Alternative Energy Credits and CHP in Pennsylvania

Biomass Combined Heat and Power Systems

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Topics for Discussion

• What differentiates fuel types?

• What market changes are in play

  • A bit of History

• What is Proper Valuation
Attributes:

- **Fossil**
  - Limited Resource
  - Air Emissions issues
  - Water management issues
  - Centralized Siting
  - Promotes Centralized Economic Opportunities
  - Others?

- **Renewables**
  - Unlimited Resource
  - No Air Emissions
  - No water Management issues
  - Local Siting
  - Promotes Decentralized Economic Opportunities
  - Others?
What has been enacted?

- Utility Restructuring, 1996
- Alternative Energy Portfolio, 2004
- SS House Bill of 2008
- Act 129 of 2008

All of which have 2011 as a target year

A Look At History; Electricity and Economics

- Early Electrification Circa 1900
  - Street Lighting
  - Public Transportation
  - Industrialization
Vs. Large Scale “Interstate” Generation

Shift back to Small Scale Systems
Alternative Energy Credits

• Alternative Energy Credits level the playing field between kilowatt-hours sourced from fossil fuels and those produced from renewable sources

• A Credit is issued for each 1,000 kWh produced from a renewable resource

Qualifying Resources

• Wind
• Low Impact Hydro
• Geothermal
• Biogas
• Biomass
• Fuel Cells
• Coal Mine Methane
Example Valuation: Waste Coal

1 Mw plant, 90% Capacity, 35% Eff.
8760 hrs X .9 cf = 7,884 mWh/Year

$204,960/ year @ $40/ton
7,884 mWh
2.6 Cents/kWh

Biomass Fuels

- Wood Pellets @ $125/ton = 7.4 Cents/kWh
  7.4 Cents - 2.6 Cents = 4.8 Cents/kWh or $48.00/Credit
- Switch grass @ $100/ton = $37/Credit
- Dry wood chips @ $80/ton = $30/Credit
- 50% mc wood chips @ $35/ton = $14/Credit
Recent Market Price

2008/2009  Average: $3.63 $0.00363/kWh

Range: $0.50 - $23.00
Conclusion:

- Alternative Energy Credits can stimulate growth
- Properly valuing generation attributes is critical
- Technology, Demand, and Timing favor establishment of the biomass industry