Natural gas?	Yes	Yes	Yes	Yes	Yes

Daily and annual emissions from the proposed new and modified units are summarized in Tables 8 and 9 respectively.

Table 8: PE2 (lb/day)						
Unit	NO _x	SO _x	PM ₁₀	CO	VOC	NH ₃
N-645-8-5	0.0	0.0	0.0	0.0	0.0	0.0
N-645-9-5	0.0	0.0	0.0	0.0	0.0	0.0
N-645-10-5	0.0	0.0	0.0	0.0	0.0	0.0
N-645-11-5	0.0	0.0	0.0	0.0	0.0	0.0
N-645-34-4	0.0	0.0	221.0	0.0	0.8	0.0
N-645-36-0	2,225.2	2,717.7	833.8	6,374.9	645.9	318.7
N-645-37-0	0	0	2.1	0	0	0
N-645-38-0	0	0	0.4	0	0	0
N-645-39-0	0	0	2.0	0	0	0

Table 9: PE2 (lb/yr)						
Unit	NO _x	SO _x	PM ₁₀	CO	VOC	NH ₃
N-645-8-5	0	0	11	0	0	0
N-645-9-5	0	0	11	0	0	0
N-645-10-5	0	0	0	0	0	0
N-645-11-5	0	0	0	0	0	0
N-645-34-4	0	0	80,665	0	292	0
N-645-36-0 [†]	215,350	139,140	116,535	495,836	49,600	102,622
N-645-37-0	0	0	723	0	0	0
N-645-38-0	0	0	107	0	0	0
N-645-39-0	0	0	445	0	0	0

[†] Emissions during the commissioning period shall not cause an exceedance of these annual potentials.

3. Quarterly Net Emissions Change (QNEC)

The QNEC is calculated solely to establish emissions that are used to complete the District's Permit Administration System emissions profile screen. Detailed QNEC calculations are included in Appendix G.

D. Stationary Source Calculations

1. Pre-Project Stationary Source Potential to Emit (SSPE1)

Pursuant to Section 4.9 of District Rule 2201, the Pre-Project Stationary Source Potential to Emit (SSPE1) is the Potential to Emit (PE) from all units with valid Authorities to Construct (ATC) or Permits to Operate (PTO) at the Stationary Source and the quantity of emission reduction credits (ERC) which have been banked since September 19, 1991 for Actual Emissions Reductions that have occurred at the source, and which have not been used on-site.

SSPE1 is summarized in Table 10 below and calculated in detail in Appendix E.

	NO _x	SO _x	PM ₁₀	CO	VOC
SSPE1	215,657	228,490	170,357	693,502	44,120

2. Post-Project Stationary Source Potential to Emit (SSPE2)

Pursuant to Section 4.10 of District Rule 2201, the Post Project Stationary Source Potential to Emit (SSPE2) is the Potential to Emit (PE) from all units with valid Authorities to Construct (ATC) or Permits to Operate (PTO) at the Stationary Source and the quantity of emission reduction credits (ERC) which have been banked since September 19, 1991 for Actual Emissions Reductions that have occurred at the source, and which have not been used on-site.

N-645-	Description	NO _x	SO _x	PM ₁₀	CO	VOC
8-4	Limestone silo	0	0	11	0	0
9-4	Limestone silo	0	0	11	0	0
10-4	Limestone day tank	0	0	0	0	0
11-4	Limestone day tank	0	0	0	0	0
34-2	Cooling Tower	0	0	80,665	0	292
36-0	New boiler	215,350	139,140	116,535	495,836	49,600
38-0	Fuel handling	0	0	107	0	0
37-0	Fuel receiving	0	0	723	0	0
39-0	Alternative fuel receiving					
12-4	Ash storage	0	0	0	0	0
29-2	Emergency engine	88	0	9	28	10
33-3	Emergency engine	219	0	15	47	18
ERC	N/A	0	0	0	0	0
SSPE2		215,657	139,140	198,076	495,911	49,920

Units that are being removed from service as part of this project contribute nothing to post-project potential emissions and are not included in Table 11 above. These units include both of the existing boilers, the coal handling and storage equipment, the auxiliary boiler, and the fly ash reinjection system.

3. Major Source Determination

Pursuant to Section 3.24 of District Rule 2201, a Major Source is a stationary source with post-project emissions, or SSPE2 equal to or exceeding one or more of the following threshold values. However, Section 3.24.2 states, "for the purposes of determining major source status, the SSPE2 shall not include the quantity of emission reduction credits (ERC) which have been banked since September 19, 1991 for Actual Emissions Reductions that have occurred at the source, and which have not been used on-site."

The major source determination is summarized in Table 12 below:

Table 12: Major Source Determination (lb/yr)					
	NO _x	SO _x	PM ₁₀	CO	VOC
SSPE2	215,657	139,140	198,076	495,911	49,920
Major Source Threshold	50,000	140,000	140,000	200,000	50,000
Major Source?	Yes	No	Yes	Yes	No

As shown in Table 12, this facility is a major source of NO_x, PM₁₀, and CO emissions. This facility is not a major source of SO_x or VOC emissions.

Effective July 15, 2008 the District was required to implement the requirements of Title 40, Code of Federal Regulations, Part 51.165 and the EPA Emission Offset Interpretive Ruling (Part 51 – Appendix S) for PM_{2.5}. Under these requirements a major source of PM_{2.5} is defined as one with the potential to emit 100 ton/yr (200,000 lb/yr) or more of PM_{2.5}. Since PM_{2.5} is a subset of PM₁₀, it is evident that SSPE2 for PM_{2.5} emissions is less than or equal to 198,076 lb/yr. Since this figure is less than the major source threshold of 200,000 lb/yr, this facility cannot be a major source for PM₁₀. No further discussion is required.

4. Baseline Emissions

Pursuant to District Rule 2201, Section 3.7, BE for any pollutant is equal to the pre-project potential to emit for any emissions unit located at a non-major source. As shown in Section VII.D.3 of this document, this facility is not a major source for SO_x or VOC. Therefore, BE = PE1 for these pollutants.

For NO_x:

The existing boilers (N-645-14 and '-16), auxiliary boiler (N-645-24) and emergency engines (N-645-29 and '-33) are potential sources of NO_x emissions. The NO_x SSPE1 is 215,657 lb/yr, whereas during the original permitting action POSDEF (the owner at the time) acquired and surrendered NO_x ERC sufficient to offset (taking into account distance and other offset ratios) 590 lb/day of NO_x. The original offset evaluation (Appendix I) determined that the potential NO_x emissions from the two CFB boilers was 590 lb/day, so offsets were provided for the full potential to emit NO_x for these boilers. Pursuant to Section 3.19.1 of Rule 2201, a unit is fully offset if offsets have been provided for the unit's full potential to emit. Therefore, the CFB boilers are fully offset for NO_x and BE = PE1.

Annual BE for NO_x is calculated as follows:

$$\text{BE} = (590 \text{ lb/day}) \times (365 \text{ day/yr}) = 215,350 \text{ lb/yr}$$

For PM₁₀:

Almost every new or modified unit associated with this proposal will emit PM₁₀. When this stationary source was originally permitted and constructed, POSDEF secured and surrendered offsets sufficient to mitigate 244 lb/day of PM₁₀. This quantity of offsets is equivalent to:

$$\text{Offsets} = (244 \text{ lb-PM}_{10}/\text{day}) \times (365 \text{ day/yr}) = 89,060 \text{ lb/yr}$$

Under Section 3.19.1 of Rule 2201, a unit may be considered fully offset if offsets have been provided for the unit's full potential to emit. When the facility was originally permitted, emissions from fuel handling equipment, the CFB boilers, limestone receiving and day use, and ash storage and loadout were calculated, for a total of 243.6 lb/day. Since 244 lb/day of offsets were provided, all units associated with the original permitting action (N-645-2, '-3, '-4, '-7, '-8, '-9, '-10, '-11, '-12, '-14, '-16, '-20, and '-23) were fully offset under Section 3.19.1 of the rule.

Of the remaining units, N-645-24 is a natural gas-fired auxiliary boiler with fuel oil #2 as a backup fuel. In accordance with Section 3.12.2 of Rule 2201, this boiler is a clean emission unit, defined as a unit equipped with BACT for that pollutant. Although the applicable BACT Guidelines have since been rescinded, the District has repeatedly determined that firing on natural gas is BACT for such boilers for PM₁₀. Therefore, unit N-645-24 is a clean emissions unit for PM₁₀.

Unit N-645-31 is a fly ash reinjection operation which is required in order for the existing boilers to fire entirely on petroleum coke. It is noted that fly ash that is reinjected in a boiler simply becomes part of the boiler emissions, while potential emissions entrained in air from the pneumatic conveying system is routed to either the fly ash silo (with bin vent filter) or the boiler baghouse. Either of these controls is sufficient to qualify the fly ash reinjection operation as a clean emission unit under Section 3.12.2 of Rule 2201.

Unit N-645-35 is the emergency coal storage operation and reclaim conveyors. These units are served by baghouses, which normally have a minimum control efficiency of 99%. This exceeds the 95% control efficiency required under District Rule 2201, Section 3.12.1, so the emission units associated with the emergency coal storage operation and reclaim conveyors qualify as clean emission units under this provision.

For CO:

This facility is a major source for CO emissions. However, BE is required for calculating the quantity of offsets required for those pollutants for which the offset requirement is triggered. As discussed in detail in the portion of this document devoted to Rule 2201, this proposal is exempt from the requirement to provide CO offsets. Therefore, it is not necessary to determine BE for CO.

Since the cooling tower unit N-645-34-2 is not undergoing a modification subject to Rule 2201, it is not included in BE calculations. BE for all new and modified units associated with this proposal are shown in Table 13:

Table 13: BE (lb/yr)					
	NO _x	SO _x	PM ₁₀	CO	VOC
N-645-8-4	0	0	11	N/A	0
N-645-9-4	0	0	11		0
N-645-10-4	0	0	0		0
N-645-11-4	0	0	0		0
N-645-36-0	0	0	0		0
N-645-37-0	0	0	0		0
N-645-38-0	0	0	0		0
N-645-39-0	0	0	0		0
<i>N-645-2-5</i>	<i>0</i>	<i>0</i>	<i>219</i>		<i>0</i>
<i>N-645-3-5</i>	<i>0</i>	<i>0</i>	<i>37</i>		<i>0</i>
<i>N-645-4-5</i>	<i>0</i>	<i>0</i>	<i>37</i>		<i>0</i>
<i>N-645-7-8</i>	<i>0</i>	<i>0</i>	<i>183</i>		<i>0</i>
<i>N-645-14-10</i>	<i>107,675</i>	<i>114,245</i>	<i>43,800</i>		<i>21,900</i>
<i>N-645-16-10</i>	<i>107,675</i>	<i>114,245</i>	<i>43,800</i>		<i>21,900</i>
<i>N-645-20-4</i>	<i>0</i>	<i>0</i>	<i>0</i>		<i>0</i>
<i>N-645-23-3</i>	<i>0</i>	<i>0</i>	<i>0</i>		<i>0</i>
<i>N-645-24-8</i>	<i>0</i>	<i>0</i>	<i>0</i>		<i>0</i>
<i>N-645-31-2</i>	<i>0</i>	<i>0</i>	<i>0</i>		<i>0</i>
<i>N-645-35-4</i>	<i>0</i>	<i>0</i>	<i>1,570</i>		<i>0</i>
ΣBE	215,350	228,490	89,668		

N/A: Not Applicable

Units in *italics* are existing units that will be removed from service as part of this project.

5. Major Modification

Major Modification is defined in Title 40 Code of Federal Regulations Part 51.165 (40 CFR 51.165) as "*any physical change in or change in the method of operation of a major stationary source that would result in a significant net emissions increase of any pollutant subject to regulation under the Act.*" The regulations further specify that the net emissions increase is calculated by comparing the potential emissions with the historical actual emissions for both the proposed modification itself and for all contemporaneous and creditable emission increases and decrease over the five years immediately preceding the commencement of actual construction.

The first issue to resolve for a major modification determination is that a major modification can only occur for a pollutant for which the facility is a major stationary source. As shown in Section VII.D.3, this facility is a major source for NO_x, PM₁₀, and CO. However, it must be noted that there is no major modification threshold for CO in Rule 2201. Therefore, a major modification cannot be triggered for CO.

The second step is to consider whether the project "results in" a significant increase in emissions for a particular pollutant. For this step, only the increases in emissions associated with a project are considered. As shown in Section VII.C.2 of this

document, PE2 for the new boiler (N-645-36-0) alone is sufficient to exceed the major modification thresholds for NO_x and PM₁₀. Therefore, this project results in a significant increase in NO_x and PM₁₀ emissions.

The third step is to consider whether the project results in a significant net emissions increase. Total baseline emissions and potential emissions are summarized in Table 14, along with the calculation of the net emissions increase.

Table 14: Major Modification				
Unit	NO _x		PM ₁₀	
	BE	PE2	BE	PE2
N-645-8-5	0	0	11	11
N-645-9-5	0	0	11	11
N-645-10-5	0	0	0	0
N-645-11-5	0	0	0	0
N-645-36-0	0	215,350	0	116,535
N-645-38-0	0	0	0	107
N-645-37-0	0	0	0	723
N-645-39-0				
N-645-2-5	0	0	219	0
N-645-3-5	0	0	37	0
N-645-4-5	0	0	37	0
N-645-7-8	0	0	183	0
N-645-14-10	107,675	0	43,800	0
N-645-16-10	107,675	0	43,800	0
N-645-20-4	0	0	0	0
N-645-23-3	0	0	0	0
N-645-24-8	0	0	0	0
N-645-31-2	0	0	0	0
N-645-35-4	0	0	1,570	0
Total	215,350	215,350	89,668	117,387
ΣPE2 - ΣBE	0		27,719	
Major Mod Threshold	50,000		30,000	
Major Mod?	No		No	

As shown in Table 14, this proposal is not a major modification for NO_x or PM₁₀. No further discussion is required.

6. Federal Major Modification

Pursuant to Section 3.17 of District Rule 2201, a major modification is also a federal major modification unless it is excluded under Sections 3.17.1 or 3.17.2. This proposal is not a major modification for any pollutant, so it cannot be a federal major modification. No further discussion is required.

VIII. Compliance

Rule 2201 New and Modified Stationary Source Review Rule

DTE proposes to remove from service both the existing CFB boilers and replace them with a single larger boiler connected to the same electrical generating equipment. This proposal obviously involves considerable capital expense and has the potential to qualify as a reconstruction of the stationary source. Pursuant to Section 3.33 of the rule, a reconstructed source is one in which the capital cost of any new components exceeds 50% of the fixed capital cost of a comparable, entirely new, stationary source. Such a reconstructed stationary source is evaluated as a new facility, rather than as a modification of an existing facility.

As shown in the capital cost analysis included in Appendix J, the fixed capital cost of the new components for the conversion project is estimated at \$79,089,000. The estimated fixed capital cost of a new 50 MW biomass-fired electrical generating station is estimated at \$211,347,000. The cost of new components is approximately 37% of the cost of a new facility, so the proposed conversion will not constitute a reconstructed stationary source.

This evaluation is dated March 24, 2011, whereas Rule 2201 was amended on December 18, 2008 with an effective amendment date of June 10, 2010. However, Section 2.0 provides that the requirements of the rule in effect on the date the application is deemed complete are the requirements that apply to the application. DTE's application was deemed complete on May 11, 2010, so the September 21, 2006 version of the rule applies.

A. Best Available Control Technology (BACT)

1. BACT Applicability

BACT requirements are triggered on a pollutant-by-pollutant basis and on an emissions unit-by-emissions unit basis for the following²:

- a. Any new emissions unit with a potential to emit exceeding two pounds per day,
- b. The relocation from one Stationary Source to another of an existing emissions unit with a potential to emit exceeding two pounds per day,
- c. Modifications to an existing emissions unit with a valid Permit to Operate resulting in an AIPE exceeding two pounds per day, and/or
- d. Any new or modified emissions unit, in a stationary source project, which results in a Major Modification.

As shown in Section I of this document, this proposal does not include the relocation of any existing emissions unit from one stationary source to another. As shown in Sections VII.D.5 and VII.D.6, this proposal is neither a major modification nor a federal major modification. As shown in Section VII.C.2, the proposed new boiler has the potential to emit more than 2.0 lb/day of every pollutant, but the other new and modified units do not have the potential to emit for than 2.0 lb/day of any pollutant. Therefore, BACT is required for the boiler for all pollutants, but not for any other new or modified unit.

² Except for CO emissions from a new or modified emissions unit at a Stationary Source with an SSPE2 of less than 200,000 pounds per year of CO.

2. BACT Guideline

The new boiler is covered by BACT Guideline 1.3.2 for Biomass-Fired Combustors, but this Guideline is being updated as part of this application review.

3. BACT Determination

Pursuant to District Policy APR-1305, *Best Available Control Technology (BACT) Policy*, a top-down BACT analysis shall be performed as a part of the application review for each application subject to the BACT requirements of District Rule 2201. As demonstrated in the Boiler BACT Determination (Appendix C), BACT is satisfied by:

N-645-36-0 (Biomass-Fired Boiler):

NO_x: 0.065 lb/MMBtu using selective catalytic reduction

SO_x: 0.054 lb/MMBtu using trona injection

PM₁₀: 0.0214 lb/MMBtu using a multiclone and electrostatic precipitator

CO: 0.09 lb/MMBtu using an oxidation catalyst

VOC: 0.009 lb/MMBtu using an oxidation catalyst

B. Offsets

1. Offset Applicability

Pursuant to Section 4.5.3 of the rule, emission offsets are required if SSPE2 equals or exceeds the following emission offset threshold levels for any one affected pollutant:

	NO _x	SO _x	PM ₁₀	CO	VOC
SSPE1	215,657	228,490	170,357	693,502	44,120
SSPE2	215,657	139,140	198,076	495,911	49,920
Offset Threshold	20,000	54,750	29,200	200,000	20,000
Offsets Triggered?	Yes	Yes	Yes	Yes	Yes

As shown in Table 15 above, the offset requirements are triggered for NO_x, SO_x, PM₁₀, CO, and VOC. However, pursuant to Section 4.6.1 of the rule, increases in CO emissions in CO attainment areas may be exempt from offsets provided the applicant demonstrates that the increase will not result in an exceedance of the ambient air quality standard. Air quality monitoring conducted by the District has confirmed that this proposal qualifies for this exemption, so no further discussion of CO offsets is required.

2. Quantity of Offsets Required

As shown in Section VII.D.4, baseline emissions for NO_x, SO_x, PM₁₀, and VOC are equal to the pre-project potential to emit for each pollutant and each emission unit. In addition, it is noted that there are no cargo carriers serving this facility. The ERC certificates proposed for the offset package indicate the actual emission reductions that generated the offsets occurred more than 15 miles from the DTE facility, so the distance offset ratio for these pollutants is 1.5. The quantities of emissions that must be offset for each pollutant are summarized in Tables 16, 17, and 18.

Unit	NO _x	SO _x	PM ₁₀	CO	VOC
N-645-8-5	0	0	11	0	0
N-645-9-5	0	0	11	0	0
N-645-10-5	0	0	0	0	0
N-645-11-5	0	0	0	0	0
N-645-36-0	215,350	139,140	116,535	495,836	49,600
N-645-38-0	0	0	107	0	0
N-645-37-0	0	0	723	0	0
N-645-39-0					
ΣPE2	215,350	139,140	117,387	495,836	49,600

N-645-34-4 not included in PE2 because this unit is not undergoing a modification subject to NSR.

	NO _x	SO _x	PM ₁₀	CO	VOC
N-645-8-4	0	0	11	N/A	0
N-645-9-4	0	0	11		0
N-645-10-4	0	0	0		0
N-645-11-4	0	0	0		0
N-645-36-0	0	0	0		0
N-645-38-0	0	0	0		0
N-645-37-0	0	0	0		0
N-645-39-0					
<i>N-645-2-5</i>	<i>0</i>	<i>0</i>	<i>219</i>		<i>0</i>
<i>N-645-3-5</i>	<i>0</i>	<i>0</i>	<i>37</i>		<i>0</i>
<i>N-645-4-5</i>	<i>0</i>	<i>0</i>	<i>37</i>		<i>0</i>
<i>N-645-7-8</i>	<i>0</i>	<i>0</i>	<i>183</i>		<i>0</i>
<i>N-645-14-10</i>	<i>107,675</i>	<i>114,245</i>	<i>43,800</i>		<i>21,900</i>
<i>N-645-16-10</i>	<i>107,675</i>	<i>114,245</i>	<i>43,800</i>		<i>21,900</i>
<i>N-645-20-4</i>	<i>0</i>	<i>0</i>	<i>0</i>		<i>0</i>
<i>N-645-23-3</i>	<i>0</i>	<i>0</i>	<i>0</i>		<i>0</i>
<i>N-645-24-8</i>	<i>0</i>	<i>0</i>	<i>0</i>		<i>0</i>
<i>N-645-31-2</i>	<i>0</i>	<i>0</i>	<i>0</i>		<i>0</i>
<i>N-645-35-4</i>	<i>0</i>	<i>0</i>	<i>1,570</i>		<i>0</i>
ΣBE	215,350	228,490	89,668		

Units in *italics* are existing units that will be removed from service as part of this project.

Pollutant	ΣPE2 (lb/yr)	ΣBE (lb/yr)	ΣPE2 – ΣBE (lb/yr)	Total (lb/qtr)
NO _x	215,350	215,350	0	0
SO _x	139,140	228,490	0 [†]	0
PM ₁₀	117,387	89,668	27,719	6,929.75
VOC	49,600	43,800	5,800	1,450

[†]: Since BE is greater than PE2 this is less than 0. The project results in a decrease in emissions so the quantity of offsets required is 0.

3. Interpollutant Offset Ratio:

DTE has proposed to provide a mixture of SO_x and PM₁₀ ERC to satisfy the offset obligation shown in Table 18 for PM₁₀ emissions. Section 4.13.3 of the rule allows such interpollutant substitutions provided the applicant shows that the substitution will not cause or contribute to the violation of an ambient air quality standard in accordance with Section 4.14.2 and that the appropriate interpollutant offset ratio is utilized.

Air quality impact modeling was performed, which showed that this proposal will not cause or contribute to the violation of an ambient air quality standard. A full discussion of this modeling is presented in Section VIII, Rule 2201, Part F (Ambient Air Quality Analysis) of this evaluation.

The District has prepared a policy document (albeit in draft form at this time) analyzing interpollutant offset ratios for the use of SO_x or NO_x emission reductions to offset increases in directly emitted particulate matter. This policy document concludes that an interpollutant offset ratio of 1.000 ton of SO_x per ton of PM₁₀ is appropriate throughout the San Joaquin Valley. This does not include additional offset ratio multipliers specified in the Rule, such as the distance offset ratio of 1.2:1 ratio if the reductions originated less than 15 miles from the point of use and 1.5:1 if the reductions originated 15 miles or more from the point of use.

DTE has submitted a proposed offset package that is more than sufficient to offset all increase in emissions that require offsets. The applicant will be permitted to use any combination of offsets from these certificates as long as sufficient ERC are acquired and surrendered to supply the required offsets. The ERC included in the proposed offset package are specified in Tables 19 and 20.

Table 19: PM₁₀ Offset Package Summary				
PM₁₀				
Source (location)	Q1 (lb)	Q2 (lb)	Q3 (lb)	Q4 (lb)
S-2937-4 (Buttonwillow, CA)	0	0	0	28,460
Value @ 1.5:1	0	0	0	18,973
S-3199-4 (Bakersfield, CA)	0	0	0	26,563
Value @ 1.5:1	0	0	0	17,709
S-2971-4 (McFarland, CA)	4,439	67	0	1,328
Value @ 1.5:1	2,959	45	0	885

Table 19 (cont.): PM₁₀ Offset Package Summary				
SO_x for PM₁₀				
S-3413-5 (Bakersfield, CA)	71,703	71,500	75,296	75,296
Value @ 1.5:1	47,802	47,667	50,197	50,197
N-717-5 (Merced, CA)	0	0	64,800	0
Value @ 1.5:1	0	0	43,200	0
N-718-5 (Lathrop, CA)	21,899	23,000	0	14,704
Value @ 1.5:1	14,599	15,333	0	9,803
N-931-5 (Westley, CA)	8,250	8,250	8,250	8,250
Value @ 1.5:1	5,500	5,500	5,500	5,500
Total Provided	70,860	68,545	98,897	103,067
Total Required	6,929	6,930	6,930	6,930
Difference	61,777	59,462	89,813	93,983

As shown in Table 19, the quantity of offsets available from ERC is sufficient to supply all the offsets required under the rule. DTE will be allowed to satisfy the offset requirement using any combination of ERC shown in Table 19, unless an alternative offset proposal is submitted to the District for evaluation and public notification.

Table 20: VOC Offset Package Summary				
Source (location)	Q1 (lb)	Q2 (lb)	Q3 (lb)	Q4 (lb)
S-2775-1 (Buttonwillow, CA)	11,377	11,378	11,378	11,377
Value @ 1.5:1	7,585	7,585	7,585	7,585
S-3373-1 (Bakersfield, CA)	2,978	2,979	2,979	2,978
Value @ 1.5:1	1,985	1,986	1,986	1,985
S-3132-1 (Bakersfield, CA)	13,000	13,000	13,000	13,000
Value @ 1.5:1	8,667	8,667	8,667	8,667
S-3051-1 (Bakersfield, CA)	12,500	12,500	12,500	12,500
Value @ 1.5:1	8,333	8,333	8,333	8,333
S-3504-1 (Bakersfield, CA)	1,000	1,000	1,000	1,000
Value @ 1.5:1	667	667	667	667
S-3505-1 (Bakersfield, CA)	1,500	1,500	1,500	1,500
Value @ 1.5:1	1,000	1,000	1,000	1,000
S-3503-1 (Bakersfield, CA)	5,500	5,500	5,500	5,500
Value @ 1.5:1	3,667	3,667	3,667	3,667
Total Provided	31,904	31,905	31,905	31,904
Total Required	1,448	1,448	1,448	1,449
Difference	30,456	30,457	30,457	30,455

As shown in Table 20, the quantity of offsets available from ERC is sufficient to provide all the offsets required under the rule. DTE will be allowed to satisfy the offset requirement using any combination of ERC shown in Table 20, unless an alternative offset proposal is submitted to the District for evaluation and public notification.

The following conditions will be included on the boiler ATC to ensure compliance with the offset requirements of the rule:

N-645-36-0 (Biomass-Fired Boiler):

- *Prior to operating equipment under this Authority to Construct, permittee shall surrender PM10 emission reduction credits for the following quantities of emissions: 1st quarter – 6,929 lb, 2nd quarter – 6,930 lb, 3rd quarter – 6,930 lb, and fourth quarter – 6,930 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 9/21/06). [District Rule 2201]*
- *Prior to operating equipment under this Authority to Construct, permittee shall surrender VOC emission reduction credits for the following quantities of emissions: 1st quarter - 1,450 lb, 2nd quarter - 1,450 lb, 3rd quarter - 1,450 lb, and fourth quarter - 1,450 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 9/21/06). [District Rule 2201]*
- *ERC Certificate Numbers S-2937-4, S-3199-4, S-2971-4, N-717-5, N-718-5, N-931-5, and S-3413-5 (or one or more certificates split from any of these certificates) shall be used to supply the required PM10 offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201]*
- *ERC Certificate Numbers S-2775-1, S-3373-1, S-3132-1, S-3051-1, S-3504-1, S-3505-1, and S-3503-1 (or one or more certificates split from any of these certificates) shall be used to supply the required VOC offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201]*
- *The permittee is authorized to utilize SOx ERC to satisfy the offset obligation specified in Condition 1. The use of SOx ERC to satisfy the PM10 offset obligation shall be conducted at an interpollutant offset ratio of 1:1. [District Rule 2201]*

In addition to the ERC proposed to satisfy the offset requirements, DTE has proposed to offset some of the increase in emissions by removing certain existing emission units from service. The following condition (previously included in Section I of this document) will be included on the boiler ATC to ensure the validity of this assumption:

N-645-36-0 (Biomass-Fired Boiler):

- *Prior to initial startup of the equipment authorized by this ATC, permittee shall permanently remove from service, and surrender the operating permit for, units N-645-2, '-3, '-4, '-7, '-14, '-16, '-20, '-23, '-24, '-31, and '-35. [District Rule 2201]*

C. Public Notice

1. Applicability

Pursuant to Section 5.4 of the rule, public notification and publication are required for the following types of applications:

5.4.1 New Major Sources, Major Modifications, and Federal Major Modifications

As shown in Section I, this is an existing facility and therefore cannot be a new major source. As shown in Sections VII.D.5 and 6, this proposal is both a major modification and a federal major modification for PM₁₀. Public notice is required under this provision.

5.4.2 Applications which include a new emissions unit with a Potential to Emit greater than 100 pounds during any one day for any one affected pollutant

As shown in Section VII.C.2, the proposed new boiler has the potential to emit more than 100 lb/day of NO_x, SO_x, PM₁₀, CO, and VOC. Public notice is required under this provision.

5.4.3 Modifications that increase SSPE1 from a level below the emissions offset threshold level to a level exceeding the emissions offset threshold level for one or more pollutants

As shown in Table 15 above, while SSPE2 exceeds the emission offset threshold level for all pollutants, SSPE1 already exceeded the threshold. Public notice is not required under this provision.

5.4.4 New stationary sources with SSPE2 exceeding the emissions offset threshold level for one or more pollutants

As shown in Section I, this facility is not a new stationary source. Public notice is not required under this provision.

5.4.5 Any permitting action resulting in a Stationary Source Project Increase in Permitted Emissions (SSIPE) exceeding 20,000 pounds per year for any one pollutant

Table 21: SSIPE (lb/yr)					
	NO_x	SO_x	PM₁₀	CO	VOC
SSPE2	215,925	139,140	198,076	495,911	49,920
SSPE1	215,657	228,490	170,357	693,502	44,120
SSIPE = SSPE2 – SSPE1	0	0 ³	27,719	0	5,793
SSIPE > 20,000?	No	No	Yes	No	No

As shown in Table 21, SSIPE is greater than 20,000 lb/yr for PM₁₀. Public notice is required under this provision.

³ Since SSPE2 for SO_x is less than SSPE1 the difference between the two will be a negative number. A negative number is meaningless for the increase in permitted emissions, so the result is adjusted to 0, which is the smallest value for which "increase" is meaningful. The same applies to CO.

2. Public Notice Action

Public notice is required under Section 5.4 of the rule. Therefore, public notice documents will be submitted to the California Air Resources Board (CARB) and a public notice will be published in a local newspaper of general circulation prior to the issuance of the ATC for this equipment.

D. Daily Emission Limitation (DEL)

Daily Emissions Limitations (DELs) and other enforceable conditions are required by Section 3.15 to restrict a unit's maximum daily emissions to a level at or below the emissions associated with the maximum design capacity. Per Sections 3.15.1 and 3.15.2, the DEL must be contained in the latest ATC and contained in or enforced by the latest PTO, and enforceable, in a practical manner, on a daily basis. DELs are also required to enforce the applicability of BACT. The following conditions will be included on the ATCs:

N-645-8-5, '-9-5 (Trona Receiving and Storage Silos):

- *PM10 emissions from the trona receiving and storage operation shall not exceed 0.00039 pounds per ton of trona received. [District Rule 2201]*
- *The quantity of trona received shall not exceed 75 tons in any one day. [District Rule 2201]*

N-645-10-5, '-11-5 (Trona Day Tanks):

- *PM10 emissions from the trona day tank shall not exceed 0.00039 pounds per ton of trona received. [District Rule 2201]*
- *The quantity of trona transferred to the trona day tank shall not exceed 3 tons in any one day. [District Rule 2201]*

N-645-34-4 (Cooling Tower):

As shown in Section I of this document, this modification of the cooling tower permit is not subject to NSR under Rule 2201. Therefore, no additional DEL conditions will be included on the ATC. However, existing PTO condition 1 will be revised for inclusion on the ATC to reflect the correct potential to emit VOC from this unit, as follows:

- *VOC emissions from the addition of VOC-containing chemicals to the cooling tower water shall not exceed 0.8 pounds in any one day. [District Rule 2201]*

N-645-36-0 (Biomass-Fired Boiler):

- *Startup is defined as the period of time beginning with initial boiler firing and ending only when the unit is firing on biomass or wood residue and is in compliance with the NOx, SOx, and CO emission limits for non-startup and shutdown operation, and with the minimum ESP secondary power input requirement specified in condition 25. Shutdown is defined as the period of time beginning with the initiation of the boiler shutdown sequence and ending with the cessation of combustion in the boiler. [District Rule 2201]*

- *This unit shall only be fired on biomass and wood residue, except that the unit may also be fired on natural gas during startup, shutdown, and flame stabilization periods. [District Rules 2201 and 4102]*
- *Except during periods of startup and shutdown, emission rate from this biomass-fired boiler shall not exceed 0.065 lb-NO_x/MMBtu. Initial and annual compliance with this limit shall be demonstrated by source testing. Ongoing compliance with this limit shall be determined from CEM data on a block 24-hour average basis as defined in District Rule 4352 (amended May 18, 2006). [District Rules 2201 and 4352]*
- *During periods of startup and shutdown, emission rate from this biomass-fired boiler shall not exceed 0.74 lb-NO_x/MMBtu. [District Rules 2201 and 4352]*
- *Except during periods of startup and shutdown, emission rate from this biomass-fired boiler shall not exceed 0.09 lb-CO/MMBtu. Initial and annual compliance with this limit shall be demonstrated by source testing. Ongoing compliance with this limit shall be determined from CEM data on a block 24-hour average basis. [District Rules 2201 and 4352]*
- *During periods of startup and shutdown, emission rate from this biomass-fired boiler shall not exceed 0.67 lb-CO/MMBtu. [District Rules 2201 and 4352]*
- *Except during periods of startup and shutdown, emission rate from this biomass-fired boiler shall not exceed 0.054 lb-SO_x/MMBtu. Initial and annual compliance with this limit shall be demonstrated by source testing. Ongoing compliance with this limit shall be determined from CEM data on a block 24-hour average basis. [District Rule 2201]*
- *During periods of startup, shutdown, and flame stabilization emission rate from this biomass-fired boiler shall not exceed 0.27 lb-SO_x/MMBtu. [District Rule 2201]*
- *Except during periods of startup and shutdown, emission rate from this biomass-fired boiler shall not exceed 0.0214 lb-PM₁₀/MMBtu. Initial and annual compliance with this limit shall be demonstrated by source testing. [District Rule 2201]*
- *During periods of startup and shutdown, emission rate from this biomass-fired boiler shall not exceed 0.078 lb-PM₁₀/MMBtu. [District Rule 2201]*
- *Except during periods of startup and shutdown, emission rates from this biomass-fired boiler shall not exceed 0.009 lb-VOC/MMBtu. Initial and annual compliance with this limit shall be demonstrated by source testing. [District Rule 2201]*
- *During periods of startup and shutdown, emission rate from this biomass-fired boiler shall not exceed 0.068 lb-VOC/MMBtu. [District Rule 2201]*
- *Ammonia slip emission rate from this biomass-fired boiler shall not exceed 40 ppmvd @ 3% O₂. Initial and annual compliance with this limit shall be demonstrated by source testing. [District Rule 2201]*

- *Emissions from this biomass-fired boiler shall not exceed any of the following limits: 1st Quarter: 53,837 lb-NO_x, 34,785 lb-SO_x, 29,133 lb-PM₁₀, 123,959 lb-CO, and 12,400 lb-VOC; 2nd Quarter: 53,837 lb-NO_x, 34,785 lb-SO_x, 29,134 lb-PM₁₀, 123,959 lb-CO, and 12,400 lb-VOC; 3rd Quarter: 53,838 lb-NO_x, 34,785 lb-SO_x, 29,134 lb-PM₁₀, 123,959 lb-CO, and 12,400 lb-VOC; 4th Quarter: 53,838 lb-NO_x, 34,785 lb-SO_x, 29,134 lb-PM₁₀, 123,959 lb-CO, and 12,400 lb-VOC. Compliance with NO_x, SO_x, and CO limits shall be determined from CEM data. Compliance with PM₁₀ and VOC limits shall be calculated using emission factors (the most recent source test results for non-startup/shutdown operation, or the startup/shutdown emission factors at all other times), heat input to the boiler, and operating time. [District Rule 2201]*

N-645-37-0 (Biomass Receiving and Storage):

- *PM₁₀ emissions from the biomass fuel receiving operation shall not exceed 0.000301 lb/ton on a daily average basis and 0.000527 lb/ton on an annual average basis. [District Rule 2201]⁴*
- *Biomass fuel received by the receiving and storage operation shall not exceed 2,732 tons in any one day and 470,080 tons in any calendar year. [District Rule 2201]*
- *Emissions from the biomass fuel storage piles shall not exceed 0.24 lb-PM₁₀ per acre of fuel storage piles per day. [District Rule 2201]*

N-645-38-0 (Biomass Handling):

- *PM₁₀ emissions from the biomass fuel handling system, based on the quantity of fuel processed through the fuel metering bins, shall not exceed 0.000203 lb/ton on a daily average basis and 0.000227 lb/ton on an annual average basis. [District Rule 2201]*
- *The quantity of fuel processed through the fuel metering bins shall not exceed 1,951 tons in any one day and 470,080 in any calendar year. [District Rule 2201]*

N-645-39-0 (Alternative Biomass Receiving and Storage):

- *PM₁₀ emissions from the biomass fuel receiving operation shall not exceed 0.000539 lb/ton on a daily average basis and 0.000557 lb/ton on an annual average basis. [District Rule 2201]⁵*
- *Biomass fuel received by the receiving and storage operation shall not exceed 2,732 tons in any one day and 470,080 tons in any calendar year. [District Rule 2201]*
- *Emissions from the biomass fuel storage piles shall not exceed 0.24 lb-PM₁₀ per acre of fuel storage piles per day. [District Rule 2201]*

⁴ $([0.000052 + 0.000157 + 0.0000458 + 0.0000458] \text{ lb-PM}_{10}/\text{ton}) = 0.000301 \text{ lb-PM}_{10}/\text{ton}$
 $([0.000128 + 0.000175 + 0.000112 + 0.000112] \text{ lb-PM}_{10}/\text{ton}) = 0.000527 \text{ lb-PM}_{10}/\text{ton}$

⁵ $([0.000132 + 0.000202 + 0.000205] \text{ lb-PM}_{10}/\text{ton}) = 0.000539 \text{ lb-PM}_{10}/\text{ton}$
 $([0.000143 + 0.000211 + 0.000203] \text{ lb-PM}_{10}/\text{ton}) = 0.000557 \text{ lb-PM}_{10}/\text{ton}$

E. Compliance Assurance

1. Source Testing

The proposed biomass-fired boiler is subject to the source testing requirements of District Rule 4352, as well as various Federal requirements. The source testing requirements will be discussed in the portion of this document devoted to that rule. However, as shown in the discussion for District Rule 4002, the boiler is subject to various testing and record keeping requirements to ensure its status as an area source of hazardous air pollutants. The following conditions will be included on the ATC to ensure the validity of that conclusion:

N-645-36-0 (Biomass-Fired Boiler):

- *HCl emissions from this biomass-fired boiler shall not exceed 19,980 pounds in any rolling 12-consecutive-month period. HCl emissions shall be calculated for comparison to this annual limit using the boiler heat input and the emission factor calculated in the most recent HCl source test. [District Rule 2201]*
- *This unit shall be tested to determine the HCl emission factor within 60 days of achieving the maximum steam production rate at which the unit will be operated, but not more than 180 days after initial startup, and at least once every 12 months thereafter. The permittee shall measure and record the effluent pH and liquid flow rate in the wet scrubber every 15 minutes during the source test. [District Rule 2201]*
- *HCl emissions for source test purposes shall be determined using EPA Methods 26 or 26A, and 19. [District Rule 2201]*
- *Permittee shall maintain records of HCl emissions from this boiler on a rolling 12-consecutive-month basis. Records of HCl emissions shall be updated at least once each calendar month in which the boiler operates. [District Rule 2201]*

District Policy APR-1705, *Source Testing Frequency*, specifies that sources of PM₁₀ emissions which are controlled by baghouses must be source tested to demonstrate compliance with the emission limit upon initial startup if the potential controlled emissions exceed 30.0 lb/day. APR-1705 also requires annual source testing if the potential controlled emissions exceed 70.0 lb/day. The only new or modified emission units served by baghouses are the trona silos (N-645-8-5 and '-9-5) and day tanks (N-645-10-5 and '-11-5), each of which is described in the equipment description as being controlled by a fabric filter. As shown in Section VII.C.2 of this document, the potential to emit for each of these units is less than 30.0 lb/day. Therefore, source testing is not required for these units to demonstrate compliance with this rule. No further discussion is required.

2. Monitoring

The proposed biomass-fired boiler is subject to the monitoring requirements of District Rule 4352, as well as various Federal requirements. The monitoring requirements will be discussed in the portion of this document devoted to those rules. In addition, this facility is subject to the compliance assurance monitoring (CAM) requirements in 40 CFR 64. CAM is required as part of the facility's Title V permit, but since the applicant proposes that these ATCs be issued with a certificate of conformity the CAM requirements will be addressed in this document.

It is evident that the only emission unit at this facility with uncontrolled emissions that can plausibly exceed the applicable major source threshold is the biomass-fired boiler. Therefore, the boiler will be evaluated in detail for the CAM requirements. No other emission unit has any potential to require CAM based on uncontrolled emissions, so no further discussion of CAM for any other emission unit is required.

Pursuant to 40 CFR 64.2(a), CAM is required (on a pollutant-by-pollutant basis) for an emission unit that is subject to an emission limit, is equipped with an add-on control for compliance with that emission limit, and which has potential pre-control emissions equal to or greater than the major source threshold. The boiler is subject to an emission limit for each affected pollutant, and is also equipped with an add-on control device for each pollutant. Controlled and pre-controlled emissions are calculated in Table 22 for comparison with the applicable major source thresholds.

Unit	NO _x	SO _x	PM ₁₀	CO	VOC
N-645-36-0, PE2	215,618	139,140	116,535	495,836	49,600
Major Source Threshold	50,000	140,000	140,000	200,000	50,000
CAM required?	Yes	No	No	Yes	No
Control efficiency		80%	99%		47% ⁶
Pre-controlled PE2 ⁷		695,700	11,653,500		93,585
Major Source Threshold		140,000	140,000		50,000
CAM required?		Yes	Yes		Yes

As shown in Table 22, CAM is required for all pollutants emitted by the boiler. Controlled emissions of NO_x and CO already exceed the major source threshold, so there is no need to calculate the pre-control potential emissions for these pollutants. For SO_x, PM₁₀, and VOC pre-control potential emissions are calculated and shown to exceed the major source threshold. Therefore, CAM is required for the boiler for all pollutants.

⁶ Per letter from Süd-Chemie regarding oxidation catalyst performance for control of non-methane, non-ethane hydrocarbons, dated October 19, 2010.

⁷ In each case uncontrolled PE2 is calculated by dividing PE2 by the quantity (1 – control efficiency).

In accordance with §64.3(d), a CEMS or continuous opacity monitoring system (COMS) that is required by another section of the federal regulations under the Clean Air Act may be used to satisfy the CAM requirement for the pollutant being monitored. This boiler will be equipped with CEMS for NO_x, SO_x, and CO as required by 40 CFR 75, so CAM will be satisfied for those pollutants by the use of CEMS. No further discussion of CAM for NO_x, SO_x, and CO is required.

This boiler is subject to the CAM requirement for VOC. VOC emissions are generally related to CO emissions, since both are the result of incomplete combustion and both are affected by the same pollution controls. The applicant has proposed to use the CO CEMS to satisfy the CAM requirement for VOC, on the grounds that both pollutants have the same origin and are controlled by the same technologies. District experience with oxidation catalysts (such as those installed on turbines) suggests that it is difficult to establish a direct correlation between CO and VOC emissions that would allow calculation of actual VOC emissions based on actual CO emissions measured by the CEMS. Nonetheless, it is true that an oxidation catalyst that is operating properly to control CO will also be operating to control VOC. Furthermore, as discussed in the portion of this document devoted to District Rule 4352, the applicant will be required to conduct annual source testing to demonstrate compliance with the boiler emission limits for both VOC and CO, and the source testing data is expected support the conclusion that compliance with the CO emission limit strongly suggests the unit is also in compliance with the VOC limit. Therefore, the use of CEMS to satisfy the CAM requirement for CO will be considered to also satisfy the CAM requirement for VOC. No further discussion is required.

The applicant has proposed to monitor secondary power input to the ESP to satisfy the CAM requirement. This monitoring is also required for compliance with 40 CFR 63, Subpart JJJJJJ and will be discussed in the portion of this document devoted to that Subpart and District Rule 4002.

DTE is an area source of hazardous air pollutants, as shown in the portion of this document devoted to the discussion of District Rule 4002. However, this area source status is based on a voluntary limit of 9.99 tons per year for HCl emissions. Compliance with this emission limit will be demonstrated through a combination of source testing and record keeping, as discussed under Rule 4002. However, to ensure that the use of source testing emission factors is representative of actual HCl emissions over the remainder of the year, a CAM program for the wet HCl scrubber is appropriate. The following conditions will be included on the ATC:

N-645-36-0 (Biomass-Fired Boiler):

- *The wet scrubber shall be provided with monitoring equipment that continuously monitors and records the effluent pH and flow rate of the scrubber liquid. [District Rule 2201]*
- *The wet scrubber shall be in operation whenever the boiler is operated on biomass. The effluent pH and liquid flow rate, calculated on a 24-hour block average basis, shall be maintained at or above the average pH and flow rate established during the most recent HCl source test. [District Rule 2201]*

In addition to the CAM requirements, the District has determined it is necessary that the operator monitor the biomass receiving, storage, and handling operations on a daily basis. The purpose of this monitoring is to ensure compliance with the visible emission restrictions. The following condition will be included on the ATCs to ensure compliance:

N-645-37-0 (Biomass Receiving and Storage)

N-645-39-0 (Alternative Biomass Receiving and Storage):

- *All stockpiled biomass shall be covered, or maintained adequately moist to prevent visible emissions in excess of 20% opacity as determined using EPA Method 9. Permittee shall use water sprays or other dust suppression techniques as necessary to ensure compliance with this opacity limit. [District Rule 2201]*
- *Visible emissions from the disc screen, fuel hogger, and all conveyor transfer points shall not exceed 20% opacity as determined using EPA Method 9. [District Rule 2201]*
- *Permittee shall not cause or allow visible emissions from disc screen, fuel hogger, or any conveyor transfer point, as determined using EPA Method 22 on a daily basis. Daily inspections shall take place at an appropriate time each day depending on plant start time and sunrise. If visible emissions cannot be corrected within 1 hour after detection, a visible emissions test using EPA Method 9 shall be conducted while the visible emissions are ongoing to determine if the visible emissions exceed the limit in conditions 4 and 5 (as applicable). Visible emissions less than 20% opacity as determined using EPA Method 9, or that are corrected within 1 hour after detection, shall not constitute a violation of this condition. [District Rule 2201]*

N-645-38-0 (Biomass Handling):

- *Visible emissions from all conveyor transfer points shall not exceed 20% opacity as determined using EPA Method 9. [District Rule 2201]*
- *Permittee shall not cause or allow visible emissions from any conveyor transfer point, as determined using EPA Method 22 on a daily basis. Daily inspections shall take place at an appropriate time each day depending on plant start time and sunrise. If visible emissions cannot be corrected within 1 hour after detection, a visible emissions test using EPA Method 9 shall be conducted while the visible emissions are ongoing to determine if the visible emissions exceed the limit in condition 4. Visible emissions less than 20% opacity as determined using EPA Method 9, or that are corrected within 1 hour after detection, shall not constitute a violation of this condition. [District Rule 2201]*

3. Continuous Emissions Monitoring (CEM)

CEM is required for NO_x, SO_x, CO, and O₂ under the provisions of District Rule 2540, *Acid Rain Program*, as described later in this document. The following conditions will be included on the ATC to ensure compliance:

N-645-36-0 (Biomass-Fired Boiler):

- *The exhaust stack shall be equipped with a continuous emissions monitor (CEM) for NO_x, CO, SO_x, and O₂. The CEM shall meet the requirements of 40 CFR parts 60 (for CO) and 75 (for NO_x, SO_x, and O₂), except as specified in 40 CFR 60, Subpart Db, and shall be capable of monitoring emissions during startups and shutdowns as well as during normal operating conditions. The CEM shall be used to demonstrate compliance with the Rule 2201 emission limits. [District Rules 1080 and 2201]*
- *Permittee shall install, calibrate, maintain, and operate a continuous opacity monitoring system (COMS) in accordance with 40 CFR 60.48b, and 40 CFR 60 Appendices B and F. The sampling and analyzing cycle shall be completed every successive 10 second period, and the recording cycle shall be completed every successive 6 minute period. The COMS shall be used to demonstrate compliance with the opacity requirements of 40 CFR 43b(f) and (g). [District Rules 1080 and 2201, and 40 CFR 60.48b(a)]*
- *Permittee shall install and maintain equipment, facilities, and systems compatible with the District's CEM data polling software system and shall make CEM data available to the District's automated polling system on a daily basis. [District Rule 1080]*
- *Upon notice by the District that the facility's CEM system is not providing polling data, the permittee may continue to operate without providing automated data for a maximum of 30 days per calendar year provided the CEM data is sent to the District by a District-approved alternative method. [District Rule 1080]*
- *The exhaust stack shall be equipped with permanent provisions to allow collection of stack gas samples consistent with EPA test methods and shall be equipped with safe permanent provisions to sample stack gases with a portable NO_x, CO, and O₂ analyzer during District inspections. The sampling ports shall be located in accordance with the CARB regulation titled California Air Resources Board Air Monitoring Quality Assurance Volume VI, Standard Operating Procedures for Stationary Source Emission Monitoring and Testing. [District Rule 1081]*
- *Results of continuous emissions monitoring shall be reduced according to the procedure established in 40 CFR, Part 51, Appendix P, paragraphs 5.0 through 5.3.3, or by other methods deemed equivalent by mutual agreement with the District, the ARB, and the EPA. [District Rule 1080]*

- *Permittee shall perform a relative accuracy test audit (RATA), as specified by 40 CFR Part 75, Appendix B, 2.3.1 for the NO_x, SO_x, and O₂ CEM, at least once every two successive QA operating quarters (as defined in 40 CFR 72.2) unless the monitor satisfies the requirements for reduced RATA frequencies in Section 2.3.1.2. Permittee shall perform a RATA, as specified by 40 CFR Part 60, Appendix F for the CO CEM, at least once every four calendar quarters. Permittee shall perform a cylinder gas audit (CGA) or relative accuracy audit (RAA), as specified by 40 CFR Part 60, Appendix F for the CO CEM in three of four calendar quarters, but no more than three quarters in succession. The District must be notified at least 30 days prior to any RATA, and a test plan shall be submitted for approval at least 15 days prior to testing. The results of each RATA shall be submitted to the District within 60 days thereafter. [District Rule 1080]*
- *Permittee shall comply with the applicable requirements for quality assurance testing and maintenance of the continuous emission monitor equipment in accordance with the procedures and guidance specified in 40 CFR Part 75, Appendix B. [District Rule 1080]*
- *Permittee shall submit a written report to the APCO for each calendar quarter, within 30 days of the end of the quarter, including: time intervals, data and magnitude of excess emissions, nature and cause of excess emissions (if known), corrective actions taken and preventive measures adopted; averaging period used for data reporting shall correspond to the averaging period for each respective emission standard; applicable time and date of each period during which the CEM was inoperative (except for zero and span checks) and the nature of system repairs and adjustments; and a negative declaration when no excess emissions occurred. [District Rule 1080]*

4. Record Keeping

Records must be maintained in order to document compliance with all applicable rules and regulations. The biomass-fired boiler is subject to District Rule 4352, which includes applicable record keeping requirements, so those requirements will be discussed in the portion of this document devoted to that rule.

The biomass receiving and storage operation must maintain records to demonstrate compliance with the rules, as must the biomass handling system. The following conditions will be included on the ATCs to ensure proper records are maintained:

N-645-37-0 (Biomass Receiving and Storage)

N-645-39-0 (Alternative Biomass Receiving and Storage):

- *Permittee shall maintain records of the quantity of biomass fuel received each day, in tons. [District Rule 2201]*
- *Records shall be retained on-site for a period of at least five years and made available for District inspection upon request. [District Rule 2201]*

N-645-38-0 (Biomass Handling):

- *Permittee shall maintain records of the quantity of biomass fuel processed through the fuel metering bins each day, in tons. [District Rule 2201]*
- *Records shall be retained on-site for a period of at least five years and made available for District inspection upon request. [District Rule 2201]*

The trona receiving and storage silos and day tanks must maintain records to demonstrate compliance with the rules. The following conditions will be included on the ATCs to ensure proper records are maintained:

N-645-8-5, '-9-5 (Trona Receiving and Storage Silos):

- *Records of fabric collector system maintenance, inspection, and repairs shall be maintained. The records shall include identification of equipment, date of inspection, corrective action taken, and identification of individual performing inspection. [District Rule 2520, 9.4.2]*
- *Permittee shall maintain daily records of the quantity of trona received, in tons. [District Rule 2201]*
- *Records shall be retained on-site for a period of at least five years and made available for District inspection upon request. [District Rule 2201]*

N-645-10-5, '-11-5 (Trona Day Tanks):

- *Records of vent filter system maintenance, inspection, and repairs shall be maintained. The records shall include identification of equipment, date of inspection, corrective action taken, and identification of individual performing inspection. [District Rule 2520, 9.4.2]*
- *Permittee shall maintain daily records of the quantity of trona transferred into the day tank, in tons. [District Rule 2201]*
- *Records shall be retained on-site for a period of at least five years and made available for District inspection upon request. [District Rule 2201]*

5. Reporting

The applicant is being granted a 24-month evaluation period in which to determine the optimum performance of the NO_x emission control system. During the evaluation period, annual status reports will be required. In addition, a final report will be required if the permittee has not been successful in demonstrating ongoing compliance with the design emission rate and will apply for an alternative emission limit. The following conditions will be included on the ATC to ensure compliance:

N-645-36-0 (Biomass-Fired Boiler):

- *The permittee shall be allowed a 24-month period to evaluate the operational variability and optimum control effectiveness of the proposed exhaust emission control system to meet the design emission rate of 0.040 lb-NO_x/MMBtu. During the evaluation period, the permittee shall operate and maintain the boiler and the emission control system in such a manner as to minimize NO_x emissions, and shall perform all required source testing and monitoring. The evaluation period shall begin upon the first day of the initial source test, and shall terminate after 24 months. [District Rule 2201]*
- *During the 24-month evaluation period, NO_x emissions in excess of 0.040 lb/MMBtu, but less than or equal to 0.065 lb/MMBtu, on a block 24-hour average basis shall not constitute a violation of this permit. [District Rule 2201]*
- *During the 24-month evaluation period, the permittee shall submit annual status reports on the performance of the NO_x emission control system. Each status report is due at the same time as the annual source test report. The status report shall, at a minimum, include actual operating time, actual heat input to the boiler, actual NO_x emissions as measured by the CEM system, daily and annual average actual NO_x emission rates (in lb/MMBtu), and an analysis of system performance to date and expected performance for the next year. [District Rule 2201]*
- *If NO_x emissions continue to exceed, or are projected to exceed, 0.040 lbs/MMBtu on a block 24-hour average basis after the 24-month evaluation period, the permittee shall submit a final report containing all monitoring and source test data to the District within 90 days after the end of the evaluation period. The report shall include a detailed analysis of all factors that prevent achievement of the expected emission rate, as well as a detailed explanation of the steps taken to operate and maintain the boiler and the emission control system in such a manner as to minimize emissions. The report shall also propose an enforceable NO_x emission limit, which shall not exceed 0.065 lb/MMBtu on a block 24-hour average basis. [District Rule 2201]*
- *Upon submittal of the report, the District shall re-evaluate BACT requirements for NO_x from this class and category of source and establish an appropriate BACT emissions limit. Within 30 days of receipt of the District's determination, the permittee shall submit an Authority to Construct application to incorporate the revised emissions limit. In no case shall the NO_x emission limitation be higher than 0.065 lbs/MMBtu on a block 24-hour average basis. [District Rule 2201]*

- *Following the 24-month evaluation period and prior to issuance of an Authority to Construct with a revised NOx emission limit, NOx emissions in excess of 0.040 lb/MMBtu, but less than or equal to 0.065 lb/MMBtu, on a block 24-hour average basis shall not constitute a violation of this permit. [District Rule 2201]*
- *If NOx emissions do not exceed, and are not projected to exceed, the expected emission rate of 0.040 lb/MMBtu on a block 24-hour average basis after the 24-month evaluation period, then the expected emission rate of 0.040 lb/MMBtu on a block 24-hour average basis shall become an enforceable NOx emission limit. If the permittee fails to submit the required final report within 90 days after the end of the evaluation period, the permittee shall be considered to stipulate that an enforceable NOx emission limit of 0.040 lb/MMBtu on a block 24-hour average basis is achievable and will be made enforceable. [District Rule 2201]*

6. Installation, Operation, and Maintenance

Pursuant to Sections 5.6.2 and 5.6.3 of the rule, an ATC will include conditions to ensure that the new or modified source is built according to the specifications and plans included in the application, or which are necessary to assure construction and operation in the manner assumed in the application review. In addition, conditions regulating installation and operation during the commissioning period are required. The following conditions will be included on the ATCs to ensure proper installation, operation, and maintenance:

N-645-36-0 (Biomass-Fired Boiler):

- *Permittee shall minimize the emissions from the boiler to the maximum extent possible during the commissioning period. Conditions 7 through 15 shall apply only during the commissioning period as defined below. Unless otherwise indicated, Conditions 16 through 95 shall apply after the commissioning period has ended. [District Rule 2201]*
- *Commissioning activities are defined as, but not limited to, all testing, adjustment, tuning, and calibration activities recommended by the equipment manufacturers and the DTE construction contractor to insure safe and reliable steady state operation of the unit and associated electrical delivery systems. [District Rule 2201]*
- *Commissioning period shall commence when all mechanical, electrical, and control systems are installed and individual system startup has been completed, or when the boiler is first fired, whichever occurs first. The commissioning period shall terminate when the plant has completed initial performance testing, completed final plant tuning, and is available for commercial operation. [District Rule 2201]*
- *At the earliest feasible opportunity, in accordance with the recommendations of the equipment manufacturer and the construction contractor, the boiler shall be tuned to minimize emissions. [District Rule 2201]*

- *At the earliest feasible opportunity, in accordance with the recommendations of the equipment manufacturers and the construction contractor, each of the pollution control devices (trona injection system, wet scrubber, multiclone, electrostatic precipitator, oxidation catalyst, selective catalytic reduction system) shall be installed, adjusted, and operated to minimize emissions from this unit. [District Rule 2201]*
- *The permittee shall submit a plan to the District at least four weeks prior to the first firing of this unit, describing the procedures to be followed during the commissioning period. The plan shall include a description of each commissioning activity, the anticipated duration of each activity in hours, and the purpose of the activity. The activities described shall include, but are not limited to, the tuning of the combustor, the installation and operation of each of the pollution control devices, the installation, calibration, and testing of the continuous emissions monitors, and any activities requiring the firing of this unit without abatement the pollution control devices. [District Rule 2201]*
- *Emission rates from the boiler, during the commissioning period, shall not exceed any of the following emission rates: 6,652.8 lb-NO_x/day; 2,138.4 lb-SO_x/day; 1,188.0 lb-PM₁₀/day; 6,019.2 lb-CO/day; and 617.8 lb-VOC/day. During the commissioning period, the permittee shall demonstrate compliance with the NO_x, SO_x, and CO emission limits through the use of properly operated and maintained continuous emissions monitors (CEM) and recorders. The monitored parameters for this unit shall be recorded at least once every 15 minutes (excluding normal calibration periods or when the monitored source is not in operation). An exceedance of the NO_x, SO_x, and CO emission limits, as measured by the continuous emission monitors, shall be a violation of this permit condition. During the commissioning period, the permittee shall demonstrate compliance with the PM₁₀ and VOC emission limits by calculating emissions, using the heat input to the boiler, the operating time, and the emission factors specified in this condition, during each day in which the boiler is operated. PM₁₀ emissions shall be calculated using an emission factor of 0.0214 lb/MMBtu when the ESP secondary power input equals or exceeds the minimum specified in condition 25, and an emission factor of 0.15 lb/MMBtu at all other times. VOC emissions shall be calculated using an emission factor of 0.009 lb/MMBtu when the CO CEM indicates the CO emission rate is below 0.09 lb/MMBtu, and an emission factor of 0.078 lb/MMBtu at all other times. An exceedance of the PM₁₀ and VOC emission limits, as calculated, shall be a violation of this permit condition. [District Rule 2201]*
- *The continuous emissions monitors (CEM) specified in these permit conditions shall be installed, calibrated and operational prior to the first firing of the unit. After first firing, the detection range of the CEM shall be adjusted as necessary to accurately measure the resulting range of emissions concentrations. [District Rule 2201]*

- *The total mass emissions of NO_x, SO_x, PM₁₀, CO, and VOC that are emitted during the commissioning period shall be counted toward the quarterly emission limits specified in condition 56. NO_x, SO_x, and CO total mass emissions shall be determined from CEM data, while PM₁₀ and VOC total mass emissions shall be calculated using the heat input to the boiler, the operating time, and the emission factors specified in this condition, during each day in which the boiler is operated. PM₁₀ emissions shall be calculated using an emission factor of 0.0214 lb/MMBtu when the ESP secondary power input equals or exceeds the minimum specified in condition 25, and an emission factor of 0.15 lb/MMBtu at all other times. VOC emissions shall be calculated using an emission factor of 0.009 lb/MMBtu when the CO CEM indicates the CO emission rate is below 0.09 lb/MMBtu, and an emission factor of 0.078 lb/MMBtu at all other times. [District Rule 2201]*
- *All equipment shall be maintained in good operating condition and shall be operated in a manner to minimize emissions of air contaminants into the atmosphere. [District Rule 2201]*
- *The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap (flapper ok), roof overhang, or any other obstruction. [District Rule 4102]*
- *The permittee shall calibrate and maintain in operation a selective catalytic reduction (SCR) system designed to reduce NO_x emissions from the boiler exhaust stack to less than or equal to 0.040 lb/MMBtu. [District Rule 2201]*
- *During start-up or shutdown, the emissions control system shall be in operation, and emissions shall be minimized insofar as technologically possible. The operator shall maintain daily records of the duration of start-up and shutdown periods. [District Rule 2201]*

N-645-37-0 (Biomass Receiving and Storage)

N-645-38-0 (Biomass Handling)

N-645-39-0 (Alternative Biomass Receiving and Storage):

- *All equipment shall be maintained in good operating condition and shall be operated in a manner to minimize emissions of air contaminants into the atmosphere. [District Rule 2201]*

In addition, the existing trona receiving and storage silos and trona day tanks have PTO conditions ensuring proper installation, operation, and maintenance. These conditions will be retained on the ATCs. No further discussion is required.

F. Ambient Air Quality Analysis

Section 4.14.1 of this Rule requires that an ambient air quality analysis (AAQA) be conducted for the purpose of determining whether a new or modified Stationary Source will cause or make worse a violation of an air quality standard. The Technical Services Division of the SJVAPCD conducted the required analysis. Refer to Appendix D of this document for the AAQA summary sheet.

The proposed location is in an attainment area for NO_x, PM₁₀, CO, and SO_x. As shown by the AAQA summary sheet, included in Appendix D and reproduced below, the proposed equipment will not cause a violation of an air quality standard for NO_x, PM₁₀, CO, or SO_x.

Biomass Boiler, etc.	1 Hour	3 Hours	8 Hours.	24 Hours	Annual
CO	Pass	X	Pass	X	X
NO _x	Pass ¹	X	X	X	Pass
SO _x	Pass	Pass	X	Pass	Pass
PM ₁₀	X	X	X	Pass ²	Pass ²

¹The project was compared to the 1-hour NO₂ National Ambient Air Quality Standard that became effective on April 12, 2010 using the District's approved procedures.

²The criteria pollutants are below EPA's level of significance as found in 40 CFR Part 51.165 (b)(2).

The AAQA summary sheet requires that sufficiently detailed and specific emission limits be incorporated into the permit to ensure the validity of the AAQA. DTE's proposal includes a detailed breakdown of fuel handling emissions, grouping emission points geographically into the truck unloading area, disc screening area, North stockpile area, and West stockpile area. With the alternative fuel receiving and storage proposal, the emission points are grouped in the truck unloading area, disc screening area, and stockpile area. In addition, both the original and alternative fuel receiving and storage operations have potential emissions from the stockpiles themselves in the form of industrial wind erosion.

The requirement for detailed and specific emission limits is fulfilled in two parts. First, overall emission factors for both the original and alternative fuel receiving and storage operations have been calculated and incorporated into permit conditions. These emission factors are a function of the emission factor for the drop equation (essentially a constant given the fuel conditions) and the number of transfer points within the permit unit boundary. The same is true within the smaller areas within the permit unit boundary. A change in the emission factor for a permit unit would require the addition or subtraction of transfer points, which would be a modification subject to the requirement to obtain an ATC under District Rule 2010 (Permits Required). Similarly, a change in the emission factor for a particular area within a permit unit would require the addition or subtraction of transfer points within that area, which is also significant enough to require an ATC. Second, emissions from the permit unit are limited by the daily and annual throughput limits proposed by the applicant. The configuration of the fuel handling equipment incorporates various assumptions about how the fuel will flow through various branches of the handling system and apportions the overall throughput to the various emission points accordingly. These assumptions, and the resulting throughput at each emission point, are expected to remain consistent in the absence of the modification requiring an ATC. Therefore, the overall emission factor, along with documented compliance with the throughput limits at the scale in the truck unloading area and at the fuel metering bins, is sufficient to enforce compliance with the emissions upon which the AAQA results are based. No further discussion is required.

G. Compliance Certification

Section 4.15.2 of this Rule requires the owner of a new Major Source or a source undergoing a Title I Modification to demonstrate to the satisfaction of the District that all other Major Sources owned by such person and operating in California are in compliance or are on a schedule for compliance with all applicable emission limitations and standards. As discussed in Sections VIII-Rule 2201-C.1.a and VIII-Rule 2201-C.1.b, this facility is a major source and this project constitutes a Title I modification, therefore this requirement is applicable. Included in Appendix I is DTE's compliance certification.

Rule 2520 Federally Mandated Operating Permits

As shown in Section VII.D.3 of this document, SSPE2 is greater than the applicable major source threshold for NO_x, PM₁₀, CO, and VOC. Furthermore, DTE has already received its Title V permit. Therefore, DTE is subject to this rule and will, pursuant to Section 5.1 of the rule, be required to submit an application to modify the Title V permit prior to commencing operation of the modified facility. The following condition will be included on the ATCs to ensure compliance:

N-645-8-5, '-9-5, '-10-5, '-11-5, '-34-4, '-36-0, '-37-0, '-38-0, '-39-0 (All new and modified units):

- *Permittee shall submit an application to comply with District Rule 2520 – Federally Mandated Operating Permits prior to commencing operation under this ATC. [District Rule 2520]*

Rule 2540 Acid Rain Program

This rule incorporates by reference the Acid Rain Standards from 40 CFR 72 and, pursuant to §72.6(a)(3)(i), applies to new utility units, meaning any new fossil fuel-fired combustion device that serves a generator and is owned or operated by any person who sells electricity. Furthermore, the definition of "fossil fuel-fired" in §72.2 makes it clear that any combustion of fossil fuel, including natural gas, qualifies the unit as a fossil fuel-fired unit, independent of the percentage of fossil fuel consumed in any calendar year. Since the proposed boiler included in permit unit N-645-36-0 serves a 54 MW electrical generator, fires natural gas for startup and shutdown, and the electricity will be sold, this rule applies.

The acid rain program will be implemented through a Title V operating permit. Federal regulations require submission of an acid rain permit application at least 24 months before the latter of 1/1/2000 or the date the operator expects the unit to commence operation. The acid rain program requirements for this unit are expected to be minor. The owner will be required to monitor NO_x and SO_x emissions, to secure a fairly small quantity of SO_x allowances from a national SO_x allowance bank, and to install NO_x and SO_x CEMS; conditions requiring installation and operation of NO_x and SO_x CEMS are already included in the boiler ATC. DTE submitted the acid rain application on December 6, 2010. No further discussion is required.

Rule 2550 Federally Mandated Preconstruction Review for Major Sources of Air Toxics

This rule applies to any application to construct or reconstruct a major source of air toxics, defined as a facility with the potential to emit 10 tons per year or more of any one hazardous air pollutant (HAP), or 25 tons per year or more of all HAP combined. DTE will not be a major source of HAP following the proposed modification to the facility, because HCl emissions shall not exceed 9.99 ton/yr, so this rule does not apply. No further discussion is required.

Rule 4001 New Source Performance Standards (NSPS)

This rule incorporates by reference the NSPS presented in 40 CFR 60. The boiler is a steam generating unit capable of combusting biomass fuel up to 699 MMBtu/hr, or natural gas (in startup mode) at up to 100 MMBtu/hr. The boiler is not subject to Subparts D or Da, because the maximum heat input rate from fossil fuels is less than 250 MMBtu/hr. The boiler is subject to Subpart Db of this part, which establishes standards for industrial, commercial, and institutional steam generating units with a heat input capacity greater than 100 MMBtu/hr.

40 CFR 60.42b establishes SO₂ emissions standards for affected units for a variety of fuels, depending in part on when the unit was constructed, reconstructed, or modified. §60.42b(k)(1) specifies that units that commence construction, reconstruction, or modification after February 28, 2005 and combust natural gas (among other fuels), are subject to a SO₂ emissions limit of 0.20 lb/MMBtu. However, §60.42b(k)(2) provides an exemption from this SO₂ emissions limit for units combusting very low sulfur oil, gaseous fuels, a mixture of these fuels, or a mixture of these fuels with any other fuels with a potential SO₂ emission rate of 0.32 lb/MMBtu or less. This unit combusts a mixture of natural gas and biomass, but the uncontrolled SO_x emissions during startup and shutdown are limited to 0.27 lb/MMBtu. Therefore, this unit qualifies for exemption from the SO₂ emissions limit, presented in §60.42b(k)(2), based on its combustion of a mixture of gaseous fuels and fuels with potential SO₂ emissions less than 0.32 lb/MMBtu.

§60.43b establishes PM emissions standards for affected units for a variety of fuels, depending in part on when the unit commenced construction, reconstruction, or modification. §60.43b(f) establishes a general opacity limit of 20% for units combusting wood (among other fuels), with an allowance of one six-minute period per hour of not more than 27% opacity. However, owners who install and operate a continuous emissions monitoring system (CEMS) for PM on units that are subject to a federally enforceable PM emissions limit of 0.030 lb/MMBtu are exempt from the opacity limitation. Conveniently, §60.43b(h)(1) prohibits units that commence construction after February 28, 2005 and combust wood (among other fuels) from emitting PM in excess of 0.030 lb/MMBtu. This unit has a PM₁₀ emission limit of 0.0214 lb/MMBtu during steady-state operation, which is lower than the NSPS requirement.⁸ Conveniently, the NSPS limit is essentially the same as the new PM limit (0.03 lb/MMBtu) under the applicable provision of 40 CFR 63, Subpart JJJJJJ as discussed in the portion of this document devoted to Rule 4002. The NSPS requires testing upon initial startup, while Subpart JJJJJJ requires triennial testing in addition to the startup test. The test requirements for Subpart JJJJJJ apply to the same emission limit and are more stringent than the NSPS test requirements, so further discussion of the testing requirements will be presented in the discussion of Subpart JJJJJJ.

⁸ The emission limit during startup and shutdown is higher than the NSPS limit; however, pursuant to §60.8(c), emissions in excess of the NSPS limit during startup, shutdown, and malfunction are not considered to be a violation of the emission limit unless specified in the standard

§60.44b establishes NO_x emissions standards for affected units for a variety of fuels, depending in part on when the unit commenced construction, reconstruction, or modification. §60.44b(d) establishes a NO_x emission limit of 0.30 lb/MMBtu on units that combust natural gas (among other fuels) in combination with wood. §60.44b(l) establishes a lower NO_x emission limit of 0.20 lb/MMBtu for units combusting natural gas (among other fuels) and mixtures of natural gas and other fuels, when such units commence construction after July 9, 1997. However, both of these NO_x emissions limits include an exemption if the unit has an annual capacity factor for coal, oil, and natural gas of 10% or less and is subject to a federally enforceable limit on the annual capacity factor for those fuels. The annual capacity factor is calculated as the actual heat input from the fuel in question divided by the potential heat input; for a unit rated at 699 MMBtu/hr, a 10% annual capacity factor (CF) is calculated as follows:

$$CF = (699 \text{ MMBtu/hr}) \times (8,760 \text{ hr/yr}) \times (0.1) = 612,324 \text{ MMBtu/yr}$$

The annual capacity factor for natural gas will be limited to 612,324 MMBtu/yr. Conditions will be included on the boiler ATC to enforce this capacity factor limit and require appropriate record keeping.

This unit is exempt from the SO₂ and NO_x performance standards, but is subject to the PM performance standard. Therefore, the unit will be required to conduct source testing to demonstrate compliance with the PM₁₀ emissions limit in accordance with the time frames specified in §60.8. That section specifies that performance testing to show compliance with a performance standard must be conducted within 60 days of achieving maximum production, but not later than 180 days after initial startup. The District is customarily more stringent in its testing requirements, but agrees that for a unit with such cutting-edge emission control equipment the longer compliance testing window allowed by the NSPS is appropriate. A condition to this effect will be included on the boiler ATC as described in the discussion of the Rule 4352 requirements elsewhere in this document.

§60.48b(j) requires that units subject to a PM emissions standard install, calibrate, maintain, and operate a continuous opacity monitoring system (COMS). The applicant has proposed to install COMS, so this requirement of the NSPS is satisfied.

§60.49b specifies the record keeping and reporting requirements for units subject to the NSPS. These requirements include initial source test reporting, daily fuel use records, annual capacity factor calculations for each fuel combusted, and opacity records, all of which must be maintained for at least two years. Except for the opacity and fuel use record keeping requirements, these requirements are either equal to or less stringent than other reporting and record keeping requirements itemized in this document. Since the unit will be equipped with COMS, maintenance of the COMS data will ensure compliance with the requirement to maintain records of exhaust gas opacity.

The following conditions will be included on the ATC to ensure compliance:

N-645-36-0 (Biomass-Fired Boiler):

- *The total annual heat input to the unit from natural gas combustion shall not exceed 612,324 MMBtu in any one calendar year. [District Rules 4001 and 40 CFR 60.44b(d)]*

- *Permittee shall record the heat input to the unit from each fuel combusted on a daily basis. Permittee shall maintain records of the annual capacity factor for each fuel combusted on a 12-month rolling average basis, and shall update the annual capacity factor for each fuel at the end of each calendar month. [District Rules 1070 and 4001, and 40 CFR 60.49b(d)(1)]*
- *Permittee shall retain and maintain on site all data from the continuous opacity monitoring system. [District Rules 1070 and 4001, and 40 CFR 60.39b(f)]*

Rule 4002 National Emission Standards for Hazardous Air Pollutants (NESHAP)

This rule incorporates by reference various NESHAP from 40 CFR 61 and 40 CFR 63. On February 21, 2011 the US EPA Administrator signed the final NESHAP for boilers at major sources of HAP (Subpart DDDDD) and for boilers at area sources of HAP (Subpart JJJJJJ); these Subparts will become effective 60 days after the date they are published in the Federal Register, which occurred on March 21, 2011.

As shown by the data included in Appendix F of this document, DTE will have potential emissions of 9.99 tons per year (tpy) for any single HAP (specifically, HCl), and 15.7 tpy for all HAP combined. Therefore, DTE is an area source of HAP subject to Subpart JJJJJJ. Permit unit N-645-36-0 (the new boiler) is classified as a new biomass-fired boiler with a heat input rating in excess of 30 MMBtu/hr, so the NESHAP requires compliance with an emission limit of 0.03 lb-PM/MMBtu. Compliance with this emission limit must be demonstrated by source testing upon initial startup and every three years thereafter, and continuously (for a unit controlled by an ESP) by either monitoring opacity on a daily block average or by continuously monitoring ESP secondary power input. Source testing for PM must be conducted using EPA Methods 5 or 17, and then converted to a lb/MMBtu basis using Method 19. It should be noted that the NESHAP limits PM as a surrogate for non-mercury metals, so it is appropriate to test for PM using only the filterable PM normally measured using Method 5, rather than adapting Method 5 to measure the condensable PM as commonly required when measuring PM as a substitute for PM₁₀. In addition, the operator of a new biomass-fired boiler is required to conduct a tune-up every two years. The following conditions will be included on the ATC to ensure compliance with, and the applicability of, the area source NESHAP:

N-645-36-0 (Biomass-Fired Boiler):

- *The permittee shall conduct a performance tune-up of the boiler in accordance with the requirements of 40 CFR 63 Subpart JJJJJJ within 180 days of initial startup, and at least every 24 months thereafter. The permittee shall submit a signed statement in the Notification of Compliance Status indicating that each tune up was conducted. [40 CFR 63.11210]*
- *Except during periods of startup and shutdown, emission rate from this biomass-fired boiler shall not exceed 0.030 lb-PM/MMBtu [40 CFR 60.43b(h)(1) and 40 CFR 63.11201]*
- *This unit shall be tested for compliance with the PM emission limit within 60 days of achieving the maximum steam production rate at which the unit will be operated, but not more than 180 days after initial startup, and at least once every 36 months thereafter. [40 CFR 60.8(a), 40 CFR 60.43b(d), and 40 CFR 63.11220(a)]*

- *PM emissions required to be source tested under condition 61 shall be determined using EPA Methods 5 or 17 (filterable (front half) PM only), and 19. [40 CFR 60.43b(d)(2) and 40 CFR 63.11212]*
- *The electrostatic precipitator shall be provided with continuous monitoring equipment showing the secondary power input, as specified in 40 CFR 63, Subpart JJJJJJ. The monitoring equipment shall be maintained in good working condition at all times and shall be located in an easily accessible location. [District Rule 2201 and 40 CFR 63.11224]*
- *The electrostatic precipitator shall be in operation whenever the boiler is operated on biomass. The electrostatic precipitator secondary power input, on a 12-hour block average, shall be maintained at or above the lowest 1-hour average secondary power input measured during the most recent performance test demonstrating compliance with the PM emission limitation, in accordance with Table 3 of 40 CFR 63, Subpart JJJJJJ. Transient voltage fluctuations due to arcs and sparks, or similar automatic functions of the electrostatic precipitator, shall not constitute deviations. The electrostatic precipitator shall be maintained in accordance with the manufacturer's recommendations, a copy of which shall be maintained on site. [District Rule 2201, 40 CFR 63.11221 and 40 CFR 64]*

Rule 4101 Visible Emissions

This rule defines and regulates visible emissions from any source operation. In addition, opacity from the boiler stack is limited by 40 CFR 60.43b(f). The following condition will be included on each ATC to ensure compliance:

N-645-36-0 (Biomass-Fired Boiler)

- *No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1 or 20% opacity. [District Rule 4101 and 40 CFR 60.43b(f) and (g)]*

N-645-37-0 (Biomass Receiving and Storage)

N-645-38-0 (Biomass Handling)

N-645-39-0 (Alternative Biomass Receiving and Storage):

- *No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1 or 20% opacity. [District Rule 4101]*

In addition, pursuant to District Policy SSP-1005, *Visible Emissions from Operations Served by Baghouses*, the opacity limit for an emissions unit controlled by a baghouse is 5%. This lower opacity limit is appropriate to ensure that compliance with the opacity limit accurately reflects proper baghouse operation. However, the trona receiving and storage silos and day tanks already have a similar, albeit more stringent, condition on the existing PTOs. The following condition will be retained on the silo and day tank ATCs to ensure proper operation of the bin vent filters:

N-645-8-5, '-9-5 (Trona Receiving and Storage Silos)

- *There shall be no visible emissions from the fabric filter. [District NSR Rule]*

N-645-10-5, '-11-5 (Trona Day Tanks):

- *There shall be no visible emissions from the vent filter. [District NSR Rule]*

Rule 4102 Nuisance

This rule prohibits the emission of any pollutant that results in nuisance, injury, detriment, or annoyance to any significant number of persons. The following condition will be included on each ATC to ensure compliance:

N-645-8-5, '-9-5, '-10-5, '-11-5, '-36-0, '-37-0, '-38-0, '-39-0 (All new and modified units):

- *No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]*

California Health & Safety Code 41700 (Health Risk Assessment)

Pursuant to District policy APR-1905, *Risk Management Policy for Permitting New and Modified Sources*, the District must conduct a health risk assessment for any increase in affected pollutant or HAP emissions. An HRA is not required for a project with a total facility prioritization score of less than one. According to the Technical Services Memo for this project (Appendix D), the total facility prioritization score including this project was greater than one. Therefore, a health risk assessment was required to determine the short-term acute and long-term chronic exposure from this project.

District policy APR-1905 also specifies that the increase in emissions associated with a proposed new source or modification must not have acute or chronic indices, or a cancer risk, greater than the District's significance levels (i.e. acute and/or chronic indices greater than 1 and a cancer risk greater than 10 in a million). As outlined by the HRA Summary in Appendix D of this report, the emissions increases for this project was determined to be less than significant, as shown below:

RMR Summary				
Categories	Stoker-Fired Biomass Boiler (Unit 36-0)	Biomass Handling and Storage (Units 37-0, 38-0, and 39-0)	Project Totals	Facility Totals
Prioritization Score	409	0.5	>1.0	>1.0
Acute Hazard Index	0.0	NA ¹	0.0	0.0
Chronic Hazard Index	0.2	NA ¹	0.0	0.0
Maximum Individual Cancer Risk (10⁻⁶)	8.54 ²	NA ¹	8.54	8.54
T-BACT Required?	Yes	No		
Special Permit Conditions?	No	No		

1 Risks for Units 37-0 and 38-0 are included in the risk estimate for Unit 36-0. Unit 39-0 has HAP emissions equal to or less than unit 37-0, and since the two units are mutually exclusive no further analysis is required.

2 Risk at the Point of Maximum Impact.

As shown in the table above, the proposed facility will have acute and chronic hazard indices below the significance thresholds of 1. The proposed facility will have a cancer risk between 1 and 10 in a million, and will therefore trigger T-BACT for PM₁₀ emissions. As shown in the discussion of BACT under Rule 2201 above, BACT is satisfied by DTE's proposal to use a multiclone and ESP to reduce the PM₁₀ emission rate to 0.0214 lb/MMBtu. Pursuant to APR-1905, T-BACT is satisfied by BACT for the pollutants that trigger T-BACT; since DTE has proposed BACT for PM₁₀, the T-BACT requirements are also satisfied. The following special permit conditions will be included on the boiler ATC to ensure the validity of this analysis:

N-645-36-0 (Biomass-Fired Boiler):

- *The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap (flapper ok), roof overhang, or any other obstruction. [District Rule 4102]*
- *This unit shall only be fired on biomass and wood residue, except that the unit may also be fired on natural gas during startup, shutdown, and flame stabilization periods. [District Rules 2201 and 4102]*
- *Biomass is defined as any organic material originating from plants, not chemically treated and not derived from fossil fuels, including but not limited to products, by-products, and residues from agriculture, forestry, aquatic and related industries, such as agricultural, energy or feed crops and residues, orchard and vineyard prunings and removal, stone fruit pits, nut shells, cotton gin trash, corn stalks and stover, straw, seedhulls, sugarcane leavings and bagasse, aquatic plants and algae, cull logs, eucalyptus logs, poplars, willows, switchgrass, alfalfa, bark, lawn, yard and garden clippings, paper (unprinted), leaves, silvicultural residue, tree and brush pruning, sawdust, timber slash, mill scrap, wood and wood chips, and wood residue. Biomass does not include tires, material containing sewage sludge, or industrial, hazardous, radioactive, or municipal solid waste. [District Rules 2201 and 4102]*
- *Wood residue consists of wood pieces or particles which are generated from the manufacturing or production of wood products, harvesting, processing or storage of raw wood materials, or construction and demolition activities. [District Rules 2201 and 4102]*
- *Biomass and wood waste fuels shall not include pressure-treated wood and shall not contain compounds listed in Title 22, California Code of Regulations, 66261.24(a)(2)(A) in excess of the following concentrations by weight: 500 ppm antimony and/or antimony compounds, 500 ppm arsenic and/or arsenic compounds, 1,000 ppm asbestos, 10,000 ppm barium and/or barium compounds (excluding barite), 75 ppm beryllium and/or beryllium compounds, 100 ppm cadmium and/or cadmium compounds, 500 ppm chromium (VI) compounds, 2,500 ppm chromium and/or chromium (III) compounds, 8,000 ppm cobalt and/or cobalt compounds, 2,500 ppm copper and/or copper compounds, 18,000 ppm fluoride salts, 1,000 ppm lead and/or lead compounds, 20 ppm mercury and/or mercury compounds, 3,500 ppm molybdenum and/or molybdenum compounds, 2,000 ppm nickel and/or nickel compounds, 100 ppm selenium and/or selenium compounds, 500 ppm silver and/or silver compounds, 700 ppm thallium and/or thallium compounds, 2,400 ppm*

vanadium and/or vanadium compounds, and 5,000 ppm zinc and/or zinc compounds. [District Rule 4102 and 22 CCR 66261.24]

- *Permittee shall test fuel for contaminants within 60 days of achieving the maximum steam production rate at which the unit will be operated, but not more than 180 days after initial startup, and at least once every 12 months thereafter, or whenever requested by the District. The District shall be notified at least 15 days prior to scheduled sample collection. [District Rules 2201 and 4102, and 40 CFR 60.8(a)]*
- *Testing of the fuel for contaminants shall be conducted on a representative sample collected upstream of and as close as practicable to the fuel metering bins. [District Rules 2201 and 4102]*
- *Fuel shall be tested for contaminants in accordance with the wet extraction test procedure detailed in Title 22 California Code of Regulations, Division 4.5, Chapter 11, Appendix II. [District Rule 4102]*

In addition, the Technical Services memo in Appendix D requires that enforceable conditions be included to ensure fugitive PM₁₀ emissions do not exceed those used for the HRA and AAQA. The condition included on the ATC for the biomass receiving operation prohibiting visible emissions from the storage piles in excess of 20% opacity will ensure the validity of this assumption. No further discussion is required.

Rule 4201 Particulate Matter Concentration

This rule prohibits emissions of particulate matter (PM) from any source operation in excess of 0.1 grains per dry standard cubic foot of exhaust gas.

N-645-8-5, '-9-5, '-10-5, '-11-5 (Trona Receiving and Storage Silos and Day Tanks):

These units are subject to this rule and have previously been evaluated for compliance with the PM concentration limit. The following condition, included on the current PTOs, will be retained on the ATCs to ensure compliance:

- *Particulate matter emissions shall not exceed 0.1 gr/dscf in concentration. [District Rule 4201]*

N-645-36-0 (Biomass-Fired Boiler):

As noted in the discussion of Rule 4001, the combination of a multiclone and ESP is expected to ensure that the emission rates for PM and PM₁₀ from the boiler are essentially identical. The particulate matter concentration for the boiler when operating at a limit of 0.078 lb/MMBtu during startup and shutdown is calculated as follows:

$$C = (0.078 \text{ lb-PM/MMBtu}) \times (7,000 \text{ gr/lb}) \div (9,240 \text{ dscf/MMBtu})$$

$$C = 0.059 \text{ gr/dscf}$$

Since 0.059 gr/dscf is less than the rule limit of 0.1 gr/dscf, the boiler is expected to comply with this rule requirement. The following condition will be included on the ATC to ensure compliance with this rule:

- *Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201]*

Each emissions unit must comply with the rule requirement separately; however, the fuel receiving and storage operation (N-645-37-0) and fuel handling operation (N-645-38-0) have only fugitive PM emissions not subject to this rule.

Rule 4202 Particulate Matter Emission Rate

This rule prohibits particulate matter emissions from any source operation in excess of the prescribed limits in proportion to the process weight rate.

N-645-36-0 (Biomass-Fired Boiler):

For the boiler, DTE states that the maximum fuel feed rate is expected to be 81.3 ton/hr. The rule limit is calculated as follows:

$$E_{\text{limit}} = (17.31) \times (81.3)^{0.16} = 34.99 \text{ lb/hr}$$

Actual PM emissions from the boiler during startup and shutdown are expected to be 0.078 lb/MMBtu; however, the rule limit applies only to the filterable portion of the PM emissions. While there are a number of biomass-fired boilers within the San Joaquin Valley, most of these are fluidized bed units rather than stoker units. One other stoker-type biomass-fired boiler is operating within the San Joaquin Valley, the Thermal Energy Development facility in Tracy (N-1026). Source test data for this facility from 2008 and 2009 indicates that the filterable portion of the total PM emissions has been no greater than 10%, so this fraction will be used to calculate PM emissions for compliance with this rule.

$$E_{\text{actual}} = (0.078 \text{ lb/MMBtu}) \times (699 \text{ MMBtu/hr}) \times (.1) = 5.45 \text{ lb/hr}$$

Since the actual emissions are lower than the limit specified for the lower process weight rate, the boiler is expected to comply with the rule.

N-645-37-0 (Biomass Receiving and Storage):

The fuel receiving and storage operation has a process weight rate of 342 ton/hr, broken in some places into parallel streams as small as 51 ton/hr. For a 40 ton/hr process weight rate, the rule limit is 31.19 lb/hr. This operation has potential emissions of only 2.1 lb-PM₁₀/day, or 4.2 lb-PM/day using the 50% PM₁₀ fraction specified in Rule 2201, Section 4.11.2. Therefore, it is evident that the fuel receiving and storage operation will comply with the requirements of this rule. No further discussion is required.

N-645-38-0 (Biomass Handling):

The fuel handling operation has a process weight rate of approximately 81 ton/hr. For an 80 ton/hr process weight rate, the rule limit is 34.85 lb/hr. This operation has potential emissions of only 0.4 lb-PM₁₀/day, or 0.8 lb-PM₁₀/day using the 50% PM₁₀ fraction specified in Rule 2201, Section 4.11.2. Therefore, it is evident that the fuel handling operation will comply with the requirements of this rule. No further discussion is required.

N-645-39-0 (Alternative Biomass Receiving and Storage):

The fuel receiving and storage operation has a process weight rate of 342 ton/hr, broken in some places into parallel streams as small as 43 ton/hr. For a 40 ton/hr process weight rate, the rule limit is 31.19 lb/hr. This operation has potential emissions of only 2.0 lb-PM₁₀/day, or 4.0 lb-PM₁₀/day using the 50% PM₁₀ fraction specified in Rule 2201, Section 4.11.2. Therefore, it is evident that the fuel receiving and storage operation will comply with the requirements of this rule. No further discussion is required.

The existing trona receiving and storage silos and day tanks have PTO conditions ensuring compliance with this rule. The following condition will be retained on the ATCs, and included on the ATCs for the new units, to ensure compliance:

N-645-8-5, '-9-5, '-10-5, '-11-5, '-36-0, '-37-0, '-38-0, '-39-0 (All new and modified units):

- *Particulate matter emissions shall not exceed the hourly rate as calculated in District Rule 4202 using the equation $E = 3.59 \times P^{0.62}$ if P is less than or equal to 30 tons per hour, or $E = 17.31 \times P^{0.16}$ if P is greater than 30 tons per hour. [District Rule 4202]*

Rule 4203 Particulate Matter Emissions from Incineration of Combustible Refuse

This rule limits particulate matter emissions from any operation that disposes of or processes combustible refuse by burning. Rule 1020 (Definitions) defines combustible refuse as "any solid or liquid combustible waste material containing carbon in a free or combined state." While biomass meets this definition in other particulars, it is actually a byproduct of agricultural operations rather than a "waste" material. Nonetheless, this unit will comply with the rule limits.

The rule provides for two particulate matter grain loading limitations, one of which applies to any process with a burn rate in excess of 100 pounds per hour and the other of which applies to any process with a burn rate less than or equal to 100 pounds per hour. Alternatively, the operator may comply with a mass emission limit of 0.10 pounds per 100 pounds of combustible refuse burned. For a unit combusting 100 lb/hr of fuel or more, the grain loading limit is 0.10 gr/dscf calculated to 12% CO₂.

The grain loading concentration (C) for the boiler during startup and shutdown is equal to:

$$C = (0.078 \text{ lb-PM}_{10}/\text{MMBtu}) \times (7,000 \text{ gr/lb}) \times (1 \text{ MMBtu}/1,830 \text{ dscf}) \times (0.12 \div 1.0)$$
$$C = 0.036 \text{ gr/dscf}$$

Since 0.036 gr/dscf is less than the rule limit of 0.10 gr/dscf, compliance with the PM₁₀ DEL will ensure compliance with this rule. No further discussion is required.

Rule 4301 Fuel Burning Equipment

This rule regulates emissions of NO_x, SO_x, and PM from any process that burns fuel for the production of heat or power by indirect heat transfer. These limits are 140 lb/hr for NO_x, 200 lb/hr for SO_x, and 10 lb/hr for PM, which is also subject to a grain loading limit of 0.1 gr/dscf calculated to 12% carbon dioxide. The hourly emissions for NO_x and SO_x during startup and shutdown can be calculated as:

$$PE_{NO_x} = (0.74 \text{ lb/MMBtu}) \times (699 \text{ MMBtu/hr}) = 517.26 \text{ lb/hr}$$

$$PE_{SO_x} = (0.27 \text{ lb/MMBtu}) \times (699 \text{ MMBtu/hr}) = 188.73 \text{ lb/hr}$$

The potential to emit of 188.73 lb/hr for SO_x is less than the limit of 200 lb/hr specified in the rule. Compliance with the rule limit is expected, and will be ensured by the previously-listed condition prohibiting SO_x emissions in excess of 0.27 lb/MMBtu during startup, shutdown, and flame stabilization periods.

As shown above, the potential to emit NO_x during startup (calculated using the startup emission factor and maximum rated heat input) is greater than the rule limit of 140 lb/hr. However, startup operation for a solid fuel-fired boiler is a complex process, involving several hours of operation using only the startup burner, more hours using both the startup burner and some fraction of the potential solid fuel feed, and then finally a ramp-up period in which the unit is fired exclusively on solid fuel and brought up to the full firing rate. At some point in the startup process, the temperature at the SCR catalyst is finally high enough for the SCR system to begin functioning effectively and is switched on.

As discussed in Section VII.C.2, the rule limit is used to calculate the startup and shutdown contribution to the daily potential to emit calculation. The following condition will be included on the ATC to ensure compliance with the NO_x emission limit in this rule:

N-645-36-0 (Biomass-Fired Boiler):

- *NO_x emissions from this biomass-fired boiler shall not exceed 140.00 pounds in any one hour, as specified in District Rule 4301, Section 6.0. [District Rule 4301]*

As shown above in the discussion of District Rule 4202, the maximum hourly emission rate for PM is 5.45 lb/hr, which is less than the rule limit of 10 lb/hr, so compliance with this limit is expected. As shown in the discussion of Rule 4203 above, the grain loading concentration at 12% CO₂ is 0.036 gr/dscf. Since 0.036 gr/dscf is less than the rule limit of 0.1 gr/dscf, compliance with this rule is expected. No further discussion is required.

Rule 4304 Equipment Tuning Procedures for Boilers, Steam Generators, and Process Heaters

This rule specifies the tuning procedure for boilers that require tuning under other District rules. However, the only applicable District boiler rule does not have any tuning requirements. This rule does not apply, and no further discussion is required.

- Rule 4305 Boilers, Steam Generators, and Process Heaters – Phase 2**
- Rule 4306 Boilers, Steam Generators, and Process Heaters – Phase 3**
- Rule 4320 Advanced Emission Reduction Operations for Boilers, Steam Generators, and Process Heaters Greater than 5.0 MMBtu/hr**
- Rule 4351 Boilers, Steam Generators, and Process Heaters – Phase 1**

Each of these rules applies to boilers with heat input ratings in excess of 5.0 MMBtu/hr; however, each rule also includes an exemption for solid fuel-fired boilers. No further discussion is required.

Rule 4352 Solid Fuel Fired Boilers, Steam Generators, and Process Heaters

This rule applies to any solid fuel-fired boiler and is intended to regulate NO_x and CO emissions during steady-state, startup, shutdown, and flame stabilization operating periods. Section 4.0 of the rule provides an exemption, except from the record keeping requirements, for any unit located at a facility with stationary source potential emissions less than 10 ton/yr (20,000 lb/yr) of NO_x or VOC. As shown in Section VII.D.2, SSPE2 at this facility exceeds 20,000 lb/yr for both NO_x and VOC, so the Section 4.0 exemption does not apply.

Section 5.1 specifies the emission limits for various types of solid fuel-fired boilers. Separate categories are provided for units firing municipal solid waste or multiple hearth furnaces firing biomass, but the proposed stoker-type unit does not fall into either of these categories. The rule emission limits, along with the emission limits for the proposed unit, are summarized in Table 22 below:

Table 22: Rule 4352 Emission Limits (ppmv)		
	NO_x	CO
Rule 4352 Limit	115	400
Proposed Unit, Steady-State	49.7	113
Rule 4352 Compliant?	Yes	Yes

All emission limits corrected to 3% O₂

The proposed NO_x and CO emission factors are converted to exhaust gas concentrations corrected to 3% O₂ as follows:

$$C_{NOx} = (0.065 \text{ lb/MMBtu}) \div [(46 \text{ lb/lb-mol}) \times (9,240 \text{ ft}^3/\text{MMBtu}) \times (20.95 \div (20.95 - 3.00)) \div (379.5 \text{ ft}^3/\text{lb-mol})] \times 10^6$$

$$C_{NOx} = 49.7 \text{ ppmv @ 3\% O}_2$$

$$C_{CO} = (0.09 \text{ lb/MMBtu}) \div [(28 \text{ lb/lb-mol}) \times (9,240 \text{ ft}^3/\text{MMBtu}) \times (20.95 \div (20.95 - 3.00)) \div (379.5 \text{ ft}^3/\text{lb-mol})] \times 10^6$$

$$C_{CO} = 113 \text{ ppmv @ 3\% O}_2$$

Note that the emission factor of 0.065 lb-NO_x/MMBtu used above is the firm short-term emission limit. Compliance with the expected emission rate of 0.040 lb-NO_x/MMBtu will also result in compliance with the Rule limit. Section 5.2 of the rule provides that compliance with the rule emission limits shall be demonstrated on a block 24-hour average basis.

Sections 5.3 and 5.4 of the rule provide for limited exemptions to the Section 5.1 emission limits during startup and shutdown periods and, when specifically applied for, during operations at less than 50% of rated heat input. Section 5.3.1 limits each shutdown to 12 hours duration, while Section 5.3.2 limits a startup to 96 hours duration unless curing the refractory material. DTE has proposed a maximum of 12 hours of startup and shutdown per day, which complies with the rule limits, and total of 24 hours of startups and shutdowns per year. However, emissions during startup and shutdown will be limited by a flat mass limit on daily emissions along with a heat input-based emission limit expressed in lb/MMBtu, rather than by an explicit time limit on startup and shutdown operation. DTE has not requested relaxed emission limits when operating at less than 50% of rated heat input, so Section 5.4 does not apply.

Section 5.5 of the rule describes the monitoring requirements. This section requires that any unit using an ammonia injection system to install, calibrate, and maintain in operation a NO_x CEM. This unit is required to have a NO_x CEM by various other provisions and rule requirements, which will also ensure compliance with this section of the rule.

Section 6.1 requires submission of an emission control plan in accordance with the compliance schedule in Section 7.0. However, all compliance dates in Section 7.0 have passed. Therefore, this section of the rule does not apply.

Section 6.2 outlines the record keeping requirements of the rule. Specifically, this includes records of fuel receipts and fuel characteristics and the maintenance of all records for five years. In addition, various other regulations require record keeping in association with the requirements of this rule. The following conditions will be included on the boiler ATC to ensure compliance with the record keeping requirements:

- *Permittee shall maintain records of the date and duration of start-up and shutdown periods. [District Rules 2201 and 4352]*
- *Permittee shall maintain records of solid fuel higher heating value and fuel contaminant testing results. [District Rules 1070 and 4352]*
- *Permittee shall maintain records of emissions from this boiler on a calendar quarter basis. Records of quarterly emissions shall be updated at least once each calendar month in which the boiler operates. [District Rule 2201]*
- *All records shall be maintained and retained on-site for a period of at least 5 years and shall be made available for District inspection upon request. [District Rules 2201 and 4352]*

Sections 6.3 and 6.4 of the rule detail the source testing requirements test methods used to demonstrate compliance with the rule requirements. The following conditions will be included on the boiler ATC to ensure compliance:

- *Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified at least 30 days prior to any compliance source test, and a source test plan shall be submitted for approval at least 15 days prior to testing. [District Rule 1081]*
- *The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081]*
- *For emissions source testing, the arithmetic average of three 30-consecutive-minute test runs shall apply. If two of three runs are above an applicable limit the test cannot be used to demonstrate compliance with an applicable limit. [District Rules 1081 and 2201]*
- *This unit shall be tested for compliance with the NO_x, CO, PM₁₀, SO_x, VOC, and NH₃ emissions limits within 60 days of achieving the maximum steam production rate at which the unit will be operated, but not more than 180 days after initial startup, and at least once every 12 months thereafter. [District Rules 1081, 2201, and 4352, and 40 CFR 60.8(a)]*
- *This unit shall be tested for compliance with the NO_x, CO, PM₁₀, SO_x, VOC, and NH₃ emissions limits within 60 days of achieving the maximum steam production rate at which the unit will be operated, but not more than 180 days after initial startup, and at least once every 12 months thereafter. The PM source test required by condition 61 may be conducted in lieu of PM₁₀ testing required by this condition, provided all PM is assumed to be PM₁₀ as specified in condition 70. [District Rules 1081, 2201, and 4352, and 40 CFR 60.8(a)]*
- *NO_x emissions for source test purposes shall be determined using EPA Methods 7E and 19 or ARB Method 100 and EPA Method 19. [District Rules 1081 and 4352]*
- *CO emissions for source test purposes shall be determined using EPA Method 10 or ARB Method 100. [District Rules 1081 and 4352]*
- *PM₁₀ emissions for source test purposes shall be determined using EPA Methods 201A, 202, and 19. [District Rules 1081 and 4352]*
- *In lieu of performing a source test for PM₁₀, the results of the total particulate test may be used for compliance with the PM₁₀ emission limit provided the results include both the filterable and condensable (back half) particulates, and that all particulate matter is assumed to be PM₁₀. If this option is exercised, source testing shall be conducted using CARB Method 5 or EPA Method 5 (including condensable (back half) particulates). [District Rule 1081]*

- *Stack gas oxygen shall be determined using EPA Method 3 or 3A or ARB Method 100. [District Rules 1081 and 4352]*
- *SO_x emissions for source test purposes shall be determined using EPA Method 6 or ARB Method 100. [District Rules 1081 and 4352]*
- *VOC emissions for source test purposes shall be determined using EPA Method 18, 25A, or 25B, or ARB Method 100. [District Rules 1081 and 4352]*
- *Source testing for ammonia slip shall be conducted utilizing BAAQMD Method ST-1B. [District Rules 1081 and 2201]*
- *Testing for fuel higher heating value shall be conducted using ASTM Method D5865-01a or District-approved equivalent method. [District Rules 1081 and 4352, and 40 CFR 75 Appendix F]*

Section 7 of the rule establishes various compliance deadlines for specific provisions. All of these deadlines have passed, so this unit must be in compliance with all provisions of this rule from initial startup. No further discussion is required.

Rule 4801 Sulfur Compounds

This rule prohibits the emission of sulfur compounds in excess of 2,000 ppmv as sulfur dioxide (SO₂). The potential concentration of SO_x in the combustor exhaust gas during startup and shutdown can be calculated as follows:

$$C = (0.27 \text{ lb-SO}_x/\text{MMBtu}) \times (1 \text{ lb-mol}/64 \text{ lb-SO}_x) \times (379.5 \text{ ft}^3/\text{lb-mol}) \div (9,240 \text{ ft}^3/\text{MMBtu}) \times 10^6$$

C= 173 ppmv

Since 173 ppmv is less than the rule limit of 2,000 ppmv, compliance with the rule is expected. No further discussion is required.

Rule 7012 Hexavalent Chromium – Cooling Towers

This rule regulates the concentration of hexavalent chromium in cooling tower circulating water and prohibits the use of compounds containing hexavalent chromium in cooling tower after September 16, 1991. The following condition, first included on the Title V permit in 1997, will be retained on the ATC to ensure ongoing compliance:

N-645-34-4 (Cooling Tower):

- *No hexavalent chromium containing compounds shall be added to cooling tower circulating water. [District Rule 7012]*

Rule 8011 General Requirements

The definitions, exemptions, requirements, administrative requirements, recordkeeping requirements, and test methods set forth in this rule are applicable to all rules under Regulation VIII (Fugitive PM₁₀ Prohibitions) of the District Rules and Regulations.

Rule 8021 Construction, Demolition, Excavation, Extraction, and Other Earthmoving Activities

The purpose of this rule is to limit fugitive dust emission from construction, demolition, excavation, and other earthmoving activities. It requires the use of control measures to main visible dust emissions under the 20% opacity requirement.

DTE will commit to the use of dust control measures, such as water and approved chemical stabilizers, during construction to maintain opacity at less than 20% in accordance with the requirements of this rule. The following conditions will be included on the fuel receiving and handling ATCs to ensure compliance:

N-645-37-0 (Biomass Receiving and Storage)

N-645-38-0 (Biomass Handling)

N-645-39-0 (Alternative Biomass Receiving and Storage):

- *Disturbances of soil related to any construction, demolition, excavation, extraction, or other earthmoving activities shall comply with the requirements for fugitive dust control in District Rule 8021 unless specifically exempted under Section 4.0 of Rule 8021 or Rule 8011. [District Rules 8011 and 8021]*
- *An owner/operator shall submit a Dust Control Plan to the APCO prior to the start of any construction activity on any site that will include 10 acres or more of disturbed surface area for residential developments, or 5 acres or more of disturbed surface area for non-residential development, or will include moving, depositing, or relocating more than 2,500 cubic yards per day of bulk materials on at least three days. [District Rules 8011 and 8021]*

Rule 8031 Bulk Materials

This rule is intended to prevent emissions form the outdoor handling, storage, and transport of any bulk material. The following conditions will be included on the ATCs to ensure compliance:

N-645-37-0 (Biomass Receiving and Storage)

N-645-38-0 (Biomass Handling)

N-645-39-0 (Alternative Biomass Receiving and Storage):

- *When handling bulk materials outside an enclosed structure or building, water or chemical/organic stabilizers/suppressants shall be applied as required to limit Visible Dust Emissions to a maximum of 20% opacity. When necessary to achieve this opacity limitation, wind barriers with less than 50% porosity shall also be used. [District Rules 2201, 8011, and 8031]*
- *When transporting bulk materials outside an enclosed structure or building, all bulk material transport vehicles shall limit Visible Dust Emissions to 20% opacity by either limiting vehicular speed, maintaining sufficient freeboard on the load, applying water to the top of the load, or covering the load with a tarp or other suitable cover. [District Rules 8011 and 8031]*

- *All outdoor chutes and conveyors shall be controlled by any of the following options: 1) full enclosure, 2) operation with water spray equipment that sufficiently wets materials to limit VDE to 20% opacity, or 3) the concentration of particles having an aerodynamic diameter of 10 microns or less in the conveyed material shall be sufficiently small to limit VDE to 20% opacity. [District Rules 2201, 8011, and 8031]*
- *Records and other supporting documentation shall be maintained as required to demonstrate compliance with the requirements of the rules under Regulation VIII only for those days that a control measure was implemented. Such records shall include the type of control measure(s) used, the location and extent of coverage, and the date, amount, and frequency of application of dust suppressant, manufacturer's dust suppressant product information sheet that identifies the name of the dust suppressant and application instructions. Records shall be kept for one year following project completion that results in the termination of all dust generating activities. [District Rules 8011, 8031, and 8071]*

N-645-37-0 (Biomass Receiving and Storage)

N-645-39-0 (Alternative Biomass Receiving and Storage):

- *When storing bulk materials outside an enclosed structure or building, water or chemical/organic stabilizers/suppressants shall be applied as required to limit Visible Dust Emissions to a maximum of 20% opacity. When necessary to achieve this opacity limitation, all bulk material piles shall also be either maintained with a stabilized surface as defined in Section 3.58 of District Rule 8011, or shall be protected with suitable covers or barriers as prescribed in Table 8031-1, Section B, of District Rule 8031. [District Rules 2201, 8011, and 8031]*

Rule 8041 Carryout and Trackout

This rule is intended to limit dust emissions from carryout and trackout at sites subject to Regulation VIII. The following condition will be included on the ATCs to ensure compliance:

N-645-37-0 (Biomass Receiving and Storage)

N-645-38-0 (Biomass Handling)

N-645-39-0 (Alternative Biomass Receiving and Storage):

- *An owner/operator shall prevent or cleanup any carryout or trackout in accordance with the requirements of District Rule 8041 Section 5.0, unless specifically exempted under Section 4.0 of Rule 8041 (8/19/04) or Rule 8011(8/19/04). [District Rules 8011 and 8041]*

Rule 8051 Open Areas

This rule applies to any open area having 3.0 acres or more of disturbed surface area that has remained undeveloped, unoccupied, unused, or vacant for more than seven days. The following condition will be included on the ATCs to ensure compliance:

N-645-37-0 (Biomass Receiving and Storage)

N-645-38-0 (Biomass Handling)

N-645-39-0 (Alternative Biomass Receiving and Storage):

- *Whenever open areas are disturbed, or vehicles are used in open areas, the facility shall comply with the requirements of Section 5.0 of District Rule 8051, unless specifically exempted under Section 4.0 of Rule 8051 or Rule 8011. [District Rules 8011 and 8051]*

Rule 8061 Paved and Unpaved Roads

This rule applies to any new or existing public or private paved or unpaved road, road construction project, or road modification project. The following condition will be included on the ATCs to ensure compliance:

N-645-37-0 (Biomass Receiving and Storage)

N-645-38-0 (Biomass Handling)

N-645-39-0 (Alternative Biomass Receiving and Storage):

- *Any paved road or unpaved road shall comply with the requirements of District Rule 8061 unless specifically exempted under Section 4.0 of Rule 8061 or Rule 8011. [District Rules 8011 and 8061]*

Rule 8071 Unpaved Vehicle/Equipment Traffic Areas

This rule applies to any unpaved vehicle or equipment traffic area of 1.0 acre or larger. The following conditions will be included on the ATCs to ensure compliance:

N-645-37-0 (Biomass Receiving and Storage)

N-645-38-0 (Biomass Handling)

N-645-39-0 (Alternative Biomass Receiving and Storage):

- *Where dusting materials are allowed to accumulate on paved surfaces, the accumulation shall be removed daily or water and/or chemical/organic dust stabilizers/suppressants shall be applied to the paved surface as required to maintain continuous compliance with the requirements for a stabilized unpaved road as defined in Section 3.59 of District Rule 8011 and limit Visible Dust Emissions (VDE) to 20% opacity. [District Rule 8011 and 8071]*
- *On each day that 50 or more Vehicle Daily Trips or 25 or more Vehicle Daily Trips with 3 axles or more will occur on an unpaved vehicle/equipment traffic area, permittee shall apply water, gravel, roadmix, or chemical/organic dust stabilizers/suppressants, vegetative materials, or other District-approved control measure as required to limit Visible Dust Emissions to 20% opacity and comply with the requirements for a stabilized unpaved road as defined in Section 3.59 of District Rule 8011. [District Rule 8011 and 8071]*

- *Whenever any portion of the site becomes inactive, permittee shall restrict access and periodically stabilize any disturbed surface to comply with the conditions for a stabilized surface as defined in Section 3.58 of District Rule 8011. [District Rules 8011 and 8071]*
- *Water, gravel, roadmix, or chemical/organic dust stabilizers/suppressants, vegetative materials, or other District-approved control measure shall be applied to unpaved vehicle travel areas as required to limit Visible Dust Emissions to 20% opacity and comply with the requirements for a stabilized unpaved road as defined in Section 3.59 of District Rule 8011. [District Rule 8011 and 8071]*

California Environmental Quality ACT (CEQA)

The California Environmental Quality Act (CEQA) requires each public agency to adopt objectives, criteria, and specific procedures consistent with CEQA Statutes and the CEQA Guidelines for administering its responsibilities under CEQA, including the orderly evaluation of projects and preparation of environmental documents. The San Joaquin Valley Unified Air Pollution Control District (District) adopted its *Environmental Review Guidelines* (ERG) in 2001. The basic purposes of CEQA are to:

- Inform governmental decision-makers and the public about the potential, significant environmental effects of proposed activities.
- Identify the ways that environmental damage can be avoided or significantly reduced.
- Prevent significant, avoidable damage to the environment by requiring changes in projects through the use of alternatives or mitigation measures when the governmental agency finds the changes to be feasible.
- Disclose to the public the reasons why a governmental agency approved the project in the manner the agency chose if significant environmental effects are involved.

The Port of Stockton (Port) is the public agency having principal responsibility for approving the Project. As such, the Port served as the Lead Agency for the project and filed a Notice of Exemption with the Office of Planning and Research and San Joaquin County on March 23, 2011. Consistent with CEQA Guidelines §15329 (Class 29 – Cogeneration Projects at Existing Facilities) and §15302 (Class 2 – Replacement or Reconstruction), a Notice of Exemption was prepared and certified by the Port.

The District is a Responsible Agency for the project because of its discretionary approval power over the project via its Permits Rule (Rule 2010) and New Source Review Rule (Rule 2201), (CEQA Guidelines §15381).

The District's engineering evaluation of the project (this document) demonstrates that compliance with District rules and permit conditions would reduce Stationary Source emissions from the project to levels below the District's thresholds of significance for criteria pollutants. Thus, the District concludes that through a combination of project design elements and permit conditions, project specific stationary source emissions will be reduced and mitigated to less than significant levels. The District has determined that no additional findings are required (CEQA Guidelines §15096(h)).

IX. Recommendation

Compliance with all applicable rules and regulations is expected. Pending satisfactory completing of the required NSR and COC notice periods, issue Authorities to Construct N-645-8-5, '-9-5, '-10-5, '-11-5, '-36-0, '-37-0, '-38-0, and '-39-0 subject to the conditions on the attached draft Authorities to Construct in Appendix A.

X. Billing Information

Billing Information			
Permit Number	Previous Fee Schedule	Fee Schedule	Description
N-645-8-5	999-99	999-99	No applicable fee
N-645-9-5	999-99	999-99	No applicable fee
N-645-10-5	999-99	999-99	No applicable fee
N-645-11-5	999-99	999-99	No applicable fee
N-645-36-0	N/A	3020-08B-G	54,000 kW
N-645-37-0	N/A	999-99	No applicable fee
N-345-38-0	N/A	999-99	No applicable fee
N-645-39-0	N/A	999-99	No applicable fee

Appendices

- Appendix A: Draft Authority to Construct
- Appendix B: Current Permits to Operate
- Appendix C: Boiler BACT Determination
- Appendix D: Health Risk Assessment and Ambient Air Quality Analysis
- Appendix E: Detailed SSPE1 Calculations
- Appendix F: Hazardous Air Pollutant Emissions
- Appendix G: QNEC Calculations
- Appendix H: Compliance Certification
- Appendix I: Original POSDEF Offset Evaluation
- Appendix J: Reconstructed Source Analysis
- Appendix K: Biomass Fuel Handling System

Appendix A
Draft Authority to Construct

San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

ISSUANCE DATE: DRAFT
DRAFT

PERMIT NO: N-645-8-5

LEGAL OWNER OR OPERATOR: DTE STOCKTON, LLC
MAILING ADDRESS: 2526 W. WASHINGTON STREET
STOCKTON, CA 95203

LOCATION: 2526 W. WASHINGTON STREET
STOCKTON, CA 95203

EQUIPMENT DESCRIPTION:
MODIFICATION TO CONVERT SILO TO TRONA. POST-PROJECT EQUIPMENT DESCRIPTION IS: TRONA
RECEIVING SILO #1 CONTROLLED BY A FABRIC FILTER BAGHOUSE

CONDITIONS

1. Trona shall be received through direct coupled pneumatic unloading truck. [District NSR Rule] Federally Enforceable Through Title V Permit
2. The pneumatic transfer components and connections shall be totally air tight. [District NSR Rule] Federally Enforceable Through Title V Permit
3. The storage silos shall be totally air tight and vented only through a fabric filter. [District NSR Rule] Federally Enforceable Through Title V Permit
4. The fabric filters shall have a maximum effective air to cloth ratio of 4.5:1 and shall be equipped with an automatic pulse jet cleaning mechanism. [District NSR Rule] Federally Enforceable Through Title V Permit
5. There shall be no visible emissions from the fabric filter. [District NSR Rule] Federally Enforceable Through Title V Permit
6. The fabric filter baghouse shall be equipped with a pressure differential gauge to indicate the pressure drop across the bags. The gauge shall be maintained in good working condition at all times. The differential pressure across each compartment shall be maintained between 1" and 8" water column. [District NSR Rule and 2520, 9.3.2] Federally Enforceable Through Title V Permit
7. A spare set of each type of bags shall be maintained on the premises at all times. [District NSR Rule] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (209) 557-6400 WHEN CONSTRUCTION IS COMPLETED AND PRIOR TO OPERATING THE EQUIPMENT OR MODIFICATIONS AUTHORIZED BY THIS AUTHORITY TO CONSTRUCT. This is NOT a PERMIT TO OPERATE. Approval or denial of a PERMIT TO OPERATE will be made after an inspection to verify that the equipment has been constructed in accordance with the approved plans, specifications and conditions of this Authority to Construct, and to determine if the equipment can be operated in compliance with all Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District. Unless construction has commenced pursuant to Rule 2050, this Authority to Construct shall expire and application shall be cancelled two years from the date of issuance. The applicant is responsible for complying with all laws, ordinances and regulations of all other governmental agencies which may pertain to the above equipment.

Seyed Sadredin, Executive Director APCO

DAVID WARNER, Director of Permit Services
N-645-8-5: Mar 24 2011 11:23AM - DEMARISF : Joint Inspection NOT Required

8. Fabric collection system shall be completely inspected annually while in operation for evidence of particulate matter leaks and shall be repaired as needed. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
9. Fabric collector filters shall be completely inspected annually while not in operation for tears, scuffs, abrasives or holes which might interfere with PM collection efficiency and shall be replaced as needed. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
10. Records of fabric collector system maintenance, inspection, and repairs shall be maintained. The records shall include identification of equipment, date of inspection, corrective action taken, and identification of individual Performing inspection. [District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
11. Visible emissions from the the trona receiving silo shall be checked and the results recorded annually. If visible emissions are observed, corrective action shall be taken prior to further operation of the equipment. Corrective action means that visible emissions are eliminated before operation of the equipment is resumed. If visible emissions cannot be corrected within 24 hours, a visible emissions test shall be conducted by a trained observer using EPA method 9 within 72 hours. A record of the results of these observations shall be maintained. Such records shall include the observer's name and affiliation, the date, time, sky condition, and the observer's location relative to the source. [District Rule 2520, 9.3.2 and 9.4.2] Federally Enforceable Through Title V Permit
12. The differential pressure across each compartment of the fabric filter baghouse shall be checked and the results recorded annually. If the differential pressure across each compartment of the fabric filters is not between 1" and 8" water column, corrective action is required prior to further operation of the equipment. Corrective action means that the cause of the improper pressure differential is corrected before operation of the equipment is resumed. [District Rule 2520, 9.3.2 and 9.4.] Federally Enforceable Through Title V Permit
13. Particulate matter emissions shall not exceed 0.1 gr/dscf in concentration. [District Rule 4201] Federally Enforceable Through Title V Permit
14. Particulate matter emissions shall not exceed the hourly rate as calculated in District Rule 4202 using the equation $E = 3.59 \times P^{0.62}$ if P is less than or equal to 30 tons per hour, or $E = 17.31 \times P^{0.16}$ if P is greater than 30 tons per hour. [District Rule 4202] Federally Enforceable Through Title V Permit
15. PM10 emissions from the trona receiving and storage operation shall not exceed 0.00039 pounds per ton of trona received. [District Rule 2201]
16. The quantity of trona received shall not exceed 75 tons in any one day. [District Rule 2201]
17. Permittee shall maintain daily records of the quantity of trona received, in tons. [District Rule 2201]
18. {3465} Records shall be retained on-site for a period of at least five years and made available for District inspection upon request. [District Rule 2201]
19. {1830} This Authority to Construct serves as a written certificate of conformity with the procedural requirements of 40 CFR 70.7 and 70.8 and with the compliance requirements of 40 CFR 70.6(c). [District NSR Rule] Federally Enforceable Through Title V Permit
20. Permittee shall submit an application to comply with District Rule 2520 - Federally Mandated Operating Permits prior to commencing operation under this ATC. [District Rule 2520]
21. {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]

DRAFT

San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

ISSUANCE DATE: DRAFT
DRAFT

PERMIT NO: N-645-9-5

LEGAL OWNER OR OPERATOR: DTE STOCKTON, LLC
MAILING ADDRESS: 2526 W. WASHINGTON STREET
STOCKTON, CA 95203

LOCATION: 2526 W. WASHINGTON STREET
STOCKTON, CA 95203

EQUIPMENT DESCRIPTION:

MODIFICATION TO REPLACE LIMESTONE USE WITH TRONA. POST-PROJECT EQUIPMENT DESCRIPTION IS:
TRONA RECEIVING SILO #2 CONTROLLED BY A FABRIC FILTER BAGHOUSE

CONDITIONS

1. Trona shall be received through direct coupled pneumatic unloading truck. [District NSR Rule] Federally Enforceable Through Title V Permit
2. The pneumatic transfer components and connections shall be totally air tight. [District NSR Rule] Federally Enforceable Through Title V Permit
3. The storage silos shall be totally air tight and vented only through a fabric filter. [District NSR Rule] Federally Enforceable Through Title V Permit
4. The fabric filters shall have a maximum effective air to cloth ratio of 4.5:1 and shall be equipped with an automatic pulse jet cleaning mechanism. [District NSR Rule] Federally Enforceable Through Title V Permit
5. There shall be no visible emissions from the fabric filter. [District NSR Rule] Federally Enforceable Through Title V Permit
6. The fabric filter baghouse shall be equipped with a pressure differential gauge to indicate the pressure drop across the bags. The gauge shall be maintained in good working condition at all times. The differential pressure across each compartment shall be maintained between 1" and 8" water column. [District NSR Rule and 2520, 9.3.2] Federally Enforceable Through Title V Permit
7. A spare set of each type of bags shall be maintained on the premises at all times. [District NSR Rule] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

YOU **MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (209) 557-6400 WHEN CONSTRUCTION IS COMPLETED AND PRIOR TO OPERATING THE EQUIPMENT OR MODIFICATIONS AUTHORIZED BY THIS AUTHORITY TO CONSTRUCT.** This is NOT a PERMIT TO OPERATE. Approval or denial of a PERMIT TO OPERATE will be made after an inspection to verify that the equipment has been constructed in accordance with the approved plans, specifications and conditions of this Authority to Construct, and to determine if the equipment can be operated in compliance with all Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District. Unless construction has commenced pursuant to Rule 2050, this Authority to Construct shall expire and application shall be cancelled two years from the date of issuance. The applicant is responsible for complying with all laws, ordinances and regulations of all other governmental agencies which may pertain to the above equipment.

Seyed Sadredin, Executive Director, APCO

DAVID WARNER, Director of Permit Services

N-645-9-5 : Mar 24 2011 11:23AM - DEMARISF : Joint Inspection NOT Required

8. Fabric collection system shall be completely inspected annually while in operation for evidence of particulate matter leaks and shall be repaired as needed. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
9. Fabric collector filters shall be completely inspected annually while not in operation for tears, scuffs, abrasives or holes which might interfere with PM collection efficiency and shall be replaced as needed. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
10. Records of fabric collector system maintenance, inspection, and repairs shall be maintained. The records shall include identification of equipment, date of inspection, corrective action taken, and identification of individual Performing inspection. [District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
11. Visible emissions from the the trona receiving silo shall be checked and the results recorded annually. If visible emissions are observed, corrective action shall be taken prior to further operation of the equipment. Corrective action means that visible emissions are eliminated before operation of the equipment is resumed. If visible emissions cannot be corrected within 24 hours, a visible emissions test shall be conducted by a trained observer using EPA method 9 within 72 hours. A record of the results of these observations shall be maintained. Such records shall include the observer's name and affiliation, the date, time, sky condition, and the observer's location relative to the source. [District Rule 2520, 9.3.2 and 9.4.2] Federally Enforceable Through Title V Permit
12. The differential pressure across each compartment of the fabric filter baghouse shall be checked and the results recorded annually. If the differential pressure across each compartment of the fabric filters is not between 1" and 8" water column, corrective action is required prior to further operation of the equipment. Corrective action means that the cause of the improper pressure differential is corrected before operation of the equipment is resumed. [District Rule 2520, 9.3.2 and 9.4.] Federally Enforceable Through Title V Permit
13. Particulate matter emissions shall not exceed 0.1 gr/dscf in concentration. [District Rule 4201] Federally Enforceable Through Title V Permit
14. Particulate matter emissions shall not exceed the hourly rate as calculated in District Rule 4202 using the equation $E = 3.59 \times P^{0.62}$ if P is less than or equal to 30 tons per hour, or $E = 17.31 \times P^{0.16}$ if P is greater than 30 tons per hour. [District Rule 4202] Federally Enforceable Through Title V Permit
15. PM10 emissions from the trona receiving and storage operation shall not exceed 0.00039 pounds per ton of trona received. [District Rule 2201]
16. The quantity of trona received shall not exceed 75 tons in any one day. [District Rule 2201]
17. Permittee shall maintain daily records of the quantity of trona received, in tons. [District Rule 2201]
18. {3465} Records shall be retained on-site for a period of at least five years and made available for District inspection upon request. [District Rule 2201]
19. {1830} This Authority to Construct serves as a written certificate of conformity with the procedural requirements of 40 CFR 70.7 and 70.8 and with the compliance requirements of 40 CFR 70.6(c). [District NSR Rule] Federally Enforceable Through Title V Permit
20. Permittee shall submit an application to comply with District Rule 2520 - Federally Mandated Operating Permits prior to commencing operation under this ATC. [District Rule 2520]
21. {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]

DRAFT

San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

ISSUANCE DATE: DRAFT
DRAFT

PERMIT NO: N-645-10-5

LEGAL OWNER OR OPERATOR: DTE STOCKTON, LLC
MAILING ADDRESS: 2526 W. WASHINGTON STREET
STOCKTON, CA 95203

LOCATION: 2526 W. WASHINGTON STREET
STOCKTON, CA 95203

EQUIPMENT DESCRIPTION:
MODIFICATION TO CONVERT TO TRONA USE. POST-PROJECT EQUIPMENT DESCRIPTION IS: 3.5 TON TRONA DAY TANK #1 CONTROLLED BY A FABRIC FILTER BAGHOUSE

CONDITIONS

1. Each silo shall be totally enclosed and vented only through a vent filter. [District NSR Rule] Federally Enforceable Through Title V Permit
2. The bin vent filter shall be equipped with a pressure differential gauge to indicate the pressure drop across the bags. The gauge shall be maintained in good working condition at all times. The differential pressure across each compartment shall be maintained between 1" and 8" water column. [District NSR Rule and 2520, 9.3.2] Federally Enforceable Through Title V Permit
3. A spare set of each type of bags shall be maintained on the premises at all times. [District NSR Rule] Federally Enforceable Through Title V Permit
4. Trona shall be transferred through a totally air tight pneumatic transfer system, only. [District NSR Rule] Federally Enforceable Through Title V Permit
5. The vent filter shall have a maximum air to cloth ratio of 5:1 and shall be equipped with an automatic pulse jet cleaning mechanism. [District NSR Rule] Federally Enforceable Through Title V Permit
6. There shall be no visible emissions from the vent filter. [District NSR Rule] Federally Enforceable Through Title V Permit
7. Vent filter system shall be completely inspected annually while in operation for evidence of particulate matter leaks and shall be repaired as needed. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (209) 557-6400 WHEN CONSTRUCTION IS COMPLETED AND PRIOR TO OPERATING THE EQUIPMENT OR MODIFICATIONS AUTHORIZED BY THIS AUTHORITY TO CONSTRUCT. This is NOT a PERMIT TO OPERATE. Approval or denial of a PERMIT TO OPERATE will be made after an inspection to verify that the equipment has been constructed in accordance with the approved plans, specifications and conditions of this Authority to Construct, and to determine if the equipment can be operated in compliance with all Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District. Unless construction has commenced pursuant to Rule 2050, this Authority to Construct shall expire and application shall be cancelled two years from the date of issuance. The applicant is responsible for complying with all laws, ordinances and regulations of all other governmental agencies which may pertain to the above equipment.

Seyed Sadredin, Executive Director, APCO

DRAFT

DAVID WARNER, Director of Permit Services
N-645-10-5 : Mar 24 2011 11:23AM -- DEMARISF : Joint Inspection NOT Required

8. Vent filters shall be completely inspected annually while not in operation for tears, scuffs, abrasives or holes which might interfere with PM collection efficiency and shall be replaced as needed. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
9. Records of vent filter system maintenance, inspection, and repairs shall be maintained. The records shall include identification of equipment, date of inspection, corrective action taken, and identification of individual performing inspection. [District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
10. Visible emissions from the the trona day tank shall be checked and the results recorded annually. If visible emissions are observed, corrective action shall be taken prior to further operation of the equipment. Corrective action means that visible emissions are eliminated before operation of the equipment is resumed. If visible emissions cannot be corrected within 24 hours, a visible emissions test shall be conducted by a trained observer using EPA method 9 within 72 hours. A record of the results of these observations shall be maintained. Such records shall include the observer's name and affiliation, the date, time, sky condition, and the observer's location relative to the source. [District Rule 2520, 9.3.2 and 9.4.2] Federally Enforceable Through Title V Permit
11. The differential pressure across each compartment of the bin vent filter shall be checked and the results recorded annually. If the differential pressure across each compartment of the fabric filters is not between 1" and 8" water column, corrective action is required prior to further operation of the equipment. Corrective action means that the cause of the improper pressure differential is corrected before operation of the equipment is resumed. [District Rule 2520, 9.3.2 and 9.4.2] Federally Enforceable Through Title V Permit
12. Particulate matter emissions shall not exceed 0.1 gr/dscf in concentration. [District Rule 4201] Federally Enforceable Through Title V Permit
13. Particulate matter emissions shall not exceed the hourly rate as calculated in District Rule 4202 using the equation $E = 3.59 \times P^{0.62}$ if P is less than or equal to 30 tons per hour, or $E = 17.31 \times P^{0.16}$ if P is greater than 30 tons per hour. [District Rule 4202] Federally Enforceable Through Title V Permit
14. PM10 emissions from the trona day tank shall not exceed 0.00039 pounds per ton of trona received. [District Rule 2201]
15. The quantity of trona transferred to the trona day tank shall not exceed 3 tons in any one day. [District Rule 2201]
16. Permittee shall maintain daily records of the quantity of trona transferred into the day tank, in tons. [District Rule 2201]
17. {3465} Records shall be retained on-site for a period of at least five years and made available for District inspection upon request. [District Rule 2201]
18. {1830} This Authority to Construct serves as a written certificate of conformity with the procedural requirements of 40 CFR 70.7 and 70.8 and with the compliance requirements of 40 CFR 70.6(c). [District NSR Rule] Federally Enforceable Through Title V Permit
19. Permittee shall submit an application to comply with District Rule 2520 - Federally Mandated Operating Permits prior to commencing operation under this ATC. [District Rule 2520]
20. {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]

DRAFT

San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

ISSUANCE DATE: DRAFT
DRAFT

PERMIT NO: N-645-11-5

LEGAL OWNER OR OPERATOR: DTE STOCKTON, LLC
MAILING ADDRESS: 2526 W. WASHINGTON STREET
STOCKTON, CA 95203

LOCATION: 2526 W. WASHINGTON STREET
STOCKTON, CA 95203

EQUIPMENT DESCRIPTION:
MODIFICATION TO CONVERT TO TRONA USE. POST-PROJECT EQUIPMENT DESCRIPTION IS: 3.5 TON TRONA DAY TANK #2 CONTROLLED BY A FABRIC FILTER BAGHOUSE

CONDITIONS

1. Each silo shall be totally enclosed and vented only through a vent filter. [District NSR Rule] Federally Enforceable Through Title V Permit
2. The bin vent filter shall be equipped with a pressure differential gauge to indicate the pressure drop across the bags. The gauge shall be maintained in good working condition at all times. The differential pressure across each compartment shall be maintained between 1" and 8" water column. [District NSR Rule and 2520, 9.3.2] Federally Enforceable Through Title V Permit
3. A spare set of each type of bags shall be maintained on the premises at all times. [District NSR Rule] Federally Enforceable Through Title V Permit
4. Trona shall be transferred through a totally air tight pneumatic transfer system, only. [District NSR Rule] Federally Enforceable Through Title V Permit
5. The vent filter shall have a maximum air to cloth ratio of 5:1 and shall be equipped with an automatic pulse jet cleaning mechanism. [District NSR Rule] Federally Enforceable Through Title V Permit
6. There shall be no visible emissions from the vent filter. [District NSR Rule] Federally Enforceable Through Title V Permit
7. Vent filter system shall be completely inspected annually while in operation for evidence of particulate matter leaks and shall be repaired as needed. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

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Seyed Sadredin, Executive Director, APCO

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DAVID WARNER, Director of Permit Services
N-645-11-5 : Mar 24 2011 11:23AM - DEMARISF : Joint Inspection NOT Required

8. Vent filters shall be completely inspected annually while not in operation for tears, scuffs, abrasives or holes which might interfere with PM collection efficiency and shall be replaced as needed. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
9. Records of vent filter system maintenance, inspection, and repairs shall be maintained. The records shall include identification of equipment, date of inspection, corrective action taken, and identification of individual performing inspection. [District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
10. Visible emissions from the the trona day tank shall be checked and the results recorded annually. If visible emissions are observed, corrective action shall be taken prior to further operation of the equipment. Corrective action means that visible emissions are eliminated before operation of the equipment is resumed. If visible emissions cannot be corrected within 24 hours, a visible emissions test shall be conducted by a trained observer using EPA method 9 within 72 hours. A record of the results of these observations shall be maintained. Such records shall include the observer's name and affiliation, the date, time, sky condition, and the observer's location relative to the source. [District Rule 2520, 9.3.2 and 9.4.2] Federally Enforceable Through Title V Permit
11. The differential pressure across each compartment of the bin vent filter shall be checked and the results recorded annually. If the differential pressure across each compartment of the fabric filters is not between 1" and 8" water column, corrective action is required prior to further operation of the equipment. Corrective action means that the cause of the improper pressure differential is corrected before operation of the equipment is resumed. [District Rule 2520, 9.3.2 and 9.4.2] Federally Enforceable Through Title V Permit
12. Particulate matter emissions shall not exceed 0.1 gr/dscf in concentration. [District Rule 4201] Federally Enforceable Through Title V Permit
13. Particulate matter emissions shall not exceed the hourly rate as calculated in District Rule 4202 using the equation $E = 3.59 \times P^{0.62}$ if P is less than or equal to 30 tons per hour, or $E = 17.31 \times P^{0.16}$ if P is greater than 30 tons per hour. [District Rule 4202] Federally Enforceable Through Title V Permit
14. PM10 emissions from the trona day tank shall not exceed 0.00039 pounds per ton of trona received. [District Rule 2201]
15. The quantity of trona transferred to the trona day tank shall not exceed 3 tons in any one day. [District Rule 2201]
16. Permittee shall maintain daily records of the quantity of trona transferred into the day tank, in tons. [District Rule 2201]
17. {3465} Records shall be retained on-site for a period of at least five years and made available for District inspection upon request. [District Rule 2201]
18. {1830} This Authority to Construct serves as a written certificate of conformity with the procedural requirements of 40 CFR 70.7 and 70.8 and with the compliance requirements of 40 CFR 70.6(c). [District NSR Rule] Federally Enforceable Through Title V Permit
19. Permittee shall submit an application to comply with District Rule 2520 - Federally Mandated Operating Permits prior to commencing operation under this ATC. [District Rule 2520]
20. {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]

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San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

DRAFT
ISSUANCE DATE: DRAFT

PERMIT NO: N-645-34-4

LEGAL OWNER OR OPERATOR: DTE STOCKTON, LLC
MAILING ADDRESS: 2526 W. WASHINGTON STREET
STOCKTON, CA 95203

LOCATION: 2526 W. WASHINGTON STREET
STOCKTON, CA 95203

EQUIPMENT DESCRIPTION:
MODIFICATION TO REDUCE VOC LIMIT. POST-PROJECT EQUIPMENT DESCRIPTION IS: 43,000 GALLON PER MINUTE COOLING TOWER

CONDITIONS

1. VOC emissions from the addition of VOC-containing chemicals to the cooling tower water shall not exceed 0.8 pounds in any one day. [District Rule 2201]
2. Permittee shall maintain a log recording the amount of VOC containing material added each day. [District NSR Rule] Federally Enforceable Through Title V Permit
3. A list of materials added to the cooling tower and their VOC content shall be kept and made available for District inspection upon request. [District NSR Rule] Federally Enforceable Through Title V Permit
4. No hexavalent chromium containing compounds shall be added to cooling tower circulating water. [District Rule 7012]
5. {1830} This Authority to Construct serves as a written certificate of conformity with the procedural requirements of 40 CFR 70.7 and 70.8 and with the compliance requirements of 40 CFR 70.6(c). [District NSR Rule] Federally Enforceable Through Title V Permit
6. Permittee shall submit an application to comply with District Rule 2520 - Federally Mandated Operating Permits prior to commencing operation under this ATC. [District Rule 2520]

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Seyed Sadredin, Executive Director APCO

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DAVID WARNER, Director of Permit Services
N-645-34-4 : Mar 24 2011 11:24AM - DEMARISF : Joint Inspection NOT Required

San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

ISSUANCE DATE: DRAFT
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PERMIT NO: N-645-36-0

LEGAL OWNER OR OPERATOR: DTE STOCKTON, LLC
MAILING ADDRESS: 2526 W. WASHINGTON STREET
STOCKTON, CA 95203

LOCATION: 2526 W. WASHINGTON STREET
STOCKTON, CA 95203

EQUIPMENT DESCRIPTION:

54 MW (GROSS) ELECTRICAL GENERATING STATION WITH A 699 MMBTU/HR STOKER BOILER EQUIPPED WITH A 100 MMBTU/HR NATURAL GAS-FIRED STARTUP BURNER, MULTICLONE AND ELECTROSTATIC PRECIPITATOR, TRONA INJECTION AND WET SCRUBBER, OXIDATION CATALYST, AND SELECTIVE CATALYTIC REDUCTION

CONDITIONS

1. Prior to operating equipment under this Authority to Construct, permittee shall surrender PM10 emission reduction credits for the following quantities of emissions: 1st quarter - 6,929 lb, 2nd quarter - 6,930 lb, 3rd quarter - 6,930 lb, and fourth quarter - 6,930 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 9/21/06). [District Rule 2201]
2. Prior to operating equipment under this Authority to Construct, permittee shall surrender VOC emission reduction credits for the following quantities of emissions: 1st quarter - 1,450 lb, 2nd quarter - 1,450 lb, 3rd quarter - 1,450 lb, and fourth quarter - 1,450 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 9/21/06). [District Rule 2201]
3. ERC Certificate Numbers S-2937-4, S-3199-4, S-2971-4, N-717-5, N-718-5, N-931-5, and S-3413-5 (or one or more certificates split from any of these certificates) shall be used to supply the required PM10 offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201]

CONDITIONS CONTINUE ON NEXT PAGE

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Seyed Sadredin, Executive Director, APCO

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DAVID WARNER, Director of Permit Services

N-645-36-0 : Apr 4 2011 4:48PM - DEMARISF : Joint Inspection NOT Required

4. ERC Certificate Numbers S-2775-1, S-3373-1, S-3132-1, S-3051-1, S-3504-1, S-3505-1, and S-3503-1 (or one or more certificates split from any of these certificates) shall be used to supply the required VOC offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201]
5. The permittee is authorized to utilize SOx ERC to satisfy the offset obligation specified in Condition 1. The use of SOx ERC to satisfy the PM10 offset obligation shall be conducted at an interpollutant offset ratio of 1:1. [District Rule 2201]
6. Prior to initial startup of the equipment authorized by this ATC, permittee shall permanently remove from service, and surrender the operating permit for, units N-645-2, '-3, '-4, '-7, '-14, '-16, '-20, '-23, '-24, '-31, and '-35. [District Rule 2201]
7. Permittee shall minimize the emissions from the boiler to the maximum extent possible during the commissioning period. Conditions 7 through 15 shall apply only during the commissioning period as defined below. Unless otherwise indicated, Conditions 16 through 95 shall apply after the commissioning period has ended. [District Rule 2201]
8. Commissioning activities are defined as, but not limited to, all testing, adjustment, tuning, and calibration activities recommended by the equipment manufacturers and the DTE construction contractor to insure safe and reliable steady state operation of the unit and associated electrical delivery systems. [District Rule 2201]
9. Commissioning period shall commence when all mechanical, electrical, and control systems are installed and individual system startup has been completed, or when the boiler is first fired, whichever occurs first. The commissioning period shall terminate when the plant has completed initial performance testing, completed final plant tuning, and is available for commercial operation. [District Rule 2201]
10. At the earliest feasible opportunity, in accordance with the recommendations of the equipment manufacturer and the construction contractor, the boiler shall be tuned to minimize emissions. [District Rule 2201]
11. At the earliest feasible opportunity, in accordance with the recommendations of the equipment manufacturers and the construction contractor, each of the pollution control devices (trona injection system, multiclone, electrostatic precipitator, oxidation catalyst, selective catalytic reduction system) shall be installed, adjusted, and operated to minimize emissions from this unit. [District Rule 2201]
12. The permittee shall submit a plan to the District at least four weeks prior to the first firing of this unit, describing the procedures to be followed during the commissioning period. The plan shall include a description of each commissioning activity, the anticipated duration of each activity in hours, and the purpose of the activity. The activities described shall include, but are not limited to, the tuning of the combustor, the installation and operation of each of the pollution control devices, the installation, calibration, and testing of the continuous emissions monitors, and any activities requiring the firing of this unit without abatement by the pollution control devices. [District Rule 2201]
13. Emission rates from the boiler, during the commissioning period, shall not exceed any of the following emission rates: 6,652.8 lb-NOx/day; 2,138.4 lb-SOx/day; 1,188.0 lb-PM10/day; 6,019.2 lb-CO/day; and 617.8 lb-VOC/day. During the commissioning period, the permittee shall demonstrate compliance with the NOx, SOx, and CO emission limits through the use of properly operated and maintained continuous emissions monitors (CEM) and recorders. The monitored parameters for this unit shall be recorded at least once every 15 minutes (excluding normal calibration periods or when the monitored source is not in operation). An exceedance of the NOx, SOx, and CO emission limits, as measured by the continuous emission monitors, shall be a violation of this permit condition. During the commissioning period, the permittee shall demonstrate compliance with the PM10 and VOC emission limits by calculating emissions, using the heat input to the boiler, the operating time, and the emission factors specified in this condition, during each day in which the boiler is operated. PM10 emissions shall be calculated using an emission factor of 0.0214 lb/MMBtu when the ESP secondary power input equals or exceeds the minimum specified in condition 25, and an emission factor of 0.15 lb/MMBtu at all other times. VOC emissions shall be calculated using an emission factor of 0.009 lb/MMBtu when the CO CEM indicates the CO emission rate is below 0.09 lb/MMBtu, and an emission factor of 0.078 lb/MMBtu at all other times. An exceedance of the PM10 and VOC emission limits, as calculated, shall be a violation of this permit condition. [District Rule 2201]

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CONDITIONS CONTINUE ON NEXT PAGE

14. The continuous emissions monitors (CEM) specified in these permit conditions shall be installed, calibrated and operational prior to the first firing of the unit. After first firing, the detection range of the CEM shall be adjusted as necessary to accurately measure the resulting range of emissions concentrations. [District Rule 2201]
15. The total mass emissions of NO_x, SO_x, PM₁₀, CO, and VOC that are emitted during the commissioning period shall be counted toward the quarterly emission limits specified in condition 56. NO_x, SO_x, and CO total mass emissions shall be determined from CEM data, while PM₁₀ and VOC total mass emissions shall be calculated using the heat input to the boiler, the operating time, and the emission factors specified in this condition, during each day in which the boiler is operated. PM₁₀ emissions shall be calculated using an emission factor of 0.0214 lb/MMBtu when the ESP secondary power input equals or exceeds the minimum specified in condition 25, and an emission factor of 0.15 lb/MMBtu at all other times. VOC emissions shall be calculated using an emission factor of 0.009 lb/MMBtu when the CO CEM indicates the CO emission rate is below 0.09 lb/MMBtu, and an emission factor of 0.078 lb/MMBtu at all other times. [District Rule 2201]
16. No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1 or 20% opacity. [District Rule 4101 and 40 CFR 60.43b(f) and (g)]
17. {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
18. {14} Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201]
19. Particulate matter emissions shall not exceed the hourly rate as calculated in District Rule 4202 using the equation $E = 3.59 \times P^{0.62}$ if P is less than or equal to 30 tons per hour, or $E = 17.31 \times P^{0.16}$ if P is greater than 30 tons per hour. [District Rule 4202]
20. {1407} All equipment shall be maintained in good operating condition and shall be operated in a manner to minimize emissions of air contaminants into the atmosphere. [District Rule 2201]
21. {1898} The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap (flapper ok), roof overhang, or any other obstruction. [District Rule 4102]
22. The permittee shall conduct a performance tune-up of the boiler in accordance with the requirements of 40 CFR 63 Subpart JJJJJJ within 180 days of initial startup, and at least every 24 months thereafter. The permittee shall submit a signed statement in the Notification of Compliance Status indicating that each tune up was conducted. [40 CFR 63.11210]
23. The permittee shall calibrate and maintain in operation a selective catalytic reduction (SCR) system designed to reduce NO_x emissions from the boiler exhaust stack to less than or equal to 0.040 lb/MMBtu. [District Rule 2201]
24. The electrostatic precipitator shall be provided with continuous monitoring equipment showing the secondary power input, as specified in 40 CFR 63, Subpart JJJJJJ. The monitoring equipment shall be maintained in good working condition at all times and shall be located in an easily accessible location. [District Rule 2201 and 40 CFR 63.11224]
25. The electrostatic precipitator shall be in operation whenever the boiler is operated on biomass. The electrostatic precipitator secondary power input, on a 12-hour block average, shall be maintained at or above the lowest 1-hour average secondary power input measured during the most recent performance test demonstrating compliance with the PM emission limitation, in accordance with Table 3 of 40 CFR 63, Subpart JJJJJJ. Transient voltage fluctuations due to arcs and sparks, or similar automatic functions of the electrostatic precipitator, shall not constitute deviations. The electrostatic precipitator shall be maintained in accordance with the manufacturer's recommendations, a copy of which shall be maintained on site. [District Rule 2201, 40 CFR 63.11221 and 40 CFR 64]
26. The wet scrubber shall be provided with monitoring equipment that continuously monitors and records the effluent pH and flow rate of the scrubber liquid. [District Rule 2201]
27. The wet scrubber shall be in operation whenever the boiler is operated on biomass. The effluent pH and liquid flow rate, calculated on a 24-hour block average basis, shall be maintained at or above the average pH and flow rate established during the most recent HCl source test. [District Rule 2201]
28. During start-up or shutdown, the emissions control system shall be in operation, and emissions shall be minimized insofar as technologically possible. [District Rule 2201]

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CONDITIONS CONTINUE ON NEXT PAGE

29. Startup is defined as the period of time beginning with initial boiler firing and ending only when the unit is firing on biomass or wood residue and is in compliance with the NO_x, SO_x, and CO emission limits for non-startup and shutdown operation, and with the minimum ESP secondary power input requirement specified in condition 25. Shutdown is defined as the period of time beginning with the initiation of the boiler shutdown sequence and ending with the cessation of combustion in the boiler. [District Rule 2201]
30. This unit shall only be fired on biomass and wood residue, except that the unit may also be fired on natural gas during startup, shutdown, and flame stabilization periods. [District Rules 2201 and 4102]
31. The total annual heat input to the unit from natural gas combustion shall not exceed 612,324 MMBtu in any one calendar year. [District Rules 4001 and 40 CFR 60.44b(d)]
32. Biomass is defined as any organic material originating from plants, not chemically treated and not derived from fossil fuels, including but not limited to products, by-products, and residues from agriculture, forestry, aquatic and related industries, such as agricultural, energy or feed crops and residues, orchard and vineyard prunings and removal, stone fruit pits, nut shells, cotton gin trash, corn stalks and stover, straw, seedhulls, sugarcane leavings and bagasse, aquatic plants and algae, cull logs, eucalyptus logs, poplars, willows, switchgrass, alfalfa, bark, lawn, yard and garden clippings, paper (unprinted), leaves, silvicultural residue, tree and brush pruning, sawdust, timber slash, mill scrap, wood and wood chips, and wood residue. Biomass does not include tires, material containing sewage sludge, or industrial, hazardous, radioactive, or municipal solid waste. [District Rules 2201 and 4102]
33. Wood residue consists of wood pieces or particles which are generated from the manufacturing or production of wood products, harvesting, processing or storage of raw wood materials, or construction and demolition activities. [District Rules 2201 and 4102]
34. Biomass and wood waste fuels shall not include pressure-treated wood and shall not contain compounds listed in Title 22, California Code of Regulations, 66261.24(a)(2)(A) in excess of the following concentrations by weight: 500 ppm antimony and/or antimony compounds, 500 ppm arsenic and/or arsenic compounds, 1,000 ppm asbestos, 10,000 ppm barium and/or barium compounds (excluding barite), 75 ppm beryllium and/or beryllium compounds, 100 ppm cadmium and/or cadmium compounds, 500 ppm chromium (VI) compounds, 2,500 ppm chromium and/or chromium (III) compounds, 8,000 ppm cobalt and/or cobalt compounds, 2,500 ppm copper and/or copper compounds, 18,000 ppm fluoride salts, 1,000 ppm lead and/or lead compounds, 20 ppm mercury and/or mercury compounds, 3,500 ppm molybdenum and/or molybdenum compounds, 2,000 ppm nickel and/or nickel compounds, 100 ppm selenium and/or selenium compounds, 500 ppm silver and/or silver compounds, 700 ppm thallium and/or thallium compounds, 2,400 ppm vanadium and/or vanadium compounds, and 5,000 ppm zinc and/or zinc compounds. [District Rule 4102]
35. The permittee shall be allowed a 24-month period to evaluate the operational variability and optimum control effectiveness of the proposed exhaust emission control system to meet the design emission rate of 0.040 lb-NO_x/MMBtu. During the evaluation period, the permittee shall operate and maintain the boiler and the emission control system in such a manner as to minimize NO_x emissions, and shall perform all required source testing and monitoring. The evaluation period shall begin upon the first day of the initial source test, and shall terminate after 24 months. [District Rule 2201]
36. During the 24-month evaluation period, NO_x emissions in excess of 0.040 lb/MMBtu, but less than or equal to 0.065 lb/MMBtu, on a block 24-hour average basis shall not constitute a violation of this permit. [District Rule 2201]
37. During the 24-month evaluation period, the permittee shall submit annual status reports on the performance of the NO_x emission control system. Each status report is due at the same time as the annual source test report. The status report shall, at a minimum, include actual operating time, calculated heat input to the boiler, actual NO_x emissions as measured by the CEM system, daily and annual average actual NO_x emission rates (in lb/MMBtu), and an analysis of system performance to date and expected performance for the next year. [District Rule 2201]
38. If NO_x emissions continue to exceed, or are projected to exceed, 0.040 lbs/MMBtu on a block 24-hour average basis after the 24-month evaluation period, the permittee shall submit a final report containing all monitoring and source test data to the District within 90 days after the end of the evaluation period. The report shall include a detailed analysis of all factors that prevent achievement of the expected emission rate, as well as a detailed explanation of the steps taken to operate and maintain the boiler and the emission control system in such a manner as to minimize emissions. The report shall also propose an enforceable NO_x emission limit which shall not exceed 0.065 lb/MMBtu on a block 24-hour average basis. [District Rule 2201]

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39. Upon submittal of the report, the District shall re-evaluate BACT requirements for NO_x from this class and category of source and establish an appropriate BACT emissions limit. Within 30 days of receipt of the District's determination, the permittee shall submit an Authority to Construct application to incorporate the revised emissions limit. In no case shall the NO_x emission limitation be higher than 0.065 lbs/MMBtu on a block 24-hour average basis. [District Rule 2201]
40. Following the 24-month evaluation period and prior to issuance of an Authority to Construct with a revised NO_x emission limit, NO_x emissions in excess of 0.040 lb/MMBtu, but less than or equal to 0.065 lb/MMBtu, on a block 24-hour average basis shall not constitute a violation of this permit. [District Rule 2201]
41. If NO_x emissions do not exceed, and are not projected to exceed, the expected emission rate of 0.040 lb/MMBtu on a block 24-hour average basis after the 24-month evaluation period, then the expected emission rate of 0.040 lb/MMBtu on a block 24-hour average basis shall become an enforceable NO_x emission limit. If the permittee fails to submit the required final report within 90 days after the end of the evaluation period, the permittee shall be considered to stipulate that an enforceable NO_x emission limit of 0.040 lb/MMBtu on a block 24-hour average basis is achievable and will be made enforceable. [District Rule 2201]
42. Except during periods of startup and shutdown, emission rate from this biomass-fired boiler shall not exceed 0.065 lb-NO_x/MMBtu. Initial and annual compliance with this limit shall be demonstrated by source testing. Ongoing compliance with this limit shall be determined from CEM data on a block 24-hour average basis as defined in District Rule 4352 (amended May 18, 2006). [District Rules 2201 and 4352]
43. During periods of startup and shutdown emission rate from this biomass-fired boiler shall not exceed 0.74 lb-NO_x/MMBtu. [District Rules 2201 and 4352]
44. NO_x emissions from this biomass-fired boiler shall not exceed 140.00 pounds in any one hour, as specified in District Rule 4301, Section 6.0. [District Rule 4301]
45. Except during periods of startup and shutdown, emission rate from this biomass-fired boiler shall not exceed 0.09 lb-CO/MMBtu. Initial and annual compliance with this limit shall be demonstrated by source testing. Ongoing compliance with this limit shall be determined from CEM data on a block 24-hour average basis. [District Rules 2201 and 4352]
46. During periods of startup and shutdown, emission rate from this biomass-fired boiler shall not exceed 0.67 lb-CO/MMBtu. [District Rules 2201 and 4352]
47. Except during periods of startup and shutdown, emission rate from this biomass-fired boiler shall not exceed 0.054 lb-SO_x/MMBtu. Initial and annual compliance with this limit shall be demonstrated by source testing. Ongoing compliance with this limit shall be determined from CEM data on a block 24-hour average basis. [District Rule 2201]
48. During periods of startup and shutdown, emission rate from this biomass-fired boiler shall not exceed 0.27 lb-SO_x/MMBtu. [District Rule 2201]
49. Except during periods of startup and shutdown, emission rate from this biomass-fired boiler shall not exceed 0.0214 lb-PM₁₀/MMBtu. Initial and annual compliance with this limit shall be demonstrated by source testing. [District Rule 2201]
50. During periods of startup and shutdown, emission rate from this biomass-fired boiler shall not exceed 0.078 lb-PM₁₀/MMBtu. [District Rule 2201]
51. Except during periods of startup and shutdown, emission rate from this biomass-fired boiler shall not exceed 0.030 lb-PM/MMBtu [40 CFR 60.43b(h)(1) and 40 CFR 63.11201]
52. Except during periods of startup and shutdown, emission rates from this biomass-fired boiler shall not exceed 0.009 lb-VOC/MMBtu. Initial and annual compliance with this limit shall be demonstrated by source testing. [District Rule 2201]
53. During periods of startup and shutdown, emission rate from this biomass-fired boiler shall not exceed 0.068 lb-VOC/MMBtu. [District Rule 2201]
54. Ammonia slip emission rate from this biomass-fired boiler shall not exceed 40 ppmvd @ 3% O₂. Initial and annual compliance with this limit shall be demonstrated by source testing. [District Rule 4102]

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55. HCl emissions from this biomass-fired boiler shall not exceed 19,980 pounds in any rolling 12-consecutive-month period. HCl emissions shall be calculated for comparison to this annual limit using the boiler heat input and the emission factor calculated in the most recent HCl source test. [District Rule 2201]
56. Emissions from this biomass-fired boiler shall not exceed any of the following limits: 1st Quarter: 53,837 lb-NO_x, 34,785 lb-SO_x, 29,133 lb-PM₁₀, 123,959 lb-CO, and 12,400 lb-VOC; 2nd Quarter: 53,837 lb-NO_x, 34,785 lb-SO_x, 29,134 lb-PM₁₀, 123,959 lb-CO, and 12,400 lb-VOC; 3rd Quarter: 53,838 lb-NO_x, 34,785 lb-SO_x, 29,134 lb-PM₁₀, 123,959 lb-CO, and 12,400 lb-VOC; 4th Quarter: 53,838 lb-NO_x, 34,785 lb-SO_x, 29,134 lb-PM₁₀, 123,959 lb-CO, and 12,400 lb-VOC. Compliance with NO_x, SO_x, and CO limits shall be determined from CEM data. Compliance with PM₁₀ and VOC limits shall be calculated using emission factors (the most recent source test results for non-startup/shutdown operation, or the startup/shutdown emission factors at all other times), heat input to the boiler, and operating time. [District Rule 2201]
57. {383} Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified at least 30 days prior to any compliance source test, and a source test plan shall be submitted for approval at least 15 days prior to testing. [District Rule 1081]
58. {3721} The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081]
59. For emissions source testing, the arithmetic average of three 30-consecutive-minute test runs shall apply. If two of three runs are above an applicable limit the test cannot be used to demonstrate compliance with an applicable limit. [District Rules 1081 and 2201]
60. This unit shall be tested for compliance with the NO_x, CO, PM₁₀, SO_x, VOC, and NH₃ emissions limits within 60 days of achieving the maximum steam production rate at which the unit will be operated, but not more than 180 days after initial startup, and at least once every 12 months thereafter. The PM source test required by condition 61 may be conducted in lieu of PM₁₀ testing required by this condition, provided all PM is assumed to be PM₁₀ as specified in condition 70. [District Rules 1081, 2201, and 4352, and 40 CFR 60.8(a)]
61. This unit shall be tested for compliance with the PM emission limit within 60 days of achieving the maximum steam production rate at which the unit will be operated, but not more than 180 days after initial startup, and at least once every 36 months thereafter. [40 CFR 60.8(a), 40 CFR 60.43b(d), and 40 CFR 63.11220(a)]
62. This unit shall be tested to determine the HCl emission factor within 60 days of achieving the maximum steam production rate at which the unit will be operated, but not more than 180 days after initial startup, and at least once every 12 months thereafter. The permittee shall measure and record the effluent pH and liquid flow rate in the wet scrubber every 15 minutes during the source test. [District Rule 2201]
63. Permittee shall test fuel to determine the higher heating value within 60 days of achieving the maximum steam production rate at which the unit will be operated, but not more than 180 days after initial startup, and at least once every 12 months thereafter. [District Rules 1081 and 2201, and 40 CFR 60.8(a)]
64. Permittee shall test fuel for contaminants within 60 days of achieving the maximum steam production rate at which the unit will be operated, but not more than 180 days after initial startup, and at least once every 12 months thereafter, or whenever requested by the District. The District shall be notified at least 15 days prior to scheduled sample collection. [District Rules 2201 and 4102, and 40 CFR 60.8(a)]
65. Testing of the fuel for contaminants shall be conducted on a representative sample collected upstream of and as close as practicable to the fuel metering bins. [District Rules 2201 and 4102]
66. Fuel shall be tested for contaminants in accordance with the wet extraction test procedure detailed in Title 22 California Code of Regulations, Division 4.5, Chapter 11, Appendix II. [District Rules 2201 and 4102]
67. NO_x emissions for source test purposes shall be determined using EPA Methods 7E and 19 or ARB Method 100 and EPA Method 19. [District Rules 1081 and 4352]
68. CO emissions for source test purposes shall be determined using EPA Method 10 or ARB Method 100. [District Rules 1081 and 4352]
69. PM₁₀ emissions for source test purposes shall be determined using EPA Methods 201A, 202, and 19. [District Rules 1081 and 4352]

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70. In lieu of performing a source test for PM10, the results of the total particulate test may be used for compliance with the PM10 emission limit provided the results include both the filterable and condensable (back half) particulates, and that all particulate matter is assumed to be PM10. If this option is exercised, source testing shall be conducted using CARB Method 5 or EPA Method 5 (including condensable (back half) particulates). [District Rule 1081]
71. PM emissions required to be source tested under condition 61 shall be determined using EPA Methods 5 or 17 (filterable (front half) PM only), and 19. [40 CFR 60.43b(d)(2) and 40 CFR 63.11212]
72. Stack gas oxygen shall be determined using EPA Method 3 or 3A or ARB Method 100. [District Rules 1081 and 4352]
73. SOx emissions for source test purposes shall be determined using EPA Method 6 or ARB Method 100. [District Rules 1081 and 4352]
74. VOC emissions for source test purposes shall be determined using EPA Method 18, 25A, or 25B, or ARB Method 100. [District Rules 1081 and 4352]
75. Source testing for ammonia slip shall be conducted utilizing BAAQMD Method ST-1B. [District Rules 1081 and 2201]
76. HCl emissions for source test purposes shall be determined using EPA Methods 26 or 26A, and 19. [District Rule 2201]
77. Testing for fuel higher heating value shall be conducted using ASTM Method D5865-01a or District-approved equivalent method. [District Rules 1081 and 4352, and 40 CFR 75 Appendix F]
78. The exhaust stack shall be equipped with a continuous emissions monitor (CEM) for NOx, CO, SOx, and O2. The CEM shall meet the requirements of 40 CFR parts 60 (for CO) and 75 (for NOx, SOx, and O2), except as specified in 40 CFR 60, Subpart Db, and shall be capable of monitoring emissions during startups and shutdowns as well as during normal operating conditions. The CEM shall be used to demonstrate compliance with the Rule 2201 emission limits. [District Rules 1080 and 2201]
79. Permittee shall install, calibrate, maintain, and operate a continuous opacity monitoring system (COMS) in accordance with 40 CFR 60.48b, and 40 CFR 60 Appendices B and F. The sampling and analyzing cycle shall be completed every successive 10 second period, and the recording cycle shall be completed every successive 6 minute period. The COMS shall be used to demonstrate compliance with the opacity requirements of 40 CFR 43b(f) and (g). [District Rules 1080 and 2201, and 40 CFR 60.48b(a)]
80. Permittee shall install and maintain equipment, facilities, and systems compatible with the District's CEM data polling software system and shall make CEM data available to the District's automated polling system on a daily basis. [District Rule 1080]
81. {1834} Upon notice by the District that the facility's CEM system is not providing polling data, the facility may continue to operate without providing automated data for a maximum of 30 days per calendar year provided the CEM data is sent to the District by a District-approved alternative method. [District Rule 1080]
82. {1835} The exhaust stack shall be equipped with permanent provisions to allow collection of stack gas samples consistent with EPA test methods and shall be equipped with safe permanent provisions to sample stack gases with a portable NOx, CO, and O2 analyzer during District inspections. The sampling ports shall be located in accordance with the CARB regulation titled California Air Resources Board Air Monitoring Quality Assurance Volume VI, Standard Operating Procedures for Stationary Source Emission Monitoring and Testing. [District Rule 1081]
83. {1836} Results of continuous emissions monitoring shall be reduced according to the procedure established in 40 CFR, Part 51, Appendix P, paragraphs 5.0 through 5.3.3, or by other methods deemed equivalent by mutual agreement with the District, the ARB, and the EPA. [District Rule 1080]

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CONDITIONS CONTINUE ON NEXT PAGE

84. Permittee shall perform a relative accuracy test audit (RATA), as specified by 40 CFR Part 75, Appendix B, 2.3.1 for the NO_x, SO_x, and O₂ CEM,, at least once every two successive QA operating quarters (as defined in 40 CFR 72.2) unless the monitor satisfies the requirements for reduced RATA frequencies in Section 2.3.1.2. Permittee shall perform a RATA, as specified by 40 CFR Part 60, Appendix F for the CO CEM, at least once every four calendar quarters. Permittee shall perform a cylinder gas audit (CGA) or relative accuracy audit (RAA), as specified by 40 CFR Part 60, Appendix F for the CO CEM in three of four calendar quarters, but no more than three quarters in succession. The District must be notified at least 30 days prior to any RATA, and a test plan shall be submitted for approval at least 15 days prior to testing. The results of each RATA shall be submitted to the District within 60 days thereafter. [District Rule 1080]
85. Permittee shall comply with the applicable requirements for quality assurance testing and maintenance of the continuous emission monitor equipment in accordance with the procedures and guidance specified in 40 CFR Part 75, Appendix B for the NO_x, SO_x, and O₂ CEM, and in 40 CFR Part 60, Appendix F for the CO CEM. [District Rule 1080]
86. Permittee shall submit a written report to the APCO for each calendar quarter, within 30 days of the end of the quarter, including: time intervals, data and magnitude of excess emissions, nature and cause of excess emissions (if known), corrective actions taken and preventive measures adopted; averaging period used for data reporting shall correspond to the averaging period for each respective emission standard; applicable time and date of each period during which the CEM was inoperative (except for zero and span checks) and the nature of system repairs and adjustments; and a negative declaration when no excess emissions occurred. [District Rule 1080]
87. Permittee shall maintain records of the date and duration of start-up and shutdown periods. [District Rules 2201 and 4352]
88. Permittee shall record the heat input to the unit from each fuel combusted on a daily basis. Permittee shall maintain records of the annual capacity factor for each fuel combusted on a 12-month rolling average basis, and shall update the annual capacity factor for each fuel at the end of each calendar month. [District Rules 1070 and 4001, and 40 CFR 60.49b(d)(1)]
89. Permittee shall retain and maintain on site all data from the continuous opacity monitoring system. [District Rules 1070 and 4001, and 40 CFR 60.39b(f)]
90. Permittee shall maintain records of solid fuel higher heating value and fuel contaminant testing results. [District Rules 1070 and 4352]
91. Permittee shall maintain records of emissions from this boiler on a calendar quarter basis. Records of quarterly emissions shall be updated at least once each calendar month in which the boiler operates. [District Rule 2201]
92. Permittee shall maintain records of HCl emissions from this boiler on a rolling 12-consecutive-month basis. Records of HCl emissions shall be updated at least once each calendar month in which the boiler operates. [District Rules 2201, 4002, and 4102]
93. All records shall be maintained and retained on-site for a period of at least 5 years and shall be made available for District inspection upon request. [District Rules 2201 and 4352]
94. {1830} This Authority to Construct serves as a written certificate of conformity with the procedural requirements of 40 CFR 70.7 and 70.8 and with the compliance requirements of 40 CFR 70.6(c). [District NSR Rule] Federally Enforceable Through Title V Permit
95. Permittee shall submit an application to comply with District Rule 2520 - Federally Mandated Operating Permits prior to commencing operation under this ATC. [District Rule 2520]

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San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

ISSUANCE DATE: DRAFT
DRAFT

PERMIT NO: N-645-37-0

LEGAL OWNER OR OPERATOR: DTE STOCKTON, LLC
MAILING ADDRESS: 2526 W. WASHINGTON STREET
STOCKTON, CA 95203

LOCATION: 2526 W. WASHINGTON STREET
STOCKTON, CA 95203

EQUIPMENT DESCRIPTION:

BIOMASS RECEIVING OPERATION WITH THREE TRUCK UNLOADING HOPPERS, A DISC SCREEN AND HOGGER, AND ASSOCIATED CONVEYORS, AND BIOMASS STORAGE OPERATION WITH UP TO 5.5 ACRES OF BIOMASS STORAGE PILES

CONDITIONS

1. {15} No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1 or 20% opacity. [District Rule 4101]
2. {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
3. Particulate matter emissions shall not exceed the hourly rate as calculated in District Rule 4202 using the equation $E = 3.59 \times P^{0.62}$ if P is less than or equal to 30 tons per hour, or $E = 17.31 \times P^{0.16}$ if P is greater than 30 tons per hour. [District Rule 4202]
4. All stockpiled biomass shall be covered, or maintained adequately moist, to prevent visible emissions in excess of 20% opacity as determined using EPA Method 9. Permittee shall use water sprays or other dust suppression techniques as necessary to ensure compliance with this opacity limit. [District Rule 2201]
5. Visible emissions from the disc screen, fuel hogger, and all conveyor transfer points shall not exceed 20% opacity as determined using EPA Method 9. [District Rule 2201].

CONDITIONS CONTINUE ON NEXT PAGE

YOU **MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (209) 557-6400 WHEN CONSTRUCTION IS COMPLETED AND PRIOR TO OPERATING THE EQUIPMENT OR MODIFICATIONS AUTHORIZED BY THIS AUTHORITY TO CONSTRUCT.** This is NOT a PERMIT TO OPERATE. Approval or denial of a PERMIT TO OPERATE will be made after an inspection to verify that the equipment has been constructed in accordance with the approved plans, specifications and conditions of this Authority to Construct, and to determine if the equipment can be operated in compliance with all Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District. Unless construction has commenced pursuant to Rule 2050, this Authority to Construct shall expire and application shall be cancelled two years from the date of issuance. The applicant is responsible for complying with all laws, ordinances and regulations of all other governmental agencies which may pertain to the above equipment.

Seyed Sadredin, Executive Director, APCO

DAVID WARNER, Director of Permit Services

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6. Permittee shall monitor the disc screen, fuel hogger, and all conveyor transfer points for visible emissions, as determined using EPA Method 22 on a daily basis. Daily monitoring shall take place at an appropriate time each day depending on plant start time and sunrise, but shall in any event be conducted before 12:00 PM. If visible emissions are detected, permittee shall take corrective action and eliminate visible emissions within 1 hour after detection. If visible emissions cannot be eliminated within 1 hour after detection, a visible emissions test using EPA Method 9 shall be conducted while the visible emissions are ongoing to determine if the visible emissions exceed the limits specified in this permit. Visible emissions less than 20% opacity as determined using EPA Method 9 shall not constitute a violation of this condition. [District Rule 2201]
7. {1407} All equipment shall be maintained in good operating condition and shall be operated in a manner to minimize emissions of air contaminants into the atmosphere. [District Rule 2201]
8. PM10 emissions from the biomass fuel receiving operation shall not exceed 0.000301 lb/ton on a daily average basis and 0.000527 lb/ton on an annual average basis. [District Rule 2201]
9. Biomass fuel received by the receiving and storage operation shall not exceed 2,732 tons in any one day and 470,080 tons in any calendar year. [District Rule 2201]
10. Emissions from the biomass fuel storage piles shall not exceed 0.24 lb-PM10 per acre of fuel storage piles per day. [District Rule 2201]
11. Permittee shall maintain records of the quantity of biomass fuel received each day, in tons. [District Rule 2201]
12. {3465} Records shall be retained on-site for a period of at least five years and made available for District inspection upon request. [District Rule 2201]
13. {1830} This Authority to Construct serves as a written certificate of conformity with the procedural requirements of 40 CFR 70.7 and 70.8 and with the compliance requirements of 40 CFR 70.6(c). [District NSR Rule] Federally Enforceable Through Title V Permit
14. Permittee shall submit an application to comply with District Rule 2520 - Federally Mandated Operating Permits prior to commencing operation under this ATC. [District Rule 2520]
15. {3433} Disturbances of soil related to any construction, demolition, excavation, extraction, or other earthmoving activities shall comply with the requirements for fugitive dust control in District Rule 8021 unless specifically exempted under Section 4.0 of Rule 8021 or Rule 8011. [District Rules 8011 and 8021]
16. {3434} An owner/operator shall submit a Dust Control Plan to the APCO prior to the start of any construction activity on any site that will include 10 acres or more of disturbed surface area for residential developments, or 5 acres or more of disturbed surface area for non-residential development, or will include moving, depositing, or relocating more than 2,500 cubic yards per day of bulk materials on at least three days. [District Rules 8011 and 8021]
17. When handling bulk materials outside an enclosed structure or building, water or chemical/organic stabilizers/suppressants shall be applied as required to limit Visible Dust Emissions to a maximum of 20% opacity. When necessary to achieve this opacity limitation, wind barriers with less than 50% porosity shall also be used. [District Rules 2201, 8011, and 8031]
18. When storing bulk materials outside an enclosed structure or building, water or chemical/organic stabilizers/suppressants shall be applied as required to limit Visible Dust Emissions to a maximum of 20% opacity. When necessary to achieve this opacity limitation, all bulk material piles shall also be either maintained with a stabilized surface as defined in Section 3.58 of District Rule 8011, or shall be protected with suitable covers or barriers as prescribed in Table 8031-1, Section B, of District Rule 8031. [District Rules 2201, 8011, and 8031]
19. {3445} When transporting bulk materials outside an enclosed structure or building, all bulk material transport vehicles shall limit Visible Dust Emissions to 20% opacity by either limiting vehicular speed, maintaining sufficient freeboard on the load, applying water to the top of the load, or covering the load with a tarp or other suitable cover. [District Rules 8011 and 8031]
20. All outdoor chutes and conveyors shall be controlled by any of the following options: 1) full enclosure, 2) operation with water spray equipment that sufficiently wets materials to limit VDE to 20% opacity, or 3) the concentration of particles having an aerodynamic diameter of 10 microns or less in the conveyed material shall be sufficiently small to limit VDE to 20% opacity. [District Rules 2201, 8011, and 8031]

CONDITIONS CONTINUE ON NEXT PAGE

21. {3451} Records and other supporting documentation shall be maintained as required to demonstrate compliance with the requirements of the rules under Regulation VIII only for those days that a control measure was implemented. Such records shall include the type of control measure(s) used, the location and extent of coverage, and the date, amount, and frequency of application of dust suppressant, manufacturer's dust suppressant product information sheet that identifies the name of the dust suppressant and application instructions. Records shall be kept for one year following project completion that results in the termination of all dust generating activities. [District Rules 8011, 8031, and 8071]
22. {3447} An owner/operator shall prevent or cleanup any carryout or trackout in accordance with the requirements of District Rule 8041 Section 5.0, unless specifically exempted under Section 4.0 of Rule 8041 (8/19/04) or Rule 8011(8/19/04). [District Rules 8011 and 8041]
23. {3436} Whenever open areas are disturbed, or vehicles are used in open areas, the facility shall comply with the requirements of Section 5.0 of District Rule 8051, unless specifically exempted under Section 4.0 of Rule 8051 or Rule 8011. [District Rules 8011 and 8051]
24. {3437} Any paved road or unpaved road shall comply with the requirements of District Rule 8061 unless specifically exempted under Section 4.0 of Rule 8061 or Rule 8011. [District Rules 8011 and 8061]
25. {3448} Where dusting materials are allowed to accumulate on paved surfaces, the accumulation shall be removed daily or water and/or chemical/organic dust stabilizers/suppressants shall be applied to the paved surface as required to maintain continuous compliance with the requirements for a stabilized unpaved road as defined in Section 3.59 of District Rule 8011 and limit Visible Dust Emissions (VDE) to 20% opacity. [District Rule 8011 and 8071]
26. {3449} On each day that 50 or more Vehicle Daily Trips or 25 or more Vehicle Daily Trips with 3 axles or more will occur on an unpaved vehicle/equipment traffic area, permittee shall apply water, gravel, roadmix, or chemical/organic dust stabilizers/suppressants, vegetative materials, or other District-approved control measure as required to limit Visible Dust Emissions to 20% opacity and comply with the requirements for a stabilized unpaved road as defined in Section 3.59 of District Rule 8011. [District Rule 8011 and 8071]
27. {3450} Whenever any portion of the site becomes inactive, permittee shall restrict access and periodically stabilize any disturbed surface to comply with the conditions for a stabilized surface as defined in Section 3.58 of District Rule 8011. [District Rules 8011 and 8071]
28. {3438} Water, gravel, roadmix, or chemical/organic dust stabilizers/suppressants, vegetative materials, or other District-approved control measure shall be applied to unpaved vehicle travel areas as required to limit Visible Dust Emissions to 20% opacity and comply with the requirements for a stabilized unpaved road as defined in Section 3.59 of District Rule 8011. [District Rule 8011 and 8071]
29. Upon implementation of this Authority to Construct, ATC N-645-39-0 shall be cancelled. [District Rule 2201]

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San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

ISSUANCE DATE: DRAFT

PERMIT NO: N-645-38-0

LEGAL OWNER OR OPERATOR: DTE STOCKTON, LLC
MAILING ADDRESS: 2526 W. WASHINGTON STREET
STOCKTON, CA 95203

LOCATION: 2526 W. WASHINGTON STREET
STOCKTON, CA 95203

EQUIPMENT DESCRIPTION:
BIOMASS FUEL HANDLING OPERATION WITH BIOMASS METERING BINS, RECLAIM CONVEYORS, AND OTHER ASSOCIATED CONVEYORS

CONDITIONS

1. {15} No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1 or 20% opacity. [District Rule 4101]
2. {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
3. Particulate matter emissions shall not exceed the hourly rate as calculated in District Rule 4202 using the equation $E = 3.59 \times P^{0.62}$ if P is less than or equal to 30 tons per hour, or $E = 17.31 \times P^{0.16}$ if P is greater than 30 tons per hour. [District Rule 4202]
4. Visible emissions from all conveyor transfer points shall not exceed 20% opacity as determined using EPA Method 9. [District Rule 2201]
5. Permittee shall not cause or allow visible emissions from any conveyor transfer point, as determined using EPA Method 22 on a daily basis. Daily inspections shall take place at an appropriate time each day depending on plant start time and sunrise. If visible emissions cannot be corrected within 1 hour after detection, a visible emissions test using EPA Method 9 shall be conducted while the visible emissions are ongoing to determine if the visible emissions exceed the limit in condition 4. Visible emissions less than 20% opacity as determined using EPA Method 9, or that are corrected within 1 hour after detection, shall not constitute a violation of this condition. [District Rule 2201]
6. {1407} All equipment shall be maintained in good operating condition and shall be operated in a manner to minimize emissions of air contaminants into the atmosphere. [District Rule 2201]

CONDITIONS CONTINUE ON NEXT PAGE

YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (209) 557-6400 WHEN CONSTRUCTION IS COMPLETED AND PRIOR TO OPERATING THE EQUIPMENT OR MODIFICATIONS AUTHORIZED BY THIS AUTHORITY TO CONSTRUCT. This is NOT a PERMIT TO OPERATE. Approval or denial of a PERMIT TO OPERATE will be made after an inspection to verify that the equipment has been constructed in accordance with the approved plans, specifications and conditions of this Authority to Construct, and to determine if the equipment can be operated in compliance with all Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District. Unless construction has commenced pursuant to Rule 2050, this Authority to Construct shall expire and application shall be cancelled two years from the date of issuance. The applicant is responsible for complying with all laws, ordinances and regulations of all other governmental agencies which may pertain to the above equipment.

Seyed Sadredin, Executive Director APCO

DAVID WARNER, Director of Permit Services
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7. PM10 emissions from the biomass fuel handling system, based on the quantity of fuel processed through the fuel metering bins, shall not exceed 0.000203 lb/ton on a daily average basis and 0.000227 lb/ton on an annual average basis. [District Rule 2201]
8. The quantity of fuel processed through the fuel metering bins shall not exceed 1,951 tons in any one day and 470,080 in any calendar year. [District Rule 2201]
9. Permittee shall maintain records of the quantity of biomass fuel processed through the fuel metering bins each day, in tons. [District Rule 2201]
10. {3465} Records shall be retained on-site for a period of at least five years and made available for District inspection upon request. [District Rule 2201]
11. {1830} This Authority to Construct serves as a written certificate of conformity with the procedural requirements of 40 CFR 70.7 and 70.8 and with the compliance requirements of 40 CFR 70.6(c). [District NSR Rule] Federally Enforceable Through Title V Permit
12. Permittee shall submit an application to comply with District Rule 2520 - Federally Mandated Operating Permits prior to commencing operation under this ATC. [District Rule 2520]
13. When handling bulk materials outside an enclosed structure or building, water or chemical/organic stabilizers/suppressants shall be applied as required to limit Visible Dust Emissions to a maximum of 20% opacity. When necessary to achieve this opacity limitation, wind barriers with less than 50% porosity shall also be used. [District Rules 2201, 8011, and 8031]
14. {3445} When transporting bulk materials outside an enclosed structure or building, all bulk material transport vehicles shall limit Visible Dust Emissions to 20% opacity by either limiting vehicular speed, maintaining sufficient freeboard on the load, applying water to the top of the load, or covering the load with a tarp or other suitable cover. [District Rules 8011 and 8031]
15. All outdoor chutes and conveyors shall be controlled by any of the following options: 1) full enclosure, 2) operation with water spray equipment that sufficiently wets materials to limit VDE to 20% opacity, or 3) the concentration of particles having an aerodynamic diameter of 10 microns or less in the conveyed material shall be sufficiently small to limit VDE to 20% opacity. [District Rules 2201, 8011, and 8031]
16. {3447} An owner/operator shall prevent or cleanup any carryout or trackout in accordance with the requirements of District Rule 8041 Section 5.0, unless specifically exempted under Section 4.0 of Rule 8041 (8/19/04) or Rule 8011(8/19/04). [District Rules 8011 and 8041]
17. {3448} Where dusting materials are allowed to accumulate on paved surfaces, the accumulation shall be removed daily or water and/or chemical/organic dust stabilizers/suppressants shall be applied to the paved surface as required to maintain continuous compliance with the requirements for a stabilized unpaved road as defined in Section 3.59 of District Rule 8011 and limit Visible Dust Emissions (VDE) to 20% opacity. [District Rule 8011 and 8071]
18. {3449} On each day that 50 or more Vehicle Daily Trips or 25 or more Vehicle Daily Trips with 3 axles or more will occur on an unpaved vehicle/equipment traffic area, permittee shall apply water, gravel, roadmix, or chemical/organic dust stabilizers/suppressants, vegetative materials, or other District-approved control measure as required to limit Visible Dust Emissions to 20% opacity and comply with the requirements for a stabilized unpaved road as defined in Section 3.59 of District Rule 8011. [District Rule 8011 and 8071]
19. {3450} Whenever any portion of the site becomes inactive, permittee shall restrict access and periodically stabilize any disturbed surface to comply with the conditions for a stabilized surface as defined in Section 3.58 of District Rule 8011. [District Rules 8011 and 8071]
20. {3451} Records and other supporting documentation shall be maintained as required to demonstrate compliance with the requirements of the rules under Regulation VIII only for those days that a control measure was implemented. Such records shall include the type of control measure(s) used, the location and extent of coverage, and the date, amount, and frequency of application of dust suppressant, manufacturer's dust suppressant product information sheet that identifies the name of the dust suppressant and application instructions. Records shall be kept for one year following project completion that results in the termination of all dust generating activities. [District Rules 8011, 8031, and 8071]

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CONDITIONS CONTINUE ON NEXT PAGE

21. {3433} Disturbances of soil related to any construction, demolition, excavation, extraction, or other earthmoving activities shall comply with the requirements for fugitive dust control in District Rule 8021 unless specifically exempted under Section 4.0 of Rule 8021 or Rule 8011. [District Rules 8011 and 8021]
22. {3434} An owner/operator shall submit a Dust Control Plan to the APCO prior to the start of any construction activity on any site that will include 10 acres or more of disturbed surface area for residential developments, or 5 acres or more of disturbed surface area for non-residential development, or will include moving, depositing, or relocating more than 2,500 cubic yards per day of bulk materials on at least three days. [District Rules 8011 and 8021]
23. {3436} Whenever open areas are disturbed, or vehicles are used in open areas, the facility shall comply with the requirements of Section 5.0 of District Rule 8051, unless specifically exempted under Section 4.0 of Rule 8051 or Rule 8011. [District Rules 8011 and 8051]
24. {3437} Any paved road or unpaved road shall comply with the requirements of District Rule 8061 unless specifically exempted under Section 4.0 of Rule 8061 or Rule 8011. [District Rules 8011 and 8061]
25. {3438} Water, gravel, roadmix, or chemical/organic dust stabilizers/suppressants, vegetative materials, or other District-approved control measure shall be applied to unpaved vehicle travel areas as required to limit Visible Dust Emissions to 20% opacity and comply with the requirements for a stabilized unpaved road as defined in Section 3.59 of District Rule 8011. [District Rule 8011 and 8071]

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San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

ISSUANCE DATE: DRAFT
DRAFT

PERMIT NO: N-645-39-0

LEGAL OWNER OR OPERATOR: DTE STOCKTON, LLC
MAILING ADDRESS: 2526 W. WASHINGTON STREET
STOCKTON, CA 95203

LOCATION: 2526 W. WASHINGTON STREET
STOCKTON, CA 95203

EQUIPMENT DESCRIPTION:

BIOMASS RECEIVING OPERATION WITH THREE TRUCK UNLOADING HOPPERS, A DISC SCREEN AND HOGGER, AND ASSOCIATED CONVEYORS, AND BIOMASS STORAGE OPERATION WITH UP TO 2.1 ACRES OF BIOMASS STORAGE PILES

CONDITIONS

1. {15} No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1 or 20% opacity. [District Rule 4101]
2. {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
3. Particulate matter emissions shall not exceed the hourly rate as calculated in District Rule 4202 using the equation $E = 3.59 \times P^{0.62}$ if P is less than or equal to 30 tons per hour, or $E = 17.31 \times P^{0.16}$ if P is greater than 30 tons per hour. [District Rule 4202]
4. All stockpiled biomass shall be covered, or maintained adequately moist, to prevent visible emissions in excess of 20% opacity as determined using EPA Method 9. Permittee shall use water sprays or other dust suppression techniques as necessary to ensure compliance with this opacity limit. [District Rule 2201]
5. Visible emissions from the disc screen, fuel hogger, and all conveyor transfer points shall not exceed 20% opacity as determined using EPA Method 9. [District Rule 2201]

CONDITIONS CONTINUE ON NEXT PAGE

YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (209) 557-6400 WHEN CONSTRUCTION IS COMPLETED AND PRIOR TO OPERATING THE EQUIPMENT OR MODIFICATIONS AUTHORIZED BY THIS AUTHORITY TO CONSTRUCT. This is NOT a PERMIT TO OPERATE. Approval or denial of a PERMIT TO OPERATE will be made after an inspection to verify that the equipment has been constructed in accordance with the approved plans, specifications and conditions of this Authority to Construct, and to determine if the equipment can be operated in compliance with all Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District. Unless construction has commenced pursuant to Rule 2050, this Authority to Construct shall expire and application shall be cancelled two years from the date of issuance. The applicant is responsible for complying with all laws, ordinances and regulations of all other governmental agencies which may pertain to the above equipment.

Seyed Sadredin, Executive Director APCO

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DAVID WARNER, Director of Permit Services
N-645-39-0 - Mar 24 2011 11:24AM - DEMARISF : Joint Inspection NOT Required

6. Permittee shall monitor the disc screen, fuel hogger, and all conveyor transfer points for visible emissions, as determined using EPA Method 22 on a daily basis. Daily monitoring shall take place at an appropriate time each day depending on plant start time and sunrise, but shall in any event be conducted before 12:00 PM. If visible emissions are detected, permittee shall take corrective action and eliminate visible emissions within 1 hour after detection. If visible emissions cannot be eliminated within 1 hour after detection, a visible emissions test using EPA Method 9 shall be conducted while the visible emissions are ongoing to determine if the visible emissions exceed the limits specified in this permit. Visible emissions less than 20% opacity as determined using EPA Method 9 shall not constitute a violation of this condition. [District Rule 2201]
7. {1407} All equipment shall be maintained in good operating condition and shall be operated in a manner to minimize emissions of air contaminants into the atmosphere. [District Rule 2201]
8. PM10 emissions from the biomass fuel receiving operation shall not exceed 0.000539 lb/ton on a daily average basis and 0.000557 lb/ton on an annual average basis. [District Rule 2201]
9. Biomass fuel received by the receiving and storage operation shall not exceed 2,732 tons in any one day and 470,080 tons in any calendar year. [District Rule 2201]
10. Emissions from the biomass fuel storage piles shall not exceed 0.24 lb-PM10 per acre of fuel storage piles per day. [District Rule 2201]
11. Permittee shall maintain records of the quantity of biomass fuel received each day, in tons. [District Rule 2201]
12. {3465} Records shall be retained on-site for a period of at least five years and made available for District inspection upon request. [District Rule 2201]
13. {1830} This Authority to Construct serves as a written certificate of conformity with the procedural requirements of 40 CFR 70.7 and 70.8 and with the compliance requirements of 40 CFR 70.6(c). [District NSR Rule] Federally Enforceable Through Title V Permit
14. Permittee shall submit an application to comply with District Rule 2520 - Federally Mandated Operating Permits prior to commencing operation under this ATC. [District Rule 2520]
15. When handling bulk materials outside an enclosed structure or building, water or chemical/organic stabilizers/suppressants shall be applied as required to limit Visible Dust Emissions to a maximum of 20% opacity. When necessary to achieve this opacity limitation, wind barriers with less than 50% porosity shall also be used. [District Rules 2201, 8011, and 8031]
16. When storing bulk materials outside an enclosed structure or building, water or chemical/organic stabilizers/suppressants shall be applied as required to limit Visible Dust Emissions to a maximum of 20% opacity. When necessary to achieve this opacity limitation, all bulk material piles shall also be either maintained with a stabilized surface as defined in Section 3.58 of District Rule 8011, or shall be protected with suitable covers or barriers as prescribed in Table 8031-1, Section B, of District Rule 8031. [District Rules 2201, 8011, and 8031]
17. {3445} When transporting bulk materials outside an enclosed structure or building, all bulk material transport vehicles shall limit Visible Dust Emissions to 20% opacity by either limiting vehicular speed, maintaining sufficient freeboard on the load, applying water to the top of the load, or covering the load with a tarp or other suitable cover. [District Rules 8011 and 8031]
18. All outdoor chutes and conveyors shall be controlled by any of the following options: 1) full enclosure, 2) operation with water spray equipment that sufficiently wets materials to limit VDE to 20% opacity, or 3) the concentration of particles having an aerodynamic diameter of 10 microns or less in the conveyed material shall be sufficiently small to limit VDE to 20% opacity. [District Rules 2201, 8011, and 8031]
19. {3447} An owner/operator shall prevent or cleanup any carryout or trackout in accordance with the requirements of District Rule 8041 Section 5.0, unless specifically exempted under Section 4.0 of Rule 8041 (8/19/04) or Rule 8011(8/19/04). [District Rules 8011 and 8041]
20. {3448} Where dusting materials are allowed to accumulate on paved surfaces, the accumulation shall be removed daily or water and/or chemical/organic dust stabilizers/suppressants shall be applied to the paved surface as required to maintain continuous compliance with the requirements for a stabilized unpaved road as defined in Section 3.59 of District Rule 8011 and limit Visible Dust Emissions (VDE) to 20% opacity. [District Rule 8011 and 8071]

CONDITIONS CONTINUE ON NEXT PAGE

21. {3449} On each day that 50 or more Vehicle Daily Trips or 25 or more Vehicle Daily Trips with 3 axles or more will occur on an unpaved vehicle/equipment traffic area, permittee shall apply water, gravel, roadmix, or chemical/organic dust stabilizers/suppressants, vegetative materials, or other District-approved control measure as required to limit Visible Dust Emissions to 20% opacity and comply with the requirements for a stabilized unpaved road as defined in Section 3.59 of District Rule 8011. [District Rule 8011 and 8071]
22. {3450} Whenever any portion of the site becomes inactive, permittee shall restrict access and periodically stabilize any disturbed surface to comply with the conditions for a stabilized surface as defined in Section 3.58 of District Rule 8011. [District Rules 8011 and 8071]
23. {3451} Records and other supporting documentation shall be maintained as required to demonstrate compliance with the requirements of the rules under Regulation VIII only for those days that a control measure was implemented. Such records shall include the type of control measure(s) used, the location and extent of coverage, and the date, amount, and frequency of application of dust suppressant, manufacturer's dust suppressant product information sheet that identifies the name of the dust suppressant and application instructions. Records shall be kept for one year following project completion that results in the termination of all dust generating activities. [District Rules 8011, 8031, and 8071]
24. {3433} Disturbances of soil related to any construction, demolition, excavation, extraction, or other earthmoving activities shall comply with the requirements for fugitive dust control in District Rule 8021 unless specifically exempted under Section 4.0 of Rule 8021 or Rule 8011. [District Rules 8011 and 8021]
25. {3434} An owner/operator shall submit a Dust Control Plan to the APCO prior to the start of any construction activity on any site that will include 10 acres or more of disturbed surface area for residential developments, or 5 acres or more of disturbed surface area for non-residential development, or will include moving, depositing, or relocating more than 2,500 cubic yards per day of bulk materials on at least three days. [District Rules 8011 and 8021]
26. {3436} Whenever open areas are disturbed, or vehicles are used in open areas, the facility shall comply with the requirements of Section 5.0 of District Rule 8051, unless specifically exempted under Section 4.0 of Rule 8051 or Rule 8011. [District Rules 8011 and 8051]
27. {3437} Any paved road or unpaved road shall comply with the requirements of District Rule 8061 unless specifically exempted under Section 4.0 of Rule 8061 or Rule 8011. [District Rules 8011 and 8061]
28. {3438} Water, gravel, roadmix, or chemical/organic dust stabilizers/suppressants, vegetative materials, or other District-approved control measure shall be applied to unpaved vehicle travel areas as required to limit Visible Dust Emissions to 20% opacity and comply with the requirements for a stabilized unpaved road as defined in Section 3.59 of District Rule 8011. [District Rule 8011 and 8071]
29. Upon implementation of this Authority to Construct, ATC N-645-37-0 shall be cancelled. [District Rule 2201]

DRAFT

Appendix B
Current Permits to Operate

San Joaquin Valley Air Pollution Control District

PERMIT UNIT: N-645-8-4

EXPIRATION DATE: 11/30/2010

EQUIPMENT DESCRIPTION:

LIMESTONE RECEIVING SILO #1 CONTROLLED WITH A FABRIC FILTER BAGHOUSE

PERMIT UNIT REQUIREMENTS

1. Limestone shall be received through direct coupled pneumatic unloading truck. [District NSR Rule] Federally Enforceable Through Title V Permit
2. The pneumatic transfer components and connections shall be totally air tight. [District NSR Rule] Federally Enforceable Through Title V Permit
3. The storage silos shall be totally air tight and vented only through a fabric filter. [District NSR Rule] Federally Enforceable Through Title V Permit
4. The fabric filters shall have a maximum effective air to cloth ratio of 4.5:1 and shall be equipped with an automatic pulse jet cleaning mechanism. [District NSR Rule] Federally Enforceable Through Title V Permit
5. There shall be no visible emissions from the fabric filter. [District NSR Rule] Federally Enforceable Through Title V Permit
6. The fabric filter baghouse shall be equipped with a pressure differential gauge to indicate the pressure drop across the bags. The gauge shall be maintained in good working condition at all times. The differential pressure across each compartment shall be maintained between 1" and 8" water column. [District NSR Rule and 2520, 9.3.2] Federally Enforceable Through Title V Permit
7. A spare set of each type of bags shall be maintained on the premises at all times. [District NSR Rule] Federally Enforceable Through Title V Permit
8. Fabric collection system shall be completely inspected annually while in operation for evidence of particulate matter leaks and shall be repaired as needed. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
9. Fabric collector filters shall be completely inspected annually while not in operation for tears, scuffs, abrasives or holes which might interfere with PM collection efficiency and shall be replaced as needed. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
10. Records of fabric collector system maintenance, inspection, and repairs shall be maintained. The records shall include identification of equipment, date of inspection, corrective action taken, and identification of individual Performing inspection. [District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
11. Visible emissions from the the limestone receiving silo shall be checked and the results recorded annually. If visible emissions are observed, corrective action shall be taken prior to further operation of the equipment. Corrective action means that visible emissions are eliminated before operation of the equipment is resumed. If visible emissions cannot be corrected within 24 hours, a visible emissions test shall be conducted by a trained observer using EPA method 9 within 72 hours. A record of the results of these observations shall be maintained. Such records shall include the observer's name and affiliation, the date, time, sky condition, and the observer's location relative to the source. [District Rule 2520, 9.3.2 and 9.4.2] Federally Enforceable Through Title V Permit

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE

These terms and conditions are part of the Facility-wide Permit to Operate.

12. The differential pressure across each compartment of the fabric filter baghouse shall be checked and the results recorded annually. If the differential pressure across each compartment of the fabric filters is not between 1" and 8" water column, corrective action is required prior to further operation of the equipment. Corrective action means that the cause of the improper pressure differential is corrected before operation of the equipment is resumed. [District Rule 2520, 9.3.2 and 9.4.] Federally Enforceable Through Title V Permit
13. Particulate matter emissions shall not exceed 0.1 gr/dscf in concentration. [District Rule 4201] Federally Enforceable Through Title V Permit
14. Particulate matter emissions shall not exceed the hourly rate as calculated in District Rule 4202 using the equation $E = 3.59 \times P^{0.62}$ if P is less than or equal to 30 tons per hour, or $E = 17.31 \times P^{0.16}$ if P is greater than 30 tons per hour. [District Rule 4202] Federally Enforceable Through Title V Permit

These terms and conditions are part of the Facility-wide Permit to Operate.

San Joaquin Valley Air Pollution Control District

PERMIT UNIT: N-645-9-4

EXPIRATION DATE: 11/30/2010

EQUIPMENT DESCRIPTION:

LIMESTONE RECEIVING SILO #2 CONTROLLED WITH A FABRIC FILTER BAGHOUSE

PERMIT UNIT REQUIREMENTS

1. Limestone shall be received through direct coupled pneumatic unloading truck. [District NSR Rule] Federally Enforceable Through Title V Permit
2. The pneumatic transfer components and connections shall be totally air tight. [District NSR Rule] Federally Enforceable Through Title V Permit
3. The storage silos shall be totally air tight and vented only through a fabric filter. [District NSR Rule] Federally Enforceable Through Title V Permit
4. The fabric filters shall have a maximum effective air to cloth ratio of 4.5:1 and shall be equipped with an automatic pulse jet cleaning mechanism. [District NSR Rule] Federally Enforceable Through Title V Permit
5. There shall be no visible emissions from the fabric filter. [District NSR Rule] Federally Enforceable Through Title V Permit
6. The fabric filters shall be equipped with a pressure differential gauge to indicate the pressure drop across the bags. The gauge shall be maintained in good working condition at all times. [District NSR Rule] Federally Enforceable Through Title V Permit
7. The differential pressure across the fabric filters baghouse shall be maintained between 1" and 8" water column. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
8. A spare set of each type of bags shall be maintained on the premises at all times. [District NSR Rule] Federally Enforceable Through Title V Permit
9. Fabric collection system shall be completely inspected annually while in operation for evidence of particulate matter leaks and shall be repaired as needed. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
10. Fabric collector filters shall be completely inspected annually while not in operation for tears, scuffs, abrasives or holes which might interfere with PM collection efficiency and shall be replaced as needed. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
11. Records of fabric collector system maintenance, inspection, and repairs shall be maintained. The records shall include identification of equipment, date of inspection, corrective action taken, and identification of individual Performing inspection. [District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
12. Visible emissions from the the limestone receiving silo shall be checked and the results recorded annually. If visible emissions are observed, corrective action shall be taken prior to further operation of the equipment. Corrective action means that visible emissions are eliminated before operation of the equipment is resumed. If visible emissions cannot be corrected within 24 hours, a visible emissions test shall be conducted by a trained observer using EPA method 9 within 72 hours. A record of the results of these observations shall be maintained. Such records shall include the observer's name and affiliation, the date, time, sky condition, and the observer's location relative to the source. [District Rule 2520, 9.3.2 and 9.4.2] Federally Enforceable Through Title V Permit

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE

These terms and conditions are part of the Facility-wide Permit to Operate.

13. The differential pressure across each compartment of the fabric filters shall be checked and the results recorded annually. If the differential pressure across each compartment of the fabric filters is not between 1" and 8" water column, corrective action is required prior to further operation of the equipment. Corrective action means that the cause of the improper pressure differential is corrected before operation of the equipment is resumed. [District Rule 2520, 9.3.2 and 9.4.2] Federally Enforceable Through Title V Permit
14. Particulate matter emissions shall not exceed 0.1 gr/dscf in concentration. [District Rule 4201] Federally Enforceable Through Title V Permit
15. Particulate matter emissions shall not exceed the hourly rate as calculated in District Rule 4202 using the equation $E = 3.59 \times P^{0.62}$ if P is less than or equal to 30 tons per hour, or $E = 17.31 \times P^{0.16}$ if P is greater than 30 tons per hour. [District Rule 4202] Federally Enforceable Through Title V Permit

These terms and conditions are part of the Facility-wide Permit to Operate.

San Joaquin Valley Air Pollution Control District

PERMIT UNIT: N-645-10-4

EXPIRATION DATE: 11/30/2010

EQUIPMENT DESCRIPTION:

3.5 TON LIMESTONE/DAY TANK #1 CONTROLLED WITH A FABRIC FILTER BAGHOUSE

PERMIT UNIT REQUIREMENTS

1. Each silo shall be totally enclosed and vented only through a vent filter. [District NSR Rule] Federally Enforceable Through Title V Permit
2. The bin vent filter shall be equipped with a pressure differential gauge to indicate the pressure drop across the bags. The gauge shall be maintained in good working condition at all times. The differential pressure across each compartment shall be maintained between 1" and 8" water column. [District NSR Rule and 2520, 9.3.2] Federally Enforceable Through Title V Permit
3. A spare set of each type of bags shall be maintained on the premises at all times. [District NSR Rule] Federally Enforceable Through Title V Permit
4. Limestone shall be transferred through a totally air tight pneumatic transfer system, only. [District NSR Rule] Federally Enforceable Through Title V Permit
5. The vent filter shall have a maximum air to cloth ratio of 5:1 and shall be equipped with an automatic pulse jet cleaning mechanism. [District NSR Rule] Federally Enforceable Through Title V Permit
6. There shall be no visible emissions from the vent filter. [District NSR Rule] Federally Enforceable Through Title V Permit
7. Vent filter system shall be completely inspected annually while in operation for evidence of particulate matter leaks and shall be repaired as needed. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
8. Vent filters shall be completely inspected annually while not in operation for tears, scuffs, abrasives or holes which might interfere with PM collection efficiency and shall be replaced as needed. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
9. Records of vent filter system maintenance, inspection, and repairs shall be maintained. The records shall include identification of equipment, date of inspection, corrective action taken, and identification of individual performing inspection. [District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
10. Visible emissions from the the limestone/day tank shall be checked and the results recorded annually. If visible emissions are observed, corrective action shall be taken prior to further operation of the equipment. Corrective action means that visible emissions are eliminated before operation of the equipment is resumed. If visible emissions cannot be corrected within 24 hours, a visible emissions test shall be conducted by a trained observer using EPA method 9 within 72 hours. A record of the results of these observations shall be maintained. Such records shall include the observer's name and affiliation, the date, time, sky condition, and the observer's location relative to the source. [District Rule 2520, 9.3.2 and 9.4.2] Federally Enforceable Through Title V Permit

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE

These terms and conditions are part of the Facility-wide Permit to Operate.

11. The differential pressure across each compartment of the bin vent filter shall be checked and the results recorded annually. If the differential pressure across each compartment of the fabric filters is not between 1" and 8" water column, corrective action is required prior to further operation of the equipment. Corrective action means that the cause of the improper pressure differential is corrected before operation of the equipment is resumed. [District Rule 2520, 9.3.2 and 9.4.2] Federally Enforceable Through Title V Permit
12. Particulate matter emissions shall not exceed 0.1 gr/dscf in concentration. [District Rule 4201] Federally Enforceable Through Title V Permit
13. Particulate matter emissions shall not exceed the hourly rate as calculated in District Rule 4202 using the equation $E = 3.59 \times P^{0.62}$ if P is less than or equal to 30 tons per hour, or $E = 17.31 \times P^{0.16}$ if P is greater than 30 tons per hour. [District Rule 4202] Federally Enforceable Through Title V Permit

These terms and conditions are part of the Facility-wide Permit to Operate.

San Joaquin Valley Air Pollution Control District

PERMIT UNIT: N-645-11-4

EXPIRATION DATE: 11/30/2010

EQUIPMENT DESCRIPTION:

3.5 TON LIMESTONE/DAY TANK #2 CONTROLLED WITH A FABRIC FILTER BAGHOUSE

PERMIT UNIT REQUIREMENTS

1. Each silo shall be totally enclosed and vented only through a vent filter. [District NSR Rule] Federally Enforceable Through Title V Permit
2. The bin vent filter shall be equipped with a pressure differential gauge to indicate the pressure drop across the bags. The gauge shall be maintained in good working condition at all times. The differential pressure across each compartment shall be maintained between 1" and 8" water column. [District NSR Rule and 2520, 9.3.2] Federally Enforceable Through Title V Permit
3. A spare set of each type of bags shall be maintained on the premises at all times. [District NSR Rule] Federally Enforceable Through Title V Permit
4. Limestone shall be transferred through a totally air tight pneumatic transfer system, only. [District NSR Rule] Federally Enforceable Through Title V Permit
5. The vent filter shall have a maximum air to cloth ratio of 5:1 and shall be equipped with an automatic pulse jet cleaning mechanism. [District NSR Rule] Federally Enforceable Through Title V Permit
6. There shall be no visible emissions from the vent filter. [District NSR Rule] Federally Enforceable Through Title V Permit
7. Vent filter system shall be completely inspected annually while in operation for evidence of particulate matter leaks and shall be repaired as needed. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
8. Vent filters shall be completely inspected annually while not in operation for tears, scuffs, abrasives or holes which might interfere with PM collection efficiency and shall be replaced as needed. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
9. Records of vent filter system maintenance, inspection, and repairs shall be maintained. The records shall include identification of equipment, date of inspection, corrective action taken, and identification of individual performing inspection. [District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
10. Visible emissions from the the limestone/day tank shall be checked and the results recorded annually. If visible emissions are observed, corrective action shall be taken prior to further operation of the equipment. Corrective action means that visible emissions are eliminated before operation of the equipment is resumed. If visible emissions cannot be corrected within 24 hours, a visible emissions test shall be conducted by a trained observer using EPA method 9 within 72 hours. A record of the results of these observations shall be maintained. Such records shall include the observer's name and affiliation, the date, time, sky condition, and the observer's location relative to the source. [District Rule 2520, 9.3.2 and 9.4.2] Federally Enforceable Through Title V Permit

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE

These terms and conditions are part of the Facility-wide Permit to Operate.

11. The differential pressure across each compartment of the bin vent filter shall be checked and the results recorded annually. If the differential pressure across each compartment of the vent filter is not between 1" and 8" water column, corrective action is required prior to further operation of the equipment. Corrective action means that the cause of the improper pressure differential is corrected before operation of the equipment is resumed. [District Rule 2520, 9.3.2 and 9.4.2] Federally Enforceable Through Title V Permit
12. Particulate matter emissions shall not exceed 0.1 gr/dscf in concentration. [District Rule 4201] Federally Enforceable Through Title V Permit
13. Particulate matter emissions shall not exceed the hourly rate as calculated in District Rule 4202 using the equation $E = 3.59 \times P^{0.62}$ if P is less than or equal to 30 tons per hour, or $E = 17.31 \times P^{0.16}$ if P is greater than 30 tons per hour. [District Rule 4202] Federally Enforceable Through Title V Permit

These terms and conditions are part of the Facility-wide Permit to Operate.

San Joaquin Valley Air Pollution Control District

PERMIT UNIT: N-645-34-2

EXPIRATION DATE: 11/30/2010

EQUIPMENT DESCRIPTION:

43,000 GALLONS PER MINUTE COOLING TOWER

PERMIT UNIT REQUIREMENTS

1. The VOC emissions from the cooling tower shall not exceed 28.5 pounds in any one day. [District NSR Rule] Federally Enforceable Through Title V Permit
2. Permittee shall maintain a log recording the amount of VOC containing material added each day. [District NSR Rule] Federally Enforceable Through Title V Permit
3. A list of materials added to the cooling tower and their VOC content shall be kept and made available for District inspection upon request. [District NSR Rule] Federally Enforceable Through Title V Permit
4. No hexavalent chromium containing compounds shall be added to cooling tower circulating water. [District Rule 7012]

These terms and conditions are part of the Facility-wide Permit to Operate.

Appendix C
Boiler BACT Analysis

San Joaquin Valley Air Pollution Control District

Revised BACT Determination

Biomass-Fired Boiler

Facility Name: DTE Stockton, LLC
Mailing Address: 2526 W. Washington St.
Stockton, CA 95203
Contact Person: Steven Sorrentino
Telephone: (734) 302-4893
Fax: (734) 302-4802
E-Mail: sorrentinos@dteenergy.com
Application #: N-645-8-5, '-9-5, '-10-5, '-11-5, '-34-4, '-36-0, '-37-0, '-38-0
Project #: N-1101175
Deemed Complete: May 11, 2010

Date: April 28, 2011
Engineer: Frank DeMaris
Lead Engineer: Rupi Gill

I. Proposal

DTE Stockton, LLC ("DTE") owns and operates a 54 MW coal-fired electrical generating station operating under Permit to Operate (PTO) N-645 with a total of 19 distinct permit units. DTE requests Authority to Construct (ATC) permits that will allow it to convert the facility to a biomass-fired generating station. Toward this end, the existing circulating fluidized bed (CFB) boilers (N-645-14 and N-645-16) will be removed from service, to be replaced by a single stoker-type boiler better suited to reliable biomass combustion. Existing fuel receiving and handling operations will be consolidated into a receiving and storage operation and a fuel handling operation, while the existing limestone receiving and day tanks will be converted to handle trona as an alternative acid gas control mechanism.

The potential emissions from the proposed new boiler will exceed 2.0 pounds per day for all pollutants. In addition, carbon monoxide (CO) emissions from this stationary source will exceed 200,000 pounds per year. Therefore, the best available control technology (BACT) requirements are triggered for all pollutants from this boiler. The District's BACT Clearinghouse includes an existing BACT Guideline (Guideline 1.3.2) for a biomass-fired bubbling fluidized bed combustor. The District has determined that this guideline must be revised and broadened to cover biomass-fired boilers in general, and to apply to any biomass-fired boiler with heat input sufficient to support 10 MW of electrical generation.

II. Location

This facility is located at 2526 W. Washington St. in Stockton, California, within the Port of Stockton. The District has determined that this facility is not within 1,000 feet of the outer boundary of the nearest K-12 school. Therefore, the school notification requirements of California Health & Safety Code 42301.6 do not apply to this application.

III. Equipment Description

N-645-36-0:

54 MW (GROSS) ELECTRICAL GENERATING STATION WITH A 699 MMBTU/HR STOKER BOILER EQUIPPED WITH A 100 MMBTU/HR NATURAL GAS-FIRED STARTUP BURNER, MULTICLONE AND ELECTROSTATIC PRECIPITATOR, TRONA INJECTION AND WET SCRUBBER, OXIDATION CATALYST, AND SELECTIVE CATALYTIC REDUCTION

IV. Process Description

DTE is currently a 49.9 MW (net) coal-fired electrical generating station, originally issued Authority to Construct permits in 1985, that uses two 280 MMBtu/hr CFB boilers. As part of the conversion of the facility from coal to biomass, the existing CFB boilers will be replaced with a single 699 MMBtu/hr stoker-type boiler. The applicant proposed the stoker-type boiler after concluding that this configuration offers somewhat greater operational readiness and slightly lower maintenance cost than the CFB configuration.

Biomass fuel, consisting primarily of agricultural biomass but possibly including urban wood waste, almond shells, and other biomass sources, will be delivered to the site by trucks. These trucks will be unloaded into truck unloading hoppers at the truck unloading station along West Washington Road. Conveyors with 3/4 covers will transport the fuel from the receiving area to a screen to remove oversize pieces, then through an electromagnet to remove metal, and finally to the biomass storage piles. A reclaim conveyor will reclaim biomass fuel from the storage piles and transfer it to enclosed conveyors, which will carry it to the four biomass metering bins. These metering bins are the last step before the biomass fuel enters the boiler fuel feed system.

The combustor is a stoker-type unit, meaning that fuel is burned on a grate as opposed to being burned in suspension or in a fluidized bed. The combustor is equipped with a vibrating grate, upon which fuel from the charging hopper is spread using a number of distribution devices. The vibrating grate consists of a series of grate elements in a horizontal arrangement. Half of the horizontal grate elements are fixed and half oscillate to move fuel along the grate toward the ash discharge. Combustion air is fed into the combustion chamber through ports located under each grate section, while overfire air enters the combustion chamber through additional ports spaced around the combustion chamber and arranged to ensure optimal mixing and complete combustion. Bottom ash, essentially all unburned fuel residue that is too massive to become entrained in the flue gas as fly ash, is removed from the stoker grate at the opposite end from the fuel charging hopper. Pursuant to the source category description presented in Section 2.2 of *Emission Factor Documentation for AP-42 Section 1.1: Bituminous and Subbituminous Coal Combustion* (where much of the information on solid fuel-fired boilers is available), this unit is classified as a spreader stoker.

For startup operations, the combustor is equipped with a 100 MMBtu/hr natural gas-fired startup burner. This will be used to gradually heat the boiler when starting up, in order to ensure the unit is not physically damaged by heat stresses, and to bring the combustion chamber up to sufficiently high temperature to allow the biomass fuel to ignite. Once the biomass fuel is ignited, the combustor will be gradually transitioned to firing exclusively on biomass fuel. The startup burner will also be utilized to complete combustion of any remaining solid fuel residue when shutting the unit down.

V. Best Available Control Technology (BACT)

SO_x emissions from fuel combustion are the result of fuel-bound sulfur being oxidized in the combustion process. DTE proposes to control SO_x emissions using a dry powder trona injection system. The trona powder adsorbs the gaseous SO₂ or SO₃, reacting with it to produce a sulfate that can be removed from the flue gas with the rest of the PM₁₀. Trona also has a similar effect on other acid gases, particularly HCl. However, because HCl is a hazardous air pollutant, DTE also proposes to use a wet scrubber for additional HCl control to ensure that the boiler is not a major source of hazardous air pollutants.

PM₁₀ emissions from the combustor will be controlled using a combination of a multiclone and an ESP. In a multiclone, the flue gas is routed through several drastic course changes which cause suspended particulate matter to collide with the multiclone walls and fall out of suspension. In an ESP, the flue gas passes through the corona induced by an array of charged wires. Passing through the corona induces a charge on the particulate matter within the flue gas, which causes the particle to be drawn in the direction of an oppositely-charged collector plate, which it impacts and adheres to. When enough the material collected begins to interfere with the collection efficiency, the plates are rapped to cause the collected dust to fall off into a collection hopper.

CO and VOC emissions from the combustor are primarily the result of incomplete combustion. However, highly efficient combustion that minimizes CO and VOC emissions also tends to maximize NO_x emissions. DTE has proposed to control CO and VOC emissions using proper combustion supplemented by an oxidation catalyst. This catalyst uses excess oxygen in the flue gas to oxidize CO and VOC to CO₂ and gaseous H₂O.

Any operation that combusts fuel has the potential to result in NO_x emissions, which can come from the oxidation of fuel-bound nitrogen ("fuel NO_x") or from the oxidation of nitrogen in the combustion air at high temperature ("thermal NO_x"). Fuel NO_x is largely, although not directly, proportional to the fuel nitrogen content, and therefore essentially fixed in the design phase. Thermal NO_x is a function of several variables, including peak combustion temperature, the residence time at peak temperature, nitrogen concentration, and oxygen concentration or flame stoichiometry. Combustion modifications can be useful in adjusting these variables by reducing the peak temperature, nitrogen concentration, and stoichiometry. For example, by injecting some combustion air below the grate and the rest of the combustion air through the overfire air ports above the grate, the combustion zone can be expanded and the peak temperature reduced.

NO_x can also be controlled using add-on control devices such as selective non-catalytic reduction (SNCR) or selective catalytic reduction (SCR). These techniques are similar in that they inject ammonia or urea into the flue gas in order to reduce NO_x to molecular nitrogen and

water. SNCR requires high temperatures, between 1600 °F and 2100 °F, while SCR uses a catalyst to allow the same reaction to take place between 480 °F and 800 °F. SNCR has been used on biomass-fired boilers since the mid-1980s, so this control technology is well-known and widely applied. SCR is a well-known technology for controlling NO_x from gaseous or liquid fuel-fired boilers, but use on solid fuel-fired units is much more recent.

The District has recently sent draft ATCs for public notice requiring both SNCR and SCR for biomass-fired boilers. However, none of these ATCs have been issued, and in at least one case the application has been cancelled. Furthermore, DTE has provided data from the SCR vendor strongly indicating that ammonia slip from an SNCR system may be oxidized across an oxidation catalyst, resulting in much lower net NO_x control from the SNCR than would be the case in the absence of an oxidation catalyst. The SCR vendor also argues that the oxidation catalyst is required both to comply with the CO and VOC emission limits and to allow the SCR catalyst an acceptable life, since the oxidation catalyst provides additional particulate control ahead of the SCR catalyst and is much sturdier and better able to withstand the rigors of operational use and cleaning than the SCR catalyst. Therefore, DTE proposes to use only combustion controls and SCR to control NO_x emissions.

1. BACT Applicability

BACT requirements are triggered on a pollutant-by-pollutant basis and on an emissions unit-by-emissions unit basis for the following¹:

- a. Any new emissions unit with a potential to emit exceeding two pounds per day,
- b. The relocation from one Stationary Source to another of an existing emissions unit with a potential to emit exceeding two pounds per day,
- c. Modifications to an existing emissions unit with a valid Permit to Operate resulting in an AIPE exceeding two pounds per day, and/or
- d. Any new or modified emissions unit, in a stationary source project, which results in a Major Modification.

Emissions from this biomass-fired boiler are presented in the following table:

Unit	PE2 (lb/day)					
	NO _x	SO _x	PM ₁₀	CO	VOC	NH ₃
Biomass-fired boiler	2,225.2	2,717.7	833.8	6,374.9	645.9	318.7

The boiler itself has the potential to emit 495,836 lb-CO/yr, which exceeds the threshold of 200,000 lb/yr required to trigger BACT for CO. In addition, the boiler has the potential to emit more than 2.0 lb/day of each pollutant. Therefore, the boiler triggers the BACT requirements for all affected pollutants. In addition, this unit triggers the toxics best available control technology (T-BACT) requirement for PM₁₀ emissions. Since this unit also triggers BACT for PM₁₀, and T-BACT is equivalent to BACT for the pollutant(s) that trigger T-BACT, no specific T-BACT analysis for PM₁₀ will be conducted.

¹ Except for CO emissions from a new or modified emissions unit at a Stationary Source with an SSPE2 of less than 200,000 pounds per year of CO.

2. BACT Policy

In accordance with District Policy APR-1305, *Best Available Control Technology (BACT) Policy*, Section IX, "A top-down BACT analysis shall be performed as a part of the Application Review for each application subject to the BACT requirements pursuant to the District's NSR Rule." For source categories or classes covered in the BACT Clearinghouse, relevant information under each of the steps may be simply cited from the Clearinghouse without further analysis.

Existing BACT Guideline 1.3.2, which was developed to cover a biomass-fired bubbling fluidized bed combustor, is the most applicable guideline and will be cited in this determination. However, the published version of this guideline in the District's BACT Clearinghouse was last updated in November of 2002, so the guideline requires an update to consider more recent permitting actions, compliance demonstrations, and technological innovations.

The District began working on an update to this guideline as part of project C-1090203, a proposal for four biomass-fired boilers associated with the San Joaquin Solar project. However, although this project received preliminary approval from the District (public notice of the preliminary decision being published on October 12, 2009), the application was cancelled by the applicant prior to issuance of the ATCs. The updated BACT guideline was never published in the District's BACT Clearinghouse. A second application, project N-1094135, was evaluated under the revised BACT Guideline and released for public notice of the preliminary approval (on July 12, 2010). This application is currently on hold for reasons beyond the District's control, so no final approval can be given.

DTE and its control equipment vendors were made aware of the revision to BACT Guideline 1.3.2 following submission of the application packet. After reviewing the revised guideline and the two recent projects working from it (C-1090203 and N-1094135), DTE and its vendors have submitted comments and technical data calling into question some of the assumptions and analysis presented in these earlier projects. While these comments do not invalidate the earlier work, they do suggest that the collection of more operational data is warranted in order to substantiate the more aggressive emission limits in those earlier projects. Furthermore, these comments emphasize the fact that, for many of the pollutants involved, data regarding the application of these control devices to this class and category of source operation is extremely limited. For example, SNCR is a very common NO_x control device for biomass-fired boilers, SCR has a much shorter track record, and the combination of the two controls is, at this time, purely a theoretical exercise. Therefore, DTE's comments and analysis must be taken into consideration in revising the BACT Guideline, and future revisions to the guideline will hopefully benefit from DTE's operational experience with these controls.

3. Top-Down BACT Determination

EPA's RACT/BACT/LAER Clearinghouse database, CARB's BACT Clearinghouse database, the Bay Area Air Quality Management District (BAAQMD) BACT Clearinghouse, the South Coast Air Quality Management District (SCAQMD) BACT Clearinghouse, and the San Diego Air Pollution Control District (SDAPCD) BACT Clearinghouse were also queried for BACT requirements for biomass-fired boilers. In addition, in 2007 the Massachusetts Department of Environmental Protection published an internal memorandum discussing the BACT requirements for biomass-fired boilers (the "DEP memo"), which was consulted.

NO_x BACT:

BACT is triggered for NO_x emissions from this biomass-fired boiler.

Step 1 – Identify All Possible Control Technologies:

The following NO_x controls and associated emission limits have been developed from the various BACT Clearinghouses, the DEP memo, and the existing District BACT Guideline:

1. 0.10 lb/MMBtu (ammonia injection and natural gas auxiliary fuel) – Achieved in Practice (existing BACT Guideline 1.3.2)
2. 0.075 lb/MMBtu (regenerative selective catalytic reduction (RSCR), or equal, and natural gas auxiliary fuel) – Achieved in Practice (DEP memo)
3. 0.065 lb/MMBtu (selective catalytic reduction (SCR), or equal, and natural gas auxiliary fuel) – Technologically Feasible (Applicant's proposal)
4. 0.060 lb/MMBtu (RSCR or equal) – Technologically Feasible (Connecticut Department of Environmental Protection, Permit 107-0056)
5. 0.012 lb/MMBtu, selective non-catalytic reduction (SNCR), selective catalytic reduction (SCR), and wet scrubber, or equal, and natural gas auxiliary fuel – Technologically Feasible (District projects C-1090203 and N-1094135)

While data from the RACT/BACT/LAER clearinghouse indicates other emission limits are available for consideration, these limits have not been found to be consistent with the District's practice, as expressed in District Rule 4352, of limiting NO_x emissions from solid fuel-fired boilers on a block 24-hour average basis. For example, the New Hampshire Department of Environmental Services issued permit TP-0054 on July 26, 2010 for a 70 MW (1,013 MMBtu/hr) biomass-fired boiler with a NO_x emission limit of 0.06 lb/MMBtu. However, this limit, achieved using an SCR system downstream from the baghouse, is expressed as a 30-day rolling average limit. By its nature, biomass is a non-homogenous fuel that is likely to have physical and combustion characteristics that vary substantially over time, in comparison with fuels such as natural gas or coal, that have much more homogenous physical and combustion characteristics. This variability in combustion characteristics produces a corresponding variability in NO_x emissions over time, such that a short-term NO_x emission limit must necessarily be higher than an emission limit with a longer averaging period. Indeed, the averaging period is an essential element of any emission limit under consideration in a BACT determination. Therefore, the existence of lower emission limits in a pre-construction approval issued by another agency cannot automatically invalidate higher emission limits under consideration in this document when those lower limits use a longer averaging period.

In addition, it is noted that the Georgia Department of Natural Resources (DNR) issued a permit for a new 1,529 MMBtu/hr biomass-fired boiler with a NO_x emission limit, as entered in the RACT/BACT/LAER clearinghouse, of 0.01 lb/MMBtu on a 30-day rolling average. However, this entry is clearly a typographical error as indicated by the unit's potential emissions and description as a bubbling fluidized bed combustor with SNCR, and confirmed by the Air Quality Permit issued by the Georgia DNR, which limits NO_x emissions to 0.10 lb/MMBtu on a 30-day rolling average basis.

Step 2 – Eliminate Technologically Infeasible Options:

All technologies listed in Step 1 have been found to be technologically feasible, either by another regulatory agency or by applicants for District permits. However, it must be noted that the District's acceptance of 0.012 lb-NO_x/MMBtu as technologically feasible is based on ATC applications that proposed this emission limit, but in neither of the previous projects (N-1094135 and C-1090203) has an ATC been issued. Instead, project C-1090203 was cancelled at the applicant's request, while project N-1094135 is still in review pending satisfaction of the California Environmental Quality Act requirements by the Lead Agency².

The vendor for the proposed SCR system has raised the possibility that ammonia injection, such as for SNCR, upstream of the oxidation catalyst may lead to an increase in NO_x emissions as ammonia is oxidized to NO_x by the oxidation catalyst. Excess ammonia is likely to be oxidized across the oxidation catalyst at a ratio of 1 ppmv of additional NO_x for each ppmv of ammonia slip. The vendor estimates that an SNCR system, working from an uncontrolled emission factor of 0.33 lb/MMBtu (based on data from DTE's Woodland plant) would reduce NO_x by approximately 40% to 0.20 lb/MMBtu. At 40 ppmv of ammonia slip from the SNCR system, the vendor estimates approximately 0.08 lb/MMBtu of additional NO_x would be generated, for a total of 0.28 lb/MMBtu. The net effect of the SNCR system would be reduced to approximately 15% control efficiency once oxidation of ammonia across the oxidation catalyst is taken into account.

Furthermore, it is not feasible to simply abandon the oxidation catalyst in favor of SNCR and additional NO_x reductions, both because the oxidation catalyst is required for compliance with the proposed VOC and CO emission limits and because the oxidation catalyst serves an important supporting function for the SCR system. The SCR catalyst is constructed of a fibrous material with a comparatively thick catalyst bed, whereas the oxidation catalyst is metallic in construction with a comparatively thin catalyst bed. The metallic oxidation catalyst is sturdier than the fibrous SCR catalyst, while the thinner catalyst bed on the oxidation catalyst is easier to keep clean than the thick catalyst bed on the SCR catalyst. This combination of ruggedness and easy cleaning allows the oxidation catalyst to serve a protective function for the SCR catalyst, shielding the latter from the particulate matter still in the exhaust stream. This protective function for the oxidation catalyst is expected to allow the SCR catalyst a significantly longer life with less maintenance and fewer excursions above the emission limit.

If the technologically feasible limit of 0.012 lb/MMBtu is revised to remove the expected 40% control efficiency, the result is 0.02 lb/MMBtu. Assuming 90% control efficiency from the SCR system, the uncontrolled emissions would be approximately 0.2 lb/MMBtu, which is a significantly lower starting point than the 0.33 lb/MMBtu experienced at DTE's Woodland plant. Therefore, while the District believe that this emission limit is technologically feasible in general, 0.012 lb/MMBtu cannot be considered to represent a technologically feasible emission limit for the proposed combination of fuel, combustor, and pollution controls associated with this proposal.

² It is worth noting that the Governing Board for the Modesto Irrigation District, which is the Lead Agency for project N-1094135, voted to terminate negotiations with the project proponent on October 12, 2010.

Step 3 – Rank Remaining Control Technologies by Control Effectiveness

1. 0.065 lb/MMBtu (SCR for 90% control or equal and natural gas auxiliary fuel)
2. 0.060 lb/MMBtu, (RSCR for 70% control or equal and natural gas auxiliary fuel)
3. 0.075 lb/MMBtu, regenerative selective catalytic reduction (RSCR) or equal, and natural gas auxiliary fuel

It must be noted that the emission limit of 0.060 lb/MMBtu found to be technologically feasible by the Connecticut DEP is based on a control efficiency of 70% for the regenerative SCR included in that proposal. In contrast, DTE has proposed an SCR system with 90% control efficiency, albeit with a higher uncontrolled emission factor that leads to a slightly higher controlled emission limit. If the RSCR at 70% control efficiency were applied to the proposed boiler, the resulting emission limit would be:

$$EF = (0.33 \text{ lb/MMBtu}) \times (1 - 0.70) = 0.099 \text{ lb/MMBtu}$$

Since BACT is defined as the most stringent emission limit or control technique from the list of possibilities specified in Rule 2201, Section 3.9, 90% control of NO_x emissions using SCR must be considered a more stringent control technique than 70% control using RSCR.

While 0.10 lb/MMBtu would be the 4th item in this list, it is an “achieved in practice” level of control that is less stringent than the other “achieved in practice” emission limit of 0.075 lb/MMBtu. Therefore, 0.10 lb/MMBtu will be removed from consideration at this time.

Step 4 – Cost Effectiveness Analysis

The applicant has proposed the most stringent emission limitation remaining from Step 3. No cost effectiveness analysis is required.

Step 5 – Select BACT

The BACT requirement is satisfied by the applicant's proposal to comply with an emission limit of 0.065 lb-NO_x/MMBtu using selective catalytic reduction for 90% control of NO_x emissions and natural gas as auxiliary fuel.

In addition, as part of their application DTE has proposed, and the District has approved, a lower NO_x emission target of 0.040 lb/MMBtu based on 90% control from an uncontrolled emission rate of 0.33 lb/MMBtu, plus a compliance margin of approximately 20%. DTE will be granted a 24-month evaluation period in which to gather operational and emissions data on the boiler and SCR system. At the end of the evaluation period, DTE will submit a report using all available data to show what emission limit the boiler and control system can reliably comply with. DTE will then submit an application to revise the NO_x emission limit based on the results of the report. If DTE fails to submit the report, the NO_x emission target of 0.040 lb/MMBtu will become an enforceable emission limit, displacing the current NO_x emission limit of 0.065 lb/MMBtu. Furthermore, as this operational and emissions data becomes available, the District will proactively update BACT Guideline 1.3.2 to reflect that data.

SO_x BACT:

BACT is triggered for SO_x emissions from this biomass-fired boiler.

Step 1 – Identify All Possible Control Technologies:

1. 23 ppmvd (limestone injection and natural gas auxiliary fuel) – Achieved in Practice (BACT Guideline 1.3.2)
2. 0.025 lb/MMBtu (limestone injection, or equivalent equipment, and natural gas auxiliary fuel) – Achieved in Practice (DEP memo)
3. 0.012 lb/MMBtu (limestone injection, or equivalent equipment, and natural gas auxiliary fuel) – Technologically Feasible (District projects C-1090203 and N-1094135)

Note that 23 ppmvd SO_x @ 3% O₂ is equivalent to 0.0384 lb-SO_x/MMBtu, as determined in project S-1020710.

Step 2 – Eliminate Technologically Infeasible Options:

All technologies listed in Step 1 have been found to be technologically feasible, either by another regulatory agency or by applicants for District permits. However, it must be noted that the limit of 0.025 lb/MMBtu is based on the DEP memo, which concluded that the current achieved in practice BACT for SO_x is 0.025 lb/MMBtu based on the permits for several biomass-fired boilers in nearby states³. The District has reviewed the permits for the listed boilers and concluded that only one, PSNH – Schiller Station Unit 5 in Portsmouth, New Hampshire, actually includes this emission limit.

Schiller Station unit 5 is permitted to fire on both biomass and coal, with a separate SO_x emission limit for each fuel, and is equipped with limestone injection for use when firing on coal. When firing on biomass, the Schiller Station boiler operates without the limestone injection, so the SO_x emissions are entirely uncontrolled. Furthermore, Schiller Station's biomass fuel is primarily wood from timber harvesting, fire control debris removal, sawmill residue, and the clearing of forested land for development. In contrast, DTE proposes to fire primarily on agricultural residue and urban wood waste and expects, based on data from a unit in Woodland firing on similar fuel, to burn fuel with sufficient sulfur to result in uncontrolled emissions of 0.13 lb/MMBtu on average, peaking at 0.27 lb/MMBtu for the worst-case fuel. Therefore Schiller Station unit 5 cannot be considered to provide a valid point of comparison for the proposed new boiler, and the limit of 0.025 lb/MMBtu cannot be considered achieved-in-practice for this category of source.

It is noted that the emission factor associated with the achieved in practice control calculated above is greater than the alternative achieved in practice emission factor of 23 ppmvd @ 3% O₂, equivalent to 0.0384 lb/MMBtu. However, the District notes that this emission limit comes from permits to operate S-75-6-28 and S-75-11-24, originally established in 1996 as part of project S-961126, and appears to be based in part on a condition limiting fuel sulfur content to 0.90% by weight. Uncontrolled emissions based on this fuel sulfur content limit would be approximately 3.13 lb/MMBtu, requiring a control efficiency of 98.8% to comply with the

³ Schiller Station in Portsmouth, NH, Whitefield Power in Whitefield, NH, Boralex in Stratton, ME, Ware Cogen in Ware, MA, and McNeil Station in Burlington, VT.

emission limit of 0.0384 lb/MMBtu. Since such high control efficiency is beyond the range of control efficiencies (50 – 80%) normally ascribed to a dry sorbent injection process, and near the limits of what a wet flue gas desulfurization system would be capable of, additional investigation of these emission limits is required.

It is worth noting that these units are required to source test for SO_x once each year, and the most recent source test results show these units emitting 0.22 and 0.47 ppmvd SO_x @ 3% O₂; these results are less than 2% of the permitted emission limit. The high control efficiency necessary for compliance from an assumed fuel sulfur content of 0.9%, along with the extremely high current margin for compliance, strongly suggest that the uncontrolled SO_x emissions from each of these units is already in compliance with the emission limit. For example, assuming limestone injection provides 80% control of SO_x emissions, the uncontrolled emissions are:

$$EF = (0.47 \text{ ppmv}) \div (1.00 - 0.80) = 2.4 \text{ ppmv}$$

This suggests the uncontrolled emission factor is far lower than the emission limit, which is far lower than the uncontrolled emission factor proposed for DTE Stockton based on data from DTE's Woodland facility. Furthermore, the fuel sulfur content limit of 0.9% was associated with only a few fuel sources, such as cotton stalks and cotton gin trash, which the facility now consciously avoids because of the high sulfur content. Therefore, the boilers at facility S-75 cannot be considered to provide a valid point of comparison for the proposed new boiler either.

BACT is defined as the most stringent emission limit or control technique from a list of options specified in Rule 2201, Section 3.9. The applicable emission limit must be determined from the control technique and the uncontrolled emissions, so as the uncontrolled emissions increase, the emission limit resulting from application of the most stringent control technique must also increase. US EPA and the Environmental Appeals Board have long maintained that it is inappropriate to utilize the BACT requirement to fundamentally redefine the basic design or scope of the proposed project. DTE proposes to construct a biomass-fired boiler that will be fueled using locally-available biomass fuels from agricultural and urban wood sources. Similar biomass fuels are used at the Woodland plant and the potential fuel sulfur content of those fuels are a given in the project design. Requiring DTE to use fuels with lower sulfur contents would constitute a redefinition of the project scope so that it would no longer use locally-available biomass fuels. Therefore, the achieved-in-practice BACT must be considered to be limestone injection or equivalent equipment, which can achieve control efficiency in excess of 80% in many circumstances. The District will consider limestone injection with 80% control efficiency as the achieved-in-practice BACT for this category of source, and will calculate the emission limit from the uncontrolled emissions provided by the applicant.

$$EF = (0.27 \text{ lb/MMBtu}) \times (1 - 0.80) = 0.054 \text{ lb/MMBtu}$$

Step 3 – Rank Remaining Control Technologies by Control Effectiveness

1. 0.012 lb/MMBtu (limestone injection, or equivalent equipment, and natural gas auxiliary fuel)
2. 0.054 lb/MMBtu (limestone injection, or equivalent equipment, and natural gas auxiliary fuel)

Step 4 – Cost Effectiveness Analysis

DTE has proposed an emission limit of 0.054 lb/MMBtu on a block 24-hour average basis, which is the achieved-in-practice level of SO_x control for this class and category of source. DTE has provided cost estimates from control equipment vendors to address the question of whether the additional wet scrubber required for compliance with an emission limit of 0.012 lb/MMBtu would be cost effective. It is noted that this emission limit would require the control efficiency to exceed 95% to ensure that even the worst-case fuel did not cause a violation of the emission limit. This control efficiency is well in excess of what can be achieved by dry scrubbers such as the proposed trona injection system, so a wet scrubber must be considered.

DTE submitted the estimated capital cost for a wet scrubber system, and associated systems to recover and dispose of the sulfate solids in the wet scrubber solution. These costs are estimated at \$5,800,000, which can be annualized over 10 years at 10% interest as follows:

$$C_{\text{capital}} = (\$5,800,000) \times [(0.1) \times (1 + 0.1)^{10}] \div [(1 + 0.1)^{10} - (1)] = (\$5,800,000) \times (0.1627)$$

$$C_{\text{capital}} = \$944,000/\text{yr}$$

In addition, such a scrubber would have additional electrical costs, reagent costs, solid waste disposal costs, and labor costs. Of these additional costs, DTE has provided an estimate of \$642,000 per year for the sodium hydroxide reagent used in the scrubber. The total annual cost is calculated by adding the annual operating cost to the annualized capital cost:

$$C_{\text{total}} = C_{\text{capital}} + C_{\text{operating}} = (\$944,000/\text{yr}) + (\$642,000/\text{yr}) = \$1,586,000/\text{yr}$$

Cost effectiveness is calculated by dividing the annual cost by the annual emission reductions from District standard emissions. Pursuant to the May 2008 Memorandum revising the cost effectiveness thresholds for BACT determinations, when a new unit is not subject to a prohibitory rule limiting emissions of a particular pollutant then District standard emissions are equal to the emissions from similar equipment commonly available within the District. This biomass-fired boiler is subject to SO_x emission limits in Rules 4301 and 4801; however, these rules were last amended in 1992 and cannot be taken to represent District standard emissions in 2010. Therefore, a survey of biomass-fired boilers within the District is appropriate for establishing District standard emissions.

Survey of SO_x Emission Limits for District Biomass-Fired Boilers			
Unit	Emission Limit (lb/hr)	Heat Input (MMBtu/hr)	Equivalent EF (lb/MMBtu)
N-1026-1-10	6.25	259	0.024
C-799-3-13	29	460	0.063
C-1820-1-24	10.0	352	0.028
C-825-5-10	10.3	317	0.032
S-285-2-4	9.90	149	0.066
S-75-6-28	15.66	400	0.039
S-75-11-24	12.09	315	0.038
N-4607-8-0	N/A, SO _x emission limit is directly specified on a lb/MMBtu basis.		0.035
C-6923-3-0			0.04
S-834-3-6			0.061
S-91-3-14			0.04

The average SO_x emission limit from Table C-1 above is 0.042 lb/MMBtu. This conclusion is reinforced by the fact that the mode (most common result) for SO_x emission factors in the table is 0.04 lb/MMBtu, particularly if all emission factors are rounded to one significant digit. At one significant digit, five of the eleven biomass-fired boilers have a SO_x emission limit of 0.04 lb/MMBtu. Therefore, 0.042 lb-SO_x/MMBtu will be taken as the District standard emission factor, allowing annual standard emissions to be calculated as follows:

$$\begin{aligned} PE2 &= [(0.042 \text{ lb/MMBtu}) \times (641 \text{ MMBtu/hr}) \times (8,400 \text{ hr/yr})] + [(0.27 \text{ lb/MMBtu}) \times (24 \text{ hr/yr}) \\ &\quad \times (699 \text{ MMBtu/hr})] \\ PE2 &= 230,674 \text{ lb/yr} \end{aligned}$$

Potential emissions using the technologically feasible emission limit of 0.012 lb/MMBtu are calculated as follows:

$$\begin{aligned} PE2 &= [(0.012 \text{ lb/MMBtu}) \times (641 \text{ MMBtu/hr}) \times (8,400 \text{ hr/yr})] + [(0.27 \text{ lb/MMBtu}) \times (24 \text{ hr/yr}) \\ &\quad \times (699 \text{ MMBtu/hr})] \\ PE2 &= 69,142 \text{ lb/yr} \end{aligned}$$

The cost per ton of emission reductions is calculated as follows:

$$C_{\text{reductions}} = (\$1,586,000/\text{yr}) \div [(230,674 \text{ lb/yr} - 69,142 \text{ lb/yr}) \times (1 \text{ ton}/2,000 \text{ lb})] = \$19,637/\text{ton}$$

The cost effectiveness threshold for SO_x emission reductions specified in the May 2008 Memorandum is \$18,300/ton. The cost of reductions calculated above is \$19,637/ton, which is greater than the threshold. Note that this does not include operational expenses such as additional electricity consumption, additional labor costs, and additional solid waste disposal costs. If these costs were included, the annual cost would be even greater and the resulting emission reductions would cost even more on a dollar-per-ton basis. Therefore, the technologically feasible emission limit of 0.012 lb/MMBtu is not cost effective.

Although DTE has proposed to install a wet scrubber for HCl control, HCl emissions cannot be included in the cost effectiveness determination because BACT, or more precisely T-BACT, is not triggered for HCl. BACT is evaluated on a pollutant-by-pollutant basis, so it is entirely inappropriate to include pollutants for which BACT is not required in the evaluation of the cost effectiveness of controls for a pollutant for which BACT is required, even if the control device would also affect the pollutant for which BACT is not required.

Furthermore, the cost effectiveness evaluation above addresses the cost of SO_x emission reductions associated with adding a wet scrubber in order to determine whether the District can require compliance with a lower emission limit. The analysis shows that an additional wet scrubber is not a cost effective method of reducing SO_x emissions from the District standard of 0.042 lb/MMBtu to 0.012 lb/MMBtu, so the District cannot require DTE to comply with the lower emission limit. The fact that DTE has proposed a wet scrubber for HCl control is not germane to the determination that the District cannot require compliance with the lower emission limit because that limit cannot be complied with in a cost effective manner.

Step 5 – Select BACT

BACT is satisfied by DTE's proposal to use trona injection and natural gas auxiliary fuel to comply with a SO_x emission limit of 0.054 lb/MMBtu on a block 24-hour average basis. The District has concluded that trona injection provides SO_x control at least equivalent to limestone injection, and DTE will be required to conduct source testing and CEMS monitoring to support that conclusion by demonstrating compliance with the emission limit. No further discussion is required.

PM₁₀ BACT:

BACT is triggered for PM₁₀ emissions from this biomass-fired boiler.

Step 1 – Identify All Possible Control Technologies:

1. 0.045 lb/MMBtu (baghouse or ESP and natural gas auxiliary fuel) – Achieved in Practice (Guideline 1.3.2)
2. 0.024 lb/MMBtu (baghouse, multiclone, and wet scrubber, or equivalent equipment, and natural gas auxiliary fuel) – Technologically Feasible (District projects C-1090203 and N-1094135)
3. 0.0214 lb/MMBtu (multiclone and baghouse or ESP, or equivalent equipment, and natural gas auxiliary fuel) – Technologically Feasible (Applicant's proposal)

While the previous District projects found an emission limit of 0.024 lb-PM₁₀/MMBtu to be technologically feasible, the District has more recently become aware of at least three biomass-fired boilers in the State of Washington⁴ that are permitted for, and in compliance with, an emission limit of 0.02 lb-PM₁₀/MMBtu. Review of the relevant permit conditions and test results shows that this emission limit includes both filterable and condensable PM₁₀ and that the limit is valid to one significant digit, such that a test result of 0.024 lb-PM₁₀/MMBtu would not be a violation because it would round to one significant digit, i.e., it would round to 0.02 lb/MMBtu. Therefore, 0.024 lb-PM₁₀/MMBtu will be considered achieved in practice.

Step 2 – Eliminate Technologically Infeasible Options:

All technologies listed in Step 1 have been found to be technologically feasible, either by another regulatory agency or by applicants for District permits.

Step 3 – Rank Remaining Control Technologies by Control Effectiveness

1. 0.0214 lb/MMBtu (multiclone and baghouse or ESP, or equivalent equipment, and natural gas auxiliary fuel)
2. 0.024 lb/MMBtu (baghouse, multiclone, and wet scrubber, or equivalent equipment, and natural gas auxiliary fuel)

The limit of 0.045 lb-PM₁₀/MMBtu will be removed from consideration as the less stringent of the two achieved in practice options.

Step 4 – Cost Effectiveness Analysis

DTE has proposed the most stringent emission limit in step 3. A cost effectiveness analysis is not required.

⁴ Hampton Lumber Mill in Darrington, WA; Sierra Pacific Industries in Burlington, WA; Sierra Pacific Industries in Aberdeen, WA.

Step 5 – Select BACT

BACT is satisfied by DTE's proposal to use a multiclone and ESP to comply with a PM₁₀ emission limit of 0.0214 lb/MMBtu. No further discussion is required.

CO BACT:

BACT is triggered for CO emissions from this biomass-fired boiler.

Step 1 – Identify All Possible Control Technologies:

1. 183 ppmvd (natural gas auxiliary fuel) – Achieved in Practice (Guideline 1.3.2)⁵
2. 0.1 lb/MMBtu (natural gas auxiliary fuel) – Achieved in Practice (DEP memo)
3. 0.09 lb/MMBtu (oxidation catalyst and natural gas auxiliary fuel) – Technologically Feasible (Applicant's proposal)
4. 0.05 lb/MMBtu (natural gas auxiliary fuel) – Technologically Feasible (District projects C-1090203 and N-1094135)

It is noted that option 2, an emission limit of 0.1 lb-CO/MMBtu, is confirmed as achieved in practice by Schiller Station unit 5 in New Hampshire. This biomass-fired boiler is permitted for this emission limit, with confirmation of compliance provided by the continuous emissions monitoring system for CO emissions.

Step 2 – Eliminate Technologically Infeasible Options:

All technologies listed in Step 1 have been found to be technologically feasible, either by another regulatory agency or by applicants for District permits. However, it must be noted that the District has previously accepted 0.05 lb-CO/MMBtu as technologically feasible based on ATC applications that proposed this emission limit. The District acknowledges that in neither of the previous projects (N-1094135 and C-1090203) has an ATC been issued. Instead, project C-1090203 was cancelled at the applicant's request, while project N-1094135 is still in review pending satisfaction of the CEQA requirements by the Lead Agency.

The District has concluded that an oxidation catalyst will provide some level of CO control, resulting in an emission limit lower than the achieved-in-practice limit of 0.1 lb/MMBtu. However, in the absence of a manufacturer's guarantee or a permit condition confirmed by compliance testing, there would be insufficient data available for the District to conclusively determine exactly how low an emission limit an oxidation catalyst will allow. The District must, therefore, pay close attention to the guarantee offered by the oxidation catalyst manufacturer, which is for continuous compliance with an emission limit of 0.09 lb-CO/MMBtu; this emission limit will be evaluated as the only technologically feasible control option with any significant supporting documentation at this time.

⁵ Equivalent to 0.140 lb-CO/MMBtu as described in District project S-1020710.

Step 3 – Rank Remaining Control Technologies by Control Effectiveness

1. 0.09 lb/MMBtu using an oxidation catalyst and natural gas auxiliary fuel
1. 0.1 lb/MMBtu using natural gas auxiliary fuel

The other achieved-in-practice control option of 183 ppmvd CO @ 3% O₂ (0.140 lb-CO/MMBtu) will be removed from consideration at this time as it is the less stringent of the two achieved in practice options.

Step 4 – Cost Effectiveness Analysis

DTE has proposed the most stringent emission limit in step 3. A cost effectiveness analysis is not required.

Step 5 – Select BACT

BACT is satisfied by DTE's proposal to use an oxidation catalyst and natural gas auxiliary fuel to comply with a CO emission limit of 0.09 lb/MMBtu. No further discussion is required.

VOC BACT:

BACT is triggered for VOC emissions from this biomass-fired boiler.

Step 1 – Identify All Possible Control Technologies:

1. 0.02 lb/MMBtu (natural gas auxiliary fuel) – Achieved in Practice (Guideline 1.3.2)
2. 0.01 lb/MMBtu (natural gas auxiliary fuel) – Achieved in Practice (DEP memo)
3. 0.009 lb/MMBtu (oxidation catalyst and natural gas auxiliary fuel) – Technologically Feasible (Applicant's proposal)
4. 0.005 lb/MMBtu using natural gas auxiliary fuel – Technologically Feasible (District projects C-1090203 and N-1094135)

Step 2 – Eliminate Technologically Infeasible Options:

All technologies listed in Step 1 have been found to be technologically feasible, either by another regulatory agency or by applicants for District permits. However, it must be noted that the District has previously accepted 0.005 lb-VOC/MMBtu as technologically feasible based on ATC applications that proposed this emission limit. The District acknowledges that in neither of the previous projects (N-1094135 and C-1090203) has an ATC been issued. Instead, project C-1090203 was cancelled at the applicant's request, while project N-1094135 is still in review pending satisfaction of the CEQA requirements by the Lead Agency. Furthermore, it is noted that Schiller Station unit 5, a biomass-fired boiler located in New Hampshire, is operating under a PSD permit that limits VOC emissions to 0.005 lb/MMBtu. However, this emission limit is unverified as the PSD permit includes no requirement for the operator to conduct testing and demonstrate compliance with the emission limit. Therefore, the limit of 0.005 lb/MMBtu cannot be considered achieved in practice at this time.

The District has concluded that an oxidation catalyst will provide some level of VOC control, resulting in an emission limit lower than the achieved-in-practice limit of 0.01 lb/MMBtu. However, it is noted that the Connecticut Department of Environmental Protection recently issued a permit for a biomass-fired boiler which limited VOC emissions to 0.01 lb/MMBtu using an oxidation catalyst. In the absence of a manufacturer's guarantee or a permit condition confirmed by compliance testing, there would be insufficient data available for the District to conclusively determine exactly how low an emission limit an oxidation catalyst will allow. The District must, therefore, pay close attention to the guarantee offered by the oxidation catalyst manufacturer, which is for continuous compliance with an emission limit of 0.009 lb-VOC/MMBtu; this emission limit will be evaluated as the only technologically feasible control option with any significant supporting documentation at this time.

Step 3 – Rank Remaining Control Technologies by Control Effectiveness

2. 0.009 lb/MMBtu (oxidation catalyst and natural gas auxiliary fuel)
3. 0.01 lb/MMBtu (natural gas auxiliary fuel)

The other achieved-in-practice control option of 0.02 lb-VOC/MMBtu will be removed from consideration at this time as it is the less stringent of the two achieved in practice options.

Step 4 – Cost Effectiveness Analysis

DTE has proposed the most stringent emission limit in step 3. A cost effectiveness analysis is not required.

Step 5 – Select BACT

BACT is satisfied by DTE's proposal to use an oxidation catalyst and natural gas auxiliary fuel to comply with a VOC emission limit of 0.009 lb/MMBtu. No further discussion is required.

Proposed Pages for the BACT Clearinghouse

**San Joaquin Valley
Unified Air Pollution Control District**

Best Available Control Technology (BACT) Guideline 1.3.2*

Emission Unit: Biomass-Fired Boiler

Industry Type: Electrical Generation

Equipment Rating: ≥10 MW

Last Update: TBD

	Achieved in Practice or contained in SIP	Technologically Feasible	Alternate Basic Equipment
NO _x	0.075 lb/MMBtu, block 24-hour average (Regenerative Selective Catalytic Reduction, or equal, and natural gas auxiliary fuel)	0.065 lb/MMBtu, block 24-hour average (Selective Catalytic Reduction for 90% control efficiency, or equal, and natural gas auxiliary fuel)	
SO _x	0.054 lb/MMBtu, block 24-hour average (limestone injection for 80% control efficiency, or equal, and natural gas auxiliary fuel)	0.012 lb/MMBtu, block 24-hour average (wet flue gas desulfurization for 95% control efficiency, or equal, and natural gas auxiliary fuel)	
PM ₁₀	0.024 lb/MMBtu, 30-minute average (multiclone and electrostatic precipitator, or equal, and natural gas auxiliary fuel)	0.0214 lb/MMBtu, 30-minute average (multiclone and electrostatic precipitator or baghouse, or equal, and natural gas auxiliary fuel)	
CO	0.10 lb/MMBtu, block 24-hour average (good combustion practices and natural gas auxiliary fuel)	0.09 lb/MMBtu, block 24-hour average (oxidation catalyst and natural gas auxiliary fuel)	
VOC	0.01 lb/MMBtu, 30-minute average (good combustion practices and natural gas auxiliary fuel)	0.009 lb/MMBtu, 30-minute average (oxidation catalyst and natural gas auxiliary fuel)	

BACT is the most stringent control technique for the emissions unit and class of source. Control techniques that are not achieved in practice or contained in a state implementation plan must be cost effective as well as feasible. Economic analysis to demonstrate cost effectiveness is required for all determinations that are not achieved in practice or contained in an EPA approved State Implementation Plan.

***This is a Summary Page for this Class of Source - Permit Specific BACT Determinations on Next Page(s)**

San Joaquin Valley Unified Air Pollution Control District

Best Available Control Technology (BACT) Guideline 1.3.2

Emission Unit: Biomass-Fired Boiler

Equipment Rating: ≥10 MW

Facility: DTE Stockton, LLC

References: ATC #: N-645-36-0
Project #: N-1101175

Location: 2526 W. Washington St.
Stockton, CA 95203

Date of Determination: TBD

Pollutant	BACT Requirements
NO _x	0.065 lb/MMBtu, block 24-hour average
SO _x	0.054 lb/MMBtu, block 24-hour average
PM ₁₀	0.0214 lb/MMBtu, 30-minute average
CO	0.09 lb/MMBtu, block 24-hour average
VOC	0.009 lb/MMBtu, 30-minute average

- BACT Status:**
- Achieved in practice (SO_x)
 - Small Emitter
 - T-BACT (PM₁₀)
 - Technologically feasible BACT (NO_x, PM₁₀, CO, and VOC)
 - At the time of this determination achieved in practice BACT was equivalent to technologically feasible BACT
 - Contained in EPA approved SIP
 - The following technologically feasible option was not cost effective:
 1. SO_x wet scrubber for 95% control efficiency and 0.012 lb/MMBtu
 - Alternate Basic Equipment
 - The following alternate basic equipment was not cost effective:

Appendix D
Health Risk Assessment Summary
and
Ambient Air Quality Analysis

San Joaquin Valley Air Pollution Control District Risk Management Review

To: Frank DeMaris, Air Quality Engineer – Permit Services
 From: Glenn Reed, Senior Air Quality Specialist – Technical Services
 Date: November 22, 2010
 Facility Name: POSDEF Power Company
 Location: 2526 W Washington St
 Stockton, CA
 Application #(s): N-645-8-5, -9-5, -10-5, -11-5, -23-4, -36-0, -37-0, -38-0
 Project #: N-1101175

A. RMR SUMMARY

RMR Summary				
Categories	Stoker-Fired Biomass Boiler (Unit 36-0)	Biomass Handling and Storage (Units 37-0 and 38-0)	Project Totals	Facility Totals
Prioritization Score	409	0.5	>1.0	>1.0
Acute Hazard Index	0.0	NA ¹	0.0	0.0
Chronic Hazard Index	0.2	NA ¹	0.0	0.0
Maximum Individual Cancer Risk (10⁻⁶)	8.54 ²	NA ¹	8.54	8.54
T-BACT Required?	Yes	No		
Special Permit Conditions?	No	No		

- 1 Risks for Units 37-0 and 38-0 are included in the risk estimate for Unit 36-0.
 2 Risk at the Point of Maximum Impact.

Proposed Permit Conditions

To ensure that human health risks will not exceed District allowable levels; the following permit conditions must be included for:

Unit # 36-0

No special conditions are required.

Units # 37-0 and 38-0

1. Enforceable conditions should be imposed to ensure that fugitive emissions estimates used for the ambient air quality analysis and RMR are not exceeded.

T-BACT is required for this unit because of emissions of hexavalent chromium which is a PM-10. In accordance with District policy, BACT for this unit will be considered to be T-BACT.

B. RMR REPORT

I. Project Description

Technical Services received a request on July 23, 2010, to perform a Risk Management Review and an Ambient Air Quality Analysis for a proposed modification to a coal-fired power plant. The modification consisted of the installation of: a 699 MMBtu/hr stoker-fired biomass boiler (36-0); a biomass receiving operation (37-0) with two biomass storage piles (11-5 and 23-4); and a biomass fuel handling operation (38-0). Two limestone storage silos (8-5 and 9-5) and one limestone tank (10-5) will be converted to trona. The two coal-fired circulating fluidized bed boilers (14-10 and 15-10) will be decommissioned.

II. Analysis

Toxic emissions for this proposed stoker-fired biomass boiler were calculated using the District's emission factors for biomass power plant emissions from agriculture waste and urban wood waste which are based on approved Toxics Emissions Inventory Report. Fugitive emissions from the biomass handling operations were calculated using a speciation profile from the Air Resources Board (Profile No. 421). In accordance with the District's *Risk Management Policy for Permitting New and Modified Sources* (APR 1905, March 2, 2001), risks from the proposed unit's toxic emissions were prioritized using the procedure in the 1990 CAPCOA Facility Prioritization Guidelines and incorporated in the District's HEARTS database. The prioritization score for this proposed unit was greater than 1.0 (see RMR Summary Table). Therefore, a health risk assessment was necessary.

The following parameters were used for the review:

Analysis Parameters Unit 36-0			
Source Type	Point	Location Type	Rural
Stack Height (m)	45.75	Closest Receptor (m)	117.3
Stack Diameter. (m)	3.36	Type of Receptor	Business
Stack Exit Velocity (m/s)	14.24	Max Hours per Year	8424
Stack Exit Temp. (°K)	450	Fuel Type	Wood
Burner Rating (MMBtu/hr)	699		

The biomass receiving operation (i.e., truck unloading) and biomass handling operation at the plant were modeled as area sources with the following parameters:

Analysis Parameters Unit 37-0			
Source Type	Area	Location Type	Rural
X-Length (m)	22.86	Closest Receptor (m)	117.3
Y-Length (m)	33.75	Type of Receptor	Business
Release Height (m)	3.00	Pollutant Type	PM
		Emission Rate	124 lbs/yr

Analysis Parameters Unit 38-0			
Source Type	Area	Location Type	Rural
X-Length (m)	21.34	Closest Receptor (m)	117.3
Y-Length (m)	20.73	Type of Receptor	Business
Release Height (m)	18.30	Pollutant Type	PM
		Emission Rate	219 lbs/yr

The disc screening area and the north and west stockpiles were modeled as volume sources with the following parameters:

Analysis Parameters				
Source Type	Volume	Location Type		Rural
Emission Rate (hr/day)	See below	Closest Receptor (m)		117.3
Emission Rate (hr/year)	See below	Type of Receptor		Business
Pollutant Type	Dust			
Units	Disc Screening	North Stockpile	West Stockpile	
Emissions (lbs/yr)	170	272.5	272.5	
Release Height (m)	18.30	9.15	9.15	
Initial Lateral Dimension (m)	4.34	16.88	13.58	
Initial Vertical Dimension (m)	8.51	4.26	4.26	

Technical Services performed modeling for criteria pollutants CO, NO_x, SO_x and PM₁₀; as well as a RMR. The results from the Criteria Pollutant Modeling are as follows:

Criteria Pollutant Modeling Results*

Biomass Boiler, etc.	1 Hour	3 Hours	8 Hours.	24 Hours	Annual
CO	Pass	X	Pass	X	X
NO _x	Pass ¹	X	X	X	Pass
SO _x	Pass	Pass	X	Pass	Pass
PM ₁₀	X	X	X	Pass ²	Pass ²

*Results were taken from the attached PSD spreadsheet.

¹The project was compared to the 1-hour NO₂ National Ambient Air Quality Standard that became effective on April 12, 2010 using the District's approved procedures.

²The criteria pollutants are below EPA's level of significance as found in 40 CFR Part 51.165 (b)(2).

III. Conclusion

The acute and chronic indices are below 1.0 and the cancer risk is greater than 1.0 in a million, but less than 10 in a million. **In accordance with the District's Risk Management Policy, the project is approved with Toxic Best Available Control Technology (T-BACT).**

To ensure that human health risks will not exceed District allowable levels; the permit conditions listed on page 1 of this report must be included for this proposed unit.

These conclusions are based on the data provided by the applicant and the project engineer. Therefore, this analysis is valid only as long as the proposed data and parameters do not change.

The emissions from the proposed equipment will not cause or contribute significantly to a violation of the State and National AAQS.

Attachments:

- A. RMR request from the project engineer
- B. Prioritization score
- C. Point of Maximum Impact Report
- D. Summary of Maximum Air Quality Impacts

San Joaquin Valley Air Pollution Control District

Ambient Air Quality Analysis

Addendum

To: Frank DeMaris, Air Quality Engineer – Permit Services

From: Glenn Reed, Senior Air Quality Specialist – Technical Services

Date: February 23, 2011

Facility Name: DTE Stockton, LLC

Location: 2526 W Washington St
Stockton, CA

Application #(s): N-645--36-0, -38-0, -39-0

Project #: N-1101175

Proposed Permit Conditions

To ensure that the particulate emissions from the proposed alternative biomass handling process do not contribute to a violation of the State ambient air quality standards for particulate matter; the following permit conditions must be included for:

Unit # 36-0

No special conditions are required.

Units # 38-0 and 39-0

1. Enforceable conditions should be imposed to ensure that maximum daily and annual fugitive emissions estimates used for the ambient air quality analysis are not exceeded.
2. The following are the fugitive emissions modeled in this analysis:

Unit ID	Modeled Source	Maximum Daily PM10 Emissions (lbs/day)	Maximum Annual PM10 Emissions (lb/yr)
N-645-38-0	Plant Area	0.203	52.90
N-645-39-0	Truck Unloading	0.360	67.27
	Disc Screening	0.554	99.68
	Stockpile Conveyors	0.387	72.17
	Active Stockpile	0.697	202.83
	Inactive Stockpile	0.182	58.83
	Total	2.180	500.79

A. AAQA REPORT

I. Project Description

Technical Services received a request on February 14, 2011 to perform an ambient air quality analysis for an alternate scenario for the biomass receiving, handling, and storage emissions at the DTE Stockton, LLC facility. Previously, DTE had proposed to locate these operations north of the biomass boiler. The alternate scenario locates them to the east of the boiler. The Alternate Scenario will be incorporated into Unit N-645-39-0. Some of the emissions from the Alternate Scenario will also be included as Unit N-645-38-0. Emissions from biomass boiler (Unit N-645-36-0) will be unchanged from those analyzed on November 22, 2011. It was determined that it was not necessary to perform a Risk Management Review for the Alternate Scenario. The cancer risk predicted in the previous analysis was due to emissions of hexavalent chromium and arsenic. Most emissions of those toxic air pollutants are from the boiler and not the biomass handling and storage operations.

II. Analysis

Criteria pollutant emissions from the sources modeled for the Alternate Scenario

The following parameters were used for the analysis:

Analysis Parameters Biomass Boiler Unit 36-0			
Source Type	Point	Location Type	Rural
Stack Height (m)	45.75	Closest Receptor (m)	117.3
Stack Diameter. (m)	3.36	Type of Receptor	Business
Stack Exit Velocity (m/s)	14.24	Max Hours per Year	8424
Stack Exit Temp. (°K)	450	Fuel Type	Wood
Burner Rating (MMBtu/hr)	699		

The biomass handling operation at the plant was modeled as an area source with the following parameters:

Analysis Parameters Plant Area Operations Unit 38-0			
Source Type	Area	Location Type	Rural
X-Length (m)	18.54	Pollutant Type	PM
Y-Length (m)	23	Release Height (m)	18.3

The Truck Unloading operation was modeled as an area source with the following parameters:

Analysis Parameters Truck Unloading Operation Unit 39-0			
Source Type	Area	Location Type	Rural
X-Length (m)	40.81	Pollutant Type	PM
Y-Length (m)	57.91	Release Height (m)	3.1

The disc screening area was modeled as an area source with the following parameters:

Analysis Parameters Disc Screening Area Unit 39-0			
Source Type	Area	Location Type	Rural
X-Length (m)	12.86	Pollutant Type	PM
Y-Length (m)	25	Release Height (m)	13.7

Stockpile conveyors were modeled as an area source with the following parameters:

Analysis Parameters Disc Screening Area Unit 39-0			
Source Type	Area	Location Type	Rural
X-Length (m)	32.88	Pollutant Type	PM
Y-Length (m)	80.33	Release Height (m)	9.2

The disc screening area and the north and west stockpiles were modeled as volume sources with the following parameters:

Analysis Parameters			
Source Type	Volume	Location Type	Rural
Pollutant Type	PM		
Units	Active Stockpile	Inactive Stockpile	
Release Height (m)	20.7	7.6	
Initial Lateral Dimension (m)	86.58	38.29	
Initial Vertical Dimension (m)	20.7	7.6	

The results from the PM10 Modeling are as follows:

PM10 Modeling Results¹

Meteorological Year of Data	Maximum 24-Hour Concentration²	24-Hour SIL	Maximum Annual Concentration²	Annual
2005	3.4867	5.0	0.68174	1.0
2006			0.69336	
2007			0.76448	
2008			0.77758	
2009			0.76088	

¹Results are in micrograms per cubic meter.

²PM10 concentrations are below EPA's level of significance as found in 40 CFR Part 51.165 (b)(2).

III. Conclusion

The emissions from the proposed equipment will not cause or contribute significantly to a violation of the State and National AAQS for Particulate Matter as long as the conditions specified at the beginning of this Addendum are included in the Authorities to Construct.

**San Joaquin Valley Air Pollution Control District
Risk Management Review
and
Ambient Air Quality Analysis
Addendum 2**

To: Frank DeMaris, Air Quality Engineer – Permit Services
 From: Glenn Reed, Senior Air Quality Specialist – Technical Services
 Date: March 22, 2011
 Facility Name: DTE Stockton, LLC
 Location: 2526 W Washington St
 Stockton, CA
 Application #(s): N-645--36-0
 Project #: N-1101175

A. RMR SUMMARY

RMR Summary				
Categories	Stoker-Fired Biomass Boiler with Scrubber (Unit 36-0)	Biomass Handling and Storage (Units 37-0 and 38-0)	Project Totals	Facility Totals
Prioritization Score	409	0.5	>1.0	>1.0
Acute Hazard Index	0.0	NA ¹	0.0	0.0
Chronic Hazard Index	0.2	NA ¹	0.0	0.0
Maximum Individual Cancer Risk (10⁻⁶)	8.54 ²	NA ¹	8.54	8.54
T-BACT Required?	Yes	No		
Special Permit Conditions?	No	No		

- 1 Risks for Units 37-0 and 38-0 are included in the risk estimate for Unit 36-0.
 2 Risk at the Point of Maximum Impact.

Proposed Permit Conditions

To ensure that the emissions from the proposed biomass facility with a wet scrubber do not cause or contribute to a violation of the State or federal ambient air quality standards and do result in a cancer risk to the public greater than 10 in a million; the following permit conditions must be included for:

Unit # 36-0

The emission and source parameters used in this ambient air quality analysis and health risk assessment must be incorporated into the Authority to Construct for this unit.

A. RMR AND AAQA REPORT

I. Project Description

Technical Services received a request on March 17, 2011 to perform a risk management review and ambient air quality analysis for an alternate scenario in which emissions from the stoker fired biomass boiler at the DTE Stockton, LLC facility would be controlled by a scrubber to limit hydrochloric acid emissions. Previously, DTE had proposed to control these emissions with trona injection and an electrostatic precipitator. This Alternate Scenario will be incorporated into Unit N-645-36-0. The major difference between this Alternate Scenario and the original proposal is in the source parameters. The cancer risk predicted in this health risk assessment was due to emissions of hexavalent chromium and arsenic. Most emissions of those toxic air pollutants are from the boiler and not the biomass handling and storage operations.

II. Analysis

Toxic emissions for this proposed stoker-fired biomass boiler were calculated using the District's emission factors for biomass power plant emissions from agriculture waste and urban wood waste which are based on approved Toxics Emissions Inventory Report. Fugitive emissions from the biomass handling operations were calculated using a speciation profile from the Air Resources Board (Profile No. 421). In accordance with the District's *Risk Management Policy for Permitting New and Modified Sources* (APR 1905, March 2, 2001), risks from the proposed unit's toxic emissions were prioritized using the procedure in the 1990 CAPCOA Facility Prioritization Guidelines and incorporated in the District's HEARTs database. The prioritization score for this proposed unit was greater than 1.0 (see RMR Summary Table). Therefore, a health risk assessment was necessary.

The following parameters were used for the analysis:

Analysis Parameters Biomass Boiler with Wet Scrubber Unit 36-0			
Source Type	Point	Location Type	Rural
Stack Height (m)	50.33	Closest Receptor (m)	117.3
Stack Diameter. (m)	2.85	Type of Receptor	Business
Stack Exit Velocity (m/s)	17.11	Max Hours per Year	8424
Stack Exit Temp. (°K)	333	Fuel Type	Wood
Burner Rating (MMBtu/hr)	699		

The biomass receiving and handling operations at the plant for this Alternate Scenario do not differ from those in the original proposal.

Technical Services performed modeling for criteria pollutants CO, NO_x, SO_x and PM₁₀. The results from the Criteria Pollutant Modeling are as follows:

Criteria Pollutant Modeling Results*

Biomass Boiler, etc.	1 Hour	3 Hours	8 Hours.	24 Hours	Annual
CO	Pass	X	Pass	X	X
NO _x	Pass ¹	X	X	X	Pass
SO _x	Pass	Pass	X	Pass	Pass
PM ₁₀	X	X	X	Pass ²	Pass ²

*Results were taken from the attached PSD spreadsheet.

¹The project was compared to the 1-hour NO₂ National Ambient Air Quality Standard that became effective on April 12, 2010 using the District's approved procedures.

²The criteria pollutants are below EPA's level of significance as found in 40 CFR Part 51.165 (b)(2).

Concentrations higher than the 24-hour PM₁₀ Significant Impact Level (SIL) were predicted using 2008 meteorological data. These high concentrations were due to emissions from the boiler. A threshold violation file was created to identify all concentrations greater than the SIL were predicted. All exceedances of the SIL occurred on July 5, 2008. The model was run to determine the concentrations for that day from the old plant's emissions. Those concentrations were subtracted from those predicted for the biomass facility to determine if there were any instances where the SIL would be exceeded. There were none.

III. Conclusion

The acute and chronic indices are below 1.0 and the cancer risk is greater than 1.0 in a million, but less than 10 in a million. **In accordance with the District's Risk Management Policy, the project is approved with Toxic Best Available Control Technology (T-BACT).**

To ensure that human health risks will not exceed District allowable levels; the permit conditions listed on page 1 of this report must be included for this proposed unit.

These conclusions are based on the data provided by the applicant and the project engineer. Therefore, this analysis is valid only as long as the proposed data and parameters do not change.

The emissions from the proposed equipment will not cause or contribute significantly to a violation of the State and National AAQS.

Attachments:

- A. Point of Maximum Impact Report
- B. Summary of Maximum Air Quality Impacts

Attachment B

**Summary of Maximum Air Quality Impacts
($\mu\text{g}/\text{m}^3$)**

Pollutant	Averaging Time	Standard	Predicted Concentration	Significant Impact Level	Source Contribution
Respirable Particulate Matter (PM10)	24-Hour	50	129.9	5	<4.99
	Annual Arithmetic Mean	20	27.5	1	0.5
Carbon Monoxide (CO)	8-Hour	10,000	1,939		
	1-Hour	23,000	3,209		
Nitrogen Dioxide (NO ₂)	Annual Arithmetic Mean	57	0.78		
	1-Hour	188	155.3		
Sulfur Dioxide (SO ₂)	Annual Arithmetic Mean	80	26.48		
	24-Hour	105	87.03		
	3-Hour	1,300	203.72		
	1-Hour	196	97.04		

Appendix E
SSPE1 Calculations

Where possible, annual emissions from each existing permit unit will be calculated based on the DEL presented in the current PTO. This DEL will be explicitly stated and the relevant conditions cited for ease of confirmation. Unless a specific annual limit exists, annual emissions shall be calculated as the daily emissions multiplied by 365 days per year.

N-645-2-5, Coal Receiving, Storage, and Handling:

Conditions 8 and 19 limit PM₁₀ emissions to 0.1 lb/day from the coal storage silo and 0.5 lb/day from the truck dump hopper.

$$PE = (0.1 \text{ lb-PM}_{10}/\text{day} + 0.5 \text{ lb-PM}_{10}/\text{day}) = 0.6 \text{ lb-PM}_{10}/\text{day}$$

$$PE = (0.6 \text{ lb-PM}_{10}/\text{day}) \times (365 \text{ day/yr}) = 219 \text{ lb-PM}_{10}/\text{day}$$

N-645-3-5, Boiler A Coal Feed System:

N-645-4-5, Boiler B Coal Feed System:

Conditions 8 and 10 limit PM₁₀ throughput to 1,200 ton/day with a PM₁₀ emission factor of 0.000083 lb/ton. These conditions are found on the PTO for each unit.

$$PE = (1,200 \text{ ton/day}) \times (0.000083 \text{ lb-PM}_{10}/\text{ton}) = 0.1 \text{ lb-PM}_{10}/\text{day}$$

$$PE = (0.1 \text{ lb-PM}_{10}/\text{day}) \times (365 \text{ day/yr}) = 37 \text{ lb-PM}_{10}/\text{yr}$$

N-645-7-8, Coal Conveying System:

Conditions 11 and 12 limit PM₁₀ emissions from the tire-derived fuel (TDF) handling system to 0.00055 lb/ton with a throughput limit of 59.3 ton/day. Conditions 13 and 14 limit PM₁₀ emissions from coal and coke receiving through the TDF handling system to 0.0012 lb/ton with a throughput limit of 410 ton/day. Although condition 10 imposes a throughput limit of 2,400 ton/day for the coal and coke handling operation, no emission factor is associated with this limit; therefore, the throughput limit does not establish a valid DEL.

$$PE = (0.00055 \text{ lb-PM}_{10}/\text{ton}) \times (59.3 \text{ ton/day}) + (0.0012 \text{ lb-PM}_{10}/\text{ton}) \times (410 \text{ ton/day})$$

$$PE = 0.5 \text{ lb-PM}_{10}/\text{day}$$

$$PE = (0.5 \text{ lb-PM}_{10}/\text{day}) \times (365 \text{ day/yr}) = 183 \text{ lb-PM}_{10}/\text{yr}$$

N-645-12-4, Fly Ash Silo and Load Out Operation:

Although condition 12 limits throughput to 120 ton/day, no emission factor is associated with this limit; therefore, the throughput limit does not establish a valid DEL.

$$PE = 0 \text{ lb/yr}$$

N-645-14-10, 280 MMBtu/hr Boiler A:

N-645-16-10, 280 MMBtu/hr Boiler B:

These boilers are identical, so PE for each boiler is identical for each pollutant.

For NO_x:

Condition 28 establishes the operative NO_x emission limits for the boilers. In particular, it must be noted that the limit of 12.29 lb/hr conforms to District Policy APR-1105, *Guidelines for the Use of Significant Figures in Engineering Calculations*, whereas the limit of 0.04 lb/MMBtu is too imprecise to comply with APR-1105.

$$PE = (12.29 \text{ lb/hr}) \times (24 \text{ hr/day}) = 295.0 \text{ lb/day}$$

$$PE2 = (295.0 \text{ lb/day}) \times (365 \text{ day/yr}) = 107,675 \text{ lb/yr}$$

For SO_x:

Condition 26 establishes a SO_x emission limit of 13.04 lb/hr, which is more restrictive than the 0.29 lb/MMBtu limit established in condition 27.

$$PE = (13.04 \text{ lb/hr}) \times (24 \text{ hr/day}) = 313.0 \text{ lb/day}$$

$$PE = (313.0 \text{ lb/day}) \times (365 \text{ day/yr}) = 114,245 \text{ lb/yr}$$

For PM₁₀:

Condition 25 limits PM₁₀ emissions to 5 lb/hr. It will be assumed that the correct level of precision for this limit is 5.00 lb/hr.

$$PE = (5.00 \text{ lb/hr}) \times (24 \text{ hr/day}) = 120.0 \text{ lb/day}$$

$$PE = (120.0 \text{ lb/day}) \times (365 \text{ day/yr}) = 43,800 \text{ lb/yr}$$

For CO:

Condition 31 establishes the operative CO emission limit of 39.58 lb/hr.

$$PE = (39.58 \text{ lb/hr}) \times (24 \text{ hr/day}) = 949.9 \text{ lb/day}$$

$$PE = (949.9 \text{ lb/day}) \times (365 \text{ day/yr}) = 346,714 \text{ lb/yr}$$

For VOC:

Conditions 22 and 23 establish VOC emission limits of 2.5 lb/hr for each boiler and 150.0 lb/day for the entire stationary source.

$$PE = (2.5 \text{ lb/hr}) \times (24 \text{ hr/day}) = 60.0 \text{ lb/day}$$

$$PE = (60.0 \text{ lb/day}) \times (365 \text{ day/yr}) = 21,900 \text{ lb/yr}$$

For reference, the VOC SLC is equivalent to

$$PE = (150.0 \text{ lb/day}) \times (365 \text{ day/yr}) = 54,750 \text{ lb/yr}$$

N-645-20-4, Emergency Coal/Coke Feed Hopper:

Although condition 4 limits throughput to 2,400 ton/day, no emission factor is associated with this limit; therefore, the throughput limit does not establish a valid DEL.

$$PE = 0 \text{ lb/yr}$$

N-645-23-3, Emergency Coal Stockpile:

Although condition 5 limits the stockpile to 20,000 tons at any one time, no emission factor is associated with this limit; therefore, the stockpile size limit does not establish a valid DEL.

$$PE = 0 \text{ lb/yr}$$

N-645-24-8, 79 MMBtu/hr Auxiliary Boiler:

Condition 4 prohibits simultaneous operation of the auxiliary boiler with either of the CFB boilers, with the provision for a switching over period. However, the CFB boilers have the potential to emit far more of each pollutant than the auxiliary boiler does, so it will be assumed that the main boilers fire full-time. While the auxiliary boiler could technically fire during the switching over period, the CFB boilers would not be firing at their maximum rate during this period. Furthermore, even with simultaneous operation of both CFB boilers and the auxiliary boiler, total annual emissions would still be limited by various offset provisions in the permits. Therefore, it is recognized that the auxiliary boiler makes no contribution to the worst-case emissions from this facility, so PE for each pollutant from this boiler will be 0 lb/yr.

N-645-29-2, 200 bhp Emergency IC Engine:

Condition 10 limits non-emergency operation of this engine to 20 hours per year, while condition 6 limits NO_x emissions to 10 g/bhp-hr and condition 9 limits the fuel sulfur content to 0.0015% by weight. As calculated in the District's Guideline for Expedited Application Review (GEAR) for emergency diesel-fueled IC engines, the fuel sulfur content equates to an emission limit of 0.0051 g-SO_x/bhp-hr. Other emission factors will be taken from AP-42, Table 3.3-1.

For NO_x:

$$PE = (10 \text{ g/bhp-hr}) \times (200 \text{ bhp}) \times (20 \text{ hr/yr}) \div (453.6 \text{ g/lb}) = 88 \text{ lb/yr}$$

For SO_x:

$$PE = (0.0051 \text{ g/bhp-hr}) \times (200 \text{ bhp}) \times (20 \text{ hr/yr}) \div (453.6 \text{ g/lb}) = 0 \text{ lb/yr}$$

For PM₁₀:

$$PE = (0.0022 \text{ lb/bhp-hr}) \times (200 \text{ bhp}) \times (20 \text{ hr/yr}) = 9 \text{ lb/yr}$$

For CO:

$$PE = (0.00668 \text{ lb/bhp-hr}) \times (200 \text{ bhp}) \times (20 \text{ hr/yr}) = 27 \text{ lb/yr}$$

For VOC:

$$PE = (0.00251 \text{ lb/bhp-hr}) \times (200 \text{ bhp}) \times (20 \text{ hr/yr}) = 10 \text{ lb/yr}$$

N-645-31-2, Fly Ash Reinjection System:

Although condition 4 limits throughput to 2,400 ton/day, no emission factor is associated with this limit; therefore, the throughput limit does not establish a valid DEL. Furthermore, the fly ash reinjection system is fully enclosed and is not expected to have any fugitive emissions, while the fly ash that is reinjected becomes part of the combustor's normal PM₁₀ emissions.

$$PE = 0 \text{ lb/yr}$$

N-645-33-3, 355 bhp Emergency IC Engine:

Condition 7 limits non-emergency operation of this engine to 20 hours per year, while condition 3 limits emissions of each pollutant on a daily basis at 24 hours per day. Annual emissions for SSPE1 purposes will be calculated as a pro-rated 20-hour per day fraction of the daily limit. However, in addition to the SO_x DEL of 17.5 lb/day imposed under the applicable NSR rule when the unit was originally permitted, this engine is also subject to a condition limiting fuel sulfur content to 0.0015% by weight. As discussed for unit N-645-29-2, this fuel sulfur content equates to an emission limit of 0.0051 g-SO_x/bhp-hr.

For NO_x:

$$PE = (262.7 \text{ lb/day}) \times [(20 \text{ hr/yr}) \div (24 \text{ hr/day})] = 219 \text{ lb/yr}$$

For SO_x:

$$PE = (0.0051 \text{ g/bhp-hr}) \times (20 \text{ hr/yr}) \times (355 \text{ bhp}) \times (1 \text{ lb}/453.6 \text{ g}) = 0 \text{ lb/yr}$$

For PM₁₀:

$$PE = (18.4 \text{ lb/day}) \times [(20 \text{ hr/yr}) \div (24 \text{ hr/day})] = 15 \text{ lb/yr}$$

For CO:

$$PE = (56.9 \text{ lb/day}) \times [(20 \text{ hr/yr}) \div (24 \text{ hr/day})] = 47 \text{ lb/yr}$$

For VOC:

$$PE = (21 \text{ lb/day}) \times [(20 \text{ hr/yr}) \div (24 \text{ hr/day})] = 18 \text{ lb/yr}$$

N-645-35-4, Reclaimed Coal Handling Operation:

Conditions 20 and 21 establish the DEL for this unit.

For PM₁₀:

$$PE = (2,880 \text{ ton/day}) \times (0.0015 \text{ lb/ton}) = 4.3 \text{ lb/day}$$

$$PE2 = (4.3 \text{ lb/day}) \times (365 \text{ day/yr}) = 1,570 \text{ lb/yr}$$

SSPE1 is summarized in the following table:

SSPE1 (lb/yr)					
	NO _x	SO _x	PM ₁₀	CO	VOC
N-645-8-4	0	0	11	0	0
N-645-9-4	0	0	11	0	0
N-645-10-4	0	0	0	0	0
N-645-11-4	0	0	0	0	0
N-645-34-2	0	0	80,665	0	292
N-645-2-5	0	0	219	0	0
N-645-3-5	0	0	37	0	0
N-645-4-5	0	0	37	0	0
N-645-7-8	0	0	183	0	0
N-645-14-10	107,675	114,245	43,800	346,714	21,900
N-645-16-10	107,675	114,245	43,800	346,714	21,900
N-645-20-4	0	0	0	0	0
N-645-23-3	0	0	0	0	0
N-645-24-8	0	0	0	0	0
N-645-31-2	0	0	0	0	0
N-645-35-4	0	0	1,570	0	0
N-645-12-4	0	0	0	0	0
N-645-29-2	88	0	9	27	10
N-645-33-3	219	0	15	47	18
ERC ¹⁴	0	0	0	0	0
SSPE1	215,657	228,490	170,357	693,502	44,120

¹⁴ Although this facility owns several ERC certificates, the actual emission reductions did not take place at this stationary source. Therefore, the ERCs do not count toward the stationary source potential to emit.

Appendix F
Hazardous Air Pollutant Emissions

DTE ENERGY RESOURCES, INC.
POSDEF PLANT (N-645)
BIOMASS CONVERSION PROJECT -- AUTHORITY TO CONSTRUCT

TOXIC AIR CONTAMINANTS MAXIMUM EMISSIONS - STOKER BOILER

Parameter	
Device	Stoker Boiler
Fuel	Biomass
Steam Generation Rate (lb/hr)	430,000
Max Heat Input Rate (MMBtu/hr)	699
Avg Heat Input Rate (MMBtu/hr)	641
Min Higher Heating Value (Btu/lb)	4,299
Avg Higher Heating Value (Btu/lb)	5,956
Annual Operating Hours	8,424

Pollutant	Emission Factor		Maximum Hourly Emissions (lb/hr)	Maximum Annual Emissions (lb/yr)	Maximum Annual Emissions (tpy)
	(lb/ton)	Source			
	Acetaldehyde	1.55E-03			
Ammonia (lb/MMBtu)	0.006	DTE	4.2	32,399	16.2
Arsenic	2.32E-06	SJVAPCD	1.89E-04	1.05	5.26E-04
Benzene	1.77E-03	SJVAPCD	1.44E-01	802	4.01E-01
Cadmium	2.54E-05	SJVAPCD	2.06E-03	11.5	5.76E-03
Chromium, Hexavalent	1.85E-06	SJVAPCD	1.50E-04	0.84	4.19E-04
Copper	1.93E-05	SJVAPCD	1.57E-03	8.75	4.37E-03
Dioxins					
Dioxin: 6D 1,2,3,6,7,8	2.18E-11	SJVAPCD	1.77E-09	9.88E-06	4.94E-09
Dioxin: 7D 1,2,3,4,6,7,8	1.23E-10	SJVAPCD	1.00E-08	5.58E-05	2.79E-08
Formaldehyde	1.33E-02	SJVAPCD	1.08E+00	6,029	3.01
Furans					
Furan: 4F 2,3,7,8	1.28E-10	SJVAPCD	1.04E-08	5.80E-05	2.90E-08
Furan: 5F 2,3,4,7,8	7.09E-11	SJVAPCD	5.76E-09	3.21E-05	1.61E-08
Furan: 5F 1,2,3,7,8	4.40E-11	SJVAPCD	3.58E-09	1.99E-05	9.97E-09
Furan: 6F 1,2,3,6,7,8	2.34E-11	SJVAPCD	1.90E-09	1.06E-05	5.30E-09
Furan: 6F 2,3,4,6,7,8	2.74E-11	SJVAPCD	2.23E-09	1.24E-05	6.21E-09
Furan: 6F 1,2,3,4,7,8	2.35E-11	SJVAPCD	1.91E-09	1.07E-05	5.33E-09
Furan: 6F 1,2,3,7,8,9	4.05E-12	SJVAPCD	3.29E-10	1.84E-06	9.18E-10
Furan: 7F 1,2,3,4,6,7,8	3.63E-11	SJVAPCD	2.95E-09	1.65E-05	8.23E-09
Hydrogen Chloride (lb/MMBtu)	0.0037	DTE	2.59	19,979	9.99
Lead	5.54E-05	SJVAPCD	4.50E-03	25	1.26E-02
Manganese	4.99E-03	SJVAPCD	4.06E-01	2,262	1.13E+00
Mercury	2.87E-07	SJVAPCD	2.33E-05	0.13	6.50E-05
PAHs					
Benz(a)anthracene	7.10E-07	SJVAPCD	5.77E-05	0.32	1.61E-04
Benzo(b)fluoranthene	7.59E-08	SJVAPCD	6.17E-06	3.44E-02	1.72E-05
Benzo(k)fluoranthene	3.12E-08	SJVAPCD	2.54E-06	1.41E-02	7.07E-06
Chrysene	9.63E-07	SJVAPCD	7.83E-05	0.44	2.18E-04
Indeno(1,2,3-cd)pyrene	1.73E-08	SJVAPCD	1.41E-06	7.84E-03	3.92E-06
Naphthalene	3.24E-03	SJVAPCD	2.63E-01	1,469	0.73
Toluene	2.93E-04	SJVAPCD	2.38E-02	133	6.64E-02
TOTAL HAPs				31,425	15.7
MAXIMUM HAP				32,399	9.99

Notes

Steam generation rate (in lb/hr), heat input rates (in MMBtu/hr), heating values (in Btu/lb), and operating hours (in hr/day and hr/yr) were obtained from DTE Energy.

Except for NH3 and HCl, emission factors (in lb/ton) were specified by SJVAPCD for the San Joaquin Solar project. NH3 and HCl emission rates (in lb/MMBtu) were provided by DTE.

Except for NH3 and HCl, hourly emissions (in lb/hr) were calculated from the emission factors (in lb/ton), design heat input rate (in MMBtu/hr), and minimum heating value (in Btu/lb). Hourly NH3 and HCl emissions (in lb/hr) were calculated from the emission rate (in lb/MMBtu) and design heat input rate (in MMBtu/hr).

Except for NH3 and HCl, annual emissions (in lb/yr) were calculated from the emission factors (in lb/ton), average heat input rate (in MMBtu/hr), heating value (in Btu/lb), and annual operating hours. Annual NH3 and HCl emissions (in lb/yr) were calculated from the emission rate (in lb/MMBtu), average heat input rate (in MMBtu/hr), and annual operating hours.

Ammonia is not a HAP.

Appendix G

QNEC Calculations

The Quarterly Net Emissions Change is used to complete the emission profile screen for the District's PAS database. The QNEC is calculated as follows:

QNEC = PE2 – BE, where:

- QNEC = Quarterly Net Emissions Change for each emissions unit, lb/qtr
- PE2 = Post Project Potential to Emit for each emissions unit, lb/qtr
- BE = Baseline Emissions for each emissions unit, lb/qtr

Using the values in Sections VII.C.2 and VII.D.4 in the evaluation above, quarterly PE2 and quarterly PE1 can be calculated as follows:

$$PE2_{quarterly} = PE2_{annual} \div 4 \text{ quarters/year}$$

$$BE_{quarterly} = BE_{annual} \div 4 \text{ quarters/year}$$

Quarterly Net Emissions Increase (QNEC) (lb/qtr)							
Unit	Pollutant	PE2	BE	Qtr 1	Qtr 2	Qtr 3	Qtr 4
N-645-8-5	PM ₁₀	11	11	0	0	0	0
N-645-9-5	PM ₁₀	11	11	0	0	0	0
N-645-10-5	PM ₁₀	0	0	0	0	0	0
N-645-11-5	PM ₁₀	0	0	0	0	0	0
N-645-36-0	NO _x	215,350	0	53,837	53,837	53,838	53,838
	SO _x	139,140	0	34,785	34,785	34,785	34,785
	PM ₁₀	116,535	0	29,133	29,134	29,134	29,134
	CO	495,836	0	123,959	123,959	123,959	123,959
	VOC	49,600	0	12,400	12,400	12,400	12,400
N-645-37-0	PM ₁₀	723	0	180	181	181	181
N-645-38-0	PM ₁₀	107	0	26	27	27	27
N-645-39-0	PM ₁₀	445	0	111	111	111	112

Appendix H
Compliance Certification

San Joaquin Valley Unified Air Pollution Control District

TITLE V MODIFICATION - COMPLIANCE CERTIFICATION FORM

I. TYPE OF PERMIT ACTION (Check appropriate box)

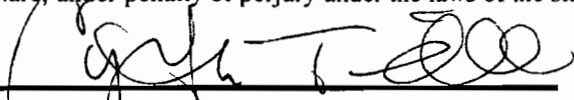
- SIGNIFICANT PERMIT MODIFICATION ADMINISTRATIVE
 MINOR PERMIT MODIFICATION AMENDMENT

COMPANY NAME: POSDEF Power Company, L.P.	FACILITY ID: N- 645
1. Type of Organization: <input type="checkbox"/> Corporation <input type="checkbox"/> Sole Ownership <input type="checkbox"/> Government <input checked="" type="checkbox"/> Partnership <input type="checkbox"/> Utility	
2. Owner's Name: POSDEF Power Company, L.P.	
3. Agent to the Owner:	

II. COMPLIANCE CERTIFICATION (Read each statement carefully and initial all circles for confirmation):

- Based on information and belief formed after reasonable inquiry, the equipment identified in this application will continue to comply with the applicable federal requirement(s).
- Based on information and belief formed after reasonable inquiry, the equipment identified in this application will comply with applicable federal requirement(s) that will become effective during the permit term, on a timely basis.
- Corrected information will be provided to the District when I become aware that incorrect or incomplete information has been submitted.
- Based on information and belief formed after reasonable inquiry, information and statements in the submitted application package, including all accompanying reports, and required certifications are true accurate and complete.

I declare, under penalty of perjury under the laws of the state of California, that the forgoing is correct and true:


Signature of Responsible Official

3/17/10
Date

Cynthia A. Tindell
Name of Responsible Official (please print)

Vice President
Title of Responsible Official (please print)

Appendix I
Original POSDEF Offset Evaluation

XI. COMPLIANCE WITH RULE 209.1 (NEW AND MODIFIED STATIONARY SOURCE REVIEW)

A. Best Available Control Technology

1. PM - The particulate matter emissions exceed 150 pounds per day. Therefore, BACT is required.
 - a. Fuel Transfer - A total accumulative amount of 2 1/2 gallons of wetting agent solution will be sprayed per ton of coal at the transfer points. In addition all transfer points will be totally enclosed and all belt conveyors will be covered. A control efficiency of at least 95% can be expected. This is considered BACT.
 - b. Storage Silos - All storage silos will be totally enclosed and vented only through vent filters. Each vent filter will have a minimum control efficiency of 99.9%. This is considered BACT.
 - c. Circulating Fluidized Bed Combustor - The emissions from the combustor will be vented through a baghouse with a control efficiency of greater than 99%. The boiler manufacturer guarantees a total emission rate of 10 lb/hr for both systems. Lowest Achievable Emission Rate not to exceed 10 pounds per hour is considered BACT.
2. SO_x - The SO_x emissions exceed 150 pounds per day. Therefore, BACT is required. Limestone injection into the fluidized bed at a Ca/S molar ratio of 1.6:1 to produce Lowest Achievable Emission Rate is considered BACT.
3. NO_x - The NO_x emissions exceed 150 pounds per day. Therefore, BACT is required. Selective Non-Catalytic Reduction (SNCR) with an ammonia injection rate of 5.5 lb NH₃/lb NO_x to produce Lowest Achievable Emission Rate is considered BACT.
4. CO - The CO emissions exceed 550 pounds per day. Therefore, BACT is required. Automatic adjustment of the combustion air flow to promote effective combustion is considered BACT. The combustion air will be adjusted to an optimum level where NO_x emissions are at the minimum and the CO emissions are at a level which does not cause a significant air quality impact.
5. HC - The hydrocarbon emissions will be less than 150 pounds per day. Therefore, BACT is not required.

B. Offsets

1. PM, SO_x, and NO_x

The expected emissions from the proposed source exceed the offset thresholds for each of these pollutants. Offsets must be provided to mitigate the worst case net emission increase of 244 lb/day of PM, 625 lb/day of SO_x, and 590 lb/day of NO_x. The applicant has agreed to locate and acquire the needed offsets. The offsets will be actual, annual, quantifiable, and enforceable. Offsets will be provided at appropriate ratios, depending on location, to assure a net benefit in air quality. The applicant will locate the offsets and will submit

for the District's approval prior to initiating constructions. The offsets will be cited prior to construction, however, pursuant to District Rule 209.1, the offsets may commence no later than the date of initial start-up of the new source.

2. CO

The CO emissions exceed the District's offset threshold of 550 lbs/day. However, the results of dispersion modeling indicate a nonsignificant CO impact on the existing ambient air quality conditions. Based on modeling, the expected worst case CO impact is well below .5 PPM. A change in ambient air CO concentration of equal to or more than .5 PPM is defined as a significant impact by the District. This value represents the lowest specified measureable concentration by the air quality monitoring instruments operated in San Joaquin County. Therefore, pursuant to the provisions of District Rule 209.1, Part III, Section B.1, the source is exempt from offset requirements for CO.

C. Air Quality Impact

The District Rule requires that emissions from a new source shall not cause or make worse the violation of an ambient air quality standard. The results of the air quality impact modeling, based on unmitigated (i.e., without offsets) emissions from the source are presented in Table XI - C.

The worst case NO₂ or SO₂ impacts, under funigation circumstances, are significant. However, the total impact (i.e., source plus background) in each case will not cause a violation of an air quality standard. The CO and PM impacts are insignificant. The ozone impact could not be modeled because the source is located in an urban area and the District does not have a gridded emission inventory. Furthermore, the source's impact relative to the mobile source emissions from a main freeway near the source was thought to be insignificant. Therefore, it is concluded that no pollutant emissions will make worse an existing violation of an ambient air quality standard nor will cause a new violation. Nevertheless, all criteria pollutant emissions, with the exception of CO and hydrocarbons, will be mitigated at appropriate ratios to assure a net air quality benefit.

Appendix J
Reconstructed Source Analysis

VIA UPS OVERNIGHT

October 25, 2010

Mr. Frank DeMaris
San Joaquin Valley Air Pollution Control District
4800 Enterprise Way
Modesto, CA 95356

RE: POSDEF Power Company, LP – Reconstructed Source Supplemental Information

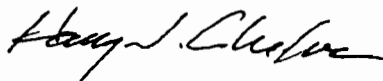
Mr. DeMaris,

This letter is in response to the SJVAPCD's request for more information on the cost comparison of the POSDEF Power Company, LP facility coal to biomass conversion project to a 50 MW facility to determine if the POSDEF project is considered a "Reconstructed Source" under San Joaquin Air Pollution Control District Rules, Rule 3.32.

Shaw calculated the fixed capital cost to build a new 50 MW facility. Shaw determined the fixed capital cost to be \$211,347,000. This was compared to the DTE Conversion estimate (from coal to wood biomass firing) which is \$79,089,000. This equates to a conversion versus new cost of 37% well below the Reconstructed Source threshold of 50% (see attached table). Therefore, the facility is not a Reconstructed Source.

Very truly yours,

SHAW CONSULTANTS INTERNATIONAL, INC.



Harry J. Chekos
Executive Consultant

CC: DTE Energy Resources, Fadi Mourad
Sierra Research, Jeff Adkins

Stockton Biomass - Capital Cost
New Plant vs Conversion

	Total Capital Costs (\$000s)		
	<u>Shaw</u>	<u>DTE</u>	
	<u>Stockton</u>	<u>Conversion</u>	<u>Conversion</u>
	<u>SOMW</u>	<u>Estimate</u>	<u>vs Cost New</u>
Construction Costs			
Material Handling	\$8,801	\$8,555	
Boiler / AQCS / Steam Turbine / Construction Labor	123,826	41,768	
Engineering/ Home office support	17,602	6,139	
Balance of Plant	35,204	15,223	
Switch Yard	6,601	0	
EPC Contingency/Fee/G&E	<u>19,313</u>	<u>7,405</u>	
Total Construction Costs	\$211,347	\$79,089	37%

Appendix K
Biomass Fuel Handling System

DTE ENERGY RESOURCES, INC.
 POSDEF PLANT (N-645)
 BIOMASS CONVERSION PROJECT – AUTHORITY TO CONSTRUCT

EMISSION FACTORS - BIOMASS HANDLING

Parameter	PM10	PM2.5
Particle Size Multiplier	0.35	0.053
Mean Wind Speed (mph)	8.10	8.10
Moisture Content	28.0%	28.0%
Emission Factor (lb/ton), Uncontrolled	5.21E-05	7.89E-06

Notes

Uncontrolled PM10 and PM2.5 emissions factors were calculated Equation 1 of Section 13.2.4 of AP-42 (November 2006).
 Mean wind speed (in mph) reflects 2004-2008 Stockton Airport meteorology data.
 Moisture content (in %) was provided by DTE.

FUGITIVE DUST EMISSIONS - BIOMASS HANDLING

Source	Maximum Throughput	Maximum Throughput (tph)	Hourly Emissions		Maximum Throughput	Maximum Throughput (tpd)	Daily Emissions		Annual Throughput	Annual Throughput (tpy)	Annual Emissions	
			PM10 (lb/hr)	PM2.5 (lb/hr)			PM10 (lb/day)	PM2.5 (lb/day)			PM10 (tpy)	PM2.5 (tpy)
Truck Unloading Area		342				2,732				470,080		
Truck Unloader #1	50%	171	8.90E-03	1.35E-03	50%	1,366	7.12E-02	1.08E-02	40%	188,032	4.90E-03	7.42E-04
Truck Unloader #2	50%	171	8.90E-03	1.35E-03	50%	1,366	7.12E-02	1.08E-02	40%	188,032	4.90E-03	7.42E-04
Truck Dump to Ground (Emergency)	0%	0	0	0	0%	0	0	0	20%	94,016	2.45E-03	3.71E-04
Truck Unloader #1 to Conveyor A	50%	0	0	0	50%	0	0	0	50%	241,305	6.29E-03	9.52E-04
Truck Unloader #2 to Conveyor A	50%	0	0	0	50%	0	0	0	50%	241,305	6.29E-03	9.52E-04
Truck Dump Pile to Truck Unloaders (Load/Unload)	0%	0	0	0	0%	0	0	0	N/A	188,032	4.90E-03	7.42E-04
Truck Unloaders from Disc Screen Emergency Pile	0%	0	0	0	0%	0	0	0	N/A	9,652	2.52E-04	3.81E-05
Truck Unloaders from Hogger Emergency Pile	0%	0	0	0	0%	0	0	0	N/A	2,878	7.50E-05	1.14E-05
SUBTOTALS			1.78E-02	2.70E-03			1.42E-01	2.16E-02			3.01E-02	4.55E-03
Disc Screening Area												
Conveyor A to Disc Screen	100%	342	1.78E-02	2.70E-03	100%	2,732	1.42E-01	2.16E-02	98%	472,958	1.23E-02	1.87E-03
Conveyor A to Ground (Emergency)	0%	0	0	0	0%	0	0	0	2%	9,652	2.52E-04	3.81E-05
Disc Screen to Belt Conveyor B1 (Undersized)	35%	120	6.23E-03	9.43E-04	35%	956	4.98E-02	7.55E-03	35%	164,528	4.29E-03	6.49E-04
Disc Screen to Belt Conveyor B2 (Undersized)	35%	120	6.23E-03	9.43E-04	35%	956	4.98E-02	7.55E-03	35%	164,528	4.29E-03	6.49E-04
Disc Screen to Hogger (Oversized)	30%	102	5.34E-03	8.09E-04	30%	820	4.27E-02	6.47E-03	30%	141,024	3.68E-03	5.57E-04
Disc Screen to Ground (Oversized, Emergency)	0%	0	0	0	0%	0	0	0	2%	2,878	7.50E-05	1.14E-05
Hogger to Belt Conveyor B1 (Hogged)	15%	51.2	2.67E-03	4.04E-04	15%	410	2.14E-02	3.23E-03	15%	70,512	1.84E-03	2.78E-04
Hogger to Belt Conveyor B2 (Hogged)	15%	51.2	2.67E-03	4.04E-04	15%	410	2.14E-02	3.23E-03	15%	70,512	1.84E-03	2.78E-04
Disc Screen Emergency Pile to Truck Unloaders	0%	0	0	0	0%	0	0	0	N/A	9,652	2.52E-04	3.81E-05
Hogger Emergency Pile to Truck Unloaders	0%	0	0	0	0%	0	0	0	N/A	2,878	7.50E-05	1.14E-05
Belt Conveyor C1 to Belt Conveyor E	50%	40.7	2.12E-03	3.21E-04	50%	976	5.09E-02	7.70E-03	50%	235,040	6.13E-03	9.28E-04
Belt Conveyor C2 to Belt Conveyor E	50%	40.7	2.12E-03	3.21E-04	50%	976	5.09E-02	7.70E-03	50%	235,040	6.13E-03	9.28E-04
SUBTOTALS			4.52E-02	6.84E-03			4.29E-01	6.50E-02			4.12E-02	6.23E-03

North Stockpiling Area		81				1,951				54	tph	
Belt Conveyor B1 to North Storage Pile	50%	40.7	2.12E-03	3.21E-04	50%	325	1.70E-02	2.57E-03	12%	55,809	1.45E-03	2.20E-04
Belt Conveyor B1 to Overpile Drag Chain 1	50%	130	6.78E-03	1.03E-03	50%	1,041	5.42E-02	8.21E-03	38%	179,231	4.67E-03	7.07E-04
Overpile Drag Chain 1 to North Overpile	50%	130	6.78E-03	1.03E-03	50%	1,041	5.42E-02	8.21E-03	38%	179,231	4.67E-03	7.07E-04
Reclaimer 1 to Belt Conveyor C1	50%	0.0	0	0	50%	0	0	0	50%	235,040	6.13E-03	9.28E-04
Overpile 1 to North Storage Pile (Load/Unload)	0%	0	0	0	0%	0	0	0	N/A	358,463	9.34E-03	1.41E-03
SUBTOTALS			1.57E-02	2.37E-03			1.25E-01	1.90E-02			2.63E-02	3.98E-03
West Stockpiling Area												
Belt Conveyor B2 to West Storage Pile	50%	40.7	2.12E-03	3.21E-04	50%	325	1.70E-02	2.57E-03	12%	55,809	1.45E-03	2.20E-04
Belt Conveyor B2 to Overpile Drag Chain 2	50%	130	6.78E-03	1.03E-03	50%	1,041	5.42E-02	8.21E-03	38%	179,231	4.67E-03	7.07E-04
Overpile Drag Chain 2 to West Overpile	50%	130	6.78E-03	1.03E-03	50%	1,041	5.42E-02	8.21E-03	38%	179,231	4.67E-03	7.07E-04
Reclaimer 2 to Belt Conveyor C2	50%	0.0	0	0	50%	0	0	0	50%	235,040	6.13E-03	9.28E-04
Overpile 2 to West Storage Pile (Load/Unload)	0%	0	0	0	0%	0	0	0	N/A	358,463	9.34E-03	1.41E-03
SUBTOTALS			1.57E-02	2.37E-03			1.25E-01	1.90E-02			2.63E-02	3.98E-03
Plant Area												
Belt Conveyor E to Belt Conveyor F	100%	81.3	4.24E-03	6.42E-04	100%	1,951	1.02E-01	1.54E-02	100%	470,080	1.23E-02	1.86E-03
Belt Conveyor F to Belt Conveyor G	100%	81.3	4.24E-03	6.42E-04	100%	1,951	1.02E-01	1.54E-02	100%	510,957	1.33E-02	2.02E-03
Belt Conveyor G to Boiler Drag Chain	100%	81.3	4.24E-03	6.42E-04	100%	1,951	1.02E-01	1.54E-02	100%	510,957	1.33E-02	2.02E-03
Boiler Drag Chain to Biomass Metering Bins	100%	81.3	4.24E-03	6.42E-04	90%	1,756	9.15E-02	1.39E-02	100%	470,080	1.23E-02	1.86E-03
Boiler Drag Chain to Belt Conveyor H	0%	0.00	0	0	0%	0	0	0	8%	40,877	1.07E-03	1.61E-04
Belt Conveyor H to Belt Conveyor F	0%	0.00	0	0	0%	0	0	0	8%	40,877	1.07E-03	1.61E-04
SUBTOTALS			1.70E-02	2.57E-03			3.97E-01	6.01E-02			5.33E-02	8.07E-03
TOTALS							1.02E+00	1.55E-01			1.50E-01	2.28E-02
MAXIMUM							4.29E-01	6.50E-02			5.33E-02	8.07E-03

Notes

Transfer points were identified by DTE.

Maximum daily truck unloading rate (2,732 tpd) was provided by DTE and reflects 8 hours per day for 5 days per week.

Maximum daily truck unloading rate (470,080 tpy) was provided by DTE.

Maximum truck unloading rate (342 tph) was calculated from the maximum daily unloading rate (3,732 tpd) for an 8-hour day.

Maximum hourly boiler feed rate (81 tph) reflects the hourly average of the maximum daily delivery rate (3,732 tpd for 5 days per week) for a 168-hour week.

Maximum boiler feed rate (1,951 tpd) reflects the daily average of the maximum daily delivery rate (3,732 tpd for 5 days per week) for a 7-day week.

Average hourly boiler feed rate (54 tph) reflects the hourly average of the maximum annual delivery rate (470,080, tpy) for an 8,760-hour year.

Throughput rates for individual transfer points (in tph, tpd, and tpy) were calculated based upon a biomass handling description provided by DTE and the truck unloading and boiler feed rates discussed above.

PM emissions rates (in lb/hr, lb/day, and tpy) were calculated using emission factors (lb/ton) and throughput (in tph, tpd, and tpy).

DTE ENERGY RESOURCES, INC.
POSDEF PLANT (N-645)
BIOMASS CONVERSION PROJECT – AUTHORITY TO CONSTRUCT

EMISSION FACTORS - BIOMASS HANDLING

Parameter	PM10	PM2.5
Particle Size Multiplier	0.35	0.053
Mean Wind Speed (mph)	8.10	8.10
Moisture Content	28.0%	28.0%
Emission Factor (lb/ton), Uncontrolled	5.21E-05	7.89E-06

0.15

Notes

Uncontrolled PM10 and PM2.5 emissions factors were calculated Equation 1 of Section 13.2.4 of AP-42 (November 2006).

Mean wind speed (in mph) reflects 2004-2008 Stockton Airport meteorology data.

Moisture content (in %) was provided by DTE.

FUGITIVE DUST EMISSIONS - BIOMASS HANDLING

Source	Maximum Throughput	Maximum Throughput (tpd)	Daily Emissions		Annual Throughput	Annual Throughput (tpy)	Annual Emissions	
			PM10 (lb/day)	PM2.5 (lb/day)			PM10 (tpy)	PM2.5 (tpy)
Truck Unloading Area						470,080		
Truck Unloader #1	33%	911	4.75E-02	7.19E-03	32%	148,859	3.88E-03	5.87E-04
Truck Unloader #2	33%	911	4.75E-02	7.19E-03	32%	148,859	3.88E-03	5.87E-04
Truck Unloader #3	33%	911	4.75E-02	7.19E-03	32%	148,859	3.88E-03	5.87E-04
Truck Unloader #1 to Conveyor A	33%	911	4.75E-02	7.19E-03	32%	148,859	3.88E-03	5.87E-04
Truck Unloader #2 to Conveyor A	33%	911	4.75E-02	7.19E-03	32%	148,859	3.88E-03	5.87E-04
Truck Unloader #3 to Conveyor A	33%	911	4.75E-02	7.19E-03	32%	148,859	3.88E-03	5.87E-04
Truck Dump to Inactive Stockpile	0%	0	0	0	5%	23,504	6.13E-04	9.28E-05
Inactive Stockpile to Emergency Loader (Unload)	18%	482	2.51E-02	3.80E-03	27%	125,171	3.26E-03	4.94E-04
Emergency Loader #3 to Conveyor J	18%	482	2.51E-02	3.80E-03	27%	125,171	3.26E-03	4.94E-04
Conveyor J to Conveyor A	18%	482	2.51E-02	3.80E-03	27%	125,171	3.26E-03	4.94E-04
SUBTOTALS			3.60E-01	5.45E-02			3.37E-02	5.10E-03
Disc Screening Area								
Conveyor A to Conveyor B	118%	3,214	1.67E-01	2.54E-02	122%	571,747	1.49E-02	2.26E-03
Conveyor B to Disc Screen	118%	3,214	1.67E-01	2.54E-02	122%	571,747	1.49E-02	2.26E-03
Disc Screen to Conveyor C (Undersized)	70%	2,250	1.17E-01	1.78E-02	70%	400,223	1.04E-02	1.58E-03
Disc Screen to Hogger (Oversized)	30%	964	5.02E-02	7.61E-03	30%	171,524	4.47E-03	6.77E-04
Hogger to Conveyor C (Hogged)	30%	964	5.02E-02	7.61E-03	30%	171,524	4.47E-03	6.77E-04
Disc Screen to Conveyor C (Emergency)	0%	0	0	0	4%	18,803	4.90E-04	7.42E-05
SUBTOTALS			5.53E-01	8.37E-02			4.97E-02	7.52E-03

Stockpile Area		1,951				54	tph	
Conveyor C to Belt Conveyor D	118%	3,214	1.67E-01	2.54E-02	104%	488,883	1.27E-02	1.93E-03
Conveyor C to Conveyor G	18%	344	1.79E-02	2.71E-03	18%	82,864	2.16E-03	3.27E-04
Belt Conveyor D to Belt Conveyor E	82%	2,250	1.17E-01	1.78E-02	82%	387,216	1.01E-02	1.53E-03
Belt Conveyor E to Active Stockpile Stacker	N/A	2,250	1.17E-01	1.78E-02	82%	387,216	1.01E-02	1.53E-03
Active Stockpile Stacker to Active Stockpile	N/A	2,250	1.17E-01	1.78E-02	82%	387,216	1.01E-02	1.53E-03
Reclaimer to Belt Conveyor F	82%	1,607	8.38E-02	1.27E-02	90%	424,822	1.11E-02	1.68E-03
Belt Conveyor F to Belt Conveyor G	N/A	1,607	8.38E-02	1.27E-02	90%	424,822	1.11E-02	1.68E-03
Belt Conveyor I to Active Storage Pile	0%	0	0	0	8%	37,606	9.80E-04	1.48E-04
Belt Conveyor D to Inactive Storage Pile	18%	482	2.51E-02	3.80E-03	18%	101,667	2.65E-03	4.01E-04
Inactive Storage Pile (Unload)	18%	482	2.51E-02	3.80E-03	22%	101,667	2.65E-03	4.01E-04
SUBTOTALS			7.55E-01	1.14E-01			7.36E-02	1.11E-02
Plant Area								
Belt Conveyor G to Boiler Drag Chain	100%	1,951	1.02E-01	1.54E-02	108%	507,686	1.32E-02	2.00E-03
Boiler Drag Chain to Biomass Metering Bins	100%	1,951	1.02E-01	1.54E-02	100%	470,080	1.23E-02	1.86E-03
Belt Conveyor G to Belt Conveyor I	0%	0	0	0	8%	37,606	9.80E-04	1.48E-04
SUBTOTALS			2.03E-01	3.08E-02			2.65E-02	4.01E-03
TOTALS			1.87E+00	2.83E-01			1.83E-01	2.78E-02

Notes

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Maximum hourly boiler feed rate (81 tph) reflects the hourly average of the maximum daily delivery rate (3,732 tpd for 5 days per week) for a 168-hour week.

Maximum boiler feed rate (1,951 tpd) reflects the daily average of the maximum daily delivery rate (3,732 tpd for 5 days per week) for a 7-day week.

Average hourly boiler feed rate (54 tph) reflects the hourly average of the maximum annual delivery rate (470,080, tpy) for an 8,760-hour year.

Throughput rates for individual transfer points (in tph, tpd, and tpy) were calculated based upon a biomass handling description provided by DTE and the truck unloading and boiler feed rates discussed above.

PM emissions rates (in lb/hr, lb/day, and tpy) were calculated using emission factors (lb/ton) and throughput (in tph, tpd, and tpy).