

Final Statement of Reasons for Rulemaking

Including Summary of Comments and Agency Responses

PUBLIC HEARING TO CONSIDER THE PROPOSAL TO ESTABLISH A DISTRIBUTED GENERATION CERTIFICATION PROGRAM

Public Hearing Date: November 15, 2001
Agenda Item Number: 01-9-1

State of California
AIR RESOURCES BOARD

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I. GENERAL

On November 15, 2001, the Air Resource Board (ARB or Board) conducted a public hearing to consider a proposal to establish a distributed generation (DG) certification program as required by Senate Bill (SB) 1298 (chapter 741, statutes of 2000). The DG certification program establishes emission standards and other certification requirements for electrical generation technologies that are exempt from air pollution control or air quality management district (district) permit requirements. The DG certification program will add sections 94200-94214 to title 17, California Code of Regulations (CCR). The Staff Report: Initial Statement of Reasons for the Proposal to Establish a Distributed Generation Certification Program, released to the public on September 28, 2001 (staff report), is incorporated by reference herein.

At the November 15, 2001, hearing, the Board approved the proposed regulation with modifications. The modifications were made available for a public comment period from March 11, 2002 to March 27, 2002. This Final Statement of Reasons for Rulemaking (FSOR) updates the staff report by identifying and explaining the modifications that were made to the original proposal. The FSOR also summarizes the written and oral comments received during the 45-day comment period proceeding the November 15, 2002, public hearing, the hearing itself, and the 15-day comment period for the proposed modifications, and contains the ARB staff's responses to those comments.

Fiscal Impacts

The regulatory action will not impose a mandate upon and create costs to local agencies. Therefore, the Executive Officer has determined that the regulatory action imposes no costs on local agencies that are required to be reimbursed by the state pursuant to part 7 (commencing with section 17500), division 4, Title 2 of the Government Code, and does not impose a mandate on

local agencies that is required to be reimbursed pursuant to Section 6 of Article XIII B of the California Constitution.

Consideration of Alternatives

The Board has further determined that no alternative considered by the agency would be more effective in carrying out the purpose for which the regulatory action was proposed or would be as effective and less burdensome to affected private persons than the action taken by the Board. SB 1298 dictated specific requirements for the DG certification program which limited the alternatives the ARB staff could consider in developing this regulation.

II. MODIFICATIONS MADE TO THE ORIGINAL PROPOSAL

Various modifications to the original proposal were made to address comments received during the 45-day public comment period, and to clarify the regulatory language. A "Notice of Public Availability of Modified Text," together with a copy of the modified proposed language were sent on March 11, 2002, to each of the individuals described in subsections (a)(1) through (a)(4) of section 44, Title 1, CCR. Additionally, this notice and the modified proposed language were made available on ARB's website and potentially affected industry were notified, via an email list server, of the website posting.

By these actions, the modified DG certification regulation was made available to the public for a 15-day minimum comment period from March 11, 2002 to March 27, 2002, pursuant to Government Code section 11346.8. Responses to comments made during the public comment period for these modifications are presented in Section IV of this FSOR. After the close of the public comment period, the Board's Executive Officer determined that, with the exception of the changes described in Section III below, no additional modifications should be made to the DG Certification regulation. The Executive Officer subsequently issued Executive Order G-02-020, which adopted the DG Certification program.

The modifications to the originally proposed regulation are described below:

Purpose and Applicability

Changes were made to Sections 94200 and 94201 to replace "Distributed Generation" with "DG" because the term "DG" was used throughout the remainder of the regulation.

A grammatical change was made to the definition of "District " in Section 94202.

Requirements

“CHP” was replaced with “Combined Heat and Power” in Section 94203 because the phrase “Combined Heat and Power “ not “CHP” was defined in Section 94202.

Language was added to section 94203 (a)(2)(A) and (b)(1)(B) to clarify that determining a 60 percent minimum efficiency for a DG Unit integrated with combined heat and power must be based on the unit running at 100 percent load.

Language was deleted in section 94203 (b)(1)(B) to remove the requirement for an average efficiency of 75 percent for units integrated with combined heat and power. This requirement, along with the 2007 standard will be reevaluated during the 2005 technology review when more information is expected to be available on combined heat and power applications.

Certification Procedure

Language was added to Section 94204 to clarify that the fuel type and the type or description of emission control equipment used for certification must be included in the certification application.

Testing

Language in section 94207 was restructured to improve the clarity of the testing parameters. Specifically, language in section 94207 (d)(2)(C) was moved to become section 94207(d)(1). Changes were made to the originally proposed section 94207 (d)(3) to correct the reference for the electric meter calibration method. Changes were also made to the originally proposed section 94207 (d)(4) to improve the clarity and to change the methodology for averaging the emission testing results to reflect a true arithmetic calculation.

The ARB Test Methods incorporated in section 94207 have been previously adopted by the ARB and are referenced in title 17, CCR, sections 94101, 94102, 94103, 94104, and 94114. The ARB Test Methods are incorporated by reference because it would be cumbersome, unduly expensive, or otherwise impractical to publish the test methods in the CCR.

III. CHANGES WITHOUT REGULATORY EFFECT

In addition to the modifications described above, the following non-substantial or solely grammatical modifications were made after the close of the 15-day comment period. The changes do not materially alter any

requirement, right responsibility, condition, prescription or other regulatory element of any CCR provisions.

Recordkeeping Requirements

A clerical edit was made to Section 94208 (recordkeeping requirements) to change the reference to section 94207(d)(5), to section 94207(d)(6). Section 94207 (testing requirements) was restructured, but the change was not reflected in the reference to it in section 94208.

The regulation contained in this rulemaking requires reports, which apply to businesses. It is necessary for the health, safety and welfare of the people of the State of California that the regulations apply to businesses.

IV. SUMMARY OF COMMENTS AND AGENCY RESPONSES

The Board received written and oral comments in connection with the 45-day comment period, the November 15, 2001, hearing, and the 15-day public comment period for the modified regulatory language. A list of commenters is set forth below, identifying the date and form of all comments that were timely submitted. Following the list is a summary of each objection or recommendation made regarding the proposed action, together with an explanation of how the proposed action has been changed to accommodate the objection or recommendation or the reasons for making no change.

A. Responses to Comments Received During the 45-day Public Comment Period and Board Hearing

<u>Abbreviation</u>	<u>Commenter</u>
ALA	Bonnie Holmes-Gen Assistant Vice President for Government Relations American Lung Association of California Oral/written testimony: November 15, 2001
Anderson	Don Anderson Written testimony: November 5, 2001
Blumenshine	Nadine Pourier Blumenshine Written testimony: November 8, 2001
Booth	Nathaniel Booth Written testimony: November 8, 2001
Bowman	Stan Zwicker Bowman Power Systems, Inc. Oral/written testimony: November 15, 2001
Brenneman	Dr. Mary Brenneman Written testimony: October 30, 2001
Burkes	Joseph Burkes, MD Staff Physician So California Permanente Medical Group Written testimony: November 13, 2001
CALPIRG	Susannah Churchill CALPIRG Energy Advocate California Public Interest Research Group Oral/written testimony: November 15, 2001
Capstone	Kevin Duggan Manager Regulatory and Environmental Issues Capstone Turbine Corporation Written testimony: November 13, 2001
CCA	Todd Campbell Coalition for Clean Air Written testimony: November 7, 2001

	Oral testimony: November 15, 2001
Citizen	Concerned Citizen Written testimony: November 7, 2001
CTA	Bonnie Holmes-Gen California Thoracic Society Oral testimony: November 15, 2001
ED	James B. Martin Environmental Defense Written testimony: November 7, 2001
EMA	Timothy A. French Engine Manufacturers Association Written testimony: November 12, 2001 Oral testimony: November 15, 2001
Gates	Valerie Gates Oral testimony: November 15, 2001
Giglio	Sharon Giglio Written testimony: October 28, 2001
Grant	Scott Grant Written testimony: October 17, 2001
Gray	Bonnie Grey Written testimony: November 14, 2001
Gray Panthers	Joan B. Lee Karl Stoffers Gray Panthers Oral testimony: November 15, 2001
Hill	Melissa Hill Written testimony: October 26, 2001
Kaiser	Misha Askren, MD Kaiser Permanente Written testimony: October 9, 2001
Kitchens	Johnny Kitchens Written testimony: October 17, 2001
Liberty	Lina Paredes

	Director of Programs Liberty Hill Foundation Written testimony: November 12, 2001
Lipman	Steven Lipman Steven Lipman Consulting Written testimony: October 24, 2001
Margulies	Matthew Margulies, MD Written testimony: September 22, 2001
Niswander	Ruth Niswander Written testimony: November 8, 2001
NRDC	Sheryl Carter Natural Resources Defense Council Written testimony: November 7, 2001 Oral testimony: November 15, 2001
Perkins	William E. Perkins, M.D. Board Member L. A. Physicians for Social Responsibility Written testimony: November 14, 2001
PlugPwr	Loren Kaye Kahl/Pownall Advocates on behalf of Plug Power, Inc. Written testimony: October 26, 2001 Oral testimony: November 15, 2001
PSR	Felix Aguilar, MD, MPH Board President Physicians for Social Responsibility Written testimony: November 13, 2001 Martha Arguello Coordinator, Environment and Health Programs Physicians for Social Responsibility Oral testimony: November 15, 2001
Quiroga	Jose Quiroga, MD Member of Board of Directors Physicians for Social Responsibility Written testimony: November 14, 2001
RE	Steven Greenberg

	Jean Pierre Batmale Real Energy, Inc. Written testimony: November 14, 2001
Sierra Club	Eric Wesselman Sierra Club Written testimony: November 12, 2001 Oral testimony: November 15, 2001 Valerie Gates Oral testimony: November 15, 2001
SCAQMD	Barry R. Wallerstein, D.Env. Executive Officer South Coast Air Quality Management District Written testimony: November 13, 2001 Mohsen Nazemi Oral testimony: November 15, 2001
SEI	Tyrone Cashman, PhD Solar Economy Institute Written testimony: November 5, 2001
SmithK	Kathleen Smith Written testimony: November 1, 2001
SmithM	Marilyn Smith Written testimony: November 14, 2001
SMUD	Bud Beebe Sacramento Municipal Utility District Oral testimony: November 15, 2001
Solar	Ralph V. Ordonez, PE Environmental Regulatory Specialist Solar Turbines, Inc. Oral testimony: November 15, 2001 (reg?)
Solt	Chuck Solt Catalytica Energy Systems, Inc. Oral testimony: November 15, 2001
STM	Himesh Dhungel, PhD Director – Business Development Mark T. Kuntz Marketing Sales Consultant STM Power, Inc.

Written testimony: November 14, 2001
S. N. Prakash
Oral testimony: November 15, 2001

Wagstaff

Barbara Wagstaff
Written testimony: November 6, 2001

Comments and Responses

The ARB staff received approximately 8,000 comments from Sierra Club and CALPIRG members, approximately 100 comments from American Lung Association members, and approximate 1,600 comments from Environmental Defense members. The comments were submitted as form emails, postcards, petitions, and letters that originated from these organizations. Most of these comments focused on urging the ARB to promote only the cleanest distributed generation technologies in California. An example of a form postcard is included in Attachment A to the FSOR.

In addition, all of these organizations submitted individual letters and all but the Environmental Defense organization gave public testimony at the Board Hearing. The specific comments from each organization are summarized below according to subject area.

1. Support for Clean DG

- 1.1 Comment: ARB should undertake the following policy actions: stringent efficiency-based standards, streamlined permitting process for clean units; requiring all DG units be certified or permitted by ARB or air districts in order to be interconnected to the electrical power grid; adequate enforcement of standards; and significant penalties for violation. (Blumenshine, Booth, Brenneman, Burkes, CALPIRG, Giglio, Grant, Gray, Hill, Kaiser, Kitchens, Lipman, Margulies, Niswander, PSR, Quiroga, Sierra Club, Smithk, Wagstaff)

Agency Response: The ARB staff believes that the proposed regulation provides stringent efficiency-based standards, adequate enforcement of standards, and significant penalties for violation. The proposed regulation does not address streamlining the permitting process for electrical generation technologies because only DG units not subject to permit requirements will fall under the certification program. SB 1298 required the ARB to develop guidance for permitting electrical generation technologies that are subject to district permitting requirements. The Guidance for Permitting of Electrical Generation, which includes streamlining mechanisms, was approved by the Board at its November 15, 2001, public hearing. The regulation also does not address requirements for interconnecting DG units with the grid. Interconnection requirements are developed by other government agencies.

- 1.2 Comment: The ARB should provide guidance encouraging California's air districts to adopt equally strong emissions rules. (Burkes, ED, Liberty, Niswander, Perkins, PSR)

Agency Response: As was mentioned in the previous comment, the Board approved a district guidance document for the permitting of electrical generation sites, at its November 15, 2001, public hearing. The non-regulatory guidance document includes the ARB staff's suggestions on emission limits for electrical generation technologies that are generally permitted by California's air districts. The emission limits in the guidance document are based on the most stringent permit conditions in California.

- 1.3 Comment: The Board should adopt regulations that ensure DG units will be as clean or cleaner than the leading technologies for centralized power plants, as soon as possible, and highly efficient to reduce global warming gases. (ALA)

Comment: The Board should adopt tough standards for emissions, pursue certification of facilities, and impose penalties for violations. (Grey Panthers)

Comment: There must be strict clean and simple emission standards and regulations that will improve the quality of air while allowing companies to comply with minimum difficulty. (Grant)

Agency Response: The ARB staff believes the proposed regulation satisfies the requirements of SB 1298 by setting certification requirements for manufacturers, including emission standards, imposing penalties for violations, ensuring that DG emissions meet emission standards for central station power plants by the earliest practicable date, and encouraging the production of highly efficient technology with reduced emissions of global warming gases.

- 1.4 Comment: The ARB should regulate small producers. These generators pollute much more than the large state regulated producers.(Anderson)

Agency Response: As required by SB 1298, the proposed certification regulation sets standards for small DG technologies that are not subject to permit requirements.

- 1.5 Comment: The ARB should prevent huge investments in climate destabilizing, dirty fossil generators. Solar powered energy equipment and windmills need to be part of California's resources. ARB should support installation of clean air energy technologies. State standards should promote advanced and renewable technologies such as wind, solar and fuel cells. (SEI, Brenneman, Smith, ALA)

Agency Response: The ARB staff included provisions in the proposed regulation to provide incentives for manufacturers of zero and near-zero emissions technologies such as wind turbines, photovoltaic cells (solar),

and fuel cells. Manufacturers of zero emission technologies may seek voluntary certification for marketing purposes and not be assessed a fee. Manufacturers of DG technologies that meet the 2007 standard by 2003, such as fuel cells, will have the 2003 certification fee waived. Manufacturers may choose to integrate a DG unit that emits air pollution, such as a microturbine, with a zero emission technology and seek certification of the integrated package. Integrated packages such as these will increase the electrical output of the unit and thus increase the unit's efficiency.

- 1.6 Comment: ARB should ignore all form letters. (Citizen)

Agency Response: The ARB staff is required to consider all comments received during the public review period.

2. Recertification

- 2.1 Comment: Certifications should be valid for as long as the model is unchanged. (Plugpwr)

Agency Response: This comment was from a manufacturer of fuel cells whose technology can already meet the 2007 standards. The ARB staff believes that setting a time limit on all certifications is consistent with other ARB certification programs. Once technologies are certified to the 2007 limits, the ARB staff believes that it is important to periodically obtain updated information on these technologies, even if the technology has not changed. If no changes have been made to the technology, recertification will be much simpler than the initial certification process. The ARB staff will work with manufacturers to ensure that the recertification process is not unduly burdensome when no significant change has occurred to the technology.

- 2.2 Comment: The regulation should clarify what happens to units upon the lapse of the initial certification. (EMA)

Agency Response: Once the certification for a specific model of a DG unit has expired, no new units of that model can be sold unless the model is recertified. However, once a unit has been certified, the certification is good for the life of the unit.

3. Testing Requirements

- 3.1 Comment: The regulation should explicitly allow for flexibility in the modes to be tested, other than 50, 75 and 100 percent load, if the technology operates at other set points. (Plugpwr)

Agency Response: The regulation does allow for alternative testing parameters to address specific limitations of a technology. If the manufacturer is unable to modify the operation load of the technology in order to test at the other required loads of 50 and 75 percent, then the ARB staff will work with the manufacturer to achieve the testing requirements using alternative parameters.

- 3.2 Comment: The testing and sampling methodologies need to be amended and improved to account for the stringency of the 2007 emission limits. The requirements are not practicable because the methods can not accurately measure down to the stringent 2007 level. (EMA)

Agency Response: The ARB staff is currently working on a new testing method for oxides of nitrogen (NOx) to specifically address the issue of accurately measuring very low NOx emissions, such as those required in the 2007 standards. The testing requirements in the certification regulation will be reevaluated along with the 2007 emission limits during the 2005 technology review.

- 3.3 Comment: SCAQMD supports certification testing at multiple load points, but supports testing more than one unit, per model, if the technology is unproven.

Agency Response: The ARB staff believes that the requirement for testing only one unit for each model to be certified is consistent with other ARB certification programs. Source testing multiple units would be very expensive for manufacturers. The regulation requires each DG unit be tested for NOx emissions prior to commercial operation using a simple NOx analyzer. This provision was included as a less burdensome quality control alternative to requiring comprehensive source testing of multiple units of a model that is being certified.

4. Emergency Generators

- 4.1 Comment: The ARB should not exempt emergency generators from the certification program. (Bowman, Capstone, ED)

Agency Response: The ARB staff does not agree with this comment. Emergency generators play an important role when natural gas or electricity service is interrupted, but are not used for prime power production. Emergency generators are diesel-fueled and usually limited by permit conditions to a few hundred operating hours per year. If emergency generators were included in the certification program, the emission standards would essentially prohibit their use in California, which is not the intent of SB 1298.

- 4.2 Comment: Emissions from diesel emergency generators must be addressed. The emission standards that are being developed by ARB staff for diesel emergency generators should be consistent with the DG emission standards. (ALA, CCA, ED, NRDC)

Comment: Diesel emergency generators must be addressed because they may be located in low-income communities of color. (Burkes, PSR)

Agency Response: Emissions from emergency generators will be addressed through the ARB's Diesel Risk Management Program. The ARB staff identified particulate matter (PM) from diesel-fueled engines as a toxic air contaminant in 1998. The ARB staff is currently developing air toxic control measures for diesel-fired stationary engines including emergency generators. The measures will be presented to the Board in 2003. Under this program, the ARB staff must evaluate the health impacts of diesel PM exposure to all communities including low-income communities of color.

The ARB staff will strive for consistency, where possible, between the standards in the diesel control measures and the DG certification program. However, the purpose of the Diesel Risk Management Program is to reduce exposure to diesel PM, which is not an issue with the natural gas-fired technologies that will fall under the DG certification program. Consequently, the emission standards in the two programs may ultimately be dissimilar.

- 4.3 Comment: The ARB should urge all districts to adopt the definition of emergency generation that is in the DG Guidance document. (CCA, Gates, NRDC, Sierra Club)

Agency Response: The Guidance for the Permitting of Electrical Generation Technologies is a non-regulatory guidance that the districts can use when evaluating their local rules, including possible revisions to their definition of emergency generator.

5. **Portable Equipment**

- 5.1 Comment: The ARB should not exempt portable equipment from the certification requirements. (Capstone)

Agency Response: The ARB staff does not agree with this comment. The ARB already has a voluntary Portable Equipment Registration Program (PERP) that limits emissions from portable equipment. Most of this equipment runs on diesel fuel. The emission standards in PERP are currently being evaluated under the Diesel Risk Management Program

and the ARB staff will be proposing mandatory air toxic control measures for diesel engines (including portable) to the Board in 2003.

- 5.2 Comment: The ARB should make the standards in ARB's Portable Equipment Registration Program (PERP) consistent with the DG standards. (Calpirg, Gates, NRDC, Sierra Club)

Agency Response: As was mentioned in the previous comment, the emission standards in PERP will be reevaluated during the implementation of the Diesel Risk Management Program. The ARB staff is currently developing air toxic control measures that will set mandatory emission limits for the types of diesel engines that are registered under PERP.

As mentioned in Comment 4.2, the ARB staff will strive for consistency, where possible, between the standards in the diesel control measures and the DG certification program. However, the purpose of the Diesel Risk Management Program is to reduce exposure to diesel PM, which is not an issue with the natural gas-fired technologies that will fall under the certification program. Consequently, the emission standards in the PERP and the DG certification programs may ultimately be dissimilar.

6. Enforcement of DG Program

- 6.1 Comment: ARB should provide guidance to the local districts to enhance monitoring and enforcement on backup generators. (ED)

Comment: The ARB must ensure that emergency generators are not used as DG. (ALA, Burkes, ED, Liberty, Niswander, NRDC, Perkins, PSR, Quiroga)

Agency Response: As mentioned in Comment 4.1, it is the ARB staff's goal to ensure that backup generators are used only in emergency situations. The ARB staff will continue to work with districts as we develop our air toxic control measures for diesel engines to enhance the monitoring and enforcement of emergency generators.

- 6.2 Comment: The ARB must ensure that portable generators are not used as DG. (ALA, Calpirg, NRDC).

Agency Reponse: Portable generators registered under PERP are prohibited from being used longer than one year and a day at one location. It is the goal of the enforcement staffs of the ARB and districts to ensure that portable generators are not run permanently at for the production of prime power. In addition, the ARB staff will continue to work with districts as we develop and implement our air toxic control measures

for diesel engines to ensure that portable equipment is used only on a temporary basis.

- 6.3 Comment: The ARB must ensure that certified DG units are only operated on the fuel that they were certified to use. (ALA)

Agency Response: All certified units must have a visible label identifying the year of the conforming emission standards, the executive order number of the certification, and the type of fuel used for certification. The ARB enforcement staff can check labels on DG units during facility inspections to ensure that certified DG units are only operating on the fuel that they were certified to use.

- 6.4 Comment: SCAQMD supports random testing of field units by local districts and CARB staff and believes enforcement should be an integral part of the DG certification program.

Agency Response: The ARB staff agrees that enforcement is an important element to the certification program and will continue to communicate with the manufacturers and the districts regarding the requirements of the DG certification program. It is the ARB staff's intent that ARB enforcement staff will check labels on DG units during facility inspections to determine if the units have been certified by the ARB.

7. **Emission Standards and Technology Review**

- 7.1 Comment: The 2003 emission standard for NO_x should be 1.0 lb/MW-hr. (STM)

Agency Response: SB 1298 requires the ARB to develop emission standards that "reflect the best performance achieved in practice by existing electrical generation technologies." The ARB staff reviewed available source test data from existing DG technologies and determined that 0.5 lb/MW-hr was the lowest achievable emission levels from these technologies. During the development of the regulation, potentially affected manufacturers, including the commentor, indicated to the ARB staff that they expected their technologies to meet the 2003 emission standards by January 1, 2003. The commentor submitted a subsequent comment letter during the 15-day review period for the modified regulation that supports all of the proposed emission standards. Please refer to Comment 5.6 in Section IV B. for a summary of this comment.

- 7.2 Comment: The PM standard is too imprecise and should be expressed in lb/MW-hr. (EMA)

Agency Response: The NOx standards in the proposed regulation essentially eliminate all but natural gas fueled DG technologies from the certification process. PM emissions from natural gas combustion are based on the sulfur content of the fuel. The PM standard in the certification regulation is identical to the Best Available Control Technology (BACT) requirement in ARB's Power Plant Guidance document for electrical generation of 50 MW or greater. Requiring the use of only pipeline quality natural gas with no more than 1 grain per 100 standard cubic feet (scf) of sulfur content as a PM standard is currently the most effective control of PM emissions from this fuel use.

- 7.3 Comment: The 2007 standards are cost-prohibitive and are not cost-effective. (EMA, STM)

Agency Response: SB 1298 requires DG technologies to ultimately meet emission limits for central station power plants. Those levels are reflected in the 2007 emission standards. There are a number of ways a manufacturer can meet the 2007 standards. Manufacturers can redesign their technologies, increase the unit's efficiency, add CHP, or add control equipment to their technologies. It is unclear at this point, which options manufacturers will choose to meet the 2007 limits. Compliance cost for the 2007 standard will be evaluated in more detail during the 2005 technology review when more information is available on DG technologies.

- 7.4 Comment: The 2007 standards are infeasible for Reciprocating Internal Combustion Engines (RICE), and will force the market to consist of only microturbines and fuel cells. (EMA)

Agency Response: The ARB staff is aware that it will be very difficult for RICE technologies to meet the 2007 standard. However, the ARB staff does not expect many, if any, internal combustion engines to fall under the certification program. Discussions with RICE manufacturers that sell units for prime power production, as opposed to emergency stand-by use, have indicated that their installations would be subject to district permit requirements and thus would not be subject to certification. The ability of RICE technologies, as well as all other DG technologies, to meet the 2007 limit will be reevaluated during the 2005 technology review.

- 7.5 Comment: The regulation should either strengthen the intent to maintain the 2007 standard or include an interim standard of .14 lb/MW-hr (for NOx) in 2005 and move the technology review and the final standard to 2006 and 2008, respectively. (NRDC, CCA, Sierra Club)

Comment: The regulation should include an interim standard or strengthen the Board's intent to maintain the 2007 standard. (CALPIRG)

Comment: The technology review should be in 2006 (Bowman)

Comment: The technology review could be deferred to 2007. (EMA)

Agency Response: The ARB staff chose not to include an interim standard because of the amount of time it takes for a manufacturer to develop and commercialize a new product. Manufacturers have indicated to the ARB staff that it takes four years to develop a new product. The manufacturers were given a 5-year period from when the Board approved the regulation to when their units must meet the 2007 standards. Including interim standards would require manufactures to make multiple changes to their products that would create additional costs.

The ARB staff recognized the limited amount of information that is available on these emerging DG technologies including the mechanisms that can be incorporated to reduce emissions to the 2007 limits. The ARB staff proposed a technology review to address the ability of these technologies to meet the 2007 limits. The ARB staff chose a 2005 review date because it was halfway between the emission standard dates and would give manufacturers two and one-half years from when the regulation was approved by the Board to collect additional information on their technologies.

- 7.6 Comment: Phase 2 standards should be no earlier than 2010. If 2007 standards are passed, a mechanism should be included to refer the feasibility of the 2007 date back to the Board for reconsideration. (Bowman)

Comment: The 2007 standards should be eliminated pending results of the 2005 technology review or deferred to 2011. (EMA)

Agency Response: The regulation requires a technology review by July 2005, and requires the staff to report back to the Board on the feasibility of the 2007 standards. At that time, the Board may direct staff to modify the compliance date for the final limits.

- 7.7 Comment: It is inappropriate to require small microturbines to meet Best Available Control Technology (BACT) limits for central station power plants. The word "equivalent" that is used in the SB 1298 legislation does not have the same meaning as "equal." Best Available Control Technologies (BACT) determinations are based on what are in permit conditions and not necessarily what has yet been proven in the field. (Bowman)

Agency Response: The ARB staff believes that SB 1298 directs the ARB to require emissions from smaller electrical generation sources to ultimately meet emission limits of central station power plants. BACT has historically reflected the lowest limits that are contained in permit conditions regardless of whether the permitted source has begun operating. The ARB staff used current BACT limits for central station power plants in California and applied an adjustment factor for transmission line losses (that are inherent to central station power plants) to set the final emission limits for DG sources that are required by 1298.

- 7.8 Comment: The 2005 review should include consideration of a credit for avoided ammonia emissions. (Capstone)

Agency Response: The ARB staff is assuming that the commentor is referring to fugitive ammonia emissions that can be associated with a Selective Catalytic Reduction (SCR) unit, one of several options that can be used to reduce NOx emissions from central station power plants. The commentor is assuming that if certified DG units are displacing electrical generation that would otherwise be created at a central station power plant, some fugitive ammonia emissions would also be displaced. The commentor believes that some kind of credit should be allowed for this in the final emission standards.

The ARB staff does not believe that DG technologies should be granted credits for potentially avoiding ammonia emissions from central station power plants. Historically, emissions credits have been granted for quantifiable localized sources that displace emissions from another source, such as a power plant. Because DG technologies are often deployed far from power plants, information about the chemical composition, location, and quantity of emissions is not available. Finally, it is important to note that other non-ammonia based NOx control technologies can be used by central station power plants.

- 7.9 Comment: The regulation needs to clarify if it applies to technologies using bio-gas. If it is included, the emission standards will prohibit the operation of such installations because aftertreatment systems are incompatible with bio-gas fuels in RICE. (EMA)

Agency Response: Because of their larger size, RICE installations using biogas (waste gas from landfill and sewage treatment facilities) fuels would not be subject to certification. Rather, they are subject to district permitting requirements that recognize both the benefits of biogas collection systems and the engineering challenges of dealing with contaminants in these primitive gases that deactivate traditional aftertreatment systems.

8. Combined Heat and Power Credit

- 8.1 Comment: The regulation should incorporate the Combined Heat and Power (CHP) credit methodology developed by NRDC for both the 2003 and 2007 standard and include greater recognition of climate change mitigation benefits of higher efficiencies. (NRDC,CCA, Calpirg)

Comment: The regulation should more directly recognize greenhouse gas emission impacts and reward highest efficiency technologies. (ALA)

Comment: The regulation should allow partial emission credit for CHP, if existing boiler emissions are partially displaced. A tiered emissions credit should be included in the regulation. End users of DG technologies will calculate and compare emissions from both new DG sources and existing boilers and determine compliance with the proposed emission standards based upon the tiered emissions credit. (RE)

Comment: It is unclear if the CHP method for the 2007 standard will fully recognize the avoided emissions of co-generation. Emissions achieved in practice by boilers and the 2007 CHP credit should be re-evaluated during the 2005 technology review. (Capstone)

Agency Response: The ARB staff has proposed a simple approach for crediting DG units that use CHP. Under the proposed requirements, if a manufacturer wants to sell a unit with CHP, the manufacturer must demonstrate that the unit meets 60 percent efficiency. In other words, a manufacturer must design its integrated unit to meet a minimum efficiency of 60 percent. There would be no further requirements on the manufacturer or on the units once they are sold.

For 2003, the manufacturer can certify their integrated units to an emission standard that incorporates an established credit for avoided boiler emissions. Again, there would be no further requirements on manufacturers or on an end user of the certified units.

Allowing partial emission credit for CHP, if existing boiler emissions are partially displaced at a site, would not be feasible in the DG certification program because certification is issued at the manufacturer's level, and manufacturers have no control over the extent to which CHP is used after their units are sold.

The NRDC's CHP calculation is more complicated than what the ARB staff has proposed. It requires site-specific information on the operating unit after it is sold which, again, is not available at the manufacturer's level.

The ARB staff will reevaluate the CHP credit methodology for the 2007 standard during the 2005 technology review. At that time, the ARB staff will be better able to calculate emission benefits for CHP applications.

- 8.2 Comment: The minimum and average efficiency parameters for CHP credit should be used for testing purposes only and not be made an operating requirement. A certification program cannot practicably control the operating mode of the systems once placed in the fields. (Capstone)

Comment: The CHP credit should be based on the building's historical thermal load or on measuring the efficiency of the system when the cogeneration system is running, providing for some minimum amount of annual hours of operations. (RE)

Comment: The efficiency parameters for the CHP credit should be eliminated. (Solt)

Comment: The CHP provision should be clarified. Reciprocating internal combustion engines (RICE) do not have standardized CHP packages. If the language is not clarified, RICE manufacturers will not know how to take advantage of CHP provisions. (EMA)

Agency Response: The ARB staff included a minimum 60 percent efficiency requirement for CHP to encourage high efficiency CHP applications. This requirement means that the test data used for certification must demonstrate that the CHP unit can capture 60 percent of the process heat that is created during fuel combustion.

The ARB staff, however, removed the minimum 75 percent average efficiency requirement that was included in the originally proposed regulation because very little information is available on actual CHP use in California. The average efficiency number reflects how often the CHP component is actually used. For example, some business may use the process heat in CHP packages on a seasonal basis only and not run the CHP unit year-round which would affect the average efficiency number.

Information on CHP applications in California will be collected and evaluated during the 2005 technology review when the ARB staff can accurately define efficiency requirements and better calculate emission benefits for CHP applications.

9. Other Certification Requirements

- 9.1 Comment: ARB should reconsider the requirement for a manufacturer to demonstrate that the emissions of the technology to be certified are maintained for 15,000 hours. (EMA)

Agency Response: The 15,000 hour timeframe is within the expected useful life of emission control units that could be integrated with some technologies seeking certification and is also within many manufacturers' warranty periods. If a product is too new to have actually logged 15,000 hours, a statistical analysis can be performed on data obtained from shorter test periods to predict emission rates that would be expected from the equipment over longer time periods. The ARB staff will work with manufacturers on ways to demonstrate compliance with this requirement.

The 15,000 hour emission durability requirement will be reevaluated during the 2005 technology review when more information is available on the operating conditions, performance, and capabilities of these emerging distributed generation technologies.

10. Comments on the ISOR

- 10.1 Comment: The microturbine definition in the ISOR should be amended. (Capstone)

Agency Response: This comment does not address the proposed regulatory language. "Microturbine " is not defined in the proposed regulation. Instead, its definition is included for illustrative purposes in Chapter III of the Staff Report. The definition of microturbine in the Staff Report has no bearing on what technologies will be subject to the regulation.

- 10.2 Comment: Cost estimates in the ISOR are underestimated because manufacturers may have numerous models to be certified, not just one as assumed in cost estimates. (EMA)

Agency Response: The ARB staff was unable to determine, at the time the cost estimates were developed for this regulation, how many models each manufacturer would be certifying under the DG program. At that time, the ARB staff identified four microturbine companies, four internal combustion engines companies, 16 fuel cell technology companies, and one external combustion engine technology company that could potentially sell unpermitted units in California after January 1, 2003. Because most of these companies are still developing their technologies, it is unclear even at this writing, how many models, if any, these manufacturers will be selling in California after 2002.

The commentor represents Recipricating Internal Combustion Engines (RICE). Discussions with RICE manufacturers that sell units for prime power production, as opposed to emergency stand-by use, have indicated

that their installations will most likely be subject to district permit requirements and thus would not be subject to certification.

11. Support for Certification Regulation

- 11.1 Comment: The Air Resources Board should adopt the standards which ARB staff has drafted. (ALA, CTA, ED, Grey Panthers, Liberty, Niswander, Perkins, PSR)
- 11.2 Comment: Plug Power commends ARB staff efforts to develop a balanced regulation, supports exempting zero-emission technologies from certification requirements, supports criteria pollutant standards, and supports application fees based per model and fee waivers for early certification to 2007 standards. NRDC and CCA support the initial emission standards, phased timeline, and the proposed recognition of zero emission technologies. EMA supports the exclusion of emergency generators and registered portable equipment. Bowman supports the 2003 emission standard and CHP credit. SCAQMD supports the certification program and believes it is appropriate to recognize the efficiency of fuel use and reduced greenhouse gases in certification program. SMUD supports the certification criteria.

B. Responses to Comments Received During the 15-Day Public Comment Period for the Modified Regulatory Language

<u>Abbreviation</u>	<u>Commenter</u>
ALA	Kenneth D. Smith DG Program Manager American Lung Association of California Written testimony: March 27, 2002
Beek	Allan Beek Written Testimony: March 17, 2002
Capstone	Kevin Duggin Capstone Turbine Corporation Written Testimony: March 27, 2002
Cornejo	Edward Cornejo Written testimony: March 24, 2002
Fuel Cell Energy	Richard Shaw, Manager Applications Engineering Fuel Cell Energy Written testimony: March 19, 2002
IRES	Robert P. Mack Director, Marketing and Business Development IR Energy Systems Written testimony: March 27, 2002
Merry	Liz Merry Verve Enterprises Written Testimony: April 3, 2002
NRDC	Sheryl Carter Natural Resources Defense Council Written testimony: March 27, 2002
PSR	Martha Dina Arguello Environmental Health Coordinator Physicians for Social Responsibility Written testimony: March 27, 2002
Ramos	Teresa Ramos Antonio Ramos

Jacqueline Turvey
Written testimony: March 26, 2002

Ratcliff Philip Ratcliff
Written testimony: March 18, 2002

Shea Naima and Tehya Shea
Written testimony: March 13, 2002

STM Himesh Dhungel
Director
Business Development
STM Power
Written testimony: March 19, 2002

Wetmore Paul and Melanie Wetmore
Written Testimony: April 7, 2002

Comments and Responses

1. Emission Standards

- 1.1 Comment: ARB should not delete the 75 percent minimum average efficiency requirement for the combined heat and power (CHP) credit that can be applied to the 2007 standard. (Cornejo)

Agency Response: The ARB staff retained the minimum 60 percent efficiency requirement to encourage high efficiency CHP. The ARB staff, however, removed the minimum 75 percent average efficiency requirement that was included in the originally proposed regulation because very little information is available on actual CHP use in California. The average efficiency number reflects how often the CHP component is actually used. For example, some business may use the process heat in CHP packages on a seasonal basis only and not run the CHP unit year-round which would affect the average efficiency number.

Information on CHP applications in California will be collected and evaluated during the 2005 technology review when the ARB staff can accurately define efficiency requirements and better calculate emission benefits for CHP applications.

- 1.2 Comment: ARB must ensure that only the cleanest and most efficient technologies are given emissions credit for future DG. The ARB should more fully develop the credit methodologies for both combined heat and power and zero emission technologies to ensure that the benefits are credited effectively.
(ALA, PSR, NRDC)

Agency Response: The credit for the zero-emission technology is outside the scope of the modified language that was available for public review. However, the regulation contains a simple energy credit (section 94203(a)(2)(B)) that manufactures can use when certifying units that integrate air polluting technologies with zero-emission technologies.

The ARB staff is assuming that the comment regarding more fully developing the credit methodologies for CHP is referring to NRDC's proposed CHP credit methodology. Please refer to Comment 8.1 in Section IV B for staff's response to modifying the CHP credit methodology.

- 1.3 Comment: The word "Fossil" should be removed from section 94203 (b)(1)(B) which specifies the minimum efficiency requirement for taking the combined heat and power credit. The word should be removed because "Fossil" is not referenced anywhere else in the regulation and only the word "Fuel" should remain. (Beek)

Agency Response: The words “fossil fuel” were used in this section because only natural gas fuel is expected to be used with certified technologies. Installations burning biogas, such as at landfills and POTWs, will be subject to permit requirements and thus not part of the certification program.

- 1.4 Comment: The ARB should enforce clean air standards at a much higher level than at present. (Shea)

Agency Response: It does not appear that this statement was directed specifically to distributed generation sources; however, it has always been ARB’s mission to enforce clean air standards for a variety of air pollution sources in California. The DG certification program will allow the ARB staff to mandate and enforce stringent and timely emission standards for an emerging source of air pollution in California.

2. Technology Review

- 2.1 Comment: ARB should not let the 2005 technology review delay the emission standards that are currently set for 2007. (ALA, PSR, NRDC)

Agency Response: This comment is outside the scope of the modified language that was available for public review. However, it is the ARB staff’s intent that all manufacturers should strive to meet the final standards by 2007. The ARB staff will be reevaluating all technologies and their abilities to meet the 2007 standard during the 2005 technology review. The ARB staff will report its finding to the Board. At that time, the Board could direct the staff to modify the compliance dates for the final limits depending on the staff’s findings.

- 2.2 Comment: The 2007 emission standards should be re-evaluated during the proposed 2005 review to ensure that a complete and accurate comparison is made between the demonstrated emissions of distributed generation and central station power plants. (IRES)

Agency Response: The proposed regulation requires a technology review in 2005 that will include re-evaluating the 2007 standards.

3. Testing Requirements

- 3.1 Comment: The language is unclear as to whether engines would be tested and certified as a model number or whether every production engine must be tested. (IRES)

Agency Response: The ARB staff clarified at workshops and workgroup meetings that only one unit must be source tested for each model certified. The regulation requires each DG unit be tested for NOx emissions prior to commercial operation using a simple NOx analyzer. This provision was included as a less burdensome quality control alternative to requiring comprehensive source testing of multiple units of a model that is being certified.

- 3.2 Comment: The requirement for testing at various load conditions to calculate an emissions rate could result in higher CO₂ emissions. The requirement could mean that a product will be designed to run at full power all the time, but shed part of its load across a resistive bank during lower load demands. In this manner, certified emissions would be low for all power output settings, but CO₂ emissions would be higher-than-required at part power. (IRES)

Agency Response: The ARB staff believes it is appropriate for the testing requirements to include testing at 50, 75, and 100 percent loads. Some manufacturers have indicated that there may be situations when a unit is run on less than 100 percent load once it is placed in the field. Also, the multiple load testing requirements in the regulation are similar to existing test cycles used to calculate emission rates from engines subject to other certification programs administered by the ARB.

The ARB staff will reevaluate the testing requirements during the 2005 technology review. The ARB staff can include in that review an evaluation of the effect that these requirements will have on CO₂ emissions.

- 3.3 Comment: The proposed methodology for calculating the emission rate from the testing results is inconsistent with other Federal regulations such as 40 CFR 89. The methodology used to calculate the emission rate should be consistent with existing standards. (IRES, Capstone)

Agency Response: The methodology was revised to represent a true arithmetic averaging number that will result in a more conservative emission rate than the originally proposed methodology. The methodology is not identical to the method in Federal regulations 40 CFR 89 because the Federal standard applies to mobile sources, which are tested in a different manner than stationary sources, such as distributed generation.

4. Applicability

- 4.1 Comment: Most DG units escape the certification requirement because of the wording in section 94201(d). This section states that a DG unit must be certified by the ARB unless the DG unit "is not exempt from an air

pollution control district or air quality management district's permitting requirements." (Beek)

Comment: Electrical generation technologies should not be exempt from air pollution control. (Ramos, Ratcliff)

Agency Response: The ARB staff is assuming the commentors misunderstood the wording in Section 94201. The words "is not exempt from an air pollution control district or air quality management district's permitting requirements" are the same as saying "is subject to an air pollution control district or air quality management district's permitting requirements." Therefore, DG units must be certified by the ARB unless they are subject to district permit requirements, as required by SB 1298.

5. Other Comments

- 5.1 Comment: Section 94208 (recordkeeping requirements) should now reference section 94207(d)(6) not section 94207(d)(5) because of the restructuring that was done to Section 94207. (Fuel Cell Energy)

Agency Response: The ARB staff agrees with this edit and made a non-substantive change to the regulation after the close of the 15-day review period.

- 5.2 Comment: The 15,000 hour timeframe for demonstrating emissions durability is too long and, instead, should equal the standard set in 40 CFR 89.104 for small engines. ARB should clarify how OEMs (Original Engines Manufacturers) would be required to certify compliance with the 15,000 hours requirement. (IRES)

Agency Response: This comment is outside the scope of the modified language that was available for public review. However, the Federal regulation 40 CFR 89 applies to small off road engines, such as lawn mowers, and weed trimmers. These engines have substantially shorter useful lives than DG technologies. The DG certification program's 15,000 hour timeframe is within the expected useful life of emission control units that may be integrated with some technologies seeking certification and is also within many manufacturers' warranty periods. If a product is too new to have actually logged 15,000 hours, a statistical analysis can be performed on data obtained from shorter test periods to predict emission rates that would be expected from the equipment over longer time periods. The ARB staff will work with manufacturers on ways to demonstrate compliance with this requirement.

The 15,000 hour emission durability requirement will be reevaluated during the 2005 technology review when more information is available on

the operating conditions, performance, and capabilities of these emerging distributed generation technologies.

- 5.3 Comment: Portable and emergency generators should not be exempt from the certification program. (Capstone)

Agency Response: This comment is outside the scope of the modified language that was available for public review. However, this comment is addressed in the response to Comment 4.1 in Section IV A of the FSOR.

- 5.4 Comment: ARB must ensure that back-up generators are not used as DG and are only used in emergency situations. (ALA, PSR)

Agency Response: This comment is outside the scope of the modified language that was available for public review. However, this comment is addressed in the response to Comment 6.3 in Section IV A of the FSOR.

- 5.5 Comment: ARB should make the emission standards in the diesel control program and the portable equipment program consistent with the emission standards in the certification regulation. (NRDC, Capstone)

Agency Response: This comment is outside the scope of the modified language that was available for public review. However, this comment is addressed in the response to Comments 4.2 and 5.2 in Section IV A of the FSOR.

- 5.6 Comment: STM fully supports the proposed NO_x, CO, and VOC standards in the proposed regulation.

6. Late Comments

- 6.1 Comment: ARB should undertake the following policy actions: stringent efficiency-based standards, streamlined permitting process for clean units; requiring all DG units be certified or permitted by ARB or air districts in order to be interconnected to the electrical power grid; adequate enforcement of standards; and significant penalties for violation. (Merry, Wetmore)

Agency Response: These comments were received after the close of the public review period and are identical to comments received during the 45 day public review period included in Comment 1.1 of Section IV A of this FSOR.

C. Responses to Comments Made By the Office of Small Business Advocate and the Trade and Commerce Agency

Commenter

James J. Lichter, Analyst
Regulation Review Unit
California Trade and Commerce Agency
Written testimony: November 8, 2001

Comments and Responses

- 1.1 Comment: Inconsistent cost impact statements were made in the Public Hearing Notice. The FSOR should explain which cost impact information in the Notice is accurate.

Agency Response: The ARB staff inadvertently stated in the Public Hearing Notice that there would be no cost impact on businesses to comply with the proposed regulation. Earlier in the Notice, staff noted that the Executive Officer's initial assessment of the proposed regulation indicated that there would be a minimal statewide adverse economic impact on affected businesses. The Notice went on to state that a detailed economic impact assessment of the proposed certification program could be found in the ISOR.

Section VIII of the ISOR indicated that the overall statewide cost of the proposed certification regulation for the 2003 standards was estimated to be \$370,000 with an estimated individual business cost of \$11,000 to \$21,500.

- 1.2 Comment: More complete cost information should be presented in the FSOR including: DG products currently available for sale in California; the share of those products that currently comply with the 2003 emission standards; the approximate cost of modifying or redesigning the remaining products to comply with the proposed 2003 emission standards; and the cost imposed on manufacturers by the proposed 2007 standards.

Agency Response: The ARB staff was unable to determine, at the time that the cost estimates were developed for this regulation, how many DG products were going to be sold in California after 2003. At the time that the cost estimates were developed for this regulation, the ARB staff identified four microturbine companies, four internal combustion engines companies, 16 fuel cell technology companies, and one external combustion engine technology company that could potentially sell unpermitted units in California after January 1, 2003. Because most of

these companies are still developing their technologies, it is unclear how many models, if any, these manufacturers will be selling in California after 2002.

At the time the cost impacts were developed, all but one manufacturer indicated to the ARB staff that their product could meet the 2003 standard by January 1, 2003. That manufacturer has since closed its DG technology department. Because most DG technologies are still in the development stage or are just entering the commercialization stage, manufacturers can still design their technologies to meet the 2003 limits before selling them in California.

There are a number of ways a manufacturer can meet the 2007 standards. Manufacturers can redesign their technologies, increase the unit's efficiency, add CHP, or add control equipment to their technologies. It is unclear at this point, which options manufacturers will choose to meet the 2007 limits. One manufacturer indicated that it would cost several millions of dollars of redesign cost to meet the 2007 limit. However, it may be difficult for a manufacturer to separate its ongoing research and development costs from its cost to comply with the 2007 limit.

As was indicated in the ISOR, the ARB staff will reevaluate compliance cost for the 2007 standard during the 2005 technology review when more information is available on the ability of DG technologies to meet the 2007 standard.

- 1.3 Comment: The recordkeeping cost for manufacturers should be included in the FSOR and a maximum recordkeeping retention time should be added to the regulation so that businesses are not required to keep records longer than necessary.

Agency Response: Recordkeeping cost was not included in the ISOR because the ARB staff does not expect the recordkeeping requirements to be outside of a manufacturer's normal business operation and recordkeeping costs. The ARB staff would expect manufacturers to retain all of their information used for certification at least through 2005 so that it could be used in the ARB's technology review. At that time, the ARB staff can reevaluate the recordkeeping retention time.

- 1.4 Comment: ARB should consider a fourth alternative to the proposed regulation which is to set different compliance deadline dates for DG technologies facing significant technological problems and costs in meeting the 2007 emissions standards.

Agency Response: The ARB staff did not consider a fourth alternative because SB 1298 dictated specific requirements for the DG certification

program which limited the alternatives the ARB staff could consider in developing this regulation.