

January 15, 2002

BY ELECTRONIC AND U.S. MAIL

Mr. Frederick Weston
The Regulator Assistance Project
50 State Street, Suite 3
Montpelier, VT 05602

Dear Mr. Weston:

The Natural Resource Defense Council submits these comments on the November 2001 Public Review Draft of the "Model Regulations for the Output of Specific Air Emissions from Smaller-Scale Electric Generation Resources" to supplement those we have made during our participation in the model emissions regulations working group.

The model regulations being developed under the Regulatory Assistance Projects excellent leadership and with financial support of the National Renewable Energy Lab will provide a great service to both the distributed generation industry and the environment. By helping states across the country coalesce around a single set of standards and by setting those standards at an aggressive, technology forcing level, but a level that should be achievable, the model regulations will avoid a patchwork of regulations that could stymie the industry while guiding the industry towards superior environmental performance. That said, there are a number of issues (all of them identified in the draft as unresolved) on which NRDC wishes to make its position clear.

Carbon Dioxide (CO₂): The CO₂ standards are an essential feature for a family of technologies that aspire to someday become as common as other standard household and workplace appliances. Unfortunately the draft standards provide no pressure for increased efficiency and reduce CO₂ emissions. The draft standards propose 1450 lb CO₂/MWh for emergency units, 1500 lb/MWh for peaking units and 1400 lb/MWh for baseload units. Assuming these all these types of units ran on diesel, these translate to efficiencies of about 38%, 39% and 37% respectively. Alternatively assume they all natural gas, the efficiencies would be 28%, 27% and 29% respectively. Current diesel engines can already readily achieve efficiencies of 38% while natural gas engines readily achieve between 29% and 36% efficiency. Natural gas microturbines have lower electric only efficiencies (~25%), but in combined heat and power configurations should be do significantly better than these standards.

NRDC recommends that the 2009 CO₂ standards be decreased to 1300 lbs/MWh for emergency generators, 1350 lb/MW for peakers and 1250 lbs/MWh for baselaod. For a diesel emergency generator this translates to an efficiency requirement of 42.4%, for a natural gas peaker 29.5%, and for a natural gas baseload unit 32.0%. With combined heat and power an option for compliance, these standards are technology forcing but achievable. Furthermore the technology review serves as an appropriate check should technologies not advance.

Peaking unit definition and treatment: The model rule is trying to achieve a careful balance between protecting the environment, being achievable and being implementable. For larger generators this balance is achieved through a combination of project specific evaluation, air quality specific regulations, and emissions credit trading. There are few enough of these larger projects that regulators can afford to examine each one, and the projects themselves generate enough revenue that they can afford to comply with location specific regulations and participate in emission credit programs. Smaller generators are already probably too numerous to be

individually evaluated, and the manufacturers cannot afford to develop different models for each region's air needs. Furthermore owners of these small generators are not going have the time or wherewithal to participate in emissions credits trading.

Allowing higher emissions during peak times—the same times when all the other generators will be running and total emissions will be at their greatest—flies in the face of protecting air quality. Unfortunately, the current technologies that able to startup quick enough to serve peak pollute more. As a result, while NRDC is uncomfortable setting different standards for peaking units than for baseload units, we recognize that it may be necessary in the context of smaller scale generators. However, these units do not run 700 hours. A quick review of recent load duration curves for the New England Power Pool and PJM Interconnect indicates that demand is more than two standard deviations above the average less than 3% of the year. This suggests that the real peaking demand happens during less than 300 hours a year.

NRDC recommends that the definition of peak be changed to 300 non-emergency hours per year, and that the need for differential standards be periodically re-evaluated.

Definition of emergency generators: Emergency generators provide a vital service during a blackout and under normal conditions operate very infrequently, probably less than 50 hours per year. Because of these benefits and the infrequency of operation, these units are typically exempted from emissions standards. There is increasing interest in calling on these units before the grid fails to try to stave off large losses of service, and some of these units may be able to help in this way. Unfortunately, there is also interest in using emergency generators to provide economic benefit during price spikes. There is no justification for allowing these units to financially benefit without complying with strict emissions standards. NRDC fears that without a substantial increased enforcement, there is no way to keep units that are allowed to run to help prevent blackouts from also running to provide economic benefit.

Absent stricter enforcement mechanisms, NRDC recommends that the use of emergency generators be restricted to testing, maintenance and limited duration grid failures. Any unit that did not meet this definition should be required to meet the peaking or baseload standards. The allowed hours of operation to meet these needs is less than 100 and the definition should reflect this as well.

Existing Units: There are over 127 gigawatts of smaller-scale electric generating capacity in place in the U.S., and the vast majority of this existing capacity is made up of dirty little diesel engines. While according to Power Systems Research nearly 50% of the installed base of small diesel engines is used as emergency generators, the other 50% provides peak-shaving and baseload power. Furthermore as Table 1 shows, more than 50% of the installed base of smaller diesels is more than 5 years old. The current draft of the model regulations does not address any of these units.

Table 1. Existing Diesel Engines.

Size	Amount of Capacity (MW)				Total
	< 5 Years	5 - 10	11 - 15	15+	
0-100 kW	3,349	2,335	1,469	1,582	8,736
101-250 kW	6,022	3,316	1,521	988	11,848
251-500 kW	9,381	5,926	3,555	2,994	21,856
501-1,000 kW	13,429	12,563	4,674	2,604	33,270
>1 MW	26,491	16,063	4,688	4,329	51,572
Total	58,672	40,203	15,907	12,498	127,281

Source: Power Systems Research, 2001.

NRDC recommends that the draft regulations be amended to require that between 2003 and 2009 all existing units apply for a new permit and comply with the standards in effect when they comply. The regulations should also include a requirement that all existing units be brought up to currently applicable standards anytime a permit is modified in any way. At a minimum, these recommendation should be made in the text explaining and supporting the regulations.

Credits for efficiency and non-emitting resources: While NRDC strongly supports energy efficiency and the development of non-emitting resources, we are concerned that the credits proposed in the draft will be very difficult to implement well and may open a loophole in the standards. It will be very difficult to determine if efficiency measures would have been implemented regardless of the installation of a new generator, and the output of wind and solar systems is highly site-specific. As a result, type testing of systems will be impossible and certification of individual systems difficult.

Absent a much more extensive development of how these credits would be implemented, NRDC recommends they be dropped for the draft regulation and simply discussed along with the implementation challenges in the supporting text.

Treatment of very small and very clean units: For very small units, the record keeping requirements will constitute a burden. The owners of these units are likely to be individuals and small businesses. Similarly waiving the record keeping requirement for very clean units can be a useful incentive for these units.

NRDC recommends that for units that have a capacity of 20kW or less and that are certified by the manufacturer to meet the appropriate standards, the record keeping requirements be waived. Similarly for units that have NO_x, PM₁₀, and CO emissions rates approximately one order of magnitude less than the draft baseload standards, the record keeping should also be waived.

NO_x emissions standards: There are already a number of smaller-scale generators that can comply with even the lower end of the range of draft baseload 2003-2005 standard, and at least one manufacturer that has committed to meet or exceed the lower end of the draft 2006-2008 standard. Even more units will be able to achieve these units when in combined heat and power configurations. Figure 1 shows the emissions rates in terms of total emissions per megawatt of electricity that CHP units with various power to heat ratios would be able to emit while still complying with a 0.5, 0.27 and 0.07 set of standards. This assumes that certification emissions are calculated as in Section VI.(B)(2) and with a 0.036 lbs NO_x/mmBtu emissions rate for new boilers. As Figure 1 indicates, CHP will be an important path to compliance for many units that might otherwise not be able to meet the lower end of the draft standards. The technology review also provides an appropriate check on technological progress.

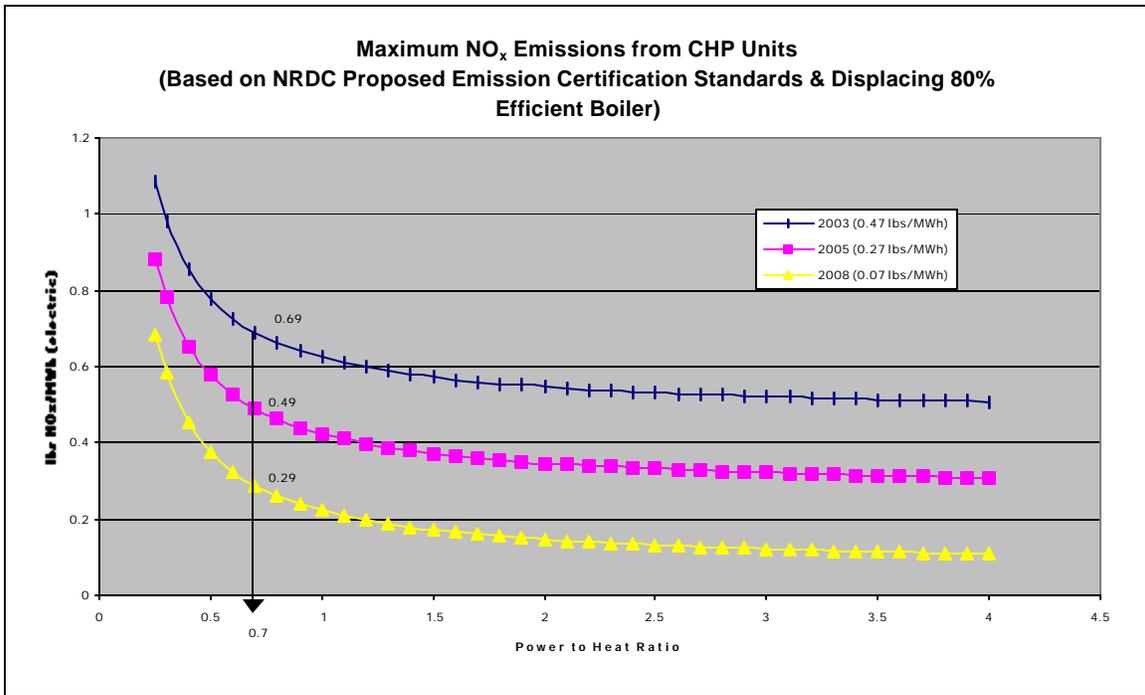


Figure 1. Allowed Emission Rates from CHP Units.

NRDC recommends that the 2003 through 2005 NO_x standard be set at 0.47 lbs/MWh, the 2006 through 2008 standard be set at 0.27 lbs/MWh, and the 2009 standard be set at 0.07 lbs/MWh.

NRDC has greatly appreciated the opportunity to participate in the development of the draft regulations and is grateful for this opportunity to provide comments. We look forward to helping to finalize the model regulations. Please feel free to contact me if you have any questions regarding these comments. I can be reached by phone at (212) 727-4482 or by email at nagreen@nrdc.org.

Sincerely,

Nathanael Greene
 Senior Policy Analyst