

**PROJECT DEVELOPMENT AND BUSINESS PLAN  
FOR  
ADAMS COUNTY WOODY BIOMASS POWER GENERATION**

**November 2010**

# Contents

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List of Tables .....	iii
I. Executive Summary.....	1
II. Introduction.....	4
II.1 Background.....	4
II.2 Project Purpose and Purpose of the Business Plan .....	5
II.3 Scope of the Business Plan.....	5
III. Summary of Woody Biomass Availability .....	7
III.1 Supply .....	7
III.2 Levelization .....	9
III.3 Planning for Start-Up and Operation .....	9
III.4 Certainty of Supply .....	9
IV. Costs and Financing of Woody Biomass Feedstock Sources .....	11
IV.1 Costs of Harvesting Biomass.....	11
IV.2 Financing of Harvesting Equipment and Operations.....	12
IV.3 Fuel Handling, Storage, and Management .....	13
V. Process Design of the Generating Facility.....	14
V.1 Fatal Flaws.....	14
V.2 Correctness of Initial Assumptions .....	14
V.3 Appropriate Technology Selection .....	14
V.4 Plant Efficiency (Heat Rate).....	16
V.5 Plant Capacity .....	17
V.6 Fuel Requirements .....	17
V.7 Staff Requirements.....	17
V.8 Maintainability.....	17
V.9 Constructability.....	17
V.10 Length and Sequencing of the Schedule .....	17
V.11 Utility Interconnect Plan .....	17
V.12 Specific Technical Issues .....	17
V.12.1 Fuel Handling Concepts and Methods.....	17
V.12.2 Emission Controls .....	18
VI. Permitting and Siting Issues.....	19
VI.1 Site Considerations .....	19
VI.2 Permitting Requirements.....	19
VI.2.1 Idaho Department of Environmental Quality Air Permit .....	20
VI.2.2 Idaho Well Permit.....	21
VI.2.3 Environmental Protection Agency Water Discharge Permit .....	22
VI.2.4 County Permits.....	22
VI.3 Utility Issues .....	23
VI.4 Site Commitment Issues.....	23
VI.5 Other Considerations.....	23

VI.5.1	Traffic .....	23
VI.5.2	Socioeconomics.....	23
VI.5.3	Compatibility with County Comprehensive Plan.....	25
VII.	Power Sales.....	26
VIII.	Financing Options .....	27
VIII.1	Development Grant.....	27
VIII.2	Clean Renewable Energy Bonds.....	27
VIII.3	USDA Rural Energy for America Program (REAP) .....	28
VIII.4	USDA Forest Service Loan Guarantee .....	28
VIII.5	Economic Recovery Act Funds .....	28
IX.	Operational Plan and Business Structure Strategies.....	29
IX.1	Business Definition.....	29
IX.2	Vision, Goal and Objectives of the Business/Project .....	29
IX.3	Critical Issues and Associated Hurdles .....	29
IX.3.1	Issues.....	29
IX.3.2	Hurdles.....	30
IX.4	Ownership and Business Structure .....	30
IX.4.1	Private .....	30
IX.4.2	Public Ownership .....	31
IX.4.3	Public/Private Partnership.....	31
IX.4.4	Utility Ownership .....	31
IX.5	Recommended structure.....	31
IX.6	Development.....	32
IX.6.1	Formalize a Development Team .....	32
IX.6.2	Development Financing Grant .....	32
IX.6.3	Fuel Supply .....	33
IX.6.4	Construction/Permanent Financing .....	33
IX.6.5	Interconnect.....	33
IX.6.6	Permitting.....	34
IX.6.7	Power Sales .....	34
IX.6.8	Political Lobbying .....	34
IX.7	BUDGET.....	34
IX.7.1	Development Budget .....	34
IX.7.2	Capital Budget.....	34
IX.7.3	Annual Operating Budget .....	35
IX.8	Economic Analysis .....	35
IX.8.1	Factors Affecting Project Economics .....	35
IX.8.2	Results of Economic Analysis .....	37
IX.8.3	Evaluation of Economic Enhancements .....	38
IX.8.4	Recommendations .....	39
IX.9	Schedule .....	39
X.	Literature Cited .....	41

## **LIST OF TABLES**

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Table III-1.	Estimated quantities of woody biomass available by year, 2009–2013 .....	7
Table III-2.	Estimated quantities of woody biomass available by source .....	8
Table III-3.	Levelized fuel and stockpiling needs (bone dry tons) .....	9
Table IV-1.	Fuel collection capital costs for one in-the-woods crew.....	11
Table IV-2.	Fuel collection variable costs for one in-the-woods crew, 10,000 BDT/yr.....	11
Table IV-3.	Fuel collection total costs for one in-the-woods crew, 10,000 BDT/yr.....	12
Table IV-1.	Total employment impact associated with biomass plant construction, operation, and fuel supply .....	25
Table IX-1.	Project team roles.....	32
Table IX-2.	Economic analysis (from Proforma in Appendix D).....	38
Table IX-3.	REC price at minimum debt coverage .....	39

## I. Executive Summary

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The Board of Adams County Commissioners (Board) is promoting the concept of using a biomass-fired power plant to provide a source of employment and economic development in Adams and surrounding rural counties in Idaho.. This business plan, prepared under contract to Adams County, is designed to move the proposed project forward by providing a concise written basis for the project, an introduction to the project for interested stakeholders, a list of priorities for development efforts, and guidance for the Board going forward. The plan builds on existing studies and focuses on the critical items that need to be considered by the Board to bring the project to fruition. In this document, references to the Adams County Woody Biomass Power Generation Project (the project) include the team and team efforts that are referred to throughout.

The current interest in renewable energy sources and the abundance of government-owned forest land in the county has led the Board to seriously consider and promote the concept of a biomass-fired power plant as the centerpiece for local economic development. The feasibility of the concept depends on a number of factors, but three factors stand out:

- the availability of a dependable, adequate wood supply at a reasonable cost (financing and a power sales agreement are not available without a secure wood supply),
- a long-term agreement for the sale of electricity (not possible without the certainty of fuel supply).
- Readily accessible financing for both equity and debt

In its work to date, the Board has defined a number of project characteristics that affect the business plan. These include the following:

- Power generation—the plant would be sized to produce 10 to 13 megawatts
- Power sales—preferentially, power would be sold to Idaho Power,
- Fuel supply—the fuel supply would include biomass from central Idaho (Adams, Valley, Boise, Gem, Washington, and Idaho counties. Biomass supplies would come primarily from the Payette and Boise national forests and from state lands
- Plant site—a county-owned site has been selected for the plant
- Other support—the project is moving forward with the full cooperation of the USDA Forest Service and several other parties.

The cost of harvesting forest biomass is expected to be from \$40.00 to \$47.00 per bone dry ton. The project is expected to employ 8 crews of 6 persons each harvesting a mix of fuel from logging slash and from thinning and clearing operations. The capital cost required to set up one crew is estimated at \$870,000. The capital equipment is expected to already exist for some of the woods crews and to be a new investment for some of the crews. The cost of fuel described above includes the cost of investment.

The process and design of the proposed facility is all proven and long used technology. There is no technology risk to be addressed as a component of operational risk. The plant efficiency and fuel consumption rates addressed in the conceptual plant design are well within industry norms.

The plant site selection addressed all of the normal siting concerns, including water, electric transmission, road quality, population density, critical air modeling factors, and county site control. All factors are favorable at the selected site.

Key permits will be the IDEQ Permit to Construct for air quality and an EPA National Pollutant Discharge Elimination System (NPDES) permit for water discharge quality. No issues that would adversely affect the County's ability to receive these permits were observed.

The focus for power sales is Idaho Power, whose 138 kV transmission line passes within ¼ mile of the project site. An interconnect study has been initiated by Idaho Power, an application and payment for commencement of interconnect engineering has been made, and Idaho Power has provided the County with a letter indicating that, provided milestones are achieved, it will honor the pre June 2010 rates

Further development funding and construction funding will be sought at the same time that other development activities are going forward. An amount of approximately \$500,000 for development to carry the project all the way to construction/permanent financing will be sought through grants

There are several financing options that will be pursued. These include:

- Clean Renewable Bonds (CREBS)
- USDA Rural Energy for America Program (REAP)
- Loan guarantees through the USDA Forest Service
- Economic recovery funds

There are multiple possible business structures for the project. These include private ownership, Public/Private partnership, utility structures, and government ownership. The structure that is put in place at the end will be highly dependent on the financing form achieved. The plan recommends Public/Private partnership.

The action resulting from this business plan will be the creation of a formal project team consisting of a recommended 4 persons:

- Project Manger
- Project Developer
- Fuel Supply Manager
- Permitting Manager

These positions/functions may be filled by volunteers, paid individuals, or consultants. The focus needs to be to form the team and immediately begin executing the key tasks identified in the plan, all of which need to be advanced in order for the project to succeed:

- Fuel supply
- Power sales and interconnect
  - Development funding
  - Permitting
  - Construction financing

## **II. Introduction**

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Since 2006, Adams County (the County) has aggressively investigated the possibility of constructing a woody biomass generation or cogeneration plant. This activity included development of and participation in the Woody Biomass Utilization Partnership (Partnership), which includes a Biomass Coordinator, commissioner representatives from Adams, Boise, Gem, and Valley counties, and one at-large member from each county. Ad Hoc members include the USDA Forest Service, Idaho Department of Commerce, Idaho Department of Lands, Bureau of Land Management (BLM), private industry representatives, private consultants, the Rocky Mountain Elk Foundation, Sage Community Resources (an economic development association of the cities and counties of southwest Idaho), the West Central Highlands Resource Conservation and Development District, and others. The Partnership, formed in 2007 as a 501c3 non-profit organization, has and continues to invest considerable time, money, and resources toward removing barriers to woody biomass industry development.

The County has received an Idaho Renewable Energy Enterprise Zone (REEZ) Grant in the amount of \$70,000 that is currently being used to define the project and fund the earliest project development activities. This grant and the activities it funds are addressed in the project budget.

### **II.1 BACKGROUND**

With a population of 3,476 people in 2000 (U.S. Census, 2010b), Adams County ranked 41st in population among Idaho's 44 counties at that time (Netstate, 2000). The county population grew very modestly since 2000, reaching an estimated population of 3,520 in 2009 (U.S. Census, 2010a). The county's primary industry in 2000 was the sector that includes agriculture, forestry, fishing and hunting, and mining, which employed 18.4 percent of civilian workers over the age of 16 (U. S. Census, 2010b), down from 25.4 percent in 1990 (U.S. Census, 2010c). Although more recent employment census data are not available, county employment in the forest products sector has been in a multi-decade decline that appears to have continued through the current year. At the Board's June 7, 2010, board meeting, board members noted the county's high unemployment rate<sup>1</sup>. The Board also noted that the educational system is suffering, with teacher pay cuts of 19 percent over a 2-year period and declining student enrollment (70 children in grades 7-12 expected for the 2010-2011 school year, down from 140 children 10 years ago and even more in the 1970s). The Board also notes that there are currently 16 vacancies on Main Street in Council, the county seat, and that the hospital closed in 2001.

In response to the decline in the local economy, the Board, along with other members of the Partnership, has spent more than four years researching viable options for economic development. This research has included conversations with and presentations to city, state, and federal legislators, as well as interested stakeholders and interest groups. Over the course of

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<sup>1</sup> Idaho Department of Labor (2010) statistics indicate that Adams County's annual average unemployment ranged between 5.4 and 15.1 percent from 1999 through 2009, while the state's average ranged from 3.0 to 8.0 during the same period. Adams County's 15.1 percent average annual unemployment rate in 2009 was the highest in the state. U.S. Bureau of Labor Statistics' (2010) data show that Adams County's March unemployment rate exceeded 20 percent in 12 of the last 20 years, and exceeded 25 percent in 7 of those years.

these discussions, and given that 60.3% of the land in the county is forested (Idaho Dept. of Commerce, 2010), the Board concluded that local economic development must continue to remain centered on the natural resource base. The Board notes that nearly 70 percent of the county's land base is in government ownership<sup>2</sup> and therefore is not taxable. Although the preponderance of government land ownership restricts the county's tax base, it also offers opportunities if the land can be used in a way that supports local economic development.

As noted in Adams County's Comprehensive Plan (Adams County, 2006a), an interesting new direction in forest management has been encouraged by passage of the Healthy Forest Initiative. The Initiative's goal is to improve forest health and resistance to catastrophic wildfire by removing excess fuel that has been created during one hundred years of fire suppression. Small clearing projects and stewardship contracts have created employment that has returned local workers to the forest. Creating projects has been limited, in part, by the need for the USDA Forest Service to find beneficial use for the small diameter timber and chipped material removed in these projects. Through a USDA Forest Service "Fuels to Schools" grant, along with a bond, Council Schools converted their heating system from an antiquated fuel oil boiler to one fired by wood chips. Subsequently, the County, in partnership with the USDA Forest Service, engaged Siemens Corporation, which also engineered the Council Schools' heating system, to perform a feasibility study on generating power by burning wood chips. That study, in turn, helped move the County forward with the currently proposed biomass generation plant.

## **II.2 PROJECT PURPOSE AND PURPOSE OF THE BUSINESS PLAN**

The purpose of the proposed biomass project is to provide local, living wage jobs that can serve as a foundation for stabilizing the local economy. The project would provide short-term jobs constructing the plant as well as long-term jobs in plant operations and in-the-woods jobs in biomass collection and transportation. As an adjunct to sawtimber harvesting and forest thinning, biomass collection would provide ancillary benefits in terms of forest management, habitat improvement, and wildfire fuel reduction.

This Project Development and Business Plan (Plan), prepared under contract to Adams County, is designed to move the proposed project forward by providing a concise written basis for the project, an introduction to the project for interested stakeholders, a list of priorities for development efforts, and guidance for the Board going forward. The Plan builds on existing studies and focuses on the critical items that need to be considered by the Board to bring the project to fruition. In this document, references to the Adams County Woody Biomass Power Generation Project (the project) include the team and team efforts that are referred to throughout.

## **II.3 SCOPE OF THE BUSINESS PLAN**

This Plan addresses both the business structure and the business strategy of the proposed project. It was prepared according to the outline of the REEZ Grant requirements, as follows:

- Section I—Executive summary

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<sup>2</sup> According to the Idaho Department of Commerce (2010), the breakdown of landownership in Adams County is as follows: federal – 64.7% (including BLM –6.2 % and national forest – 58.5%; state – 4.3%; city and county – 0.3%; private – 30.8%

- Section II—Background, scope, and purpose of the business plan
- Section III—Woody biomass availability and security of the supply
- Section IV—Financial arrangements for securing the fuel supply, as well as handling and storage of the feedstock
- Section V—Process design for the generation facility
- Section VI—Facility site considerations and permitting issues
- Section VII—Electricity markets, revenues, and return on investment
- Section VIII—Financing options and financing plan
- Section VIX—Proposed operational plan, business structure, and business strategy

### III. Summary of Woody Biomass Availability

The resource focus of this project dictates that the Plan start with the biomass: how much is in the forests, how much can be accessed and harvested, when it will be made available, how much it will cost, and how it will be delivered to the plant. Previous studies provide a sufficient basis for this written Plan to answer these questions in terms of what is reasonably available for the project and what steps will need to be taken to answer these questions.

#### III.1 SUPPLY

The USDA Forest Service’s Coordinated Resource Offering Protocol (CROP) report for southwest Idaho (Mater, Ltd., 2008) provides the best basis for estimating quantities and locations of available biomass. Table III-1 summarizes the estimates of quantities available by year for the 5-year period beginning in 2009.

**Table III-1. Estimated quantities of woody biomass available by year, 2009–2013**

YEAR	Thinning and Clearing (T & C) Total (gT)	T & C of Fuel Quality (25% of Total) (gT)	Small-Diameter Logs Harvested for Sawtimber (MMBF)	Large-Diameter Logs Harvested for Sawtimber (MMBF)	Slash Associated with Removal of Small- and Large-Diameter Logs (gT) <sup>a</sup>	Total (gT)
2009	86,339	21,585	483	58.7	213,267	234,852
2010	63,565	15,890	42.4	52.2	188,647	204,537
2011	91,126	22,781	65.8	63.8	258,339	281,120
2012	82,712	20,678	51.1	68.9	239,176	259,854
2013	83,054	20,763	58.3	60.3	236,436	257,199
<b>5 Year Average</b>						<b>247,512</b>

Source: Mater Ltd., 2008

Notes: gT – green tons

MMBF – millions of board feet

<sup>a</sup> Based on 1,096 dry tons of slash per MMBF of logs (or 1,993gT at 45% moisture content) (Morgan, 2009).

Review of the available data (Table III-2) indicates that 84 percent of the available biomass is located on the Payette National Forest (NF)(30.6%), the Boise NF (24.9%), and state lands (28.9%). The review also indicates that in terms of accessibility and haul distance, the project will be best served by focusing on these three sources. This does not mean that biomass from other sources such as the Sawtooth NF or Salmon-Challis NF will not find its way to the Adams County project. Rather it means that those sources should be pursued only on an opportunistic basis

**Table III-2. Estimated quantities of woody biomass available by source, 5 Yr estimate**

<b>SOURCE</b>	<b>Thinning and Clearing (gT)</b>	<b>% of Thinning and Clearing Total</b>	<b>Small-Diam. Logs (MMBF)</b>	<b>Large-Diam. Logs (MMBF)</b>	<b>Slash from Removal of Small- and Large-Diam. Logs (gT)<sup>a</sup></b>	<b>% of Slash Total</b>	<b>Total, All Types (gT)</b>	<b>% of Total</b>
Boise NF	73,437	24	113.3	86.5	398,096	44	471,533	
Payette NF	122,603	39	79.3	52.3	262,173	29	384,776	
Salmon – Challis NF	56,291	19	33.5	3.6	73,884	8	130,175	
Sawtooth NF	16,525	5	14.5	2.1	33,134	4	49,659	
BLM	10,700	3	11.8	13.1	49,670	6	60,370	
Idaho State Lands	32,000	10	3.45	37.0	79,500	9	111,500	
Private Lands <sup>1</sup>	Only Summary data is available	Only Summary data is available	Only Summary data is available	Only Summary data is available	Only Summary data is available	Only Summary data is available	160,000	
<b>TOTAL</b>	<b>311,556</b>	<b>100.0</b>	<b>255.86.0</b>	<b>194.6</b>	<b>896,457</b>	<b>100.0</b>	<b>1,368,013<sup>2</sup></b>	<b>100.0</b>

Source: Mater, Ltd., 2008

<sup>a</sup> Based on 1,096 dry tons of slash per MMBF of logs (or 1,993gT at 45% moisture content) (Morgan, 2009).

<sup>1</sup> Verbal estimate from Potlatch, September 2010 of 20,000 gT per year total.

**2-Not additive acrs00, includes 160,000 tons (estimated by Potlatch as 32,000 for 5 yr average)**

The quantity required annually for the plant is 85,000 bone dry tons (BDT) (or 154,000 green tons [gT] at 45% moisture content). This amount can be provided from the three sources noted above, provided that at least an annual average of 59 percent of the 5-year average available from the three target sources can be recovered and delivered.

Note the numbers include private timber lands as total annual availability, (Potlatch, previously Boise Cascade). Potlatch did not provide production broken down by type. The information provided is gT per year available as fuel.

### III.2 LEVELIZATION

Meeting the annual flat fuel needs of the project will require that a combination of levelization of deliveries from the planned contracts and stockpiling of fuel be employed to assure that both the annual total and daily needs of the plant are met. A practical fuel plan looking forward from today will include both levelization and stockpiling as shown in the example in Table III-3.

**Table III-3. Levelized fuel and stockpiling needs (bone dry tons)**

<b>Year</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>
Fuel Required	0	85,000	85,000	85,000
LEVELIZED SOURCE				
Payette NF	15,000	33,000	12,000	21,000
Boise NF	12,500	55,000	34,000	41,000
State Lands	0	20,000	22,000	23,000
Subtotal	27,500	108,000	68,000	85,000
Shortfall ( ) or Surplus Harvested	27,500	23,000	(17,000)	0
Beginning of Year Inventory	0	27,500	52,500	35,500
Withdrawn ( ) or Added to Inventory	0	23,000	(17,000)	0
End of Year Inventory	27,500	50,500	35,500	35,500

Discussions with the National Forests, private land owners and State Lands regarding planning for harvesting will need to include levelization of annual supply and recognition that contract deliveries will need to be initiated months ahead of plant start-up to establish a working inventory. A 12 month fuel supply at start-up would provide the amounts required for stockpiling.

### III.3 PLANNING FOR START-UP AND OPERATION

Planning for fuel stockpiling in advance of operations is an action that will establish both the viability of the resource and the soundness of the suppliers' operational capability to provide the resource. A 85,000 BDT stockpile (12 months) represents an investment of approximately \$3,800,000.

### III.4 CERTAINTY OF SUPPLY

An additional concern is how to provide a degree of certainty that the biomass harvested under the USDA Forest Service and State contracts goes to the Adams County project rather than to a competing use. There is potential for a competing biomass-to-energy project in Emmett, Idaho, because its haul radius overlaps that for the Adams County project. Another potential competing project has been discussed for the sawmill in Grangeville. That mill currently sells its chips and hog fuel to Potlatch in Lewiston. Higher electric prices than are currently offered would be necessary for that project to be successful. If it were to proceed in the future and were sized at

10 MW, it would need an additional 35,000 BDT per year above and beyond its internal hog fuel production.

Overall availability of fuel supply is necessary for the project to succeed. However, it is not sufficient by itself. The lack of certainty regarding the fuel supply is the factor responsible for most failed biomass electric generating plants. The failure of dozens of biomass facilities in the United States in the late 1980s and early 1990s (most especially in California, where many plants were built and financed based on fuel supplies that turned out to be highly speculative) was due to a combination of an uncertain fuel supply and extreme competition, which drove the bidding for fuel to very high levels (\$50/BDT in 1990 dollars, equivalent to more than \$100/BDT in 2010 dollars). Lenders have institutional memories of this period and will not finance a project without certainty of supply for the period of time required to retire whatever debt is used to fund the project.

Certainty of biomass supply will require an acceptable form of regulatory or contractual guarantee that the fuel will be available for the term of the project debt. A minimum of 10 years and most likely 15 years of certainty will be required. This Plan addresses this topic and possible courses of resolution.

The method immediately available to the project to improve the certainty of supply is to emulate the method used at a similar project in Oregon. The Warm Springs project participants negotiated a memorandum of understanding that provided for all of the parties controlling fuel supply to state in writing the quantities that each would have available during the life of the project. The Adams County project proponents have started a similar process. This process includes participation by the Boise NF, the Payette NF, BLM, Idaho State Lands and private land owners.

## IV. Costs and Financing of Woody Biomass Feedstock Sources

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### IV.1 COSTS OF HARVESTING BIOMASS

Harvesting and delivery of the biomass will be a significant operation, requiring a substantial investment in fixed capital and operating costs. An operational team of 6-8 workers will require \$900,000 in capital investment and \$7,500 per week of operating capital for labor, fuel, maintenance and other costs. Several companies in Idaho and the Rocky Mountain area are already equipped to perform this work. Which of these will respond to USDA Forest Service contracting opportunities is uncertain. Certainly some firms will respond and take on the stewardship contracts.

Table IV-1 summarizes the capital costs for the equipment needed to cut, gather, chip and deliver the harvested biomass.

**Table IV-1. Fuel collection capital costs for one in-the-woods crew**

Equipment	Quantity	Price	Total
Grinder	1	\$600,000	\$600,000
Grapple/Loader	1	100,000	\$100,000
Truck and Trailers	2	80,000	\$160,000
Miscellaneous and Tools	--	10,000	\$10,000
Total			\$870,000

The variable costs for the harvesting operations include labor, insurance, taxes, fuel and equipment operation and maintenance (O&M). Table IV-2 summarizes the variable costs of gathering biomass fuel and delivering it to the project.

**Table IV-2. Fuel collection variable costs for one in-the-woods crew, 10,000 BDT/yr**

ITEM	UNIT COST	COST/YEAR
Overhead	N/A	\$37,000
Maintenance	\$3.96/BDT	\$59,400
Labor	\$16.27/BDT	\$244,050
Fuel	\$2.39/BDT	\$35,850
Transportation	\$1.05/BDT	\$15,750
Total		\$392,050

Combined, the capital and variable costs for one team gathering 10,000 BDT in a 9- to 10-month harvesting period are summarized in Table IV-3.

**Table IV-3. Fuel collection total costs for one in-the-woods crew, 10,000 BDT/yr**

<b>Item</b>	<b>Cost</b>
Capital Recovery, 7 years (straight line depreciation)	\$125,000
Return on Capital	\$87,000
Variable Costs	\$392,050
Total Cost	\$604,500
Cost per Bone Dry Ton, Delivered	\$40.30 <sup>1</sup>

<sup>1</sup> Depending on crew size, the source of fuel and transportation distance the cost could be higher at ~\$45.00 per BDT.

The resulting cost per BDT delivered to the project is based on a number of assumptions that have historically been borne out by actual in-the-woods operations. Those assumptions are as follows:

- 2,080 hours of operations per year; partial year (9 months) offsets overtime
- Crew sized for recovering slash—Add \$4.00 to \$6.00/BDT for thinning operations
- 10% return on capital
- Accelerated depreciation may be available, but is not assumed

#### **IV.2 FINANCING OF HARVESTING EQUIPMENT AND OPERATIONS**

Financing of woody biomass harvesting will come from two sources: private funds of firms that are already in or want to enter the thinning and clearing business who have the necessary expertise, equipment and at least a core crew; and funds financed through the project's fuel purchase contracts. The former already exist and are the most easily mobilized. The latter will come into existence only when either the project can make such funds available as part of the project financing or the cash flow through contracts is available because the project development has been successful. In both cases, the project development will need to have been successful enough that funds are available to begin purchase of fuel well in advance of commercial operation.

The project as conceived will consume approximately 7,000 BDTs of fuel per month in full operation and about half that amount per month for a 2-month testing and start-up period leading up to full load operation and the Commercial Operation Date (COD). Further, this amount should be increased to include a full 12 months supply available at start-up. This means that a bare minimum of approximately 85,000 BDTs of fuel (12 months at one full load consumption) need to be on hand prior to beginning hot start-up. The source for this fuel will be the crews operating under stewardship contracts in the national forests and under thinning and clearing agreements on State lands. The amount of fuel needed at the beginning of hot start-up will require the full-time operation of 5 in-the-woods crews for approximately an operating season prior to start-up. If a decision is made to stockpile more fuel in advance of COD, then either more time or more crews will be required. A second result of receiving fuel in advance of start-up is that either the

fuel receiving equipment must be placed into operation early, or live bottom trucks capable of self-unloading must be used.

In order to provide the fuel needed for commercial operations, it will be necessary to place 5 or 6 additional crews into operation (the number depends on the actual production rates achieved by the crews), for a total of 8 crews, and have them fully operational by the COD.

If it is possible to confirm that the following two simplifying assumptions are true, it will improve the probability of achieving successful fuel supply. Both of the initial in-the-woods crews and half of the total crews will be from firms that are already operating in the Northwest, and

- Those firms will contract with the USDA Forest Service for clearing and thinning operations as part of a stewardship program.
- The form of Fuel Supply Agreement in Appendix A is acceptable.

These assumptions are reasonable, but they will prove to be accurate only if the project actively takes the necessary steps to support them. These crews would not need an infusion of capital, but would need nearly immediate cash flow in the form of payment for biomass delivered to the project site. That cash flow will need to come from up front project operating capital included as part of the financing of the project.

In order to have the needed 8 crews in operation at COD, it will be necessary to pre-contract with firms that already have made or will make the needed capital investment to place the crews in the woods. To the extent that these operators cannot be confirmed during project development, the fuel supply is at risk. It will be prudent for the project to plan for providing a source of capital to assure startup of one or more biomass harvesting operations.

In the event that the project's financing is able to provide funds for fuel harvesting equipment, the County will need to plan on closely controlling how that money is allocated and who the end beneficiary of the funds is.

### **IV.3 FUEL HANDLING, STORAGE, AND MANAGEMENT**

Handling, storage, and management of the fuel supply will be kept as simple as possible. To the maximum extent possible, chipped fuel will be fed directly into the in-woods chip vans for immediate transport to and unloading at the power plant fuel yard. The goal is to handle the fuel only once prior to delivery at the plant. Pre-COD fuel delivery will be to the permanent fuel yard area. The fuel yard area will need to be able to store 50,000 or more tons of fuel.

Once delivered, fuel will need to be managed according to a Fuel Management Plan (Fuel Plan). The Fuel Plan will require tracking and recording of the quantity, quality, receipt dates, and storage locations of each batch of fuel as received. This will allow blending of different batches of fuel prior to feeding to the boiler and management of the age of the fuel to minimize the loss of heating value (btu/pound) over time.

## **V. Process Design of the Generating Facility**

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The conceptual process design for the facility is based on the universally accepted and time proven use of a Rankine cycle steam boiler and turbine generator. The process is further defined as an 850 pounds per square inch guage (psig), 825°F boiler with a single extraction turbine, de-aerating feed water heater and water cooled surface condenser. There is no simpler biomass fueled electric generation cycle available with such a long and successful history.

A brief review of the application of this process for the Adams County Project follows.

### **V.1 FATAL FLAWS**

Review of the process for fatal flaws reveals no such flaws. The Heat and Mass Balance (drawing 1001-6 on the following page) presents the conceptual level fuel flow, steam generation, gross and net electric generation, cooling water flows, combustion air and flue gas flow and liquid and solid waste flows (water and ash). While a detail design may result in numbers that vary somewhat from these conceptual values, none of the values presented are incorrect or vary from generally expected performance for a plant of this type and size.

### **V.2 CORRECTNESS OF INITIAL ASSUMPTIONS**

The key assumptions that are part of this design are:

- Performance efficiencies of:
  - Boiler
  - Steam turbine generator
  - Condenser
  - Cooling tower
- Fuel moisture content
- Fuel heating value
- Electrostatic precipitator performance
- Water quality

All of these assumptions are in line with generally accepted practices.

### **V.3 APPROPRIATE TECHNOLOGY SELECTION**

The conceptual design depicts a fluidized bed boiler. This is a place holder and one of three basic designs for the technology basis of the project. The three are fluidized bed, fixed grate and traveling grate. All three have been successfully applied many times for biomass fueled projects. At this point, a decision on technology is not necessary. However, the project team will be making a technology decision in the near future. The decisive parameters for each are:

- Fluid bed
  - Positives



- 
- Excellent combustion control
- Best NO<sub>x</sub> control
- Highly flexible; accepts fuel variance
- Negatives
- Highest parasitic loads
- More complex operation
- Higher capital cost
- Fixed Grate
  - Positives
  - Simple to operate
  - Lower capital cost
  - Lowest parasitic loads
  - Negatives
  - Harder to control combustion
  - No in-situ NO<sub>x</sub> control
  - Requires frequent manual cleaning
- Travelling Grate
  - Positives
  - Lower parasitic loads
  - Easier to control and operate
  - 
  - Negatives
  - No in-situ NO<sub>x</sub> control
  - Complex and frequent grate maintenance

#### **V.4 PLANT EFFICIENCY (HEAT RATE)**

The plant heat rates calculated in the Mass and Heat Balance spreadsheet are within acceptable standards for this size plant. They may be better with a different design, but that improved heat rate would require higher capital cost. The trade-off of heat rate vs. capital cost is an economic decision.

An additional consideration is that higher efficiency (lower heat rates) would probably require a higher temperature and pressure boiler with resulting more stringent water quality requirements.

## **V.5 PLANT CAPACITY**

The plant size of 10-MW net is sufficient in size to have some economies of scale over smaller plants while still being a match to the fuel supply. This is also the largest plant that the Idaho Public Utilities Commission (PUC) requires Idaho Power to sign under regulated pricing and other contract terms.

## **V.6 FUEL REQUIREMENTS**

The fuel requirements are correctly stated at approximately 85,000 BDT per year. This corresponds to 154,000 TPY at 45% moisture content (MC) and 141,700 TPY at 40 % MC, which matches the expected moisture content of the fuel leaving the woods.

## **V.7 STAFF REQUIREMENTS**

Staffing requirements are accurately stated.

## **V.8 MAINTAINABILITY**

Maintenance of the plant will rely heavily on an established maintenance program consisting of routine, periodic and annual maintenance activities. Such programs have been set up hundreds of times and will be successful for this plant if established and followed.

## **V.9 CONSTRUCTABILITY**

There are no issues of constructability with the conceptual design. The owner may wish to make or have performed a constructability review of the detailed design before it is executed.

## **V.10 LENGTH AND SEQUENCING OF THE SCHEDULE**

A Gantt Chart schedule is presented in Appendix B and discussed in Section IX.

## **V.11 UTILITY INTERCONNECT PLAN**

A 138-kV interconnect with Idaho Power approximately ¼ mile from the plant is anticipated. The interconnect design will be prepared to conform to Idaho requirements.

## **V.12 SPECIFIC TECHNICAL ISSUES**

### **V.12.1 Fuel Handling Concepts and Methods**

Biomass fueled power plants have a history of continuously dealing with fuel handling and feed problems. These can be minimized by including design considerations such as:

- Top of pile recovery
- Avoiding tall/deep fuel enclosure buildings
- Providing for simplicity in stackout and recovery
- Providing for alternate feed via a separate reclaimer that is fed using a front end loader
- Use of continuous fuel recirculation

### **V.12.2 Emission Controls**

Emissions concerns will deal with the criteria pollutants and HAPS. While the conceptual design does not address it, consideration should be given to whether or not IDEQ will require continuous emissions monitoring (CEMS). The heat and mass balance should also address the potential needs for adding an ammonia storage tank, feed and injection capabilities in the event that NO<sub>x</sub> control is required beyond that available from combustion control.

## **VI. Permitting and Siting Issues**

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### **VI.1 SITE CONSIDERATIONS**

The Board proposes to locate the plant at a site on Goodrich Road near the Adams County landfill. The key considerations in selecting the proposed site include legal control of a large enough site, water availability, proximity to electric transmission, road transportation quality, ease of air quality permitting (e.g., lack of nearby air emissions modeling impediments such as mountains or tall occupied structures), and the sparseness of development near the site. The site's attributes rank high in all considerations, and issues appear to favor approval from the various agencies, as follows:

- There is plenty of space available at the selected site and, given that the County owns the site, the issue of legal control is not a concern.
- The planned groundwater source (the aquifer under Indian Valley) is expected to be tapped. The aquifer does not have a record of depletion (see Section VI.2.2 below).
- There is an Idaho Power 138kV transmission line crossing the project site. The exact carrying capacity of Idaho Power's 138-kV transmission line is not certain, Idaho Power initially stated in a preliminary assessment that 10 MW added in Adams County may, at certain times, result in an exceedance of transmission capacity. Idaho Power later retracted that statement
- The activities of 16 to 20 wood chip trucks accessing and leaving the site daily via the Goodrich Road entrance from Highway 95 is not expected to have a serious traffic impact. The road already handles the solid waste trucks that go to the landfill. However, the road will need to be improved to handle the loads and traffic added by the construction traffic and fuel trucks during operation. The site is far enough from the mountains east and west of the site that air dispersion modeling is unlikely to show any significant impacts. Additionally, there are no public facilities such as schools, churches, or hospitals that could be affected by worst case modeling assumptions. The only nearby public facility is the landfill.
- There are 15 residences within one mile of the proposed site and several additional residences, including the community of Mesa if that radius is extended to 1-1/2miles. While it may not be required by state or local regulations, sound level for these residences should be considered in the permitting process

### **VI.2 PERMITTING REQUIREMENTS**

Permitting will be performed by one or more third-party consultants with experience permitting projects in Idaho. The consultants will address the air and water permitting, a Permit to Construct (PTC) from the Idaho Department of Environmental Quality (DEQ), and an NPDES permit for water discharge from EPA. The following paragraphs briefly describe the issues that will need to be addressed for a successful permitting effort.

### VI.2.1 Idaho Department of Environmental Quality Air Permit

According to DEQ's website (DEQ, 2010):

IDEQ is the state agency delegated by the federal government to issue air quality permits in Idaho. Permits are required by the federal Clean Air Act and set the conditions under which facilities that generate air pollution may operate. The purpose of permits is to ensure compliance with all state and federal air pollution control rules, which are designed to protect public health and the environment.

Any business or industry (source) in Idaho that emits, or has the potential to emit, pollutants into the air is required to have an air pollution control permit from DEQ. Permits are issued when new sources begin operation and when existing sources modify their facilities.

DEQ's Air Quality Division issues several different types of permits based on the emissions from the facility and/or emitting source. Permits require sources to comply with all health- and technology-based standards established by the U.S. Environmental Protection Agency (EPA) and the Rules for Control of Air Pollution in Idaho. If an applicant demonstrates compliance with all applicable federal and state air pollution laws and regulations, DEQ is required by law to issue an air permit.

Because the plant will emit more than 100 tons per year of one or more of the defined criteria pollutants (NO<sub>x</sub>, particulates, SO<sub>x</sub>, CO, VOCs—the plant is estimated to emit 103 tons per year (TPY) of NO<sub>x</sub> and 163 TPY of CO), it is considered a major source. As a major stationary source the plant will be required to obtain a PTC and a Title V (HAPS regulation) operating permit.

A plant is also considered a major source if it emits more than 10 TPY of any “Hazardous Air Pollutant” (HAP) or 25 TPY or more of all HAPs in the aggregate. Biomass plants of this size burning in-the-woods derived fuel are not expected to emit either 10TPY of any HAP or 25 TPY of all HAPS in the aggregate.

The selected project site is advantageous from the perspective of air quality permitting. With the possible exception of winter inversions and the potential for icing from the cooling tower plume (issues that would not prevent receiving an air permit), it is expected that air modeling will show that the site does not present air quality concerns.

An additional air emissions concern is fugitive dust. Receiving of fuel and operation of the fuel system will create fugitive dust. DEQ is also the regulatory body for control of fugitive dust emissions. The plant, as part of the PTC, will be required to demonstrate that “All reasonable precautions shall be taken to prevent particulate matter from becoming airborne.” Reasonable precautions are defined by the DEQ as:

- Using water or chemicals
- Applying dust suppressants
- Using control equipment
- Covering trucks

- Paving
- Removing materials

### **VI.2.2 Idaho Well Permit**

The Idaho Department of Water Resources (IDWR, 2010a) administers the rules regarding well construction and licensing of well drillers. A well permit may be obtained in accordance with Title 42 of the Idaho Code as stated below.

42-235. DRILLING PERMITS. Prior to beginning construction of any well, or changing the construction of any well, the driller or well owner shall obtain a permit from the director of the department of water resources to protect the public health, safety and welfare and the environment, and to prevent the waste of water or mixture of water from different aquifers. There shall be a seventy-five dollar (\$75.00) charge for the permit if the well is to be used for domestic or monitoring purposes. If the well is to be used for other than domestic or monitoring purposes, the charge for the permit shall be two hundred dollars (\$200). All moneys received pursuant to this section shall be credited to the water administration account. The director may provide a blanket drilling permit for site specific monitoring programs which will determine the quality, quantity, temperature, pressure or other attributes of aquifers. The application for a blanket permit shall include a design proposal prepared by a licensed engineer or licensed geologist which shall describe the overall drilling program and all relevant technical features of the wells to the satisfaction of the director. Progress reports, completion and other data may be required as provided by rule. The fee for the blanket permit shall be one hundred dollars (\$100) plus an additional fifty dollars (\$50.00) per well. A driller or well owner violating any provision of this section shall be guilty of a misdemeanor and shall also be subject to the enforcement procedures of section 42-1701B, Idaho Code.

The aquifer in Adams County is designated as a “valley fill” aquifer (Graham and Campbell, 1981), and as such is not a sole source aquifer, nor is it a groundwater management area or a critical ground water area as defined by IDWR. Therefore, the following from Title 42-233A applies to issuance of a well permit (IDWR, 2010b):

In the event an application for permit is made with respect to an area that has not been designated as a critical ground water area the director of the department of water resources shall forthwith issue a permit in accordance with the provisions of section 42-203A and section 42-204, Idaho Code, provided said application otherwise meets the requirements of such sections; and further provided that if the applicant proposes to appropriate water from a ground water basin or basins in an amount which exceeds ten thousand (10,000) acre-feet per year either from a single or a combination of diversion points, and the director determines that the withdrawal of such amount will substantially and adversely affect existing pumping levels of appropriators pumping from such basin or basins, or will substantially and adversely affect the amount of water available for withdrawal from such basin or basins under existing water rights, the director may require that the applicant undertake such recharge of the ground water basin or basins as will offset that withdrawal adversely affecting existing pumping levels or water rights.

The end result is that IDWR is obligated to provide a well permit that is properly applied for and paid for.

### **VI.2.3 Environmental Protection Agency Water Discharge Permit**

The federal government has jurisdiction over water quality permits in Idaho. In this case the Clean Water Act establishes the National Pollutant Discharge Elimination System (NPDES) requirements. For the biomass plant, the Storm Water NPDES Permitting Program and the NPDES Pretreatment Program apply. The former governs how stormwater runoff is to be handled and the StormWater Pollution Prevention Plan (SWPPP) is to be written. The latter defines the program for pretreatment and discharge of industrial water pre-discharge treatment. The final Pretreatment Streamlining Rule of 2005 is to be applied. Both the NPDES permit and approval of the SWPPP are a formal but certain process that will result in the project's proceeding as planned if the regulations are followed.

### **VI.2.4 County Permits**

#### **VI.2.4.1 Permits**

Adams County will have jurisdiction over building permits, grading and drainage permits, road construction permits, and other locally controlled permitting issues. The Project will plan to follow County regulations scrupulously to assure there are no causes for legal delays of the project at the County level.

#### **VI.2.4.2 Land Use and Zoning**

The Adams County Comprehensive Plan (Adams County, 2006a) has provisions related to the compatibility of industrial development with existing land uses. The Land Use element includes the following objective and policies related to Land Use Goal 4, *Provide for economic growth*:

GOAL 4: Provide for economic growth.

OBJECTIVE 4: The County should provide areas that are zoned properly for industrial development and encourage development of industrial parks that are cost effective and compatible with local areas.

POLICY:

4a. The County shall continue to provide an open public review and comment process for development.

4b. The County shall encourage commercial and industrial zones while safeguarding existing residential areas from incompatible commercial and industrial zones.

4c. The County shall prevent new development from posing hazards and problems for the surrounding areas and the environment.

4d. The County shall require buffering between dissimilar land uses.

The site proposed by the Board meets these policy objectives by co-locating the biomass plant with the existing landfill, apart from residential and other incompatible land uses.

With respect to the Adams County Zoning Ordinance (Adams County, 2006b), the regulations for the Industrial (I) zone state that “Mitigation will be required for noise, odor, lighting, signage and parking so industrial uses are compatible with existing land uses in this zone.” Locating the biomass plant at the landfill site meets this zoning stipulation.

To demonstrate that the plant would not cause an undue increase in ambient noise levels at the nearest residences, the Board may wish to engage a consultant to take ambient noise level measurements and model the plant’s estimated noise impacts.

### **VI.3 UTILITY ISSUES**

There are two issues regarding the electric utility (Idaho Power) that apply. The topic of Power Sales is addressed in Section VII, *Power Sales*, and the interconnect is addressed in Section V.11, *Utility Interconnect*.

### **VI.4 SITE COMMITMENT ISSUES**

As noted above, the County owns the proposed project site, so there are no site commitment issues associated with the County’s use of the site for the proposed biomass plan.

### **VI.5 OTHER CONSIDERATIONS**

In selecting the proposed project site, the Board considered features other than those related to permitting and proximity to utilities. These considerations included potential adverse impacts related to traffic, as well as the benefits to be derived in terms of jobs and income to the local area.

#### **VI.5.1 Traffic**

The main traffic impacts during construction will be the result of heavy trucks and the construction labor traffic. During operation traffic impacts will result from wood chip trucks delivering fuel. The construction traffic is temporary and can be routed and/or timed to create minimum impacts. The wood/fuel trucks will be long term and, at the lightest truckloads of 20 BDT (30gT) per truck, will equal approximately 16 trucks per day (5 days/week) for the plant consumption of 85,000 BDT/YR. An early and consistent public involvement program can successfully address this issue for the community. Given the existing landfill-related truck traffic on Goodrich Road, the additional traffic is not expected to be a problem for other users of the road. The presence of chip trucks on Hwy. 95 and other local roads would be consistent with the long-term historic use of those roads for logging and other from-the-woods truck traffic.

#### **VI.5.2 Socioeconomics**

The purpose of the proposed biomass project is to provide local, living wage jobs that can serve as a foundation for stabilizing the local economy. This is what the project is all about. Jobs, reduced unemployment, and improved county economics are the key goals for developing the project. It is still necessary, however, to consider both the negative and positive aspects of socioeconomic impacts.

As noted in Section II.1, *Background*, Adams County had a population of 3,476 people in 2000 (U.S. Census, 2010b) and an estimated population of 3,520 in 2009 (U.S. Census, 2010a). The

economic sector that includes agriculture, forestry, fishing and hunting, and mining continues to be the largest employer in the county, although employment in the forest products sector has been in a multi-decade decline that appears to have continued through the current year. The government also provides substantial employment in the county. The Idaho Department of Commerce (2010) reports that major employers include Adams County government, Council School District, Meadows Valley School District, Meadows Valley Market, JK Morgan, Tom Mahon Logging Inc., Idaho Transportation Department, and the USDA Forest Service. Brundage Ski Area, located on the Adams and Valley County border, is a large seasonal employer.

The project's potential impact on local employment will be governed by the jobs required for project construction and operation, as well as supplying the project with fuel. Additionally, there is a multiplier effect associated with new investments in a community, as the new investments and wages cycle through the economy. Multipliers were developed for Adams County based on 2008 IMPLAN<sup>3</sup> data that take account of the following impacts:

- **Direct Impact** corresponds to the initial changes in final demand generated by project construction, operation, and fuel acquisition.
- **Indirect Impact** includes the consecutive rounds of industry spending that are triggered by the initial change in final demand. Local businesses engaged in constructing or operating the plant or supplying fuel to the plant will typically purchase some of their materials and services from other local businesses, which then in turn purchase from their local suppliers, and so on.
- **Induced Effect** refers to the impact triggered by increased household spending by employees of the directly and indirectly affected businesses. Employees spend part of their earnings at local establishments, which in turn purchase some of their input materials and services locally to satisfy this demand, and so on.

Table VI-1 presents a conservative estimate of employment effects under the following assumptions:

- Construction—average of 100 workers over a period of 18 months
- Operation—21 permanent full-time employees
- Fuel supply—48 workers minimum and 64 maximum, assuming 8 teams averaging 6 to 8 workers per team
- Adams County multiplier of 1.3 for new non-residential construction

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<sup>3</sup> IMPLAN was developed by the Forest Service for use in land resource planning and has evolved into a valuable tool used by both public and private entities for a variety of purposes, including business development and community growth. For example, the U.S. Department of Agriculture, Natural Resource Conservation Service, has used IMPLAN to estimate the economic benefits of conservation programs in Montana (NCRS, 2006). Recipients of funds provided under the American Recovery and Reinvestment Act of 2009 are currently using IMPLAN to estimate the job-creating impacts of funds received for programs ranging from highway reconstruction to alternative energy infrastructure to public land management, including fuels reduction (MIG, 2009).

- Adams County multiplier of 1.2 for forestry and support for forestry activities

**Table IV-1. Total employment impact associated with biomass plant construction, operation, and fuel supply**

	Direct Jobs	Multiplier	Total Jobs
Construction	100	1.3	130
Long Term			
Operation	21`	1.3	27
Fuel Supply	48 - 64	1.2	58 - 77
Total Temporary (construction)			130
Total Long-term (operations and fuel supply)	69 - 85		85 - 104

### VI.5.3 Compatibility with County Comprehensive Plan

As noted above in Section VI.2.4, the proposed biomass project would be compatible with the Adams County Comprehensive Plan (Adams County, 2006a) Land Use Goal 4, *Provide for economic growth*: It would also be compatible with Natural Resource/Hydropower and Alternative Sources of Power Goal 2, *Support residents' exploration of sources for alternative power*, as defined in the following objective and policy statement:

- OBJECTIVE 2: The County should encourage exploration of alternative sources of power.
- POLICY: 2a. The County should support innovative uses of biomass, geothermal wind, small diameter timber and other renewable resources within the County to create jobs and reduce fuel costs.

## VII. Power Sales

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Power sales opportunities are limited. Idaho Power is the obvious choice and the alternatives would require wheeling the power through Idaho Power's lines to other utilities, assuming a willing buyer can be found. The alternatives are Avista Corp (Spokane), Rocky Mountain Power (Salt Lake City/Eastern Idaho/Utah/Oregon/Washington/Wyoming), and public utility districts (PUDs) and municipal utilities in Washington, Oregon, Idaho, and Utah. Out of these, the easiest to work with are Avista and Rocky Mountain Power, both of which have more contracts with independent power producers (IPPs) than does Idaho Power. The priorities for power sales are:

- Idaho Power
- Avista
- Rocky Mountain Power
- Other opportunities

The focus will be on Idaho Power. The process currently under way with Idaho Power relies on the 10MW Public Utilities Regulatory Policy Act (PURPA) contract approved by the Idaho Public Utilities Commission several years ago. That agreement provides for the long-term purchase of power by Idaho Power if specific conditions are met. The rate in effect at the time Adams County first approached Idaho Power was \$91.00 per kWh. The current rate is lower, but Idaho Power has stated that if the County can move ahead on a prescribed schedule, then Idaho Power will honor the earlier, higher rate.

Stumbling with Idaho Power or providing cause for Idaho Power to change its mind will result in the rates offered being updated to a much lower value. The effort with Idaho Power (which can also be applied to other opportunities, if applicable) will include seeking political, contractual and financial methods of enhancing the value of the power sales agreement for both Idaho Power and the project.

## **VIII. Financing Options**

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The immediate financing need is for funding following the REEZ grant in order to continue moving forward with project development. The REEZ grant allows the project to be advanced to a state where it is credible and can more readily qualify for further funding. The immediate and most natural thought would be to, as quickly as possible, secure at least \$25 million in construction/permanent financing. Although that financing could occur, assuming that such financing could happen quickly (3–6 months) without further development is an invitation to failure.

The Team, as described in Section IX, will immediately be seeking such permanent financing. However, further development of the project while seeking major financing is necessary for success. The Team will therefore be seeking an additional grant in the near term to both advance the project and keep it alive while the larger financing is sought.

In addition to addressing the immediate need for development funding (see Section VIII.1 below), the team member leading the financing effort will have the main long-term goal of finding and securing construction/permanent financing. Until the permanent financing is secured, this is a continuous top priority item regardless of the stage of the project. The most successful result would be to find the ultimate source of financing while securing the development grant, thereby assuring continuous project development with no interruption.

### **VIII.1 DEVELOPMENT GRANT**

The project will need to enter into an agreement with a professional grant writer with the capabilities to both identify the universe of available grants and write the grant application(s). The REEZ grant has a \$3,000 budget to cover grant writing out-of-pocket expenses during this period. The grant writer will be paid from the new grant proceeds either an agreed amount for success or a percentage of the grant.

Referring to the project budget (Section IX), the development budget will be further refined (some items dropped as not necessary, others added, and some changed) while the additional development funding is being pursued.

### **VIII.2 CLEAN RENEWABLE ENERGY BONDS**

Clean Renewable Energy Bonds (CREBS) is a federal loan program that has been in use since 2005. The program is administered by the Internal Revenue Service (IRS) and is explained in IRS Bulletin 2007-14 and Section 54(f) of the Internal Revenue Code.

The loan program is based on using tax credits to subsidize interest payments. CREBS are allocated to state and local governments for use in energy projects from an annual cap that varies from year to year and that is annually authorized by the Congress. Unused cap in a given year can be applied for in the following year.

“New CREBS” is a restructured program signed into law on March 18, 2010. The new CREBS involve a direct payment from the federal government of the lesser of the interest payable or 70% of the “tax credit rate” published by the Treasury Department.

The business plan calls for investigating this option.

### **VIII.3 USDA RURAL ENERGY FOR AMERICA PROGRAM (REAP)**

Under this program, which was part of the 2008 Farm Bill, funds are available in varying amounts under several sections of the bill.

- Section 9007 specifies that loan guarantees will be available in the amounts of \$60 million in 2010 and \$70 million in 2011 and 2012.
- Section 9012 provides for the USDA Forest Service to conduct a comprehensive research program into biomass-to-energy conversion. Local governments are a priority for this section.
- Section 9013, the “Community Wood Energy Program,” provides \$5 million per year for FY 2009–2012 for local governments to acquire or upgrade wood energy systems.

Pursuing these programs for subsidies, grants, and loans is a priority for the business plan. The U.S. Department of Agriculture closure date for current grants and guarantees was June 30, 2010. Planning for the next such date will need to begin immediately.

### **VIII.4 USDA FOREST SERVICE LOAN GUARANTEE**

The USDA Forest Service was the conduit through which loan guarantees were provided to projects elsewhere in the country in 2010. Additional amounts are expected to be available in 2011. In the past, funds have been available to those projects that best positioned themselves to make immediate/quick use of the funds. This plan has as one of its goals being ready for any such backing that occurs in the future.

### **VIII.5 ECONOMIC RECOVERY ACT FUNDS**

The recent announcement of hearings in response to requests for economic development bonds that would be used to build a biomass plant in Emmett, Idaho, is evidence that Recovery funds are available in Idaho. This potential source is part of the plan.

## **IX. Operational Plan and Business Structure Strategies**

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### **IX.1 BUSINESS DEFINITION**

The business of this project and its successors is generating and selling energy for the benefit of the citizens of Adams County, using Adams County's natural and human resources. These goals will hold true in a public/Private partnership wherein a requirement that a private entity, in addition to operating the plant for a profit and in order to receive the benefits provided by the county, will accept the County's community goals.

### **IX.2 VISION, GOAL AND OBJECTIVES OF THE BUSINESS/PROJECT**

The County's vision of the future for this project is that the Project will set the standard for how the County can help to improve its own future by creating industrial opportunities using the resources at hand.

The goal of the project is to create business infrastructure for Adams County that will provide jobs and economic growth for the citizens and businesses in the county. More specifically, the immediate objectives are to identify and address the barriers facing the Project in the areas of:

- Fuel supply
- Power sales and interconnect
- Development funding
- Permitting
- Construction financing

### **IX.3 CRITICAL ISSUES AND ASSOCIATED HURDLES**

#### **IX.3.1 Issues**

The most important issues to address are ones whose completion will make it possible to secure a power sales agreement and financing. Those project elements that can assure development of the project are:

- Fuel supply
- Power sales
- Economics/financing

If these hurdles are insurmountable, or if there is a fatal flaw presented by any one of these three elements, there will be no project. Other elements that are of less importance but which can affect the successful development and outcome of the project are permitting, the size of the project, and the reliability of the technology that is adopted.

This list of priorities was selected based on the belief that the single most critical resource affecting the economics, operation and success of the project is fuel supply. With a given fuel supply or range of supplies, project economics can be addressed to an extent sufficient to obtain

a qualified Power Sales Agreement. Economics of the project have to pencil out as being feasible or there is little or no chance of obtaining financing.

### **IX.3.2 Hurdles**

The hurdles to successfully contracting for an acceptable fuel supply are many. The needed quantities must be both available and obtainable. The CROP studies and other studies provide enough detailed information to believe that more than the needed amount of fuel is available in the national, state, and private forests considered for the project. The fuel supply hurdles then are those that directly or potentially bar obtaining/securing the needed annual quantities for the Adams County project for the term required.

The issues include leaving the forest alone vs. managing the resource responsibly, increasing roadless areas vs. stabilizing roadless areas, entering into short term stewardship contracts vs. finding long term financing, levelizing the flow of biomass, competition for the biomass, and securing fuel supply capital sources that are local in nature but require action at the state and federal level for resolution.

Completing a Power Sales Agreement as stressed in Section VII above will be difficult. The single most difficult effort will be to retain focus and absolute adherence to the Idaho Power milestones needed to secure that contract. It is likely that the last element to be put in place will be an executed Power Sales Agreement; however, approval by the purchasing entity will undoubtedly require proof of financing for signature.

A secure fuel supply and a PSA are necessary, but not sufficient to complete financing. The quality of all the other elements will need to be such that the economics (pro-forma) of the project are robust. The financing entity, be it a federal agency, a private lender or a bank, will perform a strict due diligence on the project with scrutiny of every item affecting the economics of the project.

## **IX.4 OWNERSHIP AND BUSINESS STRUCTURE**

Several business structures are possible, with each being appropriate to differing development paths. The business structure employed will be determined as a direct result of how the project will be financed, owned and operated, but will need to be flexible so that changes in structure are possible as events unfold. Ultimately, financing opportunities will dictate the business structure.

### **IX.4.1 Private**

The simplest structure for the County and the Partnership will be private ownership with private or a mix of private and public financing. Private financing together with the private ownership will result in the highest or least acceptable risk profile for the owner. Without the necessary conditions for acceptable fuel, operating and revenue risks, this will be the most difficult arrangement to achieve. The most likely ownership vehicles for this structure are a 'C' Corporation, a limited liability corporation (LLC), or some other special purpose structure that shields the owners from the project's liabilities.

#### **IX.4.2 Public Ownership**

Public ownership of electric facilities is common. Municipal, state, and federal examples are city-owned electric utilities, Public Utility Districts, State Municipal Power Authorities that provide power to multiple municipal utilities, and federal agencies, such as BPA and TVA.

It is important to note that in all the cases found, such as the Intermountain Power Project, the municipalities participating were doing so through their municipally owned utility and were customers and well as developers and owners of the IPP projects. The reason for this is that a city or county without a market is not in a position to absorb risks associated with the sale of power.

#### **IX.4.3 Public/Private Partnership**

As defined by the National Council for Public-Private Partnerships (NCP3P), a PPP is a joint venture/collaborative enterprise formalized by a contractual agreement between a public agency (federal, state or local) and a private entity (NCP3P, 2010). PPPs are more widely used in Europe but are finding favor and are growing in use in the United States. Some of the benefits of a PPP are that it:

- Reduces development risks
- Reduces public capital requirements
- Brings the strengths of the private sector to public projects

PPP3s are used in transportation, water/wastewater, urban development, energy, schools, and other types of projects.

NOTE: After discussions, it is recommended that the County take the steps necessary to set up the entity (corporation or otherwise as recommended by legal counsel) now. This will allow quick action when appropriate opportunities arise.

#### **IX.4.4 Utility Ownership**

Adams County could elect to form a PUD or one of the other forms of publically owned electric utility (rural cooperative, municipal). This is not recommended, however, unless the county is prepared for the significant commitment of time and resources required.

To summarize, the project team will address the final business structure to be used as the project is developed.

### **IX.5 RECOMMENDED STRUCTURE**

The Public/Private Partnership structure is recommended because it:

- Provides the largest number of options for financing
- Is the most flexible
- Retains significant control for the County
- Allows both public and private financing sources to be optimized

## IX.6 DEVELOPMENT

It is the top priority for this plan that the project proponents immediately form a specific project team and begin immediately pursuing the activities discussed below. To successfully complete development/close of financing, several tasks will need to be pursued in parallel. The activities are closely inter-related and most cannot be advanced without advancing the other activities.

### IX.6.1 Formalize a Development Team

A project team of three or four persons will be formed and specific roles taken by the team members. Part-time or volunteer members are good. Team members will consist of a Project Manager and team members with fuel supply, power sales, interconnect, lobbying, financing, and permitting as key roles. Each team member will lead one or more tasks and will also be back-up (fully informed and ready to fill in as needed) for at least one activity. Team Roles are to be defined along the lines suggested in Table IX-1.

**Table IX-1. Project team roles**

<b>Team Member</b>	<b>Member's Role</b>	<b>Key Development Activities</b>	<b>Back-Up Development Activities</b>
Project Manager	Leads team, works with Commissioners and the Partnership	Financing	Fuel supply
Project Developer	Guides and coordinates development activities	Power sales interconnect	Financing and permitting
Fuel Supply Manager	Secures the fuel supply	Fuel supply	Interconnect development grant
Permitting Manager)	Technical interface with engineering and permitting consultants, prime contact with agencies	Permitting development grant	Interconnect Power sales

### IX.6.2 Development Financing Grant

The Project has short-term, medium-term, and long-term financial needs. In the short term, permit application fees, interconnect study fees, consultants, and legal advice will need to be covered. The REEZ grant for \$70,000 will be adequate for these expenses. However, the County needs to be prepared for expenses that exceed the REEZ grant amount. Medium-term costs over the next 12 months for permitting studies and submittals, preliminary design, legal fees, PSA negotiations and other expenses may total \$500,000 or more. Longer term financing will have to address detailed design, construction, start-up and operating capital needs. The medium- and long-term cash flow requirements could be met by early resolution of finance guarantees. It's far more likely that there will be two efforts required to cover these needs. When applying for grants, loans or other funding, the team will maximize the benefits of each

source by keeping all funding needs in mind. For example in seeking funding of short-term needs, the medium-term needs may be satisfied at the same time by the same source.

### **IX.6.3 Fuel Supply**

The team will address the fuel supply in three ways. First, discussions with the USDA Forest Service need to be started and expedited on how to maximize the term of stewardship contracts and how to levelize the annual amount of biomass cleared and available to the project. Secondly, detailed talks with current operators who will be contracting with the USDA Forest Service for stewardship contracts need to determine the contractor's needs for contract terms and any other issues of concern to the operators. Finally, political resolution to the "bankable" fuel supply issues need to be initiated.

Because the fuel supply will drive most of the other issues, it will receive top priority. An example of a path to resolution, given the USDA Forest Service's inability to guarantee contracts or term of contracts, is to seek legislation or an executive order directing that the first 85,000 BDT of biomass removed from the forest be made available first to the Adams County Project. Similar action can be sought from the state lands.

### **IX.6.4 Construction/Permanent Financing**

For most projects, the proponent will seek to complete a PSA commitment, make progress on permit applications, and secure a fuel supply before pursuing financing. In today's financial markets and given the nature of the fuel supply and Adams County's reliance on Idaho Power as its power purchaser, it will be necessary to secure some acceptable form of financing certainty before a PSA will be finalized. The fuel supply is completely intertwined with financing. Solving the "bankable" fuel supply issue will resolve financing. Obtaining a financing guarantee will reduce the pressure to match long-term fuel contracts to the term of finance. Funding sources that will be pursued are:

- Grants from state, federal, or other sources
- Loan guarantees
- Capital and operating subsidies
- CREBs<sup>4</sup>
- Renewable energy subsidies
- DOE grants and loans
- Equity funding

### **IX.6.5 Interconnect**

The interconnect agreement will be developed in parallel with the Power Sales Agreement. Team members working on this task will be coordinating the two efforts.

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<sup>4</sup> Legislation is now being considered that will lift the annual cap on CREBs.

### **IX.6.6 Permitting**

The team member leading permitting will be interfacing with and directing the consultant(s) contracted to apply for and obtain the air permit (Permit to Construct), water permit, well permit and local permits. The priority will BE on the air permit.

### **IX.6.7 Power Sales**

The team member leading the power sales effort will, at a minimum, maintain close contact with the Office of Energy resources, the IPUC, and Idaho Power. Close contact means at least twice a month discussions and at times daily contacts. The PSA team member will be charged with tracking the PSA process with Idaho Power and pushing the team to meet Idaho Power's deadlines.

Other power sales issues that will be addressed are the interconnect, coordination with financing, and seeking and pursuing strategies to enhance the value of the power and protect the project's ownership of non-energy and non-capacity attributes. This last role is important for realizing the value of renewable energy certificates (RECs, also known as 'green tags') and other environmental items such as carbon credits.

### **IX.6.8 Political Lobbying**

Political lobbying is a necessity. The project cannot succeed without both political support and political action. Once the project team is established, the key political players will be identified as such and a team member or members will have, as an on-going assignment, maintaining relationships with and informing those key political players.

A guiding document will be established and maintained that identifies all of the Project issues and hurdles that may be resolved by or whose resolution requires political action. There will, for example, be several actions under the headings of fuel supply and financing and, perhaps, also under the heading of power sales. The list will identify the political figures involved for the action and how they may either complete or facilitate the action.

## **IX.7 BUDGET**

Three project budgets are presented in Appendix C. They are 1) the Development Budget; 2) the Capital Budget, and 3) the Operating Budget. These budgets are preliminary drafts only, to be used as guides. They are also subject to revision and change even after the final written plan is accepted by the County.

### **IX.7.1 Development Budget**

The development budget addresses both the current REEZ development budget and the medium-term development budget needs.

### **IX.7.2 Capital Budget**

The capital budget is higher than previously included in the County's planning. This reflects the addition of some items that may not have been included previously, such as capitalized fuel purchased prior to start-up and interest during construction. This budget requires serious discussion.

### IX.7.3 Annual Operating Budget

The annual operating budget was drawn straight from Yanke Energy files and is based on Yanke Energy's operating experience.

## IX.8 ECONOMIC ANALYSIS

The project economic pro-forma is a development tool and when used properly, can also be a decision making tool. However its best use is as a guide for keeping the project team focused on the most important aspects of the development effort. Appendix \_\_\_ contains copies of the economic analyses scenarios that address the critical critical issues to be resolved in order for the project to succeed.

The model is a discounted cash flow 20 year projection of project capital cost, financing, revenues and operating expenses. The model was developed with a focus on the pretax annual cash position of the project. The pro-forma does not address taxes, the non-cash expense of depreciation nor how to best make use of the Production Tax credit in the event that a grant in-lieu of the ITC/PTC is elected. Those issues can only be addressed after an ownership structure is decided upon. After tax returns are almost always positive and attractive if an acceptable debt coverage and after debt service cash flow is established.

The most critical elements of the model can then be subjected to sensitivity analysis to determine what range(s) for these parameters can result in an acceptable debt coverage ratio and a positive cash flow after debt service. A project with the minimum debt coverage greater than 1.3 and average debt coverage greater than 1.5 is financeable in most markets.

### IX.8.1 Factors Affecting Project Economics

Cost of debt, fuel cost and revenue are the economic factors that the project team must address while advancing the project.

- **Cost of Debt**—Reducing the cost of debt will occur in two ways, first, loan guarantees (USDA Program) or a direct interest rate subsidy (CREBS) will be required. The loan guarantee program will be restricted in both amount and the percentage of project cost to which it can be applied (\$210 million and 75% for example). The interest rate for a guaranteed loan has not been determined, but should be in the 4-5% range reflecting the low risk it represents to lenders. Additionally, loan guarantees often require an upfront fee or an annual fee and sometimes both. CREBS under revised rules can be either direct interest payments or tax credits to offset interest costs. The programs should be researched further to determine how the conditions apply. The IRS daily publishes the interest rate offset that is available from the CREBS program. That interest rate varies, but is currently in the 4.3 % range. If 7.5% project debt can be placed, the resulting net rate paid by the project will be approximately 3.2%.
- **Fuel Cost**—As previously stated the fuel cost, will be in the \$45/BDT range. This is the single highest operating cost for the plant. The fuel cost estimate is based on all processing and transportation costs but no payment for woody biomass in the forest. Sharing the cost of removing the slash and thinning between the project fuel payments and the timber sale (Shared Fuel Costs) will help the project viability as well as reducing the costs to the USDA Forest Service and increasing the probability that these improved

forest management practices can be continued long term. Many of the resulting benefits go to others who also use the forests (wildlife, forest products industry, recreational users etc. (and others who benefit from a reduction in wildfire numbers and intensity). Proposals for biomass management plans, such as those published by the Forest Guild ([www.forestguild.org](http://www.forestguild.org)) call for biomass management based on federal, state and private lands owners initiatives that will:

- Assure sustainability
- Provide the highest and best utilization of biomass for energy
- Provide climate change mitigation
- Support biomass removal from public lands

Past and current programs such as the Biomass Crop Assistance Program (BCAP), created by the Food, Conservation and Energy Act in 2008 as part of the 2008 Farm Bill, have provided subsidies for removal of biomass from the forests. These subsidies provide direct environmental and forest based benefits. Funding of these subsidies to provide either a fixed \$/ton or a percent matching funding for biomass removal are needed. Historically these incentive programs where the fuel costs are shared have come and gone so that the project can only take advantage of these when available but the proforma does not factor this uncertainty into the fuel costs

Currently the Stewardship contracts being let by the Payette National Forest are of two types. The contracts provide either stumpage and the price paid for the stumpage is reduced by the cost of gathering, landing and removing all of the slash created by the operation; or the contracts are for clearing and thinning and there is direct payment to the contractor to clear, thin, chip and remove the biomass. In either case, there are benefits to the USDA Forest Service for having a market that pays for that biomass. The cost to the project for removing the biomass as fuel does not need to be and should not be the full cost of removal. It should instead be a Shared Fuel Cost based on the economic cost that the project can bear, which will in turn either increase the price paid to the USDA Forest Service for the stumpage or reduce the price paid by the USDA Forest Service for clearing and thinning.

- **Revenue**—There are three existing and one potential future source for revenue. Power sales (Idaho Power Avoided Costs from 2009), federal renewable energy Production Tax Credits (PTCs) and Renewable Energy Credits (RECs) are the three existing sources of revenue. The potential revenue source is for the CO<sub>2</sub> emissions reduction created by generating energy from non-fossil fuels. The Idaho Power rates from 2009 are used in the proforma because they are known and are not going to change. The PTCs are currently available as provided by federal legislation but are not a cash flow. Rather, PTCs are an income tax credit and can only be used by an entity that has taxable income to offset. In order to take advantage of PTCs, the project would need to allow the PTCs to flow to a taxable entity, probably at a steep discount. This discount is assumed at 30% for this analysis.

RECs have been traded in the US in several markets for many years. Prices have been as high as \$60/mwh (East coast, Massachusetts, Vermont) and are currently traded at \$20-

25/mwh. It is appropriate to believe that these RECs can be sold to an entity (a California city for example) that wants to increase its use of renewable resources.

CO2 emissions credits are traded in Kyoto accord countries at prices averaging \$18/ton of CO2 and CO2 credits could be sold today by this project if the US were signature to the Kyoto accords. CO2 credits and markets are global in practice and only limited in trading by politics. The US is unlikely to sign up to Kyoto, but could otherwise become a participant in global CO2 markets in the future. It is also a high probability that either legislation or EPA rule promulgation will begin regulating CO2 emissions. The ability to trade/sell CO2 emissions reductions will follow soon thereafter. All of these revenue sources are addressed in the economic models.

### **IX.8.2 Results of Economic Analysis**

Specific issues that are deemed critical to the economic success beyond obtaining a power sales agreement and assuring the fuel supply affect the revenues and costs of generating electricity. These issues should be regarded as enhancements, when fully resolved, that include items not available to private parties without the participation of the county in a Public Private Partnership. They are:

- Obtaining inexpensive financing – CREBS or equivalent
- Receiving a Grant in lieu of Investment Tax Credits (ITC) or Production Tax Credits (PTC).
- Sharing fuel costs in recognition of reduced forest management costs
- Receiving revenue from sale of PECs or CO2 reduction.

Ten different economic models were created and analyzed addressing all reasonable combinations of these key economic issues along with the overall project development issues. The results varied from scenarios with no economic benefits whatsoever to some that exceed the suggested debt coverage ratios and resulting free cash flow requirements.

In Appendix D the best of those economic model runs for a base case and 2 alternatives show the effects of successfully obtaining CREBS funding, receiving a grant in Lieu of ITC, sharing the fuel costs with the USDA Forest Service (or others), successfully marketing the RECs generated by the project and the participation in a carbon trading market in the event such a market is developed in the US.

The results of those three sensitivity analyses are shown below in Table IX-2. It is evident from these results that a combination of project cost and financing factors must be addressed in order to make the project economic.

The analyses in Table IX-2 include the following assumptions:

- Production Tax Credit (PTC) is always available if the Investment Tax Credit is not selected.

- Although Carbon credit markets are for only the CO2 itself and not other pre carbon market environmental attributes, it is assumed that either RECs or CO2 credits will be used, not both.

**Table IX-2. Economic analysis (from Proforma in Appendix D)**

Case No.	Description	Debt Coverage, Avg/Min	Free Cash Flow, Avg/Min
Base Case	No Economic Enhancement Achieved	0.33 / 0.08	(\$2,367,039)/(\$3,245,982)
D-1	CREBS Shared Fuel Cost and RECS Income	1.43 / 1.32	\$1,275,846 / \$952,513`
D-2	CREBS, ITC Grant, Shared Fuel Cost, RECS income	1.61 / 1.47	\$1,371,944 / \$1,038,612

The debt coverage and cash flow shown in Table IX-2 for Cases 1 and 2, if achieved in reality, are highly likely to be acceptable for financing. This does not mean there are no other scenarios that will be successful for the project, but it must be kept in mind that for every project there are more unsuccessful possibilities than there are successful possibilities. It is the purpose of the development team to focus on the elements leading to a successful outcome..

Both of these successful cases include: 1) CREBS financing; 2) either production tax credits or a federal grant in lieu of investment tax credits which are, in turn, electable in lieu of production tax credits; 3) Shared Fuel Costs; and 4) enhanced revenue in the form of RECs priced at \$25/mWh. Also, no attempt has been made to value the unused project tax shelter of depreciation either accelerated or in any other form. Depreciation can be used in several ways and the tax position of the entity using the depreciation will determine its application.

### IX.8.3 Evaluation of Economic Enhancements

- **Debt**—Some form of debt enhancement will be needed. CREBS are available and loan guarantees from the USDA or DOE are made available on an annual basis. In the analysis, CEEBS improve average annual cash flow by approximately \$900,000.
- **ITC Grant**—The ITC Grant in lieu of PTC is a substantial front end cash contribution. Although by itself, it only improves average annual cash flow by about \$300,000, it should be regarded as essential because it is in effect the front end equity source for the project and can make it instantly attractive to investors. The requirements, availability and timing of this federal subsidy must be determined immediately.
- **Shared Fuel Costs**—The value to the project of the limited shared fuel costs used here (50% of the costs of fuel from the Payette NF-40% of the fuel supply) is more than \$700,000 per year in after debt service cash flow. The key to accessing this value is for the policy of requiring that all slash and thinnings be removed from the forest. The Payette NF already has enacted this policy.
- **RECs Revenue**—The assumed price of RECs adds over \$2,000,000 of average after debt free cash flow to the project’s economics. This points out the need for additional revenue. The sensitivity and recommended required additional revenue is addressed

below in the Economic Recommendations section. The likelihood of being able to sell RECs is high. The value of the RECs is however very uncertain.

#### **IX.8.4 Recommendations**

The project will be successful only if debt subsidy, such as the CREBS, are used, an ITC Grant is received, the cost of fuel removed from the national forests is shared and revenue is enhanced by sale of RECs or a similar project attribute.

The project team will need to pursue these specific goals in the areas of fuel supply, financing, and revenue.

Specific values for revenue enhancement were analyzed by varying the RECs price from \$10 per mWh to \$30/mWh. The results in Table IX-3 below indicate that the minimum acceptable revenue enhancement to be sought through sale of RECs or a similar action is approximately \$18.25 per mWh.

**Table IX-3. REC price at minimum debt coverage**

<b>REC Price</b>	<b>Minimum Debt Coverage</b>
<b>\$25</b>	<b>1.65</b>
<b>\$20</b>	<b>1.39</b>
<b>\$15</b>	<b>1.13</b>
<b>\$10</b>	<b>0.87</b>

Note: CREBS, ITCG rant and Fuel Cost Sharing are included.

All of this points heavily toward the participation of a private entity with an interest in acquiring substantial tax credits and deductions. A legal review can determine what forms of project structure are allowed, but the most obviously favorable is a public/private partnership wherein the County provides the site and is the government body that applies for a part of the CREBS allocation. The private participant can then be required to apply for the grant in lieu of ITC which should be available in an amount of approximately \$7,000,000.

#### **IX.9 SCHEDULE**

A bar chart schedule showing the sequence of activities and events that will lead to completion and commercial operation of the project is in Appendix B. Starting in September 2010 activities and ending with COD in December 2013, the schedule depicts how the most critical areas of the project can be resolved in time to allow the project to meet that date. Those previously defined critical tasks are:

- Fuel supply
- Power sales and interconnect
- Development funding

- Application for grant in lieu of ITC
- Permitting
- Application for CREBS allocation
- Construction financing

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## **Appendix A**

### Fuel Agreement

**PURCHASE/SALE AGREEMENT**

This Agreement is made \_\_\_\_\_ by and between "Buyer" and "Seller" as identified below:

**Buyer:**  
ADAMS COUNTY POWER  
  
XXXXXXXXXX phone  
XXXXXXXXXX fax  
e-mail

**Fuel Deliveries are to be made to Buyer's Facility at:**  
**Goodrich Road**  
  
**Phone ()**

**Seller:**  
Company Name:  
Contact:  
Address:  
  
Telephone:  
Fax:

**1. TYPE, DESCRIPTION AND SPECIFICATIONS**

Fuel Type: Forest Derived Wood Waste, Logging Waste, Forest Thinning, Urban Wood Waste, Construction Wood Waste, Utility line clearing wood waste, etc.

Description: Tops, limbs, whole trees, insect killed wood, fire damaged wood, pallets, crates, boxes, tree prunings, construction and manufacturing residues, and other wood materials processed by a mechanical hog, grinder, or chipper and meeting the specifications below:

- Specifications:
- a. **Minimum HHV** : 8200
  - b. **Maximum ash content** : 4%
  - c. **Maximum moisture content:** 55%
  - d. **Size:** 100% of each fuel delivery must be of pieces less than 6 inches in any dimension. 90% of pieces must be 3 inches or less in any dimension. 85% of pieces must be greater than ¼" in their smallest dimension.
  - e. **Excluded Materials:** Fuel shall not contain any ash or cinder, and shall be free of foreign material including, but not limited to, sand, stone, soil, grass, metal, glass, plastic, chemicals, chemically-treated wood, and hazardous and toxic substances as defined by law.
  - f. **Unacceptable Fuel:** Fuel not meeting these Specifications will be designated Unacceptable Fuel by Buyer and will not be accepted for delivery, or, if delivered, will not be paid for. Unacceptable Fuel will be promptly removed from Buyer's Facility by Seller at Seller's expense or by Buyer at Seller's expense. Buyer's acceptance of any fuel delivery shall not constitute a waiver of default or of any of Buyer's rights herein.

## 2. QUANTITY AND PRICE; DELIVERY SCHEDULE

- a. Buyer agrees to purchase and receive, and Seller agrees to sell and deliver to Buyer's Facility: XXXX BDT per year at \$\$???.00/BDT F.O.B. Buyer's Facility
- b. Transportation of Fuel will be provided by Seller at Seller's expense. Buyer may reject any vehicle which Buyer considers unsafe to unload. Fuel will be delivered by Seller at the rate specified below. Deliveries may be made from 6 AM to 7 PM Monday through Friday; additional delivery hours may be available by special arrangement.

## 3. TERM

The Term of this Agreement shall commence on XXXX, 2011, and terminate at midnight on December 31, 2XXX.

## 4. MEASUREMENT

The unit of measurement shall be that quantity of Fuel which contains two thousand (2,000) pounds of dry biomass fiber and is hereinafter referred to as a "Bone Dry Ton" and designated by the symbol "BDT". Measurement shall be made to the nearest hundredth (1/100) BDT. Buyer shall determine the net weight in pounds of each truckload of Fuel at Buyer's Facility by weighing the loaded vehicle and deducting the tare weight. Buyer shall determine the percentage of dry Fuel in each delivery by testing representative samples using customary ASTM laboratory procedures. The percentage of dry Fuel so determined shall be multiplied by the weight in pounds of the material delivered, and the product shall be divided by two thousand (2,000) to determine the number of BDT contained in the delivery. Buyer agrees to maintain scales and related equipment in good order. Buyer's records with respect to determination of weight and fiber content of Seller's shipments shall be available for inspection by Seller at Buyer's Facility at any reasonable time. If error is discovered, Buyer shall make appropriate corrective adjustments to its equipment and/or procedures.

## 5. PAYMENT

- a. Buyer shall pay Seller on or before the first day of each calendar month for all Fuel delivered to and accepted by Buyer during the period of the first day through the fifteenth day of the preceding calendar month; and Buyer shall pay Seller on or before the fifteenth day of each calendar month for all Fuel delivered to and accepted by Buyer during the period of the sixteenth day through the last day of the preceding calendar month.
- b. Buyer shall forward to Seller with Buyer's periodic payments Buyer's certificate showing net weight and dry wood fiber content of each delivery made during the accounting period for which payment is being made. If within thirty (30) days of receipt of the statement, Seller does not make a report in writing to Buyer of an error, Seller shall be deemed to have waived any error in Buyer's statement and payments, and they shall be considered correct and complete.

## 6. INSURANCE

Each party shall, at its own expense, furnish and hold in force at all times worker's compensation insurance as required by law and employer's liability insurance to a minimum amount of one million dollars (\$1,000,000.00) each occurrence. Vehicles used by Seller or Seller's agents to deliver Fuel to Buyer's Facility shall be maintained at all times in a safe and legal condition. Prior to the first delivery hereunder, and subsequently as reasonably requested by Buyer, Seller shall provide evidence to Buyer's satisfaction that Seller's and/or Seller's agents' vehicles are insured at least to the minimum standards required by law, but no less than one million dollars (\$1,000,000.00) comprehensive general liability coverage including personal injury and property damage. Buyer shall be named an additional insured as respects its interest.

## 7. FORCE MAJEURE

Failure of performance hereunder by Buyer or Seller shall be excused in the event, to the extent, and during the time such failure is caused by curtailment of Buyer's or Seller's operations because of casualty or any other cause beyond the reasonable control of Buyer or Seller, as the case may be.

## 8. DEFAULT AND TERMINATION

The failure by Buyer or Seller (the "Defaulting Party") to fulfill substantially all material obligations to the other party (the "Nondefaulting Party") under this Agreement, unless excused by Force Majeure, shall constitute an event of Default. If an event of Default occurs during the Term of the Agreement, the Nondefaulting Party, in addition to other remedies it may have, may terminate this Agreement without further notice after providing written notice of default to the Defaulting Party. However, Buyer has the right, at its sole option to terminate this Agreement by giving written fifteen (15) day notice to Seller, and upon such termination, all obligations that are still unperformed on both sides except for payment for acceptable fuel received and accepted are thereby discharged.

## 9. OWNERSHIP: LEGAL COMPLIANCE

Seller represents and warrants that it has all right, title, and interest in the Fuel delivered hereunder and the

same is free from liens and encumbrances. Seller guarantees that all Fuel delivered under this Agreement shall be produced and delivered in compliance with all applicable Federal, State, and local laws and regulations, including without limitation OSHA regulations.

## 10. INDEMNITY

Each party shall indemnify, defend and hold harmless the other party, its officers, directors, agents, and employees against all loss, claims, damage, expense, and liability to third persons for injury to or death of persons or injury to property, proximately caused by the indemnifying party's negligent or willful acts or omissions in connection with the Agreement.

## 11. WAIVER

The failure of either party at any time or from time to time to enforce any of the terms of this Agreement shall not be construed to be a waiver of such term or of such party's right to thereafter enforce each and every provision thereof.

## 12. ENTIRE AGREEMENT

This Agreement and any exhibits attached hereto shall constitute the entire agreement between the parties, and there are no representations or understanding, oral or written, between them as of the date hereof other than as set forth herein.

**13. GOVERNING LAW**

This Agreement and the rights and obligations of the parties hereto shall be governed by and construed under the laws of the state of Idaho.

**14. OTHER TERMS**

Adams County Power is a project to create living wage jobs in Adams County and surrounding rural counties and to provide management of the public lands in the surrounding rural counties for fire control, wildlife enhancement, carbon sequestration, and emissions reduction, and to produce clean renewable "Green" energy. The minimum wage to be paid to employees of companies providing fuel to Adams County Power is \$16.00 per hour. The minimum benefit package for all employees of companies providing fuel to Adams County Power includes; health insurance, two-weeks vacation per year, a 401K retirement plan, 4 days sick leave per year, and seven paid holidays per year.

**Seller**

**Buyer**

**Adams County Power**

BY: \_\_\_\_\_

BY: \_\_\_\_\_

TITLE: \_\_\_\_\_

\_\_\_\_\_

## **Appendix B**

Project Schedule

(see separate pdf file)

## **Appendix C**

### Project Budgets

Table C-1. Development budget

Development		USE	Source
Preliminary Development	Business Plan	(\$15,000)	
	Grant Writer	(\$3,000)	
	Idaho Power Engineer Interconnect	(\$30,000)	
	Air permit Application & Support	(\$20,000)	
	Fuel Samples Analysis	(\$2,000)	
	Total	(\$70,000)	
	REEZ Grant		\$70,000
Advancing Development	Lobbying	(\$2,000)	
	Air, Permit to Construct	(\$75,000)	
	Water Permits	(\$10,000)	
	Well Permit	(\$1,000)	
	Other Permits	(\$4,000)	
	Confirm Concept design (GAs, Heat Balance, P&IDs)	(\$25,000)	
	Bid/Award Eng & Const Contract	(\$10,000)	
Engineer, Procure Construct	Negotiate Contract, Schedule, Price	(\$10,000)	
	Legal Fees	(\$15,000)	
			I think 100,000
Drill & Prove Well	(\$25,000)		
Financing			
Construction/Permanent Financing	Explore Options (Pursue at least two)	(\$5,000)	
	Apply/Negotiate Financing	(\$20,000)	
	Legal Fees	(\$20,000)	

<b>Development</b>		<b>USE</b>	<b>Source</b>
Development Grant	Close Financing	(\$20,000)	
	Research, Contact & Select Sources	n/a	
	Application & Award	(\$7,500)	
Total Development		(\$249,500)	
Grant Proceeds			\$250,000

Table C-2. Capital budget

<b>Capital Costs</b>		<b>Use</b>	<b>Source</b>
	EPC Contract Cost	(\$24,000,000)	
	Construction Representative	(\$200,000)	
	Insurance During Construction	(\$100,000)	
	Fuel Supply (Start 6 mo before COD)	(\$635,122)	
	Operating Staff (6 mo's before COD)	(\$1,245,000)	
	Interconnect Costs (Idaho Power)	(\$850,000)	
	Sub Total	(\$27,030,122)	
	Interest During Construction (Avg at 5%, 18 Mo)	(\$1,072,500)	
	Lender's fees	(\$500,000)	
	Total Capitalized Costs	(\$28,602,622)	
	Financing Proceeds		\$28,600,000

Table C-3. Operating budget

<b>Annual Operations</b>			
FUEL unit cost		\$/BDTON	\$43.97
Fuel use		BDTON	85832
Fuel @			\$3,773,634
Labor	20 staff		\$1,170,400
Administration			\$100,000
Water treatment		Likely low due to SiO <sub>2</sub>	\$158,144 230000
Ammonia			\$0
Lime stone			\$0
Ash disposal		May be high just take it to dump	\$72,389
Purchased power			\$50,000
Maintenance @ 3%			\$660,000
Taxes @ 1%		Tax holiday due to public private arrangement	\$220,000
Insurance @ 1.0%			\$220,000
<b>Total Annual Expenses</b>			<b>\$6,424,567</b>

## **Appendix D**

### Economic Pro Forma

ADAMS COUNTY POWER BASE CASE Appendix D

Financial Assumptions		
Loan Type	100%	Subsidized Loan Guarantee
Term	15	Years
Interest Rate (7.5% less Fed CRED tax credit of 4.25% = 3.25% realized)	7.50%	
Equity ARRA Grant in Lieu of PTC	30% of plant costs +10% of other costs	\$0
Annual Payment (end of year)		(\$3,960,240)

Economic Variables		
YES/NO	Price	% or No. Applied
NO	\$25.00	
NO	N/A	30.00%
NO	N/A	70.00%
NO	\$18.00	N/A
NO		5
NO		10.0%
YES	\$12.00	N/A
YES		2

Operative Assumptions		
Plant Net Capacity	10,000	kW
Plant Capacity Factor	90.00%	
Plant Operating Hours	7,254	hours
Annual Power Production	78,840	MWh
Net Heat Rate	17,688	BTU/MWh
Annual Fuel Consumption	1,394,227	million
Annual Fuel Consumption (GT at 42% MC)	136,363	green tons
Operating and Maintenance Staff	20	
Annual Outside Maintenance	\$600,000	per year
Water Treatment Annual Costs	\$315,000	
Annual Ammonia Consumption	NO	
Motor Vehicle Fuel	2,500	gallons
Ash for Disposal/tons per year	2727	tons
Purchased Power, kWh	\$50,000	

Capital Cost Assumptions		
FFC Contract	\$26,000,000	Operator Costs
Owner's Costs		1 Yr Pre-Op Fuel Supply
Const. Rep	\$200,000	Operating Staff
Insurance	\$100,000	Fuel Supply
Interest During Const	\$1,072,500	Cap Cost per hour
Sub Total Owner	\$1,372,500	2 X In-woods Capital cost
Interconnect	\$80,000	2 X In-woods Ops Capital (\$/wk)
Sub Total	\$26,222,500	Cost to Place Loan
		Sub Total
		\$9,223,043
		Pass. Atty. Advisor
		\$200,000
		Total Capital Requirement
		\$34,445,540

50.00% applied to 40.00% of the fuel  
Percent Fuel Supply from Payette HF

Economic Assumptions		
Power Sales	With Power Non-Levelized Rates, 2015, starting 2015	\$83.50 per MWh
Unsubsidized Fuel Price		\$48.50 per BDT
Applied Fuel Cost if Proj finances Inwoods Capital, as selective oil C17		\$30.21 per ton
Annual Capital Recovery for financing 2 In-woods teams, 5 yrs at 6%		(\$248,638)
Renewable Energy Credits		\$25 per MWh
Escalation Factors		
Power Sales		2.2%
Fuel		4.0%
Labor		5.0%
Maintenance		2.0%
Consumables		3.0%
Purchased Power		5.0%
Ash Disposal		2.0%
RBC		2.0%

	YEAR	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
		2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	
<b>Income</b>																						
MWh Power Energy Price		\$83.50	\$85.75	\$87.03	\$89.56	\$91.55	\$95.54	\$95.60	\$97.71	\$99.65	\$102.05	\$104.30	\$106.50	\$108.94	\$111.33	\$113.78	\$116.29	\$118.84	\$121.45	\$124.13	\$126.86	
Net Energy Production (MWh)		78,840	78,840	78,840	78,840	78,840	78,840	78,840	78,840	78,840	78,840	78,840	78,840	78,840	78,840	78,840	78,840	78,840	78,840	78,840	78,840	
Energy Revenue		\$6,584,676	\$6,760,190	\$6,908,923	\$7,060,320	\$7,216,200	\$7,375,016	\$7,537,268	\$7,700,056	\$7,872,256	\$8,045,732	\$8,222,726	\$8,403,659	\$8,588,540	\$8,777,466	\$8,970,592	\$9,167,945	\$9,369,640	\$9,575,722	\$9,786,419	\$10,000,741	
RBCs Produced		78,840	78,840	78,840	78,840	78,840	78,840	78,840	78,840	78,840	78,840	78,840	78,840	78,840	78,840	78,840	78,840	78,840	78,840	78,840	78,840	
RBC Price	\$25.00 per MWh	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	
RBC Revenue		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
Production Tax Credits (discounted at 30%)	\$11.00 per MWh	\$607,068	\$607,068	\$607,068	\$607,068	\$607,068	\$607,068	\$607,068	\$607,068	\$607,068	\$607,068	\$607,068	\$607,068	\$607,068	\$607,068	\$607,068	\$607,068	\$607,068	\$607,068	\$607,068	\$607,068	
CO2 Credits TFC, CC plant offset	0.133 \$/ton	10,486	10,486	10,486	10,486	10,486	10,486	10,486	10,486	10,486	10,486	10,486	10,486	10,486	10,486	10,486	10,486	10,486	10,486	10,486	10,486	
CO2 Credit Price	\$0.00 \$/ton, Escalates at 2%	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	
CO2 Credit Revenue - Assumed Not available until 2016		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
<b>TOTAL INCOME</b>		\$7,221,744	\$7,367,267	\$7,515,991	\$7,667,966	\$7,823,328	\$7,982,066	\$8,144,336	\$8,310,136	\$8,479,624	\$8,652,420	\$8,830,926	\$9,014,727	\$9,203,606	\$9,396,956	\$9,594,690	\$9,796,813	\$10,003,420	\$10,214,619	\$10,430,507	\$10,651,685	
<b>Expenses</b>																						
Total Fuel Unit Cost (NO Subsidies or Capital Provided)	\$/BDT	\$44.50																				
Applied Fuel Cost (with Capital Provided and FS Subsidy See Cells C17 and C18)	\$/BDT	\$36.21	\$37.66	\$39.17	\$40.73	\$42.36	\$44.06	\$45.82	\$47.65	\$49.56	\$51.54	\$53.60	\$55.75	\$57.98	\$60.30	\$62.71	\$65.22	\$67.82	\$70.54	\$73.36	\$76.29	
Fuel Consumption	BDTON	79,090	79,090	79,090	79,090	79,090	79,090	79,090	79,090	79,090	79,090	79,090	79,090	79,090	79,090	79,090	79,090	79,090	79,090	79,090	79,090	
Fuel Cost (25% discount cost to offset capital investment in fuel equip)		\$2,864,028	\$2,978,589	\$3,097,733	\$3,221,642	\$3,350,508	\$3,484,528	\$3,623,909	\$3,768,065	\$3,916,602	\$4,069,401	\$4,226,461	\$4,387,809	\$4,553,466	\$4,723,452	\$4,897,802	\$5,076,552	\$5,259,742	\$5,447,416	\$5,639,619	\$5,836,407	
Labor		\$1,223,040	\$1,234,192	\$1,245,024	\$1,255,632	\$1,266,016	\$1,276,176	\$1,286,112	\$1,295,824	\$1,305,312	\$1,314,576	\$1,323,616	\$1,332,432	\$1,341,024	\$1,349,392	\$1,357,536	\$1,365,456	\$1,373,152	\$1,380,624	\$1,387,872	\$1,394,904	\$1,401,728
Management and Administration		\$110,000	\$115,500	\$121,275	\$127,339	\$133,706	\$140,391	\$147,411	\$154,781	\$162,516	\$170,524	\$178,812	\$187,387	\$196,256	\$205,426	\$214,904	\$224,698	\$234,816	\$245,256	\$256,028	\$267,140	\$278,600
Water Treatment		\$315,000	\$340,350	\$349,312	\$356,791	\$364,495	\$372,439	\$380,620	\$389,047	\$397,720	\$406,646	\$415,824	\$425,252	\$434,929	\$444,854	\$455,028	\$465,450	\$476,120	\$487,038	\$498,204	\$509,628	\$521,308
Ammonia		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
Ash Disposal		\$60,151	\$63,945	\$67,936	\$72,135	\$76,548	\$81,181	\$86,046	\$91,151	\$96,504	\$102,104	\$107,958	\$114,064	\$120,431	\$127,058	\$133,944	\$141,090	\$148,506	\$156,292	\$164,348	\$172,674	\$181,270
Motor Vehicle Fuel		\$46,500	\$48,672	\$50,919	\$53,244	\$55,649	\$58,139	\$60,711	\$63,372	\$66,121	\$68,966	\$71,904	\$74,934	\$78,054	\$81,264	\$84,564	\$87,954	\$91,434	\$95,004	\$98,664	\$102,414	\$106,254
Purchased Power		\$50,000	\$51,500	\$53,125	\$54,781	\$56,469	\$58,196	\$59,961	\$61,762	\$63,597	\$65,474	\$67,391	\$69,348	\$71,344	\$73,379	\$75,454	\$77,568	\$79,721	\$81,913	\$84,144	\$86,414	\$88,724
Annual Maintenance		\$600,000	\$612,000	\$624,240	\$636,725	\$649,459	\$662,446	\$675,691	\$689,191	\$702,952	\$716,981	\$731,284	\$745,858	\$760,699	\$775,804	\$791,171	\$806,800	\$822,690	\$838,841	\$855,252	\$871,924	\$888,856
Taxes		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
Insurance		\$200,000	\$204,000	\$208,000	\$212,140	\$216,419	\$220,841	\$225,411	\$230,134	\$234,916	\$239,852	\$244,948	\$250,101	\$255,408	\$260,868	\$266,480	\$272,243	\$278,156	\$284,219	\$290,431	\$296,792	\$303,302
<b>Total Expenses</b>		\$5,397,049	\$5,607,046	\$5,825,721	\$6,053,439	\$6,290,593	\$6,537,568	\$6,794,647	\$7,062,015	\$7,340,084	\$7,628,274	\$7,926,901	\$8,236,323	\$8,546,866	\$8,868,852	\$9,192,613	\$9,528,472	\$9,865,752	\$10,204,776	\$10,545,868	\$10,889,352	
<b>Earnings Before Interest, Taxes, and Debt Amortization (EBITDA)</b>		\$1,824,695	\$1,760,221	\$1,690,271	\$1,614,526	\$1,532,735	\$1,444,498	\$1,349,489	\$1,247,241	\$1,137,671	\$1,020,076	\$894,135	\$759,404	\$615,419	\$461,694	\$297,718	\$122,936	(\$43,154)	(\$261,198)	(\$471,795)	(\$695,590)	
<b>Debt Service</b>																						
Beginning Debt Balance		\$34,445,540	\$33,126,715	\$31,706,979	\$30,184,933	\$28,546,541	\$26,785,231	\$24,899,945	\$22,896,604	\$20,686,610	\$18,281,515	\$15,788,014	\$13,208,875	\$10,547,076	\$7,806,726	\$5,000,000	\$2,142,991	\$0	\$0	\$0	\$0	
Remaining Years		15	14	13	12	11	10	9	8	7	6	5	4	3	2	1						
Total Annual Payment		\$3,960,240	\$3,960,240	\$3,960,240	\$3,960,240	\$3,960,240	\$3,960,240	\$3,960,240	\$3,960,240	\$3,960,240	\$3,960,240	\$3,960,240	\$3,960,240	\$3,960,240	\$3,960,240	\$3,960,240	\$3,960,240	\$3,960,240	\$3,960,240	\$3,960,240	\$3,960,240	
Interest Payment		\$2,382,456	\$2,464,304	\$2,378,173	\$2,233,368	\$2,140,091	\$2,008,897	\$1,896,896	\$1,794,246	\$1,701,046	\$1,617,396	\$1,543,296	\$1,478,746	\$1,423,746	\$1,378,296	\$1,342,296	\$1,315,746	\$1,298,746	\$1,291,296	\$1,293,296	\$1,305,296	
Principal Payment		\$1,577,784	\$1,495,936	\$1,582,067	\$1,626,872	\$1,720,149	\$1,851,343	\$2,063,344	\$2,166,000	\$2,253,154	\$2,324,844	\$2,381,944	\$2,425,500	\$2,455,500	\$2,472,000	\$2,475,000	\$2,464,500	\$2,439,500	\$2,399,500	\$2,344,500	\$2,275,000	
Ending Debt Balance		\$33,126,715	\$31,706,979	\$30,184,933	\$28,546,541	\$26,785,231	\$24,899,945	\$22,896,604	\$20,686,610	\$18,281,515	\$15,788,014	\$13,208,875	\$10,547,076	\$7,806,726	\$5,000,000	\$2,142,991	\$0	\$0	\$0	\$0	\$0	
Debt Coverage Ratio	15 yr Avg Minimum	0.30	0.06	0.47	0.41	0.39	0.37	0.35	0.32	0.29	0.26	0.23	0.19	0.16	0.12	0.08						
Operating Year After Debt Service Cash Flow	15 yr Avg Minimum	(\$2,077,545)	(\$2,142,021)	(\$2,211,969)	(\$2,287,690)	(\$2,369,305)	(\$2,457,742)	(\$2,552,752)	(\$2,654,899)	(\$2,764,508)	(\$2,882,164)											

ADAMS COUNTY POWER Appendix D-1, CREBS, Fuel Cost Sharing and RECs Income

<b>Financial Assumptions</b>			
Loan Type	100%	Subsidized Loan Guarantee	
Term	15	Years	
Interest Rate (7.5% less Fed CREB tax credit of 4.25% = 3.25% realized)	3.25%		
Equity ARRA Grant in Lieu of PTC Annual Payment (end of year)	30% of plant costs + 10% of other costs	\$0	(\$2,937,811)

<b>Economic Variables</b>			
REC Sold	YES	Price	% of No. Available
PTC Grant in Lieu of PTC	NO	N/A	10.00%
CREBS Allowed	YES	N/A	70.00%
CO2 Credits Sold	NO	\$18.00	N/A
Years until CO2 Credits Available			5
Fuel Cost Sharing	YES		20.0%
PTC Used	YES	\$11.00	N/A
Include In-Woods Capital In Financing	YES		2

<b>Operational Assumptions</b>	
Plant Net Capacity	10,000 kW
Plant Capacity Factor	90.00%
Plant Operating Hours	7,884 hours
Annual Power Production	78,840 MWh
Net Heat Rate	17,680 Btu/kWh
Annual Fuel Consumption	1,394,207 mmBtu
Annual Fuel Consumption (GT at 42% MC)	136,363 green tons
Operating and Maintenance Staff	79,090 (B/D, 0% MC)
Annual Outside Maintenance	\$600,000 per year
Water Treatment Annual Costs	\$35,000
Annual Ammonia Consumption	\$80,000
Motor Vehicle Fuel	15,000
Ash for Disposal Tons per year	2727 tons
Purchased Power, kWh	\$50,000

<b>Capital Cost Assumptions</b>			
EPC Contract	\$24,000,000	Operator Costs	\$3,800,000
Owner's Costs		Pre-Op Fuel Supply	\$1,225,000
Conv. Rep	\$2,000,000	Operating Staff	\$1,225,000
Insurance	\$100,000	Fuel Supply	\$870,000
Interest During Const	\$1,072,500	Cap Cost per term	\$1,740,000
Sub Total Owner	\$1,372,500	2 X In-woods Capital cost	\$90,000
Interconnect	\$850,000	Cost to Place Loan	\$500,000
Sub Total	\$26,222,500	Sub Total	\$6,225,000
<b>Total Capital Requirement</b>		<b>\$34,447,500</b>	

50.00% applied to 40.00% of the fuel  
 Percent Fuel Supply from Payette NF

<b>Economic Assumptions</b>	
Power Sales	Electric Power Non-Levelized Rates, 2009, starting 2013
Unsubsidized Fuel Price	\$63.93 per mmBtu
Applied Fuel Cost if Proj Finances Inwoods Capital, as selected call C17	\$44.53 per B/D
Annual Capital Recovery for financing 2 In-woods teams, 5 yrs at 6%	\$248,036
Renewable Energy Credits	\$25 per MWh
<b>Escalation Factors</b>	
Power Sales	2.3%
Fuel	4.0%
Labor	5.0%
Maintenance	2.0%
Consumables	3.0%
Purchased Power	3.0%
Ash Disposal	3.0%
REC	3.0%

	YEAR	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
		2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
<b>Income</b>																					
Ideho Power Energy Price		\$83.93	\$85.75	\$87.63	\$89.56	\$91.53	\$93.54	\$95.60	\$97.71	\$99.85	\$102.05	\$104.30	\$106.59	\$108.94	\$111.33	\$113.78	\$116.29	\$118.84	\$121.46	\$124.15	\$126.86
Net Energy Production (MWh)		78,840	78,840	78,840	78,840	78,840	78,840	78,840	78,840	78,840	78,840	78,840	78,840	78,840	78,840	78,840	78,840	78,840	78,840	78,840	78,840
Energy Revenue		\$6,614,676	\$6,760,199	\$6,906,323	\$7,053,320	\$7,201,210	\$7,350,018	\$7,500,756	\$7,653,456	\$7,808,156	\$8,064,872	\$8,323,750	\$8,584,829	\$8,848,154	\$9,113,772	\$9,381,645	\$9,651,829	\$9,924,372	\$10,199,322	\$10,476,726	\$10,756,644
RECs Produced		78,840	78,840	78,840	78,840	78,840	78,840	78,840	78,840	78,840	78,840	78,840	78,840	78,840	78,840	78,840	78,840	78,840	78,840	78,840	78,840
REC Price	\$25.00 per MWh	\$2,000,000	\$2,000,000	\$2,000,000	\$2,000,000	\$2,000,000	\$2,000,000	\$2,000,000	\$2,000,000	\$2,000,000	\$2,000,000	\$2,000,000	\$2,000,000	\$2,000,000	\$2,000,000	\$2,000,000	\$2,000,000	\$2,000,000	\$2,000,000	\$2,000,000	\$2,000,000
REC Revenue		\$1,971,000	\$1,971,000	\$1,971,000	\$1,971,000	\$1,971,000	\$1,971,000	\$1,971,000	\$1,971,000	\$1,971,000	\$1,971,000	\$1,971,000	\$1,971,000	\$1,971,000	\$1,971,000	\$1,971,000	\$1,971,000	\$1,971,000	\$1,971,000	\$1,971,000	\$1,971,000
Production Tax Credits (discounted at 30%)	\$11.00 per MWh	\$867,060	\$867,060	\$867,060	\$867,060	\$867,060	\$867,060	\$867,060	\$867,060	\$867,060	\$867,060	\$867,060	\$867,060	\$867,060	\$867,060	\$867,060	\$867,060	\$867,060	\$867,060	\$867,060	\$867,060
CO2 Credits TYP, CC plant offset	0.133 ton/MWh	10,486	10,486	10,486	10,486	10,486	10,486	10,486	10,486	10,486	10,486	10,486	10,486	10,486	10,486	10,486	10,486	10,486	10,486	10,486	10,486
CO2 Credit Price	\$0.00 \$/ton, Escalate at 2%	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
CO2 Credit Revenue- Assumed Not available until 2026		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>TOTAL INCOME</b>		\$9,352,736	\$9,575,259	\$9,800,323	\$10,027,380	\$10,256,270	\$10,487,078	\$10,720,756	\$10,957,416	\$11,200,076	\$11,448,836	\$11,703,800	\$11,965,000	\$12,232,500	\$12,506,300	\$12,786,400	\$13,072,800	\$13,365,600	\$13,664,800	\$13,970,400	\$14,282,400
<b>Expenses</b>																					
Total Fuel Unit Cost (NO Subsidie or Capital Provided)	\$/B/D	\$44.50																			
Applied Fuel Cost (with Capital Provided and 75 Subsidy Fee Call C17 and C15)	\$28.97 \$/B/D	\$28.97	\$30.13	\$31.33	\$32.59	\$33.93	\$35.35	\$36.86	\$38.45	\$39.12	\$39.65	\$41.23	\$42.88	\$44.60	\$46.38	\$48.24	\$50.17	\$52.17	\$54.26	\$56.43	\$58.69
Fuel Consumption	B/DTON	79,090	79,090	79,090	79,090	79,090	79,090	79,090	79,090	79,090	79,090	79,090	79,090	79,090	79,090	79,090	79,090	79,090	79,090	79,090	79,090
Fuel Cost (25% at discount cost to offset capital investment in fuel eqs)		\$2,281,322	\$2,281,322	\$2,281,322	\$2,281,322	\$2,281,322	\$2,281,322	\$2,281,322	\$2,281,322	\$2,281,322	\$2,281,322	\$2,281,322	\$2,281,322	\$2,281,322	\$2,281,322	\$2,281,322	\$2,281,322	\$2,281,322	\$2,281,322	\$2,281,322	\$2,281,322
Labor	20	\$1,233,000	\$1,233,000	\$1,233,000	\$1,233,000	\$1,233,000	\$1,233,000	\$1,233,000	\$1,233,000	\$1,233,000	\$1,233,000	\$1,233,000	\$1,233,000	\$1,233,000	\$1,233,000	\$1,233,000	\$1,233,000	\$1,233,000	\$1,233,000	\$1,233,000	\$1,233,000
Management and Administration		\$120,000	\$120,000	\$120,000	\$120,000	\$120,000	\$120,000	\$120,000	\$120,000	\$120,000	\$120,000	\$120,000	\$120,000	\$120,000	\$120,000	\$120,000	\$120,000	\$120,000	\$120,000	\$120,000	\$120,000
Water Treatment		\$35,000	\$35,000	\$35,000	\$35,000	\$35,000	\$35,000	\$35,000	\$35,000	\$35,000	\$35,000	\$35,000	\$35,000	\$35,000	\$35,000	\$35,000	\$35,000	\$35,000	\$35,000	\$35,000	\$35,000
Ammonia		\$80,000	\$80,000	\$80,000	\$80,000	\$80,000	\$80,000	\$80,000	\$80,000	\$80,000	\$80,000	\$80,000	\$80,000	\$80,000	\$80,000	\$80,000	\$80,000	\$80,000	\$80,000	\$80,000	\$80,000
Ash Disposal		\$68,181	\$68,181	\$68,181	\$68,181	\$68,181	\$68,181	\$68,181	\$68,181	\$68,181	\$68,181	\$68,181	\$68,181	\$68,181	\$68,181	\$68,181	\$68,181	\$68,181	\$68,181	\$68,181	\$68,181
Motor Vehicle Fuel		\$48,000	\$48,000	\$48,000	\$48,000	\$48,000	\$48,000	\$48,000	\$48,000	\$48,000	\$48,000	\$48,000	\$48,000	\$48,000	\$48,000	\$48,000	\$48,000	\$48,000	\$48,000	\$48,000	\$48,000
Purchased Power		\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000
Annual Maintenance		\$600,000	\$600,000	\$600,000	\$600,000	\$600,000	\$600,000	\$600,000	\$600,000	\$600,000	\$600,000	\$600,000	\$600,000	\$600,000	\$600,000	\$600,000	\$600,000	\$600,000	\$600,000	\$600,000	\$600,000
Taxes		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Insurance		\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000
<b>Total Expenses</b>		\$4,824,266	\$5,011,330	\$5,206,174	\$5,409,111	\$5,620,491	\$5,840,632	\$6,070,066	\$6,309,042	\$6,558,029	\$6,817,463	\$7,087,799	\$7,369,515	\$7,663,103	\$7,969,090	\$8,286,028	\$8,614,467	\$8,954,003	\$9,304,271	\$9,765,904	\$10,240,534
<b>Earnings Before Interest, Taxes, and Debt Amortization (EBITDA)</b>		\$4,528,470	\$4,563,929	\$4,594,149	\$4,628,269	\$4,655,779	\$4,686,446	\$4,710,690	\$4,728,374	\$4,739,387	\$4,743,413	\$4,741,337	\$4,733,285	\$4,719,487	\$4,700,210	\$4,675,310	\$4,644,333	\$4,607,333	\$4,564,529	\$4,516,496	\$4,463,866
<b>Debt Service</b>																					
Beginning Debt Balance		\$34,447,500	\$32,627,209	\$30,749,782	\$28,811,339	\$26,809,896	\$24,743,406	\$22,609,756	\$20,406,762	\$18,132,170	\$15,787,635	\$13,353,612	\$10,830,163	\$8,317,244	\$5,814,911	\$3,322,622	\$800,329	\$0	\$0	\$0	\$0
Remaining Years		15	14	13	12	11	10	9	8	7	6	5	4	3	2	1					
Total Annual Payment		\$2,937,811	\$2,937,811	\$2,937,811	\$2,937,811	\$2,937,811	\$2,937,811	\$2,937,811	\$2,937,811	\$2,937,811	\$2,937,811	\$2,937,811	\$2,937,811	\$2,937,811	\$2,937,811	\$2,937,811	\$2,937,811	\$2,937,811	\$2,937,811	\$2,937,811	\$2,937,811
Interest Payment		\$1,129,480	\$1,129,480	\$1,129,480	\$1,129,480	\$1,129,480	\$1,129,480	\$1,129,480	\$1,129,480	\$1,129,480	\$1,129,480	\$1,129,480	\$1,129,480	\$1,129,480	\$1,129,480	\$1,129,480	\$1,129,480	\$1,129,480	\$1,129,480	\$1,129,480	\$1,129,480
Principal Payment		\$1,808,331	\$1,808,331	\$1,808,331	\$1,808,331	\$1,808,331	\$1,808,331	\$1,808,331	\$1,808,331	\$1,808,331	\$1,808,331	\$1,808,331	\$1,808,331	\$1,808,331	\$1,808,331	\$1,808,331	\$1,808,331	\$1,808,331	\$1,808,331	\$1,808,331	\$1,808,331
Ending Debt Balance		\$32,627,209	\$30,749,782	\$28,811,339	\$26,809,896	\$24,743,406	\$22,609,756	\$20,406,762	\$18,132,170	\$15,787,635	\$13,353,612	\$10,830,163	\$8,317,244	\$5,814,911	\$3,322,622	\$800,329	\$0	\$0	\$0	\$0	\$0
Debt Coverage Ratio	15-yr Avg Minimum	1.43	1.49	1.48	1.46	1.45	1.47	1.46	1.45	1.45	1.44	1.43	1.43	1.42	1.41	1.40	1.39	1.38	1.37	1.36	1.35



Appendix D-2, CREBS, ITC Grant, Fuel Cost Sharing and RECs Income

ADAMS COUNTY POWER			
<b>Financial Assumptions</b>			
Loan Type	100%	Subordinated Loan Guarantee	15 Years
Term			
Interest Rate (7.5% less Fed CREB tax credit of 4.25% = 3.25% realized)		3.25%	
Equity ARRA Grant in Lieu of PTC Annual Payment (end of year)	30% of plant costs +10% of other costs	\$8,244,554	(\$2,254,645)
<b>Economic Variables</b>			
RECs Sold	YES/NO	Price	% of No. Available
ITC Grant in Lieu of PTC	YES	\$25.00	10.00%
CREBs Allowed	YES	N/A	70.00%
CO2 Credits Sold	NO	\$18.00	N/A
Mean units CO2 Credits Available	YES		20.0%
Fuel Cost Sharing	NO	\$11.00	N/A
ITC Used	NO		
Include In-Woods Capital in Financing	YES		2 In-Woods Terms Financed

Capital Cost Assumptions			
REC Contract	\$24,000,000	Operator Costs	
Owner's Costs		Pre-Op Fuel Supply	\$1,890,000
Const. Fee	\$200,000	Operating Staff	\$1,225,000
Insurance	\$100,000	Fuel Supply	\$670,000
Interest During Const	\$1,072,500	Cap Cost per team	\$1,780,000
Sub Total Owner	\$1,372,500	2 X In-Woods Capital cost	\$90,000
Interconnect	\$800,000	2 X In-Woods Ops Capital (\$-w/)	\$500,000
Sub Total	\$26,222,500	Cost to Place Loan	
<b>Total Capital Requirement \$34,445,545</b>			

50.00% applied to 40.00% of the fuel  
Percent Fuel Supply from Payette NF

Operative Assumptions		Economic Assumptions	
Power Net Capacity	30,000 kw	Power Sales	100% per mWh
Plant Capacity Factor	90.00%	Unsubsidized Fuel Price	\$44.50 per BDT
Plant Operating Hours	7,684 hours	Applied Fuel Cost (F-Fuel) Finance In-Woods Capital, as selected cell C17	\$26.21 per ton
Annual Power Production	78,840 mWh	Annual Capital Recovery for financing 2 in-woods teams, 5 year DN	(\$248,024)
Net Heat Rate	17,684 Btu/kWh	Reasonable Energy Credits	\$20 per mWh
Annual Fuel Consumption	1,394,207 mmbtu	<b>Location Factors</b>	
Annual Fuel Consumption (GT at 42% MC)	136,965 green tons	Power Sales	2.2%
Operating and Maintenance Staff	70	Fuel	6.0%
Annual/Outside Maintenance	\$500,000 per year	Labor	5.0%
Water Treatment Annual Costs	\$25,000	Maintenance	2.2%
Annual Ammonia Consumption	NO	Consumables	3.0%
Motor Vehicle Fuel	15,000	Purchased Power	0.0%
Ash for Disposal/tons per year	2727 tons	Ash Disposal	2.0%
Purchased Power, kWh	\$50,000	RDC	2.0%

	YEAR	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
		2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	
<b>Income</b>																						
Watts Power Energy Price		\$63.50	\$65.75	\$67.60	\$69.56	\$91.50	\$93.54	\$95.60	\$97.71	\$99.85	\$102.05	\$104.30	\$106.59	\$108.94	\$111.33	\$113.78	\$116.29	\$118.84	\$121.46	\$124.13	\$126.86	
Net Energy Production (MWh)		78,840	78,840	78,840	78,840	78,840	78,840	78,840	78,840	78,840	78,840	78,840	78,840	78,840	78,840	78,840	78,840	78,840	78,840	78,840	78,840	
Energy Revenue		\$6,614,676	\$6,760,139	\$6,908,903	\$7,060,920	\$7,216,260	\$7,375,018	\$7,537,260	\$7,703,088	\$7,872,356	\$8,045,152	\$8,222,728	\$8,405,629	\$8,593,560	\$8,787,066	\$8,986,900	\$9,193,840	\$9,408,640	\$9,632,172	\$9,865,310	\$10,109,040	
RECs Produced		78,840	78,840	78,840	78,840	78,840	78,840	78,840	78,840	78,840	78,840	78,840	78,840	78,840	78,840	78,840	78,840	78,840	78,840	78,840	78,840	
REC Price	\$25.00 per mWh	\$1,971,000	\$1,971,000	\$1,971,000	\$1,971,000	\$1,971,000	\$1,971,000	\$1,971,000	\$1,971,000	\$1,971,000	\$1,971,000	\$1,971,000	\$1,971,000	\$1,971,000	\$1,971,000	\$1,971,000	\$1,971,000	\$1,971,000	\$1,971,000	\$1,971,000	\$1,971,000	
REC Revenue		\$1,971,000	\$1,971,000	\$1,971,000	\$1,971,000	\$1,971,000	\$1,971,000	\$1,971,000	\$1,971,000	\$1,971,000	\$1,971,000	\$1,971,000	\$1,971,000	\$1,971,000	\$1,971,000	\$1,971,000	\$1,971,000	\$1,971,000	\$1,971,000	\$1,971,000	\$1,971,000	
Production Tax Credits (discounted at 30%)	\$0.00 per mWh	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
CO2 Credits TTY, CC plant offset	0.133 ton/mWh	10,486	10,486	10,486	10,486	10,486	10,486	10,486	10,486	10,486	10,486	10,486	10,486	10,486	10,486	10,486	10,486	10,486	10,486	10,486	10,486	
CO2 Credit Price	\$0.00 \$/ton, Escalates at 2%	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	
CO2 Credit Revenue - Assumed Not available until 2016		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
<b>TOTAL INCOME</b>		\$8,585,676	\$8,770,619	\$8,959,902	\$9,152,961	\$9,349,734	\$9,551,501	\$9,758,924	\$9,972,147	\$10,191,896	\$10,418,279	\$10,652,386	\$10,894,330	\$11,145,244	\$11,405,366	\$11,675,800	\$11,956,800	\$12,248,720	\$12,552,840	\$12,869,520	\$13,199,280	
<b>Expenses</b>																						
Total Fuel Unit Cost (NO Subsidies or Capital Provided)	\$/BDT	\$44.50																				
Applied Fuel Cost (with Capital Provided and FS Subsidy See Cells C17 and C18)	\$/BDT	\$28.97	\$30.33	\$31.33	\$32.50	\$33.89	\$35.25	\$36.66	\$38.12	\$39.65	\$41.23	\$42.86	\$44.60	\$46.38	\$48.24	\$50.17	\$52.17	\$54.26	\$56.43	\$58.69	\$61.03	
Fuel Consumption	BDTON	78,090	78,090	78,090	78,090	78,090	78,090	78,090	78,090	78,090	78,090	78,090	78,090	78,090	78,090	78,090	78,090	78,090	78,090	78,090	78,090	
Fuel Cost (2% at discount cost to other capital investment in fuel equip)		\$1,291,222	\$1,382,871	\$1,478,186	\$1,577,314	\$1,680,406	\$1,787,622	\$1,899,127	\$2,015,090	\$2,135,696	\$2,261,124	\$2,391,690	\$2,527,626	\$2,669,262	\$2,817,036	\$2,971,406	\$3,132,940	\$3,302,200	\$3,479,840	\$3,665,520	\$3,859,920	
Labor	30	\$1,225,000	\$1,225,000	\$1,225,000	\$1,225,000	\$1,225,000	\$1,225,000	\$1,225,000	\$1,225,000	\$1,225,000	\$1,225,000	\$1,225,000	\$1,225,000	\$1,225,000	\$1,225,000	\$1,225,000	\$1,225,000	\$1,225,000	\$1,225,000	\$1,225,000	\$1,225,000	
Management and Administration		\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	
Water Treatment		\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	
Ammonia		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
Ash Disposal		\$68,181	\$68,181	\$68,181	\$68,181	\$68,181	\$68,181	\$68,181	\$68,181	\$68,181	\$68,181	\$68,181	\$68,181	\$68,181	\$68,181	\$68,181	\$68,181	\$68,181	\$68,181	\$68,181	\$68,181	
Motor Vehicle Fuel		\$46,800	\$46,800	\$46,800	\$46,800	\$46,800	\$46,800	\$46,800	\$46,800	\$46,800	\$46,800	\$46,800	\$46,800	\$46,800	\$46,800	\$46,800	\$46,800	\$46,800	\$46,800	\$46,800	\$46,800	
Purchased Power		\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	
Annual Maintenance		\$600,000	\$600,000	\$600,000	\$600,000	\$600,000	\$600,000	\$600,000	\$600,000	\$600,000	\$600,000	\$600,000	\$600,000	\$600,000	\$600,000	\$600,000	\$600,000	\$600,000	\$600,000	\$600,000	\$600,000	
Taxes		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
Insurance		\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	
<b>Total Expenses</b>		\$4,824,244	\$5,011,310	\$5,206,174	\$5,409,111	\$5,620,491	\$5,840,682	\$6,070,066	\$6,308,042	\$6,555,012	\$6,811,463	\$7,077,999	\$7,355,315	\$7,644,000	\$7,944,666	\$8,257,920	\$8,584,360	\$8,924,600	\$9,278,320	\$9,646,160	\$10,028,720	
<b>Earnings Before Interest, Taxes, and Debt Amortization (EBITDA)</b>		\$3,761,432	\$3,759,309	\$3,753,728	\$3,743,850	\$3,729,242	\$3,710,819	\$3,688,858	\$3,658,105	\$3,623,887	\$3,585,817	\$3,543,387	\$3,495,615	\$3,442,330	\$3,383,406	\$3,318,880	\$3,248,440	\$3,171,840	\$3,088,880	\$3,000,320	\$2,906,800	\$2,808,320
<b>Debt Service</b>																						
Beginning Debt Balance		\$16,200,000	\$14,817,875	\$13,389,829	\$11,915,533	\$10,392,937	\$8,821,062	\$7,196,102	\$5,521,295	\$3,802,728	\$2,042,501	\$2,042,501	\$2,042,501	\$2,042,501	\$2,042,501	\$2,042,501	\$2,042,501	\$2,042,501	\$2,042,501	\$2,042,501	\$2,042,501	
Remaining Years		15	14	13	12	11	10	9	8	7	6	5	4	3	2	1						
Total Annual Payment		\$1,234,645	\$1,234,645	\$1,234,645	\$1,234,645	\$1,234,645	\$1,234,645	\$1,234,645	\$1,234,645	\$1,234,645	\$1,234,645	\$1,234,645	\$1,234,645	\$1,234,645	\$1,234,645	\$1,234,645	\$1,234,645	\$1,234,645	\$1,234,645	\$1,234,645	\$1,234,645	
Interest Payment		\$891,532	\$806,581	\$726,169	\$651,248	\$582,770	\$520,805	\$462,428	\$407,735	\$355,917	\$307,167	\$262,600	\$221,345	\$182,627	\$146,500	\$113,040	\$82,320	\$53,400	\$26,240	\$0	\$0	
Principal Payment		\$1,205,113	\$1,430,064	\$1,478,476	\$1,583,397	\$1,571,874	\$1,432,840	\$1,475,707	\$1,730,167	\$1,786,107	\$1,844,455	\$1,906,040	\$1,971,000	\$2,039,000	\$2,110,145	\$2,184,560	\$2,262,180	\$2,343,100	\$2,427,360	\$2,515,000	\$2,606,160	
Ending Debt Balance		\$14,817,875	\$13,389,829	\$11,915,533	\$10,392,937	\$8,821,062	\$7,196,102	\$5,521,295	\$3,802,728	\$2,042,501	\$2,042,501	\$2,042,501	\$2,042,501	\$2,042,501	\$2,042,501	\$2,042,501	\$2,042,501	\$2,042,501	\$2,042,501	\$2,042,501	\$2,042,501	
Debt Coverage Ratio	15 Yr Avg Minimum	1.61	1.47	1.68	1.66	1.67	1.66	1.65	1.64	1.63	1.60	1.56	1.50	1.43	1.35	1.27	1.19	1.11	1.03	0.95	0.87	
<b>Operating Year After Debt Service Cash Flow</b>	15 Yr Avg Minimum	\$1,526,787	\$1,524,644	\$1,516,733	\$1,508,825	\$1,494,507	\$1,475,834	\$1,452,224	\$1,423,480	\$1,389,223	\$1,349,372	\$1,303,952	\$1,252,380	\$1,194,691	\$1,131,443	\$1,063,012	\$988,165	\$906,320	\$817,377	\$721,600	\$618,320	
Operating Fee		\$250,000	\$257,500	\$265,225	\$27																	