



# **Biomass Energy and the new proposed MACT Rules**

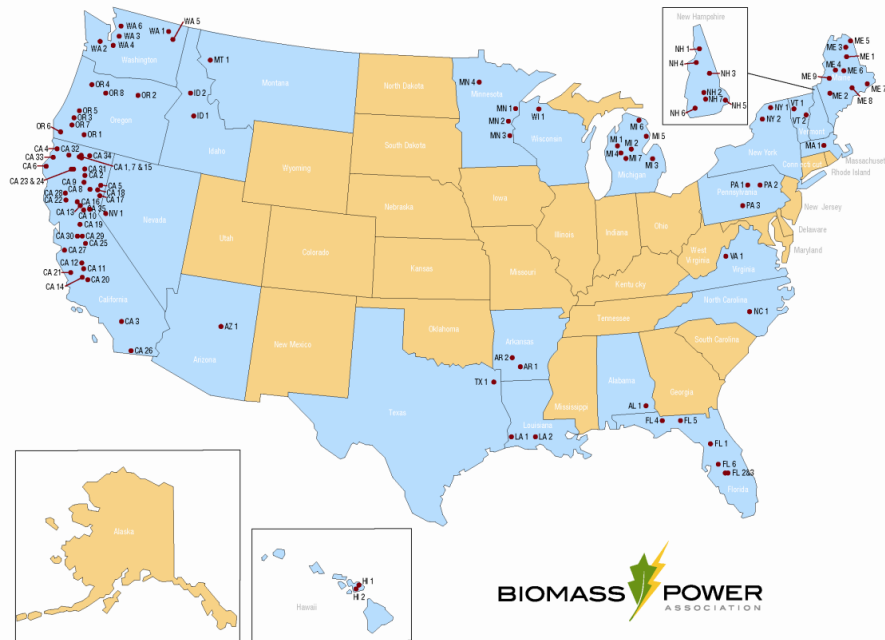
November CESA Member-RPS Collaborative Joint  
Webinar: Biomass Sustainability and RPS Programs

**Robert Cleaves**

# Biomass Power Association

- Founded in 1999
- 50 members in 22 states
- 100 power plants
- Organic, solid fuel used to generate electricity sold to grid
- Mostly “independent power producers” as opposed to utilities

# Map of Biomass Facilities



# Recent CAA Proposed Rules That Affect Biomass

- April 2010 EPA proposes four interrelated rules
- Three of the rules propose emission standards under Sections 112 and 129 of the Clean Air Act relating to Maximum Achievable Control Technology, or MACT.
- The fourth rule defines “solid waste” under RCRA, determining whether combustion units are under Section 112 (major and area source boiler MACT) or Section 129 (CISWI MACT) standards.

# The three regulatory categories...

- Commercial and Industrial Solid Waste Incineration (CISWI) Units (the **CISWI MACT** rule)
- Hazardous Air Pollutants for Industrial/Commercial/Institutional Boilers and Process Heaters (a.k.a. the **Major Boiler MACT** rule)
- National Emission Standards for Hazardous Air Pollutants for Area Sources (a.k.a. the **Area Source Boiler MACT** rule)

# How do the rules differ?

- CISWI MACT
  - units combusting non-hazardous commercial and industrial solid waste (e.g. a Biomass facility burning urban wood),
  - Emission limits on nine pollutants - mercury, lead, cadmium, HCl, particulate matter, CO, dioxins, NO<sub>x</sub> and SO<sub>2</sub>.
- Major Boiler MACT
  - new and existing biomass boilers that emit greater than 10 tons/year of a HAP or greater than 25 tons of any combination of HAPs.
  - emission limits are proposed for five pollutants – mercury, HCl, particulate matter, CO and dioxin.
- Area Source MACT
  - new and existing boilers with less than 10 tons per year of any single HAP and 25 tons per year of any combination of HAPs
  - Emission limits on new units for particulate matter and CO, and existing unit standards for CO.

# How do the rules differ?

- CISWI MACT regulates the most pollutants and generally has the most stringent limits.
- Boiler MACT is intermediate in the number of pollutants and some of them are the lowest levels (e.g. dioxin and particulate matter
- Area Source MACT regulates the fewest pollutants (only CO for existing facilities).

# What about the definition of secondary solid waste?

- Traditional fuels - coal, oil, natural gas and forest biomass are excluded from being solid waste.
- Any other material that is used as a fuel can only be excluded from solid waste if it has contaminants similar to those found in a similar traditional fuel (as well as meeting various legitimacy criteria)
- This definition causes materials with significant heat content and minor contamination levels to be regulated as solid waste and can be expected to cause many of these materials to be landfilled.



# Where does Biomass fit?

- It depends on the fuel-
  - Urban wood places a facility under CISWI MACT
  - Clean fuels (non-urban) places a facility under Major Boiler MACT if HAPs exceed thresholds
  - Clean fuels and low HAPs place a facility in the Area Source MACT

# How will Rules affect current Biomass facilities?

- Facilities will change fuels to fall under less regulated categories
  - They will stop using urban wood which places them under the CISWI MACT – this will result in higher prices for clean fuels and more landfill disposal
- Then facilities will explore technologies of reagents that might reduce emissions. Reducing one may exacerbate another (e.g. lowering CO may raise NO<sub>x</sub>)
- Lastly, facilities will look to building new boilers with the most modern design
- Given the marginal nature of Biomass electricity competitiveness, some or all of these approaches may be cost prohibitive

# Are the proposed rules unusually stringent?

USEPA says in their Regulatory Impact Analysis, currently found at <http://www.epa.gov/airquality/combustion/docs/ciswiria20100429.pdf>

“Based on the results of our analysis for existing units and our experiences with other CAA Section 129 regulations, **we do not anticipate that any new CISWI units will be constructed**.... Since CISWI rules were promulgated in 2000 and have been in effect for existing sources since 2005, many existing units have closed.... EPA is not aware of any construction of new units since 2000, and therefore does not believe there are any units that are currently subject to the 2000 CISWI NSPS. The revised CISWI rule is more stringent, so this trend is expected to continue.”

# Are the proposed rules unusually stringent?

- The “pollutant-by-pollutant” approach combined with the way the facilities have been categorized leads to standards that are
  - generally not achievable (e.g. the opacity level is in a range that instrumentation cannot measure with accuracy) and
  - do not account for normal variability and will, therefore, lead to more short-term violations of the limits

# What is there about these proposed rules that makes them problematic?

- The Agency evaluated performance of existing facilities on a “pollutant-by-pollutant” basis rather than treating them “facility-by-facility.” Facilities operate as a system and do not control emissions on an individual basis.
- Certain technologies with inherently different abilities were lumped with very different technologies (e.g., fluidized bed combustors were included with stoker boilers under the Area Source MACT – stokers cannot meet the 160 parts per million limit for this MACT).

# The Upshot...

- The proposed MACT rules will not allow most biomass facilities to operate without switching fuels and making substantial capital improvements--in some cases a complete rebuild of the combustion technology may be necessary. Some emissions limits may not be technically achievable (e.g. mercury and dioxin)
- Economics of Biomass to Electricity do not support substantial capital improvements.
- Closure of these facilities will lead to –
  - greater landfilling (and, therefore, greater greenhouse gas generation)
  - renewed open field burning of crop residues, and
  - frustration of CA and US goals of greater renewable energy use.