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May 4, 2010

Mr. Dennis Roberts, P.E.  
San Joaquin Valley Unified APCD  
1990 E. Gettysburg Avenue  
Fresno, CA 93726-0244

RE: Draft Proposed Boilers Best Performance Standard (BPS)

Dear Mr. Roberts:

Southern California Gas Company (SoCalGas) appreciates the opportunity to provide comments on the San Joaquin Valley Unified Air Pollution Control District's (District) Draft Proposed Boilers Best Performance Standard (staff report). The proposed boiler BPS may affect SoCalGas' Energy Efficiency funding programs within SJVAPCD and our customers' ability to utilize these programs.

### **Comments on the Staff Report and BPS Process**

- First, SoCalGas suggests that projects receiving energy-efficiency incentive program funding from a California utility inherently meet the best performance standards for mitigation of green house gases. Such projects have to demonstrate fuel savings, even if there are production increases, and are achieved-in-practice.
- There are many phrases regarding the BPS in the staff report that are ambiguous. It is difficult to differentiate the meaning of and differences between the phrases. At various points in the staff report, the following phrases are used to describe an element of the BPS: "achieved-in-practice", "state-of-the-art", "current state of the art", "achieved state-of-the-art", "technologically feasible", "economically feasible", "best practical performance", "common use", "common and economical", "commonly available", "commercially available", and

"most effective". In addition, the definition of "Achieved-in-Practice" is not presented until page 18 after most of the BPS analysis and use of the other phrases above. SoCalGas requests that the District use consistent terminology and provide definitions for such terminology at the beginning of the document. Definitions should be consistent with those used in the New Source Review program and District Rules (and documented as such), or labeled as a specific definition just for the BPS.

- While the staff report provides some references for emission factors and engineering calculations, there are no references or documentation provided for most of the District analysis. It is important to know the specific source of the information when analysis from such information is used to make regulatory decisions. Lack of documentation for the statement on page 12, that, "boiler thermal efficiency can exceed 95% for boilers designed with current state of the art economizers," is particularly concerning in light of the comments below on BSP element 1 - 95% thermal efficiency. It is not enough that the District provides vendor brochures as documentation. As sales literature, the brochures use very optimistic performance data and best-case project profiles that are not necessarily typical installations. SoCalGas requests that names and dates of personal communications (telephone, email, etc.), and titles of written literature used in decision-making be provided in a reference section of the staff report.
- Best Performance Standards are essentially CEQA mitigation measures. The discussion of "Achieved-in-Practice", on page 24 of the staff report quotes the definition of Best Performance Standard from the *Final Staff Report -Climate Change Action Plan: Addressing GHG Emissions Impacts under CEQA* (pages 60-61). This definition states that the BPS, as a means of reducing or limiting greenhouse gases, is "economically feasible". This is consistent with CEQA mitigation measures being subject to a feasibility analysis, which has a financial component, pursuant to Public Resources Code §21002. However, the staff report is deficient because it does not contain an economic feasibility analysis. The District needs to include a complete feasibility analysis including a financial

element in the staff report, since the District in its CEQA lead agency role is developing this BPS for greenhouse gas mitigation.

- SoCalGas requests that the District include a cost-effectiveness evaluation step in BPS determination process. The District's well-established New Source Review Program–Best Available Control Technology determinations, that impose the lowest achievable emission rate, take into account cost effectiveness. Thus, it is reasonable to include this critical evaluation in the BPS determination.
- The District only uses the Pacific Gas & Electric's electric power generation factor in the staff report. With no comparison, it is difficult to evaluate whether this is an appropriate factor for facilities in the south valley with electric service provided by Southern California Edison. Please provide this factor from Southern California Edison as well.
- SoCalGas respectfully requests that the District not use the term "control measure" when referring to the BPS. In the context of the State Implementation Plan (SIP) and the District's rules, control measures are known to be required measures. It is important to make the distinction that the BPS is a CEQA option and not a required control measure for the SIP or District's rules. A better term might be reduction measure.

### **Category**

- The District needs to provide analysis for all boilers in the stated category that may choose BPS for CEQA purposes. The BPS sets the category as "Gaseous Fuel-Fired Boilers with Rated Steam Pressure 75 psig and Greater" (psig means pound-force per square inch gauge), yet almost all of the analysis addresses 125-psig boilers. The only criteria examined for a 75-psig boiler (page 5) is that it could meet option 1) of BPS element number 1. There is no analysis shown that a 75-psig boiler can meet any of the other BPS elements in numbers 1 through 4.
- Please clarify if it is intended for the rated heat-input threshold to be different or the same in BPS elements numbers 2 and 4. The BPS is presented in the staff report as concurrent measures for boilers in the category of 75 psig or greater,

yet two of the BPS elements identify only a subset of the category: BPS element number 2 states for "20 MMBtu/hr or greater," and BPS element number 4 states, "in excess of 20 MMBtu/hr and a rated steam pressure of 125 psig or greater". It is not clear whether it was a conscious decision to specify BPS elements for boilers rated at "20 MMBtu/hour and greater" versus boilers "in excess of 20 MMBtu/hour". What is clear is those boilers 20 MMBtu/hour and greater are a different category than those boilers less than 20 MMBtu/hour. SoCalGas believes the District should have at least two categories of boilers (if not more) in this class rather than just one based on rated steam pressure.

- Greater consideration is needed for all possible types of boilers that meet the criteria for the BPS category with steam pressure rating of 75 psig and greater. Another concern of using 75 psig as the lower limit for this BPS category is there are boilers with a heat input of as low as 500,000 Btu/hour (0.5 MMBtu/hour) that exceed a steam pressure rating of 75 psig. The baseline assumptions for such small units are very different from those with 20 MMBtu/hour heat input and even than those with 5 MMBtu/hour heat input. SoCalGas suggests the District add a heat input rating to the steam pressure rating for each category such that the assumptions used in the representative baseline, technologically feasibility and economic analysis match the boilers in the stated category. This case also supports our request that this class needs more than just one BPS category.

### **Representative Baseline Operation**

- The 2002-2004 representative baseline operation should be recalculated. There is a fundamental assumption for the representative baseline operation that appears to be incorrect. On pages 6 and 7 of the staff report, the District assumes that this class and category of boilers for the baseline period of 2002-2004 would have ultra-low NO<sub>x</sub> (oxides of nitrogen) burners operating with 30% flue gas recirculation meeting 9 parts per million volume (ppmv) NO<sub>x</sub>. It appears this is based on the boilers meeting the NO<sub>x</sub> limits in Rule 4320 adopted October 16, 2008, as this is the boiler rule with a limit no higher than 9 ppmv

NO<sub>x</sub>. The earliest compliance date for Rule 4320 is July 1, 2007 for refinery units with total rated heat input greater than 110.0 MMBtu/hour. The next earliest compliance date in Rule 4320 is July 1, 2010. Clearly, this rule should not be used for the baseline period 2002-2004.

- Rule 4306 (Phase III of the boiler rules) adopted September 18, 2003 has a NO<sub>x</sub> limit range from 9 ppmv to 30 ppmv NO<sub>x</sub> (except for refinery units >110.0 MMBtu/hour input that have a 5 ppmv limit), and an earliest compliance date of June 1, 2005. Therefore, this rule is also not appropriate for calculating a three-year average for the baseline period 2002-2004.
- SoCalGas believes that the boiler rule most appropriate for the baseline period 2002-2004 is Rule 4305 Boilers, Steam Generators, and Process Heaters - Phase II. The latest compliance date for this rule was May 31, 2001, so boilers would have complied for the whole baseline period of 2002-2004. The lowest NO<sub>x</sub> limit in this rule is 30 ppmv NO<sub>x</sub>, while low-use units did not have a NO<sub>x</sub> limit. SoCalGas requests that the District use Rule 4305 and its permit database to determine what type of equipment and operational parameters were in place during the baseline period of 2002-2004, and then reevaluate the representative baseline operation.

#### **BPS 1 – Minimum thermal efficiency of 95%**

- SoCalGas requests that the District lower the minimum thermal efficiency to a more realistic value.
- First, attaining incremental efficiency gains above current generally acceptable efficiency levels is subject to the limitations of the process served by the boiler.
- In order to attain very high thermal efficiency, all relative factors such as blow-down rate, wall losses, and product streams capable of accepting the otherwise “wasted” boiler stack heat have to exist within the steam system.
- The project profile in Appendix 5 and discussed on page 19 is not applicable to most boiler applications in the San Joaquin Valley. To our knowledge, there are only 5 boilers in the size range of 150,000 lbs/hour or greater in our San Joaquin Valley service territory (only the southern portion of the District’s

jurisdiction), and in our experience very few customers have the ability to reject boiler stack heat in such quantities such that 95% efficiency could ever be obtained.

- SoCalGas is unaware of any boiler operating in the state of California that meets 95% thermal efficiency. One of our large pharmaceutical customers in southern California just installed a Super-Boiler with emerging technology incentive funding. Everyone involved in the project is very excited that test results have proven out the technology with operating efficiencies in the 93% range. This project is truly a state-of-the-art "gold standard" for boiler installation. The project utilizes an innovative transport membrane condenser (TMC), developed by the Gas Technology Institute (GTI). Use of the TMC technology was a "test" boiler program with support from the natural gas industry, the US Department of Energy, the California Energy Commission, SoCalGas' Emerging Technologies program and GTI. Clearly, this is not a typical installation, and even it does not meet the stated BPS minimum thermal efficiency of 95%! The Super-Boiler is a special project of a consortium of groups (indicted above) who pool resources to test emerging technologies. The Super-Boiler technology is still under development and is far from being becoming commercially available.
- The cost of a system that has such a high efficiency as the Super-Boiler project is very, very high (greater than \$1,000,000). Commodity based businesses like those in the San Joaquin Valley, cannot necessarily afford state-of-the-art systems like those installed at a pharmaceutical or other high-tech company.

#### **BPS 1 – Alternative 1 and 2**

- The District should address facility space considerations, especially for rebuilding existing systems. Unfortunately, the BPS ignores space considerations. For example, in order to install adequate heat transfer surface to provide a maximum design approach of 20° F temperature between the economizer flue-gas outlet and the economizer inlet water, a large surface area economizer may be needed. This takes a lot of space, which may not be available, and increases equipment cost.

- SoCalGas assumes that the equivalent energy recovery referenced in option 2 (of BPS element 1) is the minimum thermal efficiency improvement of 4% in the stated range of 4-10% depending on application specifics as discussed on page 13 of the staff report.

### **BPS 3 – Variable Frequency Speed Control Electric Motors**

- SoCalGas believes there should be a combined energy efficiency alternative in place of the combination of all four BPS elements. Although BPS element number 1 has an equivalent energy-recovery alternative, it is for only one of the 4 elements. An example of why this would be beneficial is as follows: The variable frequency drive electric motors (discussed on page 16) work well with load-following boilers, but have little value when the motor powers a fan or pump that only operates at one speed or just at full speed. This requirement is very prescriptive, and may be neither needed nor cost effective for a specific application.

### **BPS 4 – Oxygen Trim System - maximum content oxygen of 2%, and limit on percent Flue Gas Recirculation**

- Besides being very prescriptive, limiting the maximum oxygen content in the stack gas to 2% may lead to unsafe boiler conditions. The District acknowledges potential unsafe operating conditions including carbon monoxide formation, sooting, and explosions on page 15 of the staff report. Tuning the boiler in a conservative manner to assure stable and safe operations seems little price to pay when the potential for life threatening explosions exist with too little oxygen! SoCalGas requests that the District assure that any maximum oxygen content setting provides for safe boiler operation at all times.
- Limiting the flue gas recirculation to no more than 10% of the total flue gas volume prioritizes green house gas reductions over that for criteria pollutants. On page 15 of the staff report, the District indicates that Selective Catalytic Reduction (SCR) for NO<sub>x</sub> will likely be used, as higher excess air (above 10%) may be needed for ultra-low NO<sub>x</sub> burners. Although this BPS element is limited

Page 8 of 8  
Mr. Dennis Roberts  
May 4, 2010

to boilers greater than 20 MMBtu/hour heat input, some operators of units greater than 20 MMBtu/hour heat input are planning to use ultra-low NO<sub>x</sub> burners over SCR to comply with Rule 4320. Considering the enhanced option compliance date in Rule 4320 is January 1, 2014, this BPS will preclude such an option, and operators may have capital funding plans in place that cannot accommodate such a change. In addition, there is no evaluation of the emissions of an SCR ammonia system, nor the increase in mobile source emissions from ammonia delivery. Please address these issues as it counter to the District's position of not favoring one technology over another and using emission standards rather than specific, prescriptive technology.

Thank you for your consideration of our comments and working to define a more realistic and reasonable Best Performance Standard for Boilers. Please do not hesitate to call me at (559) 324-0109, if you would like discuss these comments. SoCalGas' staff of energy efficiency and combustion experts and San Joaquin Valley account executives is available to meet with District staff to discuss our and other stakeholder concerns.

Sincerely,

A handwritten signature in black ink, appearing to read 'Colby L. Morrow', with a long horizontal line extending to the right.

Colby L. Morrow  
Environmental Affairs Program Manager

CC: Martin Keast, SJVAPCD