



• August 15-18, 2010 • Dallas, Texas •  
• Dallas Convention Center •



CHP in Government Facilities:  
The Veteran's Administration  
Northeastern Biomass CHP Projects

# CHP Defined

- Combined heat & power
- Combined heat & power & cooling
- Often meaning making boiler steam, steam powered electrical back pressure turbine, with adsorption chiller
- Adsorption chillers are black magic and much less efficient than electric but fit in this application
- [www.retscreen.net](http://www.retscreen.net) or [www.epa.gov/chp](http://www.epa.gov/chp)

# Background

- VA has about 90 Energy Managers for about 153 Hospitals & 768 CBOC's
- This project is one of first Biomass CHP's for the VA
- Biomass for this is wood chips (hog fuel)
- Fuel cost is 39\$ per ton or \$5 per MMBTU vs Natural Gas at \$12 and Electric at \$42
- Various EO's are prime driver, simply put to reduce carbon footprint!!!

# Point of Use Energy!

- Generate energy at the point it will be used! Electricity is 20 to 30% efficient
- Its more efficient & costs less & reduces carbon footprint & complies with EO!
- Allow more resources (\$'s) to be spent on your primary mission.
- Make heat, electricity, and chilled water at a facility level.
- Story POU

# Togus & WRJ Biomass CHP

- VA Hospitals located in rural Maine and Vermont
- This means woods and trees!
- Excess woods chips! Of many types
- Need to reduce energy expense, usage, carbon footprint & have EO compliance
- 25,000 lbs steam, 600 KW generator, & 500 ton chiller

# Capital & the Government

- Not always cost driven
- Capital vs Operational
- Capital funding process
- MBA's not allowed

# Government/Biomass/CHP Issues

- A Study
- Funding
- Environmental Assessment
- FONSI Story
- Contracting
- Historic
- Biomass Source
- State Air Permitting

# Government/Biomass/CHP

## Issues continued

- Design/Build
- VA Boiler spec
- Electrical generation...How much?
- Carbon footprint & Nat Gen gas
- Jammed up conveyor (or frozen)
- Must have a champion!

# Specific Projects

- Togus VA Hospital 25,000 lbs/hr hp steam, 750 KW electrical - back pressure steam turbine, 500 tons adsorption cooling.
- WRJ VA Hospital 12,500 lbs/hr hp steam, 250 KW electrical – back pressure steam turbine, 250 tons adsorption cooling.

# Woodchip Biomass CHP

- Wood chips are about 4" square
- Delivered in floating bed tractor trailer rigs carrying 25 tons or so
- Two stage combustion
- Stage two burns stage one pyrolysis or syn gases in turbulence with forced air to burn at about 2200 deg F
- Removing more pollutants and increasing efficiency

# Yes go do it!

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