Biomass Feasibility Study Report

Porter Bench Energy LLC
Interim Briefing to
Environmental Quality Council

May 6, 2010

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Energy Promotion and Development Division
Montana Department of Commerce

Study Elements

- Woody biomass fuel assessment
- Typical biomass plant
- Permitting considerations
- Site assessments
- Financial feasibility

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Fuel Assessment Overview

- Coordination with Northwest Energy and DNRC
  - Data requests
  - Analysis methodology
- Data obtained from USFS, BLM, Montana DNR and Kootenai/Salish Tribes
- Area wide analysis and four site specific analyses

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Biomass Data Screens

Requested data screens based on accessibility:

- Lands with less than 40% slope
- USFS data from wildland/urban interface area, excluding old growth
- BLM data for lands outside of Wilderness Study Areas
- BIA data for non-reserved lands
- State lands data for non-deferred land only

Basis of overall Montana biomass availability

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Specific Area Analyses

- Analysis of data received within 40 and 70-mile working circles around 4 different areas in western Montana
- Estimated
  - all available woody biomass
  - Biomass from non-federal sources

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Other Woody Biomass Sources

- Unused logging residue
- Mill residue
- Municipal solid waste (i.e. discarded construction lumber, etc.)
- Utility corridors clearing

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Typical Biomass Plant

Requirements

- Power plant acreage
- Fuel storage and processing area
- Road access
- Water (30,000 gal/hour)
- Labor
- Transmission line

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Schematic Inputs and Outputs

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Rationale for 60 MW Plant

- Uses most economical plant technology
- Has faster overall permitting process in view of Dec 2010 expiration of federal production tax credits
- Larger plants require more fuel with resulting higher transportation costs
- Does not qualify as a power generator
- Smaller plants cost more per megawatt

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Capital and O&M Costs, Labor for 60 MW Plant

Costs

- Capital costs $180,000,000
- O&M costs $7,570,000

Labor and Jobs

- 500 construction jobs
  - Average of 60 to 70 on-site
  - Peak of about 150 on-site
- Plant operations
  - 45 to 55 people
- Fuel harvesting/delivery
  - Up to 400 people

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Permitting Considerations

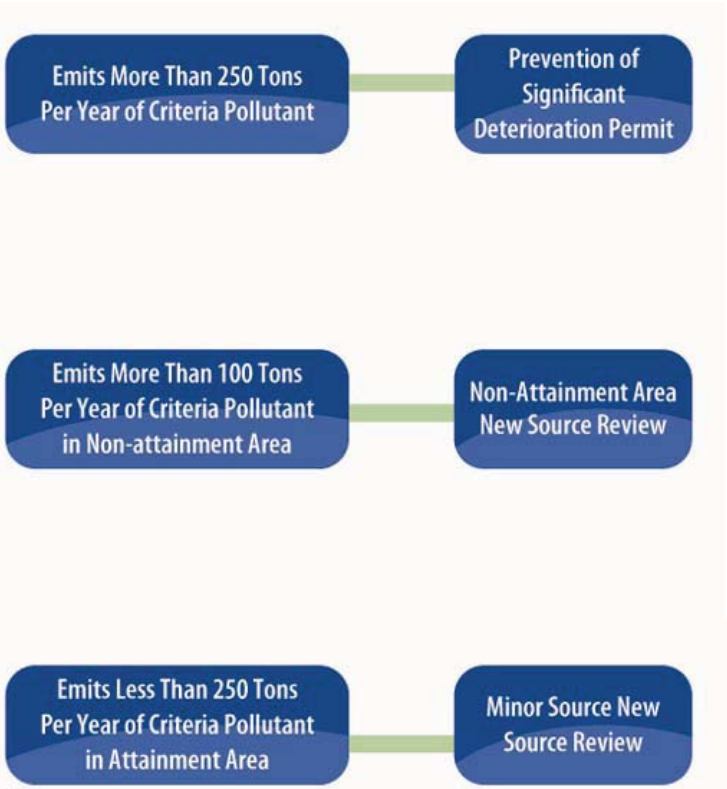
Water Quality

- Placement of discharge water
- Status of impairment of adjacent surface waters
- Ground water permitting

MEPA

Federal Nexus to NEPA

Air Quality Permitting



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Case Law Challenging Biomass Plants

Basis of current challenges:

- Air quality and greenhouse gas emissions
- Forest management and sustainability
- Truck traffic and noise
- Water use and water quality
- Level of applicable environmental review

Primary risk to projects – delay and cost

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Site Assessment

- 17 potential sites identified collectively by DOC, PBE and Northwest Energy
- Sites divided between PBE and Northwest Energy
- Nine potential sites evaluated by PBE based on:
  - Proximity and volume of biomass fuel
  - Water availability
  - Access to power grid
  - Fuel storage area
  - Water and ash disposal
  - Air shed characteristics
  - Proximity of rail
  - Workforce and worker housing proximity

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Financial Feasibility Pro Forma

- Based on a 60 MW plant using fuel only from non-federal lands
- $180,000,000 capital cost
- Above average risk premium = higher debt costs
- Fuel supply cost and Power Purchase Agreement
- Governmental and policy risks

KEY CONCLUSION:

  - Requires legislative mandates to purchase Renewal Energy Credits (REC) to be financially feasible

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Preliminary Conclusions

- Is sufficient biomass but majority is on Federal lands and is not considered accessible.
- Is conservative approach to site feasibility as considers only non-federally based biomass
- Is substantial potential job creation (considerable construction jobs, on-site employment, and biomass production/transport jobs)
- Requires careful plant design to address air quality and water quality issues and facilitate permitting
- ***Feasibility requires state legislative action to mandate purchase of Renewable Energy Credits***

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