

January 5, 2001

SCAQMD Responses to the Questions for the ARB Consultation Meeting on Distributed Generation Certification and Guidance

1. Applicability

Senate Bill 1298 states that "Commencing on January 1, 2003, all electrical generation technologies shall be certified by the state board or permitted by a district prior to use or operation in the state. "

- A. What types of DG activities do you believe are covered under the certification provision. Do you believe there are non-permitted DG activities that should not be certified under the program?

All.

- B. How do you think the differing local permit exemption limits should be addressed with respect to certification?

All the local permit exemptions will have to be identified in order to determine the range of DG technologies that will have to be certified. For example if <50 HP engines are exempt in some districts, but the least stringent district exempts engines up to 500 HP, then up to 500 HP engines will have to be certified if they will be used in that least-stringent district.

- C. How do you think fuel cells, photovoltaics, wind, and other non or low-polluting technologies should be treated under the certification program?

See later responses. If non-combustion DG technologies are included in the program, their administrative burden should be minimized so as not to become a disincentive.

2. Technology

- A. What do you believe are the appropriate groupings or categories of technologies for certification?

Since the goal of SB1298 is to bring DG emissions equal to the extremely low levels achieved by central stations, the DG emission standards should focus on emission levels per unit of energy produced and be neutral with regard to the type of DG technology. The first sentence of H&SC Section 41514.9 even says that there shall be "...uniform emission standards for electrical generation technologies..". Uniform means the same standards for all the technologies. The intent of the law appears to be that only the cleanest of DG technologies should be certified, regardless of their type.

- B. What levels of control do you believe have been achieved in practice for these categories (identify source of information)?

Non-combustion DG technologies have zero emissions per MW-hr and are probably the only technologies that already achieve the same or better levels as central stations.

For combustion sources, achieved in practice BACT levels in SCAQMD for small engines are as follows:

	NOx	NMHC	CO	PM10 & SOx
<i>g/bhp-hr</i>	<i>0.15</i>	<i>0.15</i>	<i>0.60</i>	<i>Clean Fuel**</i>
<i>lb/MW-hr*</i>	<i>0.44</i>	<i>0.44</i>	<i>1.8</i>	<i>Clean Fuel**</i>

** converted to from g/bhp-hr assuming 95% electric generator efficiency. See Part D - BACT Guidelines for Non-Major Polluting Facilities, adopted by SCAQMD in October 2000.*

*** SCAQMD defines clean fuels to include natural gas, propane and methanol. No PM or Sox emission standards have been set for these fuels because the emissions are inherently low with clean fuels. Exceptions are made for burning of landfill gas, digester gas and refinery gas.*

While not nearly as clean as a new central station, these emission levels provide a useful starting point for discussion. There may be combustion DG technologies that set even lower standards.

- C. Do you believe that there are applicable emission standards already established for any of these categories (reference the DG category/ applicable standard)?

See 2B. Because there are non-combustion DG technologies that already do better than the emission levels for central stations, CARB should consider setting the DG standards at the central station levels. That would achieve the ultimate goal of SB1298.

- D. How do you believe cogeneration should be incorporated into the emission standards adopted for the purposes of the certification program?

While cogeneration makes a lot of sense, in theory, the cogenerator's economics in the present market and in general are generally based almost wholly on the income from electric generation, not from heat. There are facilities that have gone from base-loaded to a peaker, or have totally removed their cogeneration systems because they no longer make economic sense with the current electric pricing structures. Energy savings is often not a primary issue of the users. (This could change if the recent increase in natural gas prices lasts.)

An emission credit could be given to a cogeneration system based on the assumption that all waste heat generated by the DG will actually be used, but unless a facility needs and will actually use the waste heat whenever the cogeneration system operates, the credit given may not be real. Residential and commercial facilities simply don't need heat all the time. Few industrial facilities need heat all the time, and their cogeneration systems would most likely be subject to district permitting rather than certification.

Very little cogeneration activity has taken place in the last few years, even among larger facilities where one would think the energy benefits are the greatest. Under present conditions, it is very unlikely that cogeneration will be seriously considered for small DG projects subject to certification.

Nevertheless, cogeneration deserves some incentives to help overcome the additional costs. The simplest approach would be an emission credit for each million Btu/hr recovered. Assuming a 30 ppm NO_x level found in AQMD Rules 1146.1 and 1146.2, and 80% boiler thermal efficiency, the NO_x emission credit, for example, would be 0.045 lbs NO_x/MMBtu of waste heat energy recovered.

- E. SB 1298 specifies that emissions limits are to be expressed in terms of lbs/MW-hr. However, district permit exemptions are typically expressed in units such as MMBTU input, horsepower, MMBTU output, and kilowatts. What do you believe are some of the challenges with presenting the emission standards in terms of lbs/MW-hr?

It really doesn't matter how the district permit exemption is expressed. If the DG equipment is exempt in a district, it will have to be CARB certified to be installed in that district. In order to be CARB-certified, it will have to meet the DG standards in lbs/MW-hr. Unlike some of the other output based standards, such as g/bhp-hr where the output is often difficult to measure unless the equipment is on a dyno, all the DG systems' electric output should be easily measured. Only for cogeneration systems would it be somewhat more complicated, as discussed in 2D.

- F. How do you believe the standards should address variables such as fuel type and operating load?

As previously discussed in 2B, clean fuels should be required where it is feasible. DG equipment will most likely be operated at full load whenever possible, particularly during peak electricity price periods, and emissions should only have to be evaluated in that mode unless part load operation will be a normal part of operation.

3. Certification

- A. What components of other programs do you believe that the ARB should consider for its DG certification program?

All cars in California require a smog check every two years even though they are used only about an hour per day. Combustion DG technologies should also require periodic monitoring to assure compliance with emission standards.

- B. Do you believe that the DG technologies should be subject to standards for multiple pollutants (e.g., NO_x, CO)?

Yes. There should be standards for the criteria pollutants NO_x, CO, HC, PM, Sox, and for CO₂, which addresses energy efficiency and global warming.

- C. What do you believe the criteria ought to be for demonstrating adherence to a DG emission standard?

We have no specific recommendations on this, other than testing of a single unit, one time, is not sufficient. In certain applications parametric monitoring (on a continuous or periodic basis) may provide the reasonable assurance that the established emission standard is maintained. Otherwise, periodic monitoring should be considered.

- D. Do you believe that the cost of testing and certification should be a factor in the design of the program?

In practice cost is always a consideration that could be critical. However, considering that central stations have extremely low emissions, excellent energy efficiency, and are usually continuously monitored for emissions, cost should not be a significant factor when DG systems can have lower efficiency, higher emissions, and be unmonitored.

- E. What criteria do you believe ought to be considered when establishing fees for certification under the program?

If non-combustion DG is included, to provide an incentive for such clean technologies, fees should be minimal. Fees could be based on a time and materials basis to cover all contingencies.

- F. What do you believe the process should be for updating emission standards for previously evaluated technologies as well as establishing new standards for technologies that become available in the future.

The standards should be adopted by the CARB.

- G. What do you believe the approach should be for enforcing compliance with the certification requirement?

See prior comments with regard to periodic monitoring of certified DG units.

If you are referring to dealing with a failure to obtain certification, there should be severe penalties to suppliers of DG systems that do not require a permit. You will need a good outreach program to suppliers of engines as well as packagers of DG systems. CARB will also need to enlist the assistance of local cities, counties and air districts in enforcing the certification requirement, along with appropriate cost compensation for the enforcement of the certification program by local districts.

4. Guidance

- A. What categories of technologies do you believe the guidelines should address?

All DG technologies.

- B. What kind of information do you want to see in the guidance?

Recommended BACT guidelines for DG equipment.

Recommended model permits including permit conditions addressing appropriate emission limits, monitoring, recordkeeping and reporting.

Modeling of criteria and toxic emission levels and toxic risk levels for units complying with the recommended BACT levels.

- C. What options do you believe are available for streamlining the permitting of DG units?

Development of model permits suggested in 4C.

- D. What options do you believe are available for establishing technology certification programs for DG units subject to district permitting?

SCAQMD already has a voluntary certification program for some types of low-emitting equipment that could include some DG equipment.