

**PROJECT FACT SHEET**  
**Russell City Energy Center (Hayward, CA)**

The Bay Area Air Quality Management District (“Air District”) is proposing to issue an Amended Federal Prevention of Significant Deterioration (“PSD”) Permit for the Russell City Energy Center. This Fact Sheet provides a summary of some of the most important aspects of the project and of the proposed amended permit, as well as information on how the public can get involved and provide input on the project. The Air District’s full analysis of the project, its emissions and potential environmental impacts – and how it will comply with applicable Federal PSD Permit requirements – is set forth in the Statement of Basis for the proposed amended permit, which is available from the Air District upon request. (See instructions below for further information.)

**The Russell City Energy Center Project**

The Russell City Energy Center is a proposed 600 megawatt natural gas fired combined-cycle power plant proposed to be built by Russell City Energy Company, LLC, an affiliate of Calpine Corporation. The proposed facility would be located at 3862 Depot Road, near the corner of Depot Road and Cabot Boulevard, in Hayward, CA. The facility was originally permitted in 2002, but was subsequently relocated approximately 1,500 feet north of the original permitted site, which required the facility’s permits to be amended.

The Russell City Energy Center is proposed to include: two gas turbines, two heat recovery steam generators (also known as waste heat boilers), a single steam turbine, a cooling tower and a diesel fire pump engine. The facility would be a combined-cycle power plant in which the gas turbines generate electricity and the heat from the gas turbine exhaust is used to produce steam in the heat recovery steam generator to generate additional electricity via the steam turbine. The recovery of energy from the gas turbine exhaust, which otherwise would be wasted, increases the efficiency of electrical generation. The facility would have a cooling tower that acts as a heat exchanger by circulating water to cool assorted equipment at the site. The cooling tower also cools the steam turbine condenser that recycles water back to the heat recovery steam generator. The facility would also have a 300 hp diesel engine to power a fire pump onsite (to be used in case of emergency to provide water to fight fires).

The diagram on the next page presents a schematic overview of how such a combined-cycle facility operates. The gas turbine burns natural gas, along with combustion air, to turn an electrical generator (1). The hot exhaust from the turbine is then vented to a steam generator (2) to produce steam for further electrical generation. The steam is sent to the steam turbine (3), which turns a second electrical generator. The used steam then exits to a condenser (4) where it is recycled back to the steam generator, with residual heat exhausted through a cooling tower (5).

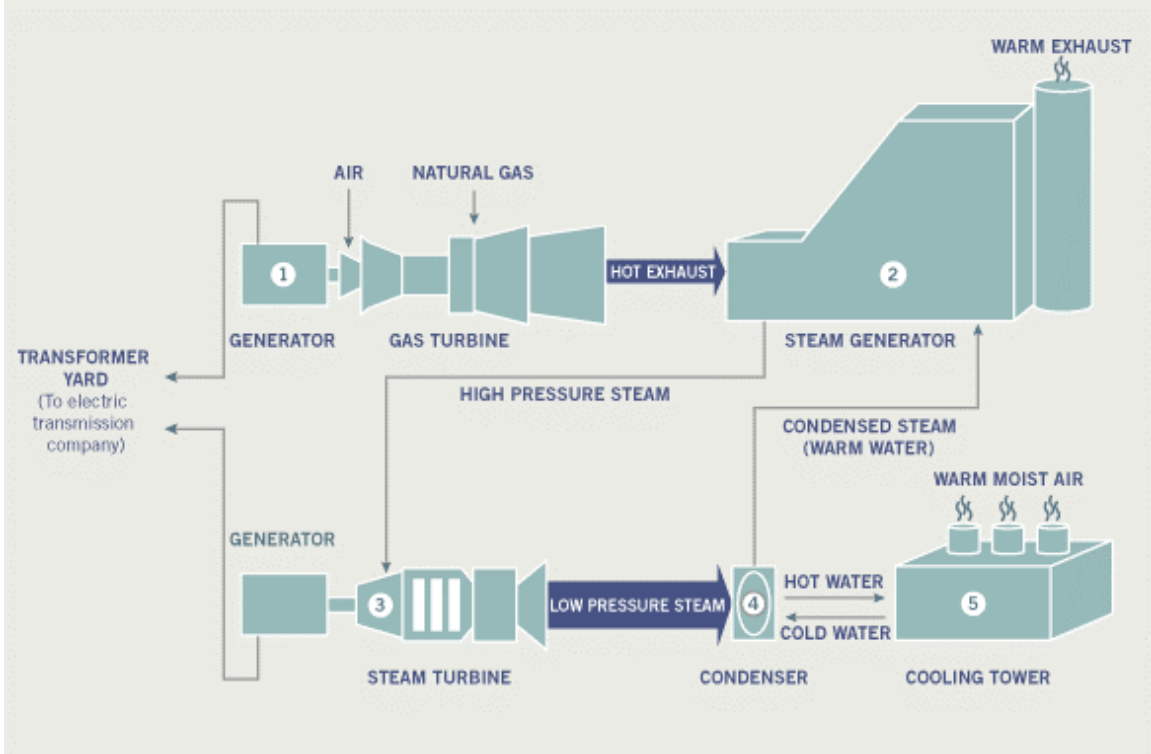


Diagram 1: Schematic Operation of a Combined-Cycle Power Plant

**Air Emissions**

The proposed facility would be allowed to emit up to the following maximum quantities of criteria air pollutants:

Nitrogen Oxides (NO <sub>2</sub> ):	134.6 tons per year
Carbon Monoxide (CO):	389.3 tons per year
Precursor Organic Compounds (POC):	28.5 tons per year
Particulate Matter (PM):	86.8 tons per year
Sulfur Dioxide (SO <sub>2</sub> ):	12.2 tons per year

The facility would also emit certain toxic air contaminants, the most significant of which (from a health risk perspective) are set forth in the following table. A full list of toxic air contaminants associated with the project is provided in the Statement of Basis for the proposed amended permit.

Toxic Air Contaminant	Project Emissions	
	lb/hour	lb/year
Ammonia	15.2	121,000
Benzene	0.0284	226
Formaldehyde	1.96	15,600
Diesel Particulate Matter	0.0740	4.00
Polycyclic Aromatic Hydrocarbons (as Benzo(a)pyrene equivalents)	0.00021	1.8

## **Pollution Control Equipment & Mitigation Measures**

The proposed facility includes pollution control equipment to minimize the amounts of air pollutants it will emit.

The combustion turbines and waste heat boilers will use special burners that minimize the amount of nitrogen oxides they produce, and their exhaust will pass through a device called a “Selective Catalytic Reduction” system that will eliminate over 90% of the nitrogen oxides from the exhaust stream. The combustion turbines and heat recovery boilers will also use equipment known as an “Oxidation Catalyst” to reduce emissions of carbon monoxide and precursor organic compounds in the exhaust stream. The facility will also be required to fire only clean-burning low-sulfur natural gas in order to minimize particulate matter (soot) and sulfur dioxide emissions.

The cooling tower will be equipped with a device known as a “Drift Eliminator” that will reduce emissions of particulate matter.

The emergency firepump will be an EPA-certified “Tier 2” diesel engine, the cleanest type of diesel engine of its size currently on the market.

The facility will also use highly efficient generating equipment to minimize the amount of greenhouse gases that will be emitted.

The facility will also be required to offset and/or mitigate its air pollutant emissions. The facility will be required to offset its nitrogen oxide and precursor organic compound emissions increases through emissions reductions from the closing of other facilities, in the form of Emission Reduction Credits that represent “banked” emissions reductions. For nitrogen oxides, the facility will be required to submit 1.15 pounds of Emission Reduction Credits for every pound of new nitrogen oxide emissions, so the offset reductions will actually exceed the facility’s new emissions for that pollutant. The facility will also be required to undertake mitigation measures to reduce emissions of particulate matter in the area, in order to address the impacts of the facility’s particulate matter emissions. These and other mitigation requirements have been imposed by the California Energy Commission in its license for the project.

## **Potential Impacts to Air Quality and Public Health**

The District has undertaken comprehensive analyses of the air quality and public health impacts associated with the proposed Russell City Energy Center. The analyses are set forth in detail in the Statement of Basis for the proposed amended permit. In summary, these analyses reached the following conclusions.

The Federal PSD Permit regulations require air quality modeling to predict potential impacts from the proposed facility on the levels of nitrogen oxides, fine particulate matter of less than 10 microns in diameter (PM<sub>10</sub>), and Carbon Monoxide in the ambient air. The Federal PSD Permit regulations require the Air District to ensure that emissions will

not cause a violation of the federal ambient air quality standards for those pollutants, or of any PSD “increment” established for those pollutants. (A PSD “increment” is the maximum allowable increase in pollutant concentration that is allowed to occur above a baseline concentration.) The Air District reviewed modeling results for the proposed facility and found that the emissions will not cause a violation of the ambient air quality standards nitrogen oxides, PM<sub>10</sub>, and Carbon Monoxide, and will not consume a significant amount of any applicable PSD increment.

The Federal PSD Permit regulations also require an analysis of the project’s impacts on visibility and on soils and vegetation. The Air District evaluated these impacts and found that there will be no significant impact to visibility, soils or vegetation.

The Federal PSD Permit regulations also require an analysis of impacts to federally-designated “Class I” areas, which are areas of special natural, scenic, recreational, or historic value (such as National Parks). The only Class I area within 100 km of the proposed facility is the Point Reyes National Seashore. The Air District found that there would be no significant impacts within that area.

Finally, in addition to the Federal PSD Permit requirement, Air District regulations also required that the District conduct a health risk assessment for the project. This assessment found that, under the worst-case scenario, the toxic health risk from the plant’s toxic emissions would be 0.7 in one million for cancer risk. The chronic non-cancer health risk index would be 0.007 and the acute non-cancer health risk index would be 0.024. A cancer risk of less than 1 in a million and non-cancer health risk indices are less than 1 are not significant for project permitting purposes.

### **Other Environmental Concerns**

In addition to the air quality issues subject to the proposed Amended Federal PSD Permit, a number of other potential environmental impacts have been evaluated as part of the comprehensive permitting process for this project, including the following.

#### *Accidental Chemical Releases from Ammonia Use and Storage*

The Russell City Energy Center will use and store aqueous ammonia in a 29.4% (by weight) solution. Consequently, the project will be required to maintain a Risk Management Plan and implement a Risk Management Program to prevent accidental releases of ammonia. The California Energy Commission has modeled the health impacts arising from a catastrophic release of aqueous ammonia due to spontaneous storage tank failure at the proposed facility and found that the impact would not be significant.

#### *Water Quality*

The City of Hayward Water Pollution Control Facility will provide secondary effluent for process water supply to the facility. A Zero Liquid Discharge (ZLD) system and a Title

22 Recycled Water Facility would be added to the facility to replace the proposed Advanced Water Treatment facility. The quantities of wastewater produced would decrease significantly with the addition of the ZLD system (including zero discharge to the bay). Further treatment to the cooling and process water to be used at the proposed facility will be tertiary treated recycled water.

### **The Amended Federal PSD Permit That The Air District Is Proposing To Issue**

The action that the Air District is currently proposing to take is to issue an Amended Federal PSD Permit for the proposed Russell City Energy Center. This permit is one of two major environmental permits the facility will require. The other is a license from the California Energy Commission issued in accordance with the Warren-Alquist State Energy Conservation and Development Act. The Energy Commission's amended license, which governs state-law environmental issues, was issued for this project in October of 2007. The Energy Commission is not authorized to issue Federal PSD Permits, however, and so it falls to the Air District to issue the Amended Federal PSD Permit for this project.

The Air District's current proposal extends to issuance of the Amended Federal PSD Permit only. Broader environmental concerns, such as those addressed in the Energy Commission's licensing proceeding under the Warren-Alquist Act, are not part of the Air District's proposal. The Energy Commission's process has been completed and the license for the project has been finalized. The Air District is not reopening the Energy Commission's licensing proceeding with this proposal.

The Air District is proposing to incorporate the changes that have been made to the proposed project into the Federal PSD Permit that was initially issued in 2002, including the new project site. The District has analyzed the entire project, however, including elements that are not being modified, and has reconfirmed that the entire project will satisfy all applicable Federal PSD Permit requirements.

The Air District is now seeking public input on its proposal to issue the Amended Federal PSD Permit. Information on how the public can get involved is provided at the end of this fact sheet. The Air District will review and consider all comments submitted by the public before taking final action on the proposed Amended Federal PSD Permit.

### **Proposed Permit Conditions**

To ensure that the project's emissions will comply with all applicable state and federal air quality laws and regulations, the facility would be subject to a number of permit conditions. The California Energy Commission has already imposed conditions under state law in its license for the proposed project. The District is now proposing conditions for the Amended Federal PSD Permit. These conditions are intended to ensure compliance with the Federal PSD Program, which is a federal requirement implemented by EPA under the federal Clean Air Act.

The primary requirement of the Federal PSD Program is that the facility must use the “Best Available Control Technology” to reduce emissions to the greatest extent achievable, taking into account energy, environmental and economic impacts. The Air District has examined the proposed facility’s operations and equipment and has developed stringent numerical emissions limits for each Federal PSD-regulated pollutant. The proposed conditions also require monitoring of emissions on a regular basis to demonstrate ongoing compliance. If the facility exceeds any emissions limit, then the facility will be subject to enforcement action. The specific numerical limits for each pollutant and the basis for the limit are explained in the Statement of Basis.

A complete list of permit conditions that the facility would be subject to can be found in the Energy Commission’s licensing decision (setting forth conditions adopted under state law), and in the Statement of Basis for the proposed Amended Federal PSD Permit (setting forth conditions that the Air District is proposing to adopt under the Federal PSD program).

### **Opportunities for Public Participation and Comment**

The Air District is seeking public input on its proposal to issue an Amended Federal PSD Permit for the Russell City Energy Center. The District invites all interested parties to comment on any aspect of the Amended Federal PSD Permit. Written comments should be directed to Weyman Lee, P.E., Senior Air Quality Engineer, Bay Area Air Quality Management District, 939 Ellis Street, San Francisco, CA, 94109, (415) 749-4623, weyman@baaqmd.gov, and must be received by January 22, 2009. In addition, the District will hold a public hearing on the project on January 21, 2009, from 6:30 to 9:00 p.m., in the Hayward City Council Chambers located in City Hall, 777 B Street, Hayward, CA 94541. Air District staff will be available before the hearing from 6:00 to 6:30 p.m. with further background information and to answer any questions from the public on an informal basis. At 6:30 p.m., the District will convene the formal public hearing to receive comments from the public on the project. All comments received during the comment period (either in writing or orally at the public hearing) will be considered by the Air District in making a final determination on issuance of an Amended Federal PSD Permit for this project.

Interested members of the public are also invited to learn more about the project as part of the public review and comment process. Further information about the project and how it will comply with applicable regulatory requirements is available in the District’s Statement of Basis for the proposed amended permit. The Statement of Basis, proposed permit conditions, the permit application and all data submitted by the applicant, and all other supporting materials are available for public inspection at the Outreach and Incentives Division Office located on the 5<sup>th</sup> Floor of District Headquarters, 939 Ellis Street, San Francisco, CA, 94109. The Statement of Basis and proposed permit conditions are also available on the District’s website at [www.baaqmd.gov](http://www.baaqmd.gov). The public may also contact Mr. Lee for further information (see contact information above). **Para obtener la información en español, comuníquese con Brenda Cabral en la sede del Distrito, (415) 749-4686, bcabral@baaqmd.gov.**