

# California Air Resources Board's Distributed Generation Program



**6<sup>th</sup> Annual Microturbine  
Applications Workshop  
January 17, 2006**

**Air Resources Board**   
California Environmental Protection Agency

# Overview

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- **California statutory requirements for DG**
- **State DG certification program**
- **DG guidelines to local air districts**
- **2006 DG technical review**

# Clean DG in California

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- **State Senate Bill 1298 (2000)**
  - **DG deployment should have minimal impact on air quality**
  - **DG must ultimately meet central station power plant emission standards**
  - **DG standards recognize combined heat and power (CHP) benefits**

# SB 1298 Requirements

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- After January 1, 2003, **every** DG unit must be certified by ARB or permitted by local air district
- ARB must develop certification program for permit-exempt technologies
- ARB must issue guidance document to local air districts for permitted technologies

# Certification Program

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# ARB Certification Requirements

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- Two sets of standards: 2003 and 2007
- Applies to DG equipment **manufacturers**
- Affects permit-exempt equipment
  - Engines (< 50 HP)
  - Microturbines (< 300 kW)
  - Fuel cells
- No special exemption for waste-gas applications

# 2003 and 2007 Certification Emission Standards (lb/MW-hr)

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	<u>NOx</u>	<u>VOC</u>	<u>CO</u>
2003	0.7	1.0	6.0
2007	0.07	0.02	0.1
<b>Reduction</b>	<b>90%</b>	<b>98%</b>	<b>98%</b>

# What Has Been Certified?

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- **2003 Standards: Four microturbines**
- **2007 Standards: Five fuel cells  
One microturbine**
- **All certified on natural gas**

# Microturbines in California

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- **500 total (estimated)**
- **60% waste-gas applications**
- **40% natural-gas applications**

# Typical Waste Gas Applications

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- **Digesters**
- **Landfills**
- **Oil-Field Waste Gases**

# Why No Waste-Gas Certification?

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- Regulation allows for fuels other than natural gas
- But waste gas composition varies
- How do we certify statewide?
- We've asked districts to issue permits for permit-exempt applications

# **Achieving 2007 Emissions Standards**

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- **Fuel cells meet standards**
- **One microturbine model meets standards now**
- **IC engines have a challenge**
- **Waste-gas applications make everything more challenging**
- **Combustion equipment can't get there without CHP**

# Combined Heat and Power (CHP)

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- Emissions standards are “output-based” (pounds of pollutant per hour **per megawatt produced**)
- To determine megawatt production, add actual electrical output with productive heat use (Convert BTUs to MW)
- Digesters are great CHP applications; landfills not

# DG Guidance

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# Guidance Requirements

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- **Assist districts with permitting DG technologies subject to district jurisdiction**
- **Create consistent permit conditions and best available control technology (BACT) limits for permitted sources**

# **What Does the DG Guidance Address?**

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- **Electrical Generation < 50 MW**
- **Recommended BACT Levels**
  - **Turbines and engines**
  - **Fossil fuel and waste gas applications**

# BACT and 2007 Certification Emission Standards (lb/MW-hr)

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	<u>NOx</u>	<u>VOC</u>	<u>CO</u>
BACT (waste gas)	1.9	1.9	7.8
2003 cert standard	0.7	1.0	6.0
2007 cert standard	0.07	0.02	0.1
Reduction	96%	99%	99%

# How Do We Address Waste-Gas DG Applications?



# 2006 Technology Review

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- **Required by ARB DG certification regulation**
- **Must review:**
  - Feasibility of 2007 standards
  - Testing requirements
  - Durability requirements
  - CHP benefits

# Tech Review Status

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- **Four workgroup meetings since June 2004**
- **Multiple one-on-one meetings with manufacturers**
- **Two conference calls on testing protocols**

# **Tech Review**

## **Initial Staff Concepts**

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- **Split certification regulation**
  - fossil fuels with current 2007 target
  - waste gas with later target
- **Get the permit-exempt waste-gas DG applications into the certification program**
  - develop surrogate waste-gas fuel to certify DG equipment

# **Tech Review**

## **Initial Staff Concepts (cont.)**

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- **Possibly change testing requirements (100% load)**
- **Credit only typical CHP usage**
- **Modify source-testing protocol**

# Tech Review Timetable

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- **Continue workgroup meetings and discussions with stakeholders**
  - January 27, 2006, 10:00 – 12:30 @ CARB
- **Go to the Board in October 2006 with proposed revisions to the DG certification regulation (and *possibly* the DG guidance document)**

# How Can Microturbine Users Help?

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- **Waste gas composition data**
- **Source test data**
- **2006 DG Technical Review participation**

# Important Points to Ponder

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- **State law requires DG to meet central power plant standards**
- **ARB staff conducting DG technical review**
- **Looks like 2007 is not the “earliest practicable date” for waste-gas DG applications**

# Additional Information

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**Information:**

**<http://www.arb.ca.gov/energy/dg/dg.htm>**

**List Serve:**

**<http://www.arb.ca.gov/listserv/dg/dg.htm>**

**Mike Waugh:**

**[mwaugh@arb.ca.gov](mailto:mwaugh@arb.ca.gov)**

**(916) 445-6018**