Wisconsin Statewide Wood Energy Team

Refueling Wisconsin with Wood Energy Series

Brought to you in partnership with these organizations

College of Agricultural & Life Sciences, University of Wisconsin-Madison

UW Extension

Wisconsin SEO State Energy Office

Forest Service, U.S. Department of Agriculture

Wisconsin Economic Development Corporation

Wisconsin Dept. of Natural Resources

Renewable Resource Solutions, LLC

SRRI

MARTH Fiber in Motion

Heating the Midwest with Renewable Biomass

University of Minnesota

www.wisconsinwoodenergy.org

Wisconsin Statewide Wood Energy Team

Economic Analysis of Wood Energy Projects

Scott Sanford
U of Wisconsin-Madison
Rural Energy Program

Outline

- Feasibility assessment process
- Cost Check list
- Logs, chips or pellets?
- Tools
- Example
- Grants and Loans
  - REAP - Lisa Noty – USDA Rural Development

Rapid Assessment Process

- Estimate Heating needs
  - Fuel bills – quantity
  - Heating appliance efficiency
    - Specification or testing
  - Calculate Usable Heat
    - Fuel quantity x Btu/unit x efficiency
    - Example – 2500 gallon LP gas/yr; boiler 75% eff
    - 2500 gal x 91600 Btu/gal x 0.75 = 171.75 Mbtu/yr

Heat of Combustion (Btu/unit)
Heating Oil – 138,000 Btu/gal
Propane – 91,600 Btu/ gal
Nat. Gas – 100,000 Btu/Therm
Electricity – 3413 Btu / kWh

Rapid Assessment Process

- Choose fuel type and appliance
  - Need fuel energy content & heating sys efficiency
- Estimate fuel quantity =

$$\frac{\text{Usable Fuel}}{\text{Btu/ fuel unit x heating system eff}}$$

- Example: Wood pellets @ 8400 Btu/lb
- 80% eff. Boiler

$$\frac{171{,}750{,}000}{8400 \text{ Btu/lb} \times 0.80} = 25558 \text{ lb} \rightarrow 12.8 \text{ tons}$$

Heat of Combustion (Btu/unit)
Wood Pellets – ~8,000 Btu/lb
Wood Chips(50%) – ~4500 Btu/lb
Cord Wood(20%) – ~22 MBtu/cord

Rapid Assessment Process

- Obtain wood fuel quote
- Calculate savings

- Example:
  - 2500 gal LP gas - $ 4875/yr
  - Wood pellet cost - $200 / ton
    - 12.8 x 200 = $2560 / yr
    - Savings → $4875 – $2560 = $2315

Rapid Assessment Process

- Obtain installed cost for Combustion Appliance
  - Appliance cost
  - Chimney / vent
  - Electrical connections
  - Plumbing
  - Fuel storage
  - Accessory equipment
    - Cleaning tools, forklift, loader, conveyors, auger, ash disposal
  - Engineering (larger projects)
  - Permits

Rapid Assessment Process

- Are Fuel Savings Positive?
- Is simple payback < equipment life?
  - Simple Payback
    - = Investment / annual savings
      - Doesn't account for annual costs, repairs, inflation, fuel cost escalation
- Do cash flow analysis or other financial analysis based on your business / finances

Equivalent Annual Cost

- Use discount / interest rate & life or payback period to calculate annual cost of ownership
  - EAC = NPV x $CR_{t,r}$ + annual maintenance cost
    - NPV – net present value
    - $CR_{t,r}$ – Capital Recovery factor
      - where t = years of life, r = discount rate
      - Lookup in table (Economic Decision Analysis-2ed.)
  - Example: Capital cost of $100,000 with 20 year life @ 7% interest; $2000/yr maintenance cost; $0 salvage
  - EAC = $100,000 x 0.0944 + $ 2000 = $ 11440/yr
- Add Fuel cost
- Sum to determine annual cost

Cost for biomass system

- Feasibility study
- Engineering Analysis
- Permits
- Equipment Cost
- Freight cost
- Installation cost
- Commissioning
- Annual maintenance / cleaning / repairs

Chips, pellets or logs??

- Capacity
- Availability
- Labor
- Storage
- Capital Cost
- Emission requirements
- Fuel cost
- Truck access

- Propane < 35,000 gal
- Fuel oil < 22,500 gal
  - Pellets or firewood

- Propane ≥ 35,000 gal
- Fuel oil ≥ 22,500 gal
  - Pellets / Chips / Firewood

Based on USFS experience

Analysis Tools

- Michigan Wood Energy calculator
  - Developed by SE MI RC&D
- Wood Energy Financial App
  - Developed by University of Minnesota
- RETScreen International
  - Developed by Natural Resource Canada

Michigan Calculator

- Michiganwoodenergy.org
- Inputs
  - Contact info – email & location
  - Type of facility
  - Boiler size
  - Current Fuel Type
  - Current Fuel price
  - Annual fuel use
  - Cost of wood fuel (pellet or wood chips
  - Financing interest rate (%)

Michigan Calculator

- Assumptions
  - No grants
  - Financing – 10 years
  - Wood chips > 3 Mbtu/hr
  - Wood Pellets <= 3 Mbtu/hr
  - Portion of fuel wood: 95%
  - Portion of fuel current fuel: 5%
  - Wood boilers sized ½ existing boilers

Michigan Calculator

- Sample output
- Emails results

Michigan Wood Energy Report

Estimated Total Project Cost: $59,100.00

Simple Payback: 8.1 years

Project Financing Information	
Percent Financed	100%
Amount Financed	$59,100.00
Amount of Grants	$0.00
Interest Rate	5%
Term	10 Years
Annual Finance Cost - Principal and Interest	$7,654.00

Annual Project Costs

Cash Flow Descriptions	Unit Costs	Fuel Source Proportion	Annual Fuel Quantities	Fuel Units	Year 1 Costs
Estimated Existing Annual Costs					
Existing Fuel (propane)	$2.00		10,000.00	gallon	$20,000.00
Estimated Proposed Wood-Fired System Annual Costs					
Wood Fuel (pellets)	$200.00	95%	56	ton	$11,200.00
Existing Fuel	$2.00	5%	500.00	gallon	$1,000.00
Additional Operation and Maintenance Costs					$500.00
Total Proposed Annual Costs					$12,700.00
Annual Cost Savings					**$7,300.00**
Annual Finance Cost - Principal and Interest					$7,654.00
Net Annual Cash Flow					**($354.00)**

Your Current Information

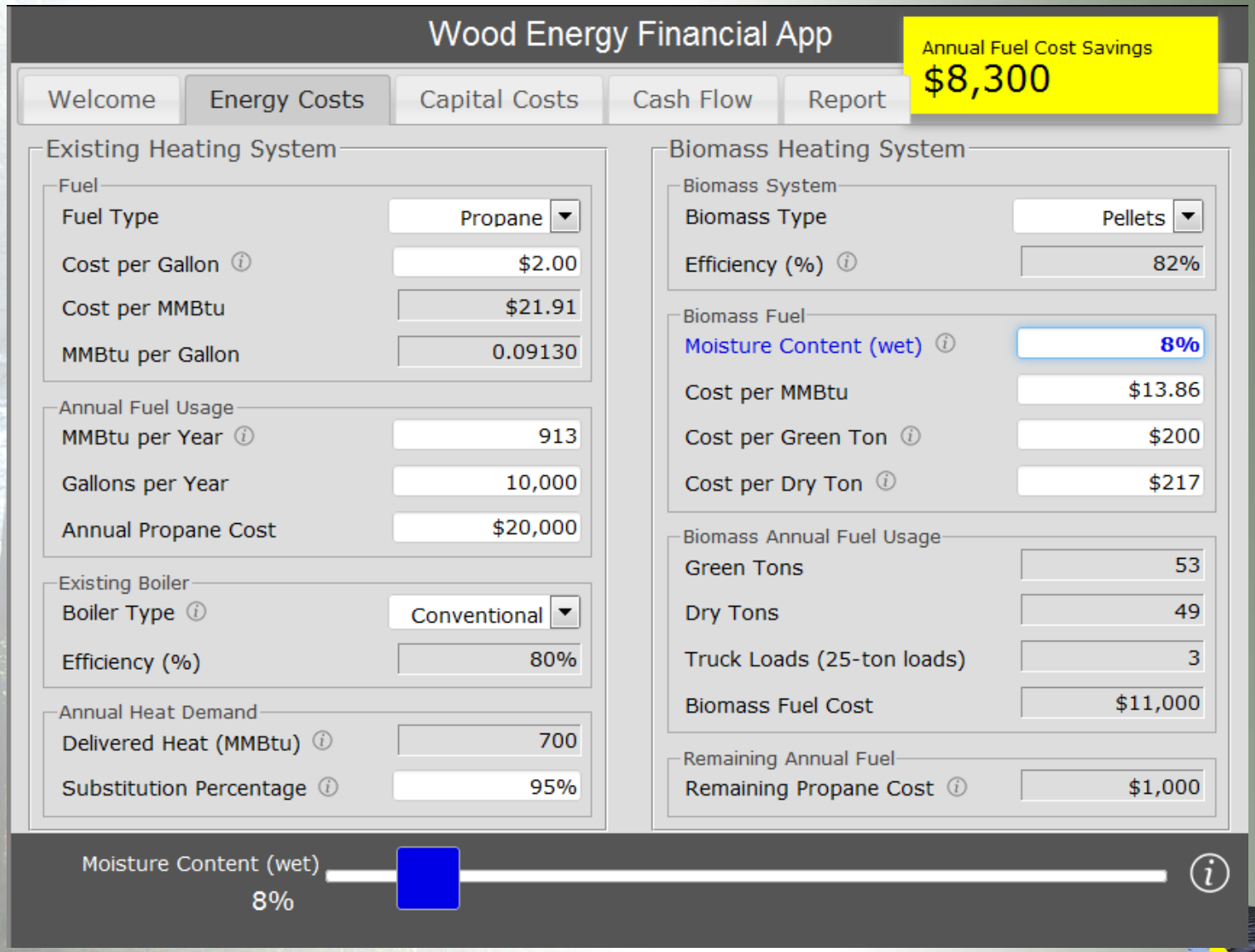
This is the information you submitted via the calculator:

- E-mail: sasanford@wisc.edu
- County: outstate
- Facility type: Industry
- Combined boiler size: 300,000.00 btu

MN Wood Energy Financial App

- woodenergy.umn.edu/BiomassCalculator/
- More detailed inputs
- Model estimated Capital costs
  - Overestimates capital costs for smaller systems
  - Indicates projects not feasible that may be.
- New version - 2015
  - Revised cost estimations
  - More accurate for small systems

Energy Cost Inputs



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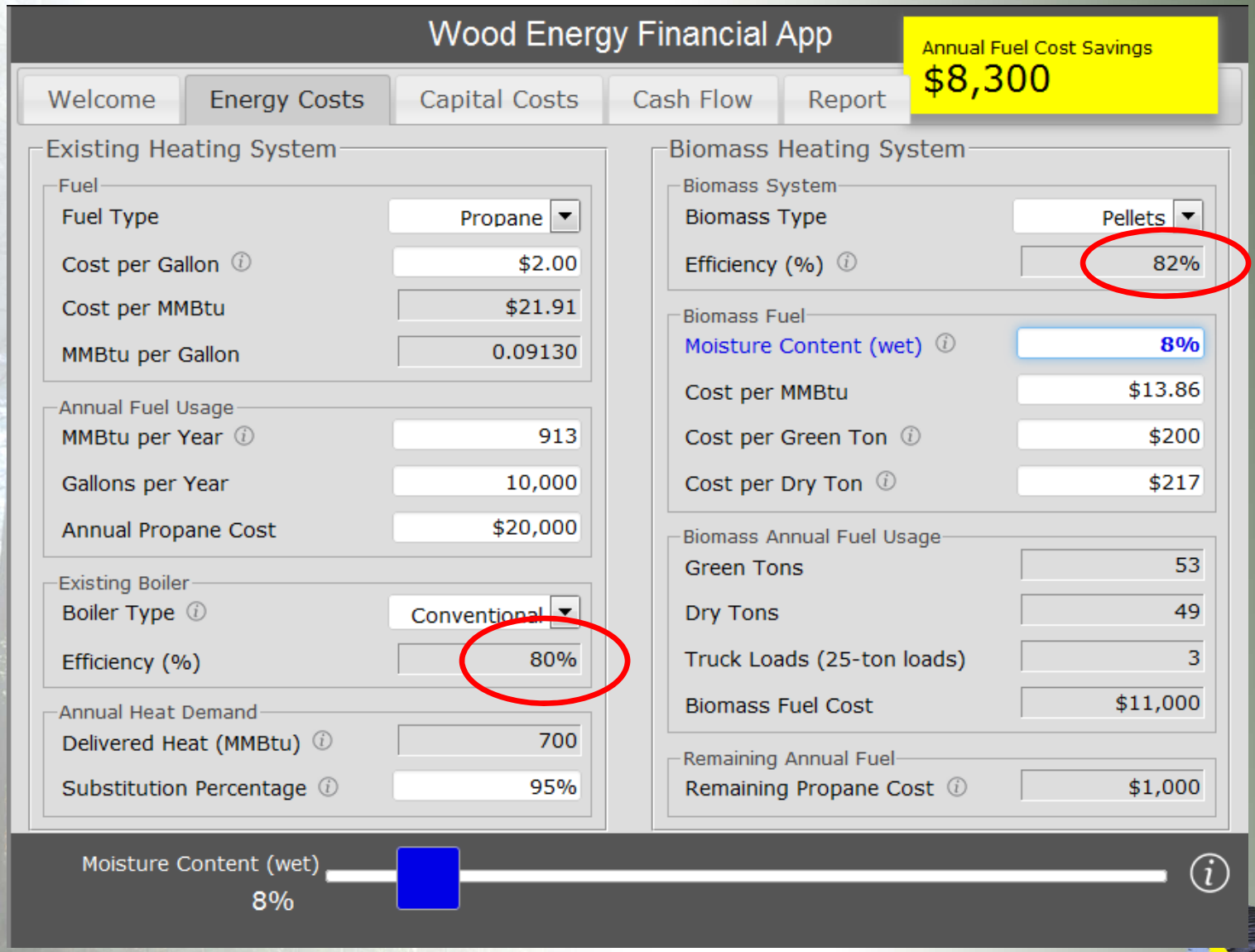
Energy Cost Inputs



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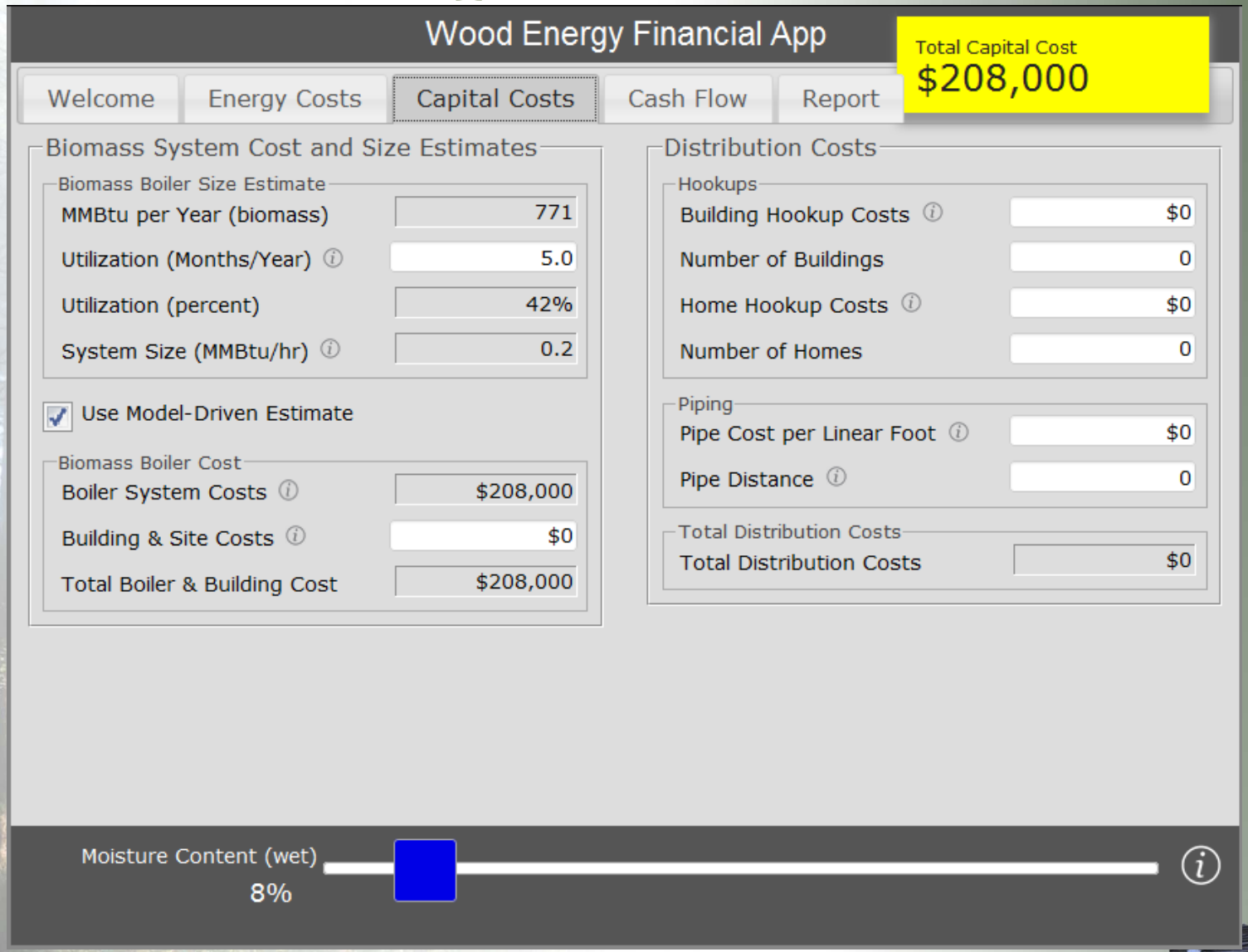
Capital Costs



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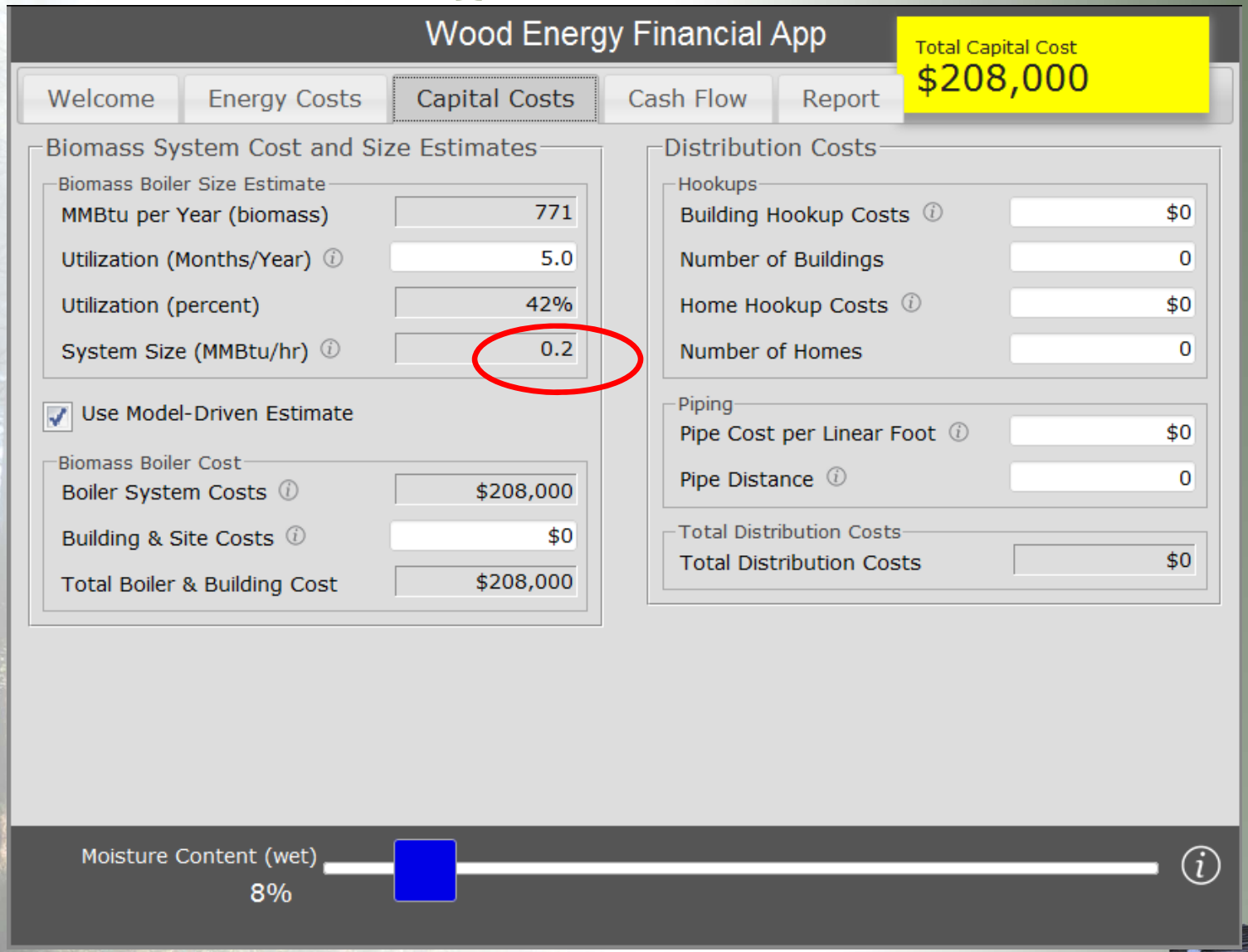
Capital Costs



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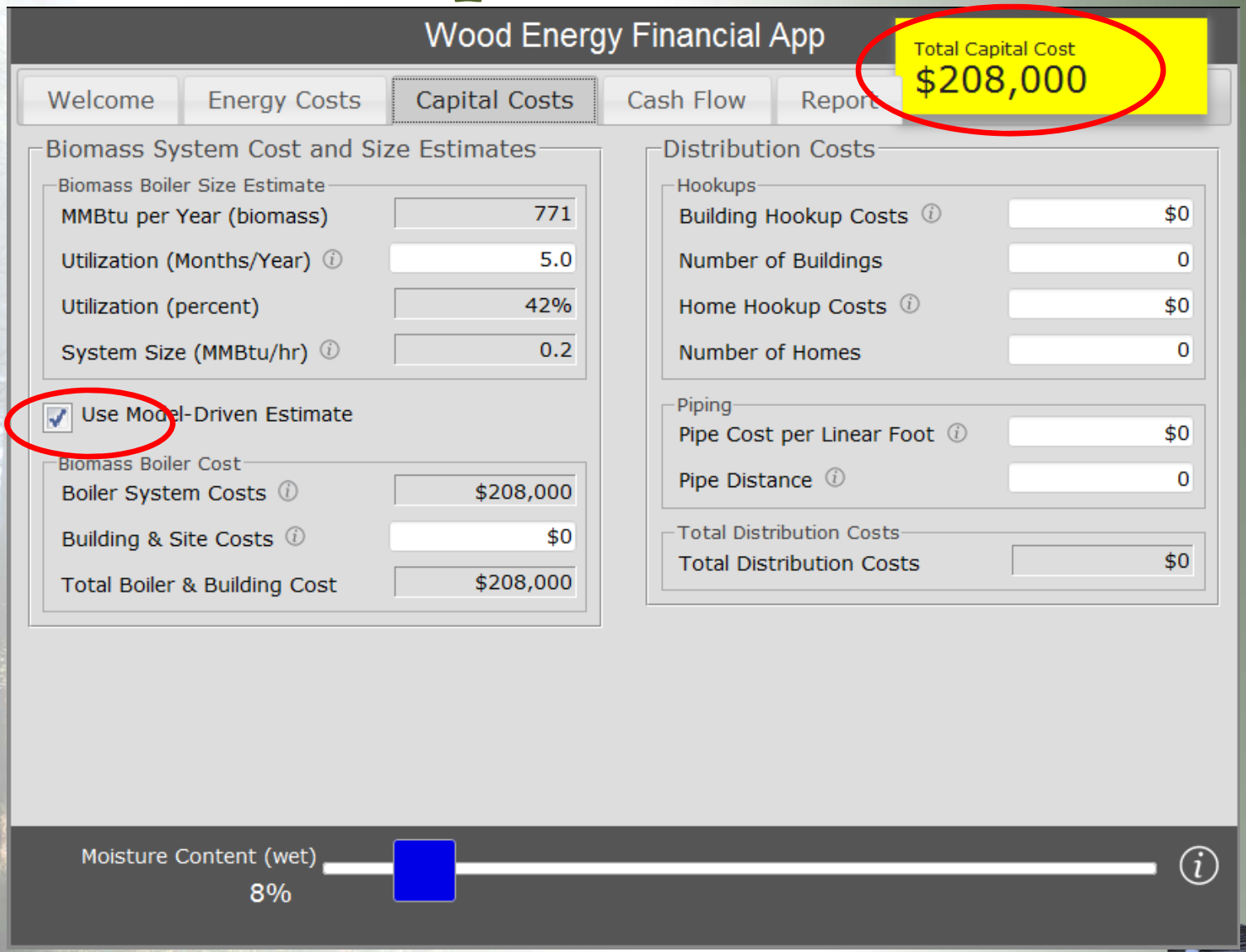
Capital Costs



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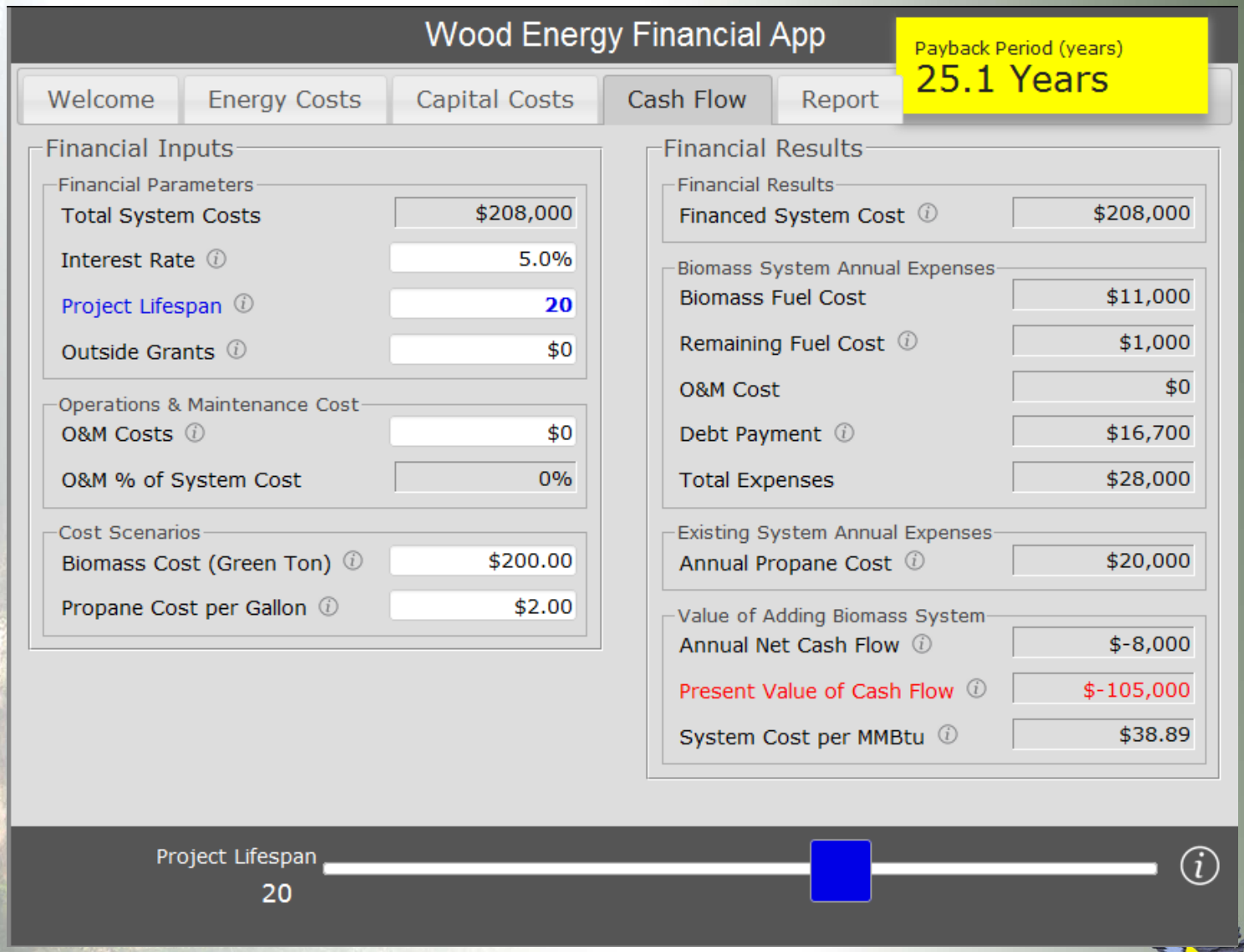
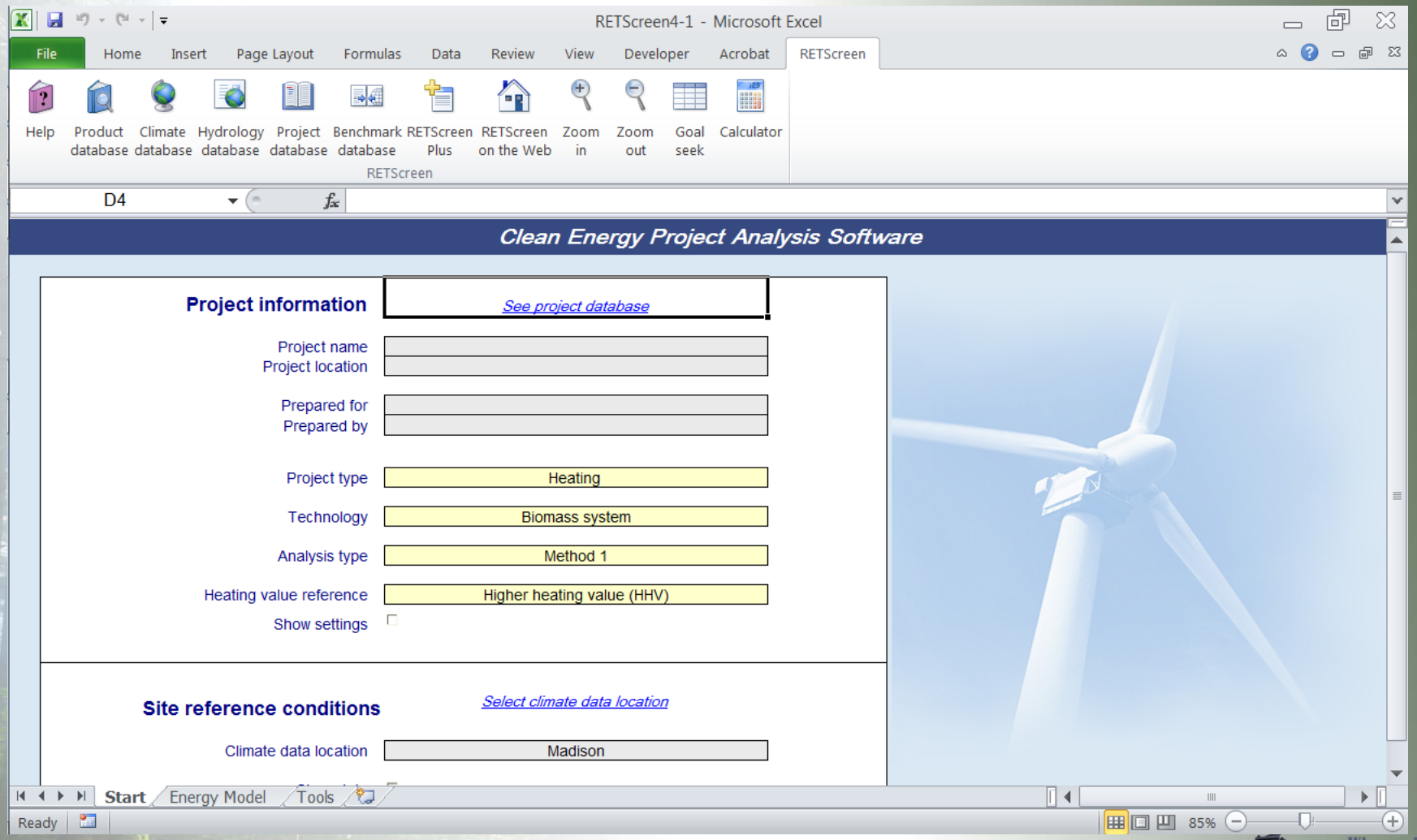
Cash Flow Analysis



RET Screen

- http://www.retscreen.net/
- Developed by Natural Resource Canada
- Downloaded Excel spreadsheet
- Climate data driven model
- Capable of handling complex projects
  - District heating
  - Case studies / templates
- Few default values

RET Screen – Method 1



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RET Screen Input page

RETScreen Energy Model - Heating project

Heating project

		Base case	Proposed case		Incremental initial costs
Heated floor area for building	ft²	5,974			
Energy efficiency measures					
Heating load for building	(Btu/h)/ft²	65	65		
Domestic hot water heating base demand	%	0%	0%		
Total heating	MWh	218	218		
Base load heating system					
Technology			Biomass system		
Capacity	million Btu/h	0.4	0.3	77.3%	$ 60,000
Heating delivered	MWh	217.9	214.2	98.3%	
Fuel type		Propane - gal	Biomass		
Seasonal efficiency	%	78%	82%		
Fuel consumption - annual	gal	10,001	48	t	
Fuel rate	$/gal	2.000	200.000	$/t	
Fuel cost	$	20,002	9,521		
Peak load heating system					
Technology					
Suggested capacity	million Btu/h		0.1		
Capacity	million Btu/h		0.6	154.5%	
Fuel type			Propane - gal		
Seasonal efficiency	%		78%		
Fuel consumption - annual	gal		170		
Heating delivered	MWh		3.7	1.7%	
Fuel rate	$/gal		2.000		
Fuel cost	$		340		

Emission Analysis

Start | Energy Model | Tools

Ready | Filter Mode

RET Screen Financial Analysis

Emission Analysis

GHG emission					
Base case	tCO2	58.1			
Proposed case	tCO2	2.7			
Gross annual GHG emission reduction	tCO2	55.4			
GHG credits transaction fee	%				
Net annual GHG emission reduction	tCO2	55.4	is equivalent to	10.1	Cars & light trucks not used
GHG reduction income					
GHG reduction credit rate	$/tCO2				

Financial Analysis

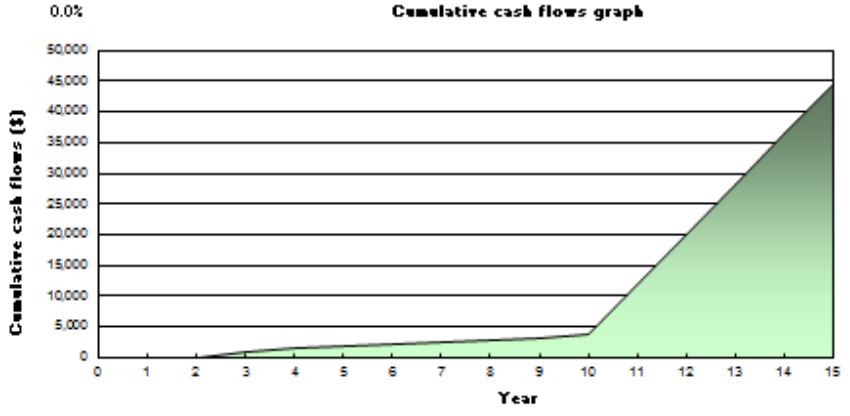
Financial parameters		
Inflation rate	%	0.0%
Project life	yr	15
Debt ratio	%	100%
Debt interest rate	%	5.00%
Debt term	yr	10

Initial costs			
Heating system	$	60,000	100.0%
Other	$		0.0%
Total initial costs	$	60,000	100.0%
Incentives and grants	$		0.0%

Annual costs and debt payments		
O&M (savings) costs	$	2,000
Fuel cost - proposed case	$	9,860
Debt payments - 10 yrs	$	7,770
Other	$	
Total annual costs	$	19,630

Annual savings and income		
Fuel cost - base case	$	20,002
Other	$	
Total annual savings and income	$	20,002

Financial viability		
Pre-tax IRR - equity	%	positive
Pre-tax IRR - assets	%	-2.4%
Simple payback	yr	7.4
Equity payback	yr	immediate



Start | Energy Model | Tools

Ready | Filter Mode

RET Screen – Method 2

- Load Analysis
  - Heating loads by month
  - Multiple buildings
- Energy Model
  - Multiple fuels
- Emissions Analysis
- Financial Analysis
- Sensitivity / Risk Assessment

Energy Model – Method 2

RETScreen Energy Model - Heating project

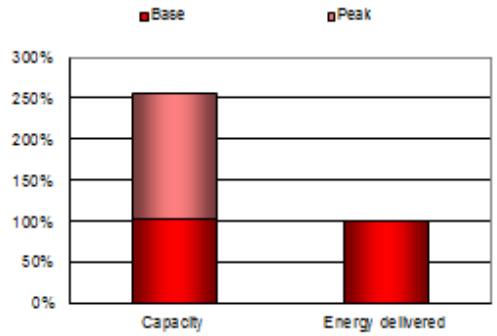
☐ Show alternative units

Proposed case heating system			
System selection		Base load system	
Base load heating system			
Technology		Biomass system	
Fuel selection method		Single fuel	
Fuel type		Biomass	
Fuel rate	$/t	200.000	
Biomass system			
Capacity	million Btu/h	0.4	102.6%
Heating delivered	MWh	219	100.0%
Manufacturer			
Model			
Seasonal efficiency	%	82%	
Boiler type		Hot water	
Fuel required	GJ/h	0.5	

See product database

Proposed case system characteristics	**Unit**	**Estimate**	**%**
Heating			
Base load heating system			
Technology		Biomass system	
Capacity	kW	117.2	102.6%
Heating delivered	MWh	219	100.0%
Peak load heating system			
Technology		Boiler	
Fuel type		Propane - gal	
Fuel rate	$/gal	2.000	
Suggested capacity	kW	0.0	
Capacity	million Btu/h	1	153.8%
Heating delivered	MWh	0.0	0.0%
Manufacturer			*See PDF*
Model			
Seasonal efficiency	%	80%	
Back-up heating system (optional)		Peak system not required	
Technology			
Capacity	kW		

System design graph

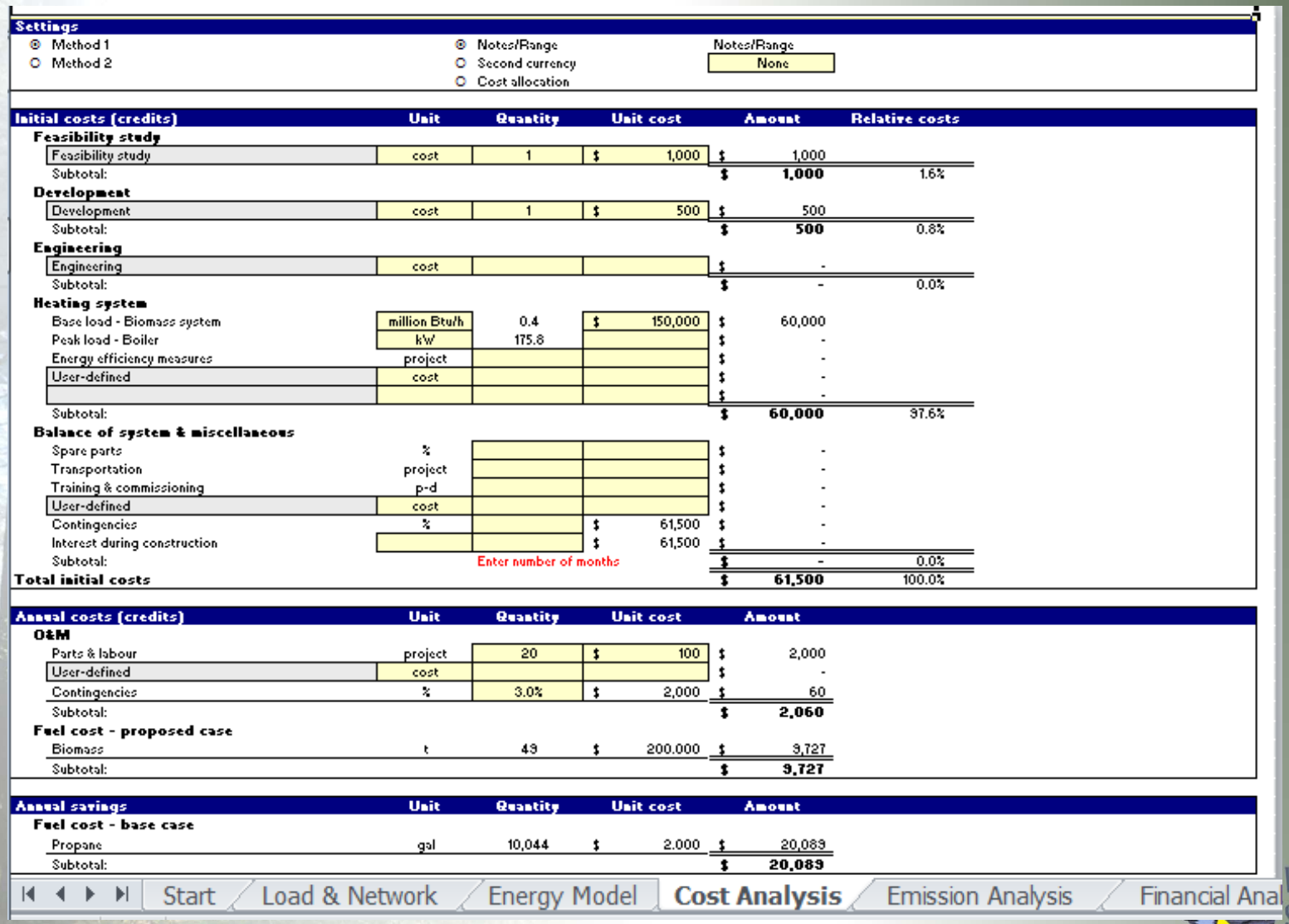


Proposed case system summary	**Fuel type**	**Fuel consumption - unit**	**Fuel consumption**	**Capacity (kW)**	**Energy delivered (MWh)**
Heating					
Base load	Biomass	t	49	117	219
Peak load	Propane	gal	0	176	0
			Total	**293**	**219**

Start | Load & Network | **Energy Model** | Cost Analysis | Emission Analysis | Financial Analysis | Risk Analy

Ready

Cost Analysis – Method 2



Settings

- (●) Method 1
- ( ) Method 2
- (●) Notes/Range
- ( ) Second currency
- ( ) Cost allocation

Notes/Range: None

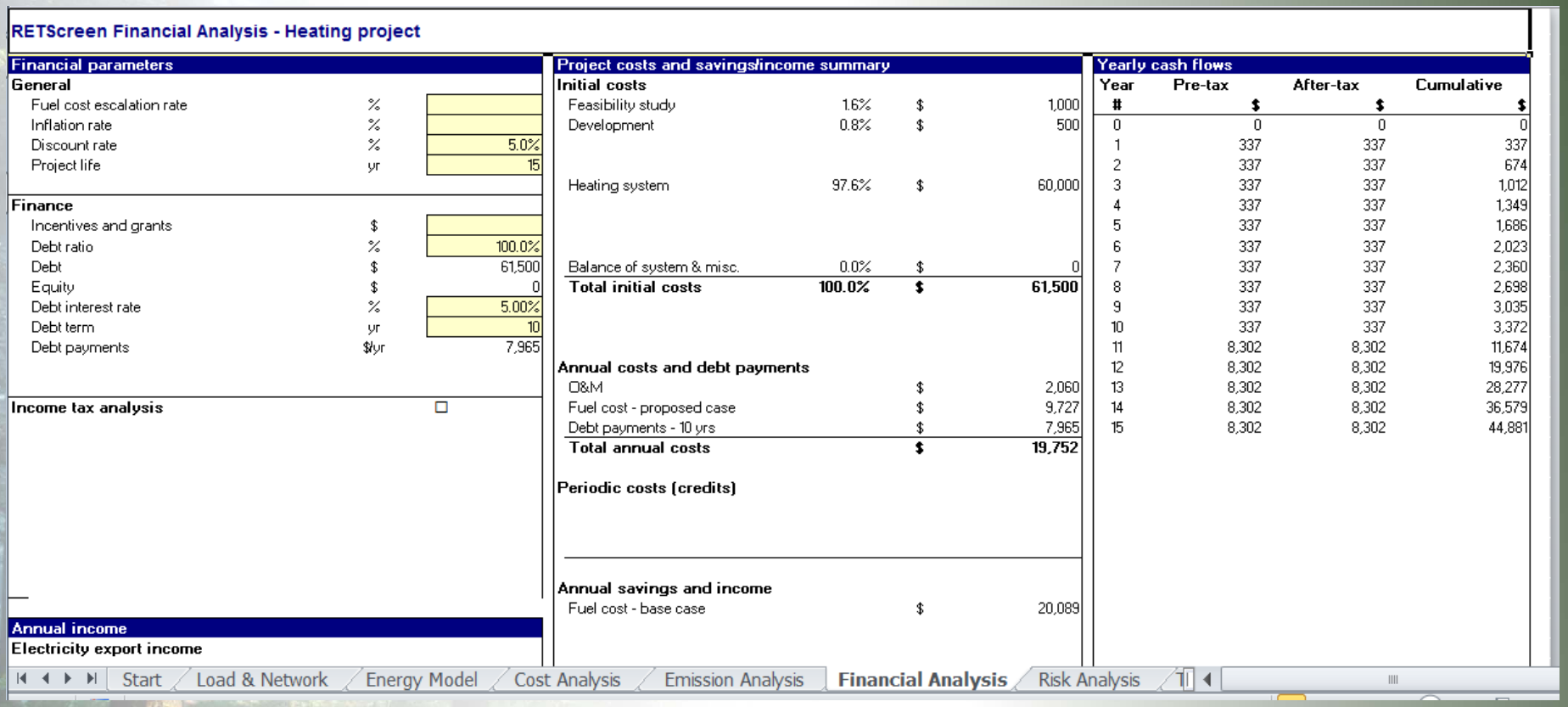
Initial costs (credits)	Unit	Quantity	Unit cost	Amount	Relative costs
Feasibility study					
Feasibility study	cost	1	$ 1,000	$ 1,000	
Subtotal:				**$ 1,000**	1.6%
Development					
Development	cost	1	$ 500	$ 500	
Subtotal:				**$ 500**	0.8%
Engineering					
Engineering	cost			$ -	
Subtotal:				**$ -**	0.0%
Heating system					
Base load - Biomass system	million Btu/h	0.4	$ 150,000	$ 60,000	
Peak load - Boiler	kW	175.8		$ -	
Energy efficiency measures	project			$ -	
User-defined	cost			$ -	
				$ -	
Subtotal:				**$ 60,000**	97.6%
Balance of system & miscellaneous					
Spare parts	%			$ -	
Transportation	project			$ -	
Training & commissioning	p-d			$ -	
User-defined	cost			$ -	
Contingencies	%		$ 61,500	$ -	
Interest during construction			$ 61,500	$ -	
Subtotal:		Enter number of months		**$ -**	0.0%
Total initial costs				**$ 61,500**	100.0%

Annual costs (credits)	Unit	Quantity	Unit cost	Amount
O&M				
Parts & labour	project	20	$ 100	$ 2,000
User-defined	cost			$ -
Contingencies	%	3.0%	$ 2,000	$ 60
Subtotal:				**$ 2,060**
Fuel cost - proposed case				
Biomass	t	49	$ 200.000	$ 9,727
Subtotal:				**$ 9,727**

Annual savings	Unit	Quantity	Unit cost	Amount
Fuel cost - base case				
Propane	gal	10,044	$ 2.000	$ 20,089
Subtotal:				**$ 20,089**

Start | Load & Network | Energy Model | **Cost Analysis** | Emission Analysis | Financial Anal

Financial Analysis – Method 2



RETScreen Financial Analysis - Heating project

Financial parameters

General		
Fuel cost escalation rate	%	
Inflation rate	%	
Discount rate	%	5.0%
Project life	yr	15

Finance		
Incentives and grants	$	
Debt ratio	%	100.0%
Debt	$	61,500
Equity	$	0
Debt interest rate	%	5.00%
Debt term	yr	10
Debt payments	$/yr	7,965

Income tax analysis ☐

Annual income

Electricity export income

Project costs and savings/income summary

Initial costs			
Feasibility study	1.6%	$	1,000
Development	0.8%	$	500
Heating system	97.6%	$	60,000
Balance of system & misc.	0.0%	$	0
Total initial costs	**100.0%**	**$**	**61,500**

Annual costs and debt payments		
O&M	$	2,060
Fuel cost - proposed case	$	9,727
Debt payments - 10 yrs	$	7,965
Total annual costs	**$**	**19,752**

Periodic costs (credits)

Annual savings and income		
Fuel cost - base case	$	20,089

Yearly cash flows

Year	Pre-tax	After-tax	Cumulative
#	$	$	$
0	0	0	0
1	337	337	337
2	337	337	674
3	337	337	1,012
4	337	337	1,349
5	337	337	1,686
6	337	337	2,023
7	337	337	2,360
8	337	337	2,698
9	337	337	3,035
10	337	337	3,372
11	8,302	8,302	11,674
12	8,302	8,302	19,976
13	8,302	8,302	28,277
14	8,302	8,302	36,579
15	8,302	8,302	44,881

Start | Load & Network | Energy Model | Cost Analysis | Emission Analysis | **Financial Analysis** | Risk Analysis

Sensitivity Analysis – Method 2

Perform analysis on	After-tax IRR - equity
Sensitivity range	10%
Threshold	20 %

Fuel cost - base case		Initial costs				$
		55,350	58,425	61,500	64,575	67,650
$		-10%	-5%	0%	5%	10%
27,815	-10%	positive	positive	positive	positive	positive
29,361	-5%	positive	positive	positive	positive	positive
30,906	0%	positive	positive	**positive**	positive	positive
32,451	5%	positive	positive	positive	positive	positive
33,997	10%	positive	positive	positive	positive	positive

Fuel cost - proposed case		Initial costs				$
		55,350	58,425	61,500	64,575	67,650
$		-10%	-5%	0%	5%	10%
13,133	-10%	positive	positive	positive	positive	positive
13,863	-5%	positive	positive	positive	positive	positive
14,592	0%	positive	positive	**positive**	positive	positive
15,322	5%	positive	positive	positive	positive	positive
16,052	10%	positive	positive	positive	positive	positive

Debt interest rate		Initial costs				$
		55,350	58,425	61,500	64,575	67,650
%		-10%	-5%	0%	5%	10%
4.50%	-10%	positive	positive	positive	positive	positive
4.75%	-5%	positive	positive	positive	positive	positive
5.00%	0%	positive	positive	**positive**	positive	positive
5.25%	5%	positive	positive	positive	positive	positive
5.50%	10%	positive	positive	positive	positive	positive

Start | Load & Network | Energy Model | Cost Analysis | Emission Analysis | Financial Analysis | **Risk Analys**

Ready

Comparison of tools

- Propane heating system
  - $2.00 per gallon
  - 10,000 gallons per year
  - 80% efficient
  - Capacity: 300,000 Btu / hr
- Biomass
  - Pellet boiler @ 82% eff
  - $200 per ton
  - 5% interest rate
  - 95% biomass / 5% propane
  - 10 year financing term

MI vs MN Analysis tools

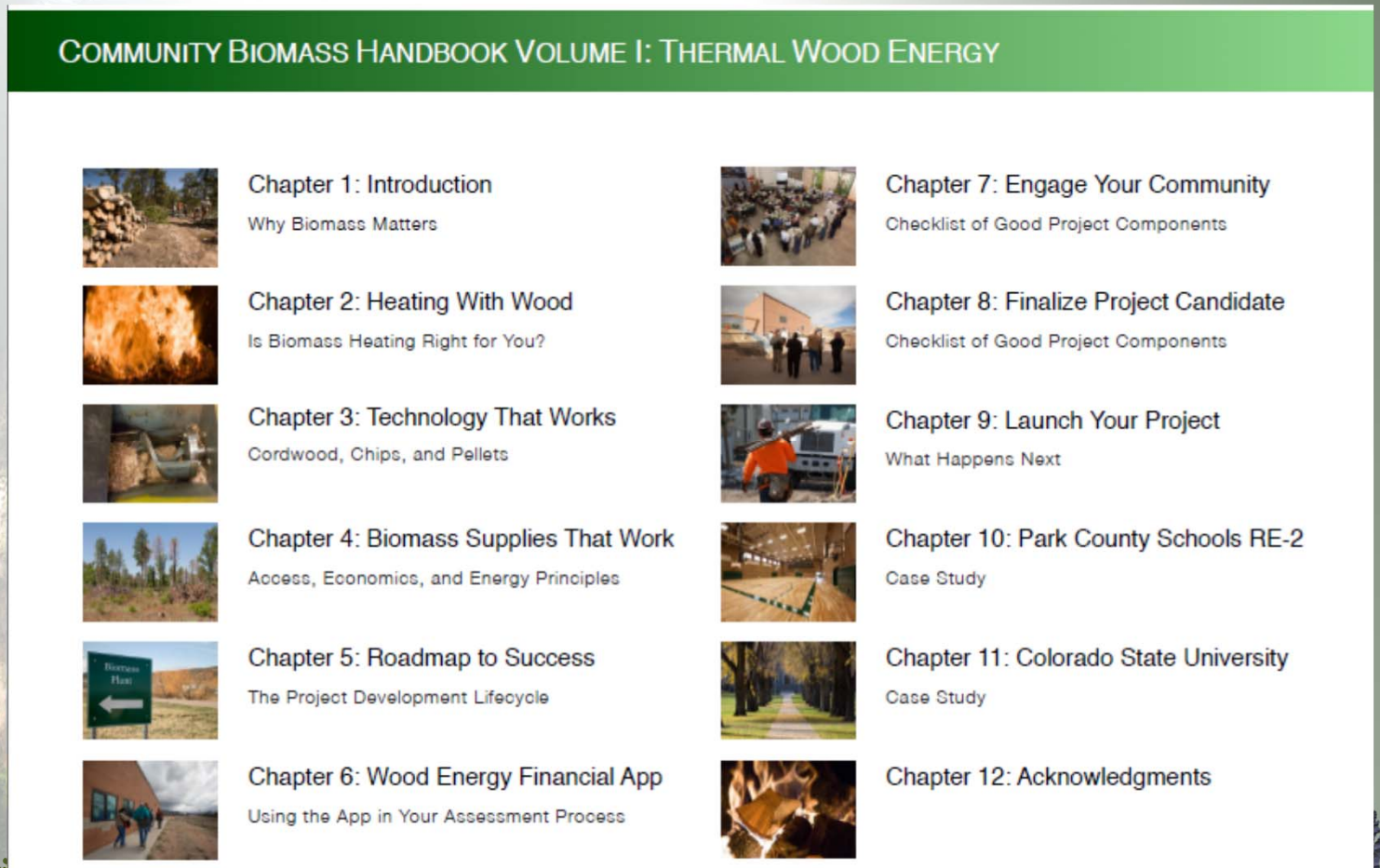
	Energy Cost Savings	Capital Cost	Principle and interest (1)	Payback (yrs)
MI	$ 7300	$ 59,100	$ 7654	8.1
MN	$ 8300	$ 208,000	$ 16700	25.1
RET Screen	$10,479	$ 60,000 (2)	$ 7770	7.4

1) MI repayment – 10 yrs; MN – 20 yrs; RET Screen – 10 yrs
2) User input

Resource Guides

❖Community Biomass Handbook

- ❖ http://woodenergy.umn.edu/CommunityBiomassHandbook.pdf



COMMUNITY BIOMASS HANDBOOK VOLUME I: THERMAL WOOD ENERGY

Chapter 1: Introduction
Why Biomass Matters

Chapter 2: Heating With Wood
Is Biomass Heating Right for You?

Chapter 3: Technology That Works
Cordwood, Chips, and Pellets

Chapter 4: Biomass Supplies That Work
Access, Economics, and Energy Principles

Chapter 5: Roadmap to Success
The Project Development Lifecycle

Chapter 6: Wood Energy Financial App
Using the App in Your Assessment Process

Chapter 7: Engage Your Community
Checklist of Good Project Components

Chapter 8: Finalize Project Candidate
Checklist of Good Project Components

Chapter 9: Launch Your Project
What Happens Next

Chapter 10: Park County Schools RE-2
Case Study

Chapter 11: Colorado State University
Case Study

Chapter 12: Acknowledgments

Resources

- Wood Pellet Heating: A Reference of Wood Pellet Fuels & Technology for Small Commercial & Institutional Systems – 2007
- Wood-Chip Heating Systems: A Guide for Institutional and Commercial Biomass Installations-2004
- Heating with Biomass: A Feasibility Study of Wisconsin Schools Heated with Wood - 2008
- Other references available at:

www.biomasscenter.org/resource-library/publications

Grants and Incentives

- Wisconsin Focus on Energy
  - Must be using Natural gas
  - Very few projects funded
- Grant from USDA Rural Development
  - Rural Energy for America Program (REAP)
    - Grants and Loans
  - Community Facilities Direct Loan & Grant
  - Community Facilities Loan Guarantees
  - Business & industry Loan Guarantee

Grants and Incentives

- Forest Service Wood Innovation Grants –
  - up to $250,000 for final engineering on projects
  - http://www.na.fs.fed.us/werc/wip/2015-rfp.shtm
- USFS Wood Education and Resource Center Wood Energy Technical Assistance program
  - Wood energy feasibility studies at no cost to facility owner.
  - Email – sasanford@wisc.edu for application

Rural Energy for America Program

REAP

Lisa Noty
Energy Division
Regional Energy Coordinator - Midwest

REAP - Assistance

- Types of Assistance
- ✓ Guaranteed Loans
- ✓ Grants
  Set aside $20,000 or less
  Unrestricted
- ✓ Guaranteed Loan Grant Combinations

REAP Funding - 2015

- Farm Bill $50 million per year

✓ 2014 and 2015 funds available in 2015

✓ Guaranteed Loan funds ~$200 million

✓ Set aside $20,000 or less $10 million

✓ Unrestricted Grants $68 million

•Annually appropriated funds

REAP – Eligible Applicants

- Rural Small Business
  Private entity (Sole proprietorship, Partnership, and Corporation)

- Agricultural Producers

REAP – Eligible Applicants (cont.)

- Must –
  - Own or control site
  - Sufficient Revenue
    - Project
    - Operation & maintenance
  - Legal Authority and Responsibility
  - Registration number (SAM)

REAP – Eligible projects (cont.)

- Technical Merit
  - Project description (commercially available)
  - Qualifications of installer/contractors,
  - Energy audit or resource assessment,
  - Equipment availability,
  - Timeline
- Pass Fail

REAP – Eligible Projects (cont.)

- Bioenergy
  - Pellet mills, biomass boilers, ethanol, and biodiesel facilities
- Anaerobic Digesters
  - Facilities that use animal or food waste to produce methane and then convert the methane to electricity
- Geothermal

REAP – Eligible Projects (cont.)

- Hydrogen
  - Derived from a renewable resource
- Solar
- Wind
- Hydroelectric
- Hybrids
- Energy Efficiency improvements

REAP – Application Process

- Three application levels
  - RES and EEI Projects with Total Project Costs of $80,000 or Less
  - RES and EEI Projects with Total Project Costs of Less Than $200,000, but More Than $80,000
  - RES and EEI Projects with Total Project Costs $200,000 and Greater

REAP – Application Process (cont.)

- Fiscal Year 2015
  Application deadline dates
  – April 30
  – June 30

  Fiscal Year 2016
  Application deadline dates
  - October 30
  - April 30

REAP – Application Process (cont.)

- Maximum grant assistance (FY) $750,000
- Grant
  - 25% of total eligible project costs
- Renewable Energy System Grant
  - minimum grant $2500,
  - maximum $500,000
- Energy Efficiency Improvement Grant
  - Minimum grant $1500,
  - Maximum $250,000

REAP – Application Process (cont.)

- Guaranteed Loan and combo's
  - 75% of total eligible project costs
- Guaranteed Loan
  - Minimum $5,000
  - Maximum $25 million

REAP – Application Process (cont.)
Helpful to know

- Only Post-application expenses are eligible
- Reimbursement Grant
- Grant Agreement
- Reporting requirements

Guaranteed Loans

✓ LOAN SIZE

- Minimum Loan Amount: $5,000
- Maximum Loan Amount: $25,000,000

✓ GUARANTEE

- 85% for loans $600,000 or less.
- 80% for loans over $600,000 up to $5 Million
- 70% for loans over $5 Million up to $10 Million
- 60% for loans over $10 Million

✓ MAXIMUM TERM LIMITS

- Working Capital – 7 Years
- Machinery & Equipment – 15 Years *(or useful life, which every is less)*
- Real Estate – 30 Years

✓ INTEREST RATE

- Fixed or Variable; if variable cannot adjust more then quarterly
- Negotiated between lender and borrower

WHAT IT CAN DO FOR BORROWERS

Assists in providing stability and growth through energy efficient improvements and renewable energy utilization.

Provides the ability to receive:

- ✓ Higher Loan Amounts
- ✓ Competitive Interest Rates
- ✓ Longer Repayment Terms

REAP

Scoring

Maximum of 100 points

REAP Scoring
(1) Energy Generated, Replaced, or Saved

– Maximum of 25 points for criterion

Quantity of Energy Generated or Saved per REAP Dollar Requested

- Maximum of 10 points in sub-criterion

Quantity of Energy Replaced, Saved, or Generated

- Maximum of 15 points in sub-criterion

REAP Scoring (cont.)

(2) Environmental Benefits

-Maximum of 5 points for criterion

Applicant must document in application the project's positive effect on any of the three impact areas:

1. Resource Conservation (e.g., water, soil, forest)

2. Public Health (e.g., potable water, air quality)

3. Environment (e.g., compliance with EPA's renewable fuel standard(s), greenhouse gases emissions, particulate matter)

REAP Scoring (cont.)

(3) Commitment of Funds

- **Maximum of 20 points for criterion**

Based on percentage of written commitment an Applicant has from its Funding Sources that are documented with complete application

REAP Scoring (cont.)

(4) Size of Agricultural Producer or Rural Small Business

– **Maximum of 10 points for this criterion**

Based on the size of the Applicant's agricultural operation or business concern, as applicable, compared to the SBA Small Business size standards categorized by the NAICS code

REAP Scoring (cont.)

(5) Previous Grantees and Borrowers

– **A maximum of 15 points for this criterion**

Points based on whether the Applicant has received a grant or guaranteed loan under the REAP RES/EEI program

REAP Scoring (cont.)

(6) Simple Payback:

- **A maximum of 15 points for this criterion**

Payback: EEI Reduce or RES Replace Onsite Use

Eligible Project Costs/Dollar value of energy reduced or replaced

REAP Scoring (cont.)

(7) State Director and Administrator Priority Points

– **A maximum of 10 points for this criterion.**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Contact Information

Brenda Heinen
brenda.heinen@wi.usda.gov
(715) 345-7615 x139

Lisa Noty
lisa.noty@wdc.usda.gov

(712) 243-2107 x116

Rural Energy for America Program (REAP)

www.rd.usda.gov/reap

What will I learn?

- **Webinar Schedule** (All webinars will run from 1:00 PM to 2:15 PM CST)

  Presentation slides and videos of presentation will be available at **wisconsinwoodenergy.org/learning.html**

- **Feb 18** The Wisconsin Energy Picture
- **Feb 25** Types of Wood Fuels & Appliances
- **March 4** Pre-Feasibility Assessment Tools & Grant Funding
- **March 11** Residential/Commercial Project Examples & Economics
- **March 18** Overview of Industrial Wood Heating & Power Systems
- **March 25** Case Study of Large Scale Wood Energy Projects
- **April 1** Wood Fuel Supply and Distribution Business
- **April 8** Wood Energy Cluster Development /District Heating

Wisconsin Statewide Wood Energy Team

Questions

This presentation was develop by:

Scott Sanford

Distinguished Outreach Specialist

Rural Energy Program

University of Wisconsin-Madison

Comments and suggestion should be directed to sasanford@wisc.edu