

**County of Sullivan, NH**

**Type of meeting:** Board of Commissioners Special Meeting Minutes  
**Date/Time:** Tuesday, January 31, 2012; 3:00 PM  
**Place:** Newport, NH – Remington Woodhull County Complex,  
County Administration Buildings, 1<sup>st</sup> Floor,  
Commissioners Conference Room

**Attendees:** Commissioners Bennie Nelson – Chair (arrived later in meeting), Jeffrey Barrette – Vice Chair and John M. Callum Jr. – Clerk, Greg Chanis – County Administration, High Sheriff Michael Prozzo, John Cressy – Facilities Director; and Sharon Callum – Administrative Assistant.

**Public Attendees:** Archie Mountain – Eagle Times Staff Reporter/Argus Champion Editor, Larry Converse – Claremont Citizen and Patrick O’Grady – Valley News.

**3:02** The Vice Chair, Jeffrey Barrette, opened the meeting, and led all in the Pledge of Allegiance.

**Agenda Item No. 3 Letter of Support (LOS) for the State’s Public Health Conference Support Application: CDC-RFA-EH12-1201**

A draft letter of support was distributed [Appendix A.1-2]. NH State is applying for funding of their annual public health conference and has requested support from each of the public health regions.

**3:04 Motion:** to support the State’s application to the CDC from NH Stateside Healthy Homes Steering Committee and the BMCAP [for NH’s statewide healthy homes conference], and sign the Letter of Support. **Made by:** Callum Jr. **Seconded by:** Barrette. **Voice vote:** All in favor.

**Non Agenda Item S.C. Commission on Wellness**

Comm. Barrette noted the Commission on Wellness met for the first time, and was well attended with 35 people, real stake holders included hospitals, all SAU’s, West Central Behavioral Health, Good Beginnings of Sullivan County, and other front line people; the meeting was facilitated by Antioch of New England; they spoke about challenges for wellness in the community; heard testimony on where the county stands: it’s assets and issues; they will hold a second meeting.

**3:08** *Commissioner Nelson arrived. After a brief update from the Vice Chair, Comm. Nelson signed the LOS, and took over running the meeting.*

**3:09** *Sheriff Prozzo arrived.*

**Agenda Item No. 1.**

**Discussion on a proposed Bio Mass Combined Heat & Power Facility @ the County's Unity Complex**

Mr. Chanis noted he brought the Delegation Executive Finance Committee (EFC) up to date on the proposed project, yesterday. Project: bio mass facility – steam turbine to feed electricity to nursing home and doc, using chips. Chanis reviewed the following documents:

- 1/30/12 email (Page 1-2) from Tom Wilson
- V1 – details of estimate for 2.9 million
- V1CF – shows Net Cash Flow: 1<sup>st</sup> year is \$60,734 and increases each year; important assumptions are \$3.25 oil costs, chip cost of 800 tons and \$42 dollars/per ton; this shows 25 years of cash flow, the first 20 years shows bond payment
- V2 Add-Alternate Cost Estimate – includes all alternates identified; Sum would be \$519,223
- V2CF Base Project plus All Alternates – Nursing Home CHP: Heating Jail and Nursing Home, 20 Year – 4.0% Bond Financing Estimate – shows the alternates included; engineers encouraged them to avoid adding extra chip storage and space for a new boiler – siting it will be easy to reconstruct later if needed. Mr. Cressy noted they indicated it's a rare occurrence to run out of chips - worst case scenario: if you have a 5 day ice storm, you fire up the backup boiler for a day.
- V3 Add-Alternate Cost Estimates – Sum of add alternate estimates is \$192,288; version recommended by both Mr. Chanis and Cressy
- V3CF Base Project + Propane Conversion + Ahern Building – Nursing Home CHP: Heating Jail and Nursing Home 20 Year – 4.0% Bond Financing Estimate – This is the version Mr. Chanis and Cressy recommend. Mr. Cressy noted the price is to replace the air make up unit completely – crane and all.
- Dan Wilson, WES, Jan 31, 2012 memo discussing fuel types, flexibility, supply, out sourcing supply management, letters from potential suppliers: HHP Inc, Timberwolf Logging and DH Harwick & Sons. Chanis pointed out all three vendors are within 100 miles, some within 40 miles, and all responded positively to working on a long term supply of chips for the complex
- NH Municipal Bond Bank 20 Year Estimated Debt Schedule – \$72,888 would be only payment due in FY '13

Next step: Delegation to hold a public hearing for the bond, notice to appear in paper 7 days in advance, and vote must occur within 14 days of hearing. Chanis recommends holding the public hearing within the next couple weeks. Comm. Nelson noted, EFC members were generally supportive. Chanis recommends holding an EFC meeting, followed by the Public hearing – he anticipates having the engineers attend the public hearing.

**3:33 Motion: that the Board of Commissioners recommend to the Sullivan County Convention to issue a 20 year bond to not to exceed Three Million Two**

Hundred Thousand Dollars, with proceeds of said bond to be used for the construction of a Combined Heat and Power Biomass Steam Plant at the Sullivan County Complex in Unity NH; and, instruct the County Administrator to work quickly to get the approval for the Delegation set. Made by: Barrette. Seconded by: Callum Jr. Discussion: Nelson noted, this is what basically residents throughout the county are doing – switching their heating fuel. Voice vote: All in favor.

**Agenda Item No. 2. Proposed FY13 Vehicle Purchase Discussion**

Mr. Chanis noted there is an April 1<sup>st</sup> cut off for receipt of vehicles; historically, they've asked Commissioners and Delegation for ordering approval - cost will be reflected in the FY13 budget. Mr. Chanis distributed a document titled "FY2013 Vehicle Worksheet" [Appendix B], which illustrated: vehicle types, quantity, unit cost, trade values, adjustments for transferred vehicles by departments: Sheriff's Office, Department of Corrections, and the Sullivan County Health Care facility; numbers are based on NH State bid list, except the highlighted ones; the EFC viewed the material this morning. Mr. Chanis noted one Chevy Impala is not shown: DOC is requesting a 24 hr. part time Investigator position in FY13 budget, which would be shared for 8 hours with the Sheriff's Office. The Sheriff indicated they've had vehicles for 41 months and mileage is running 98,000-100,000; he has found three (3) year leases are too soon to trade in, while five (5) year leases are too long; he's spent approximately \$7,000 in fleet maintenance - does not include tires; last year budget was \$39,787, and budgeting \$558 more this years. Mr. Chanis distributed a "County Debt Schedule FY 2012-2016" [Appendix C]; he's called various banks - projection estimates using annual payment of \$66,317.12 at 2.5% for 4 years - based on attaining loan today and making the first interest payment in 365 days. Final payment was made this year on the Sheriff's fleet. Sheriff confirmed the Ford Explorer 4X4 is no longer needed – front wheel works just great and they consume less gas, he's placed 32,000+ miles on the Explorer and paid approximately \$4,500 for a 3 year period. He also noted, their office has witnessed four (4) months' worth of being down a car. Sheriff discussed mileage on the DOC Crown Victoria's and work that would need to be performed when transferring vehicles from their office to DOC – prisoner transport equipment and radios to be removed.

**3:59 Motion: authorize the Sheriff and everyone to order vehicles, and, at future date, have vote to go out for financing, only cars it applies to is Sheriff's Office and DOC cars - police vehicles; to recommend to delegation to approve the vehicle worksheet as presented, with transfers and all. Made by: Barrette. Seconded by: Callum Jr. Discussion: Callum Jr. questioned why they do not selectively purchase a percentage of for next year? The Sheriff discussed loosing value on trade-ins, the current tire situation for the fleet, the desire to have all cars in equal condition, the history of leasing, cost of maintenance on new cards vs. increased maintenance cost on four year or older cards, plus, safety of vehicles. Comm. Nelson added, when it comes to pursuits, you want the cars all the same for deputies jumping into a car. Voice vote: All in favor.**

**Non Agenda Item**  
There was none.

**Public Participation**

**Agenda Item No. 5**

**Probable Executive Session Per 91-A:3.II.i. Discussion Regarding Preparations For, and, Carrying Out of Emergency Functions**

**4:08 Motion: to go into Executive Session Per 91-A:3.II.i. Discussion Regarding Preparations For, and, Carrying Out of Emergency Functions. Made by: Barrette. Seconded by: Callum Jr. Roll call vote: All in favor. Those in Executive Session included: Sheriff Prozzo, Greg Chanis, John Cressy, the three Commissioners and Ms. Callum.**

*4:09 Mr. Mountain, Converse and O'Grady left the room.*

**4:48 Motion: to exit Executive Session. Made by: Barrette. Seconded by: Callum Jr. Voice vote: All in favor.**

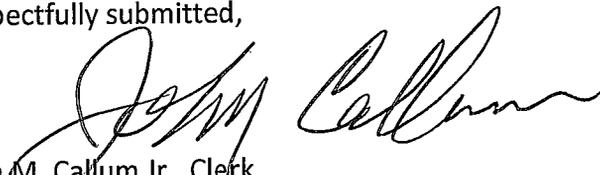
**Agenda Item No. 4**

**Probable Executive Session Per RSA 91-A:3.II.d. - Continued discussions regarding a proposed County building lease**

It was noted an Executive Session was unnecessary. Commissioner Barrette said West Central Behavioral Health Services has indicated they are viewing another site opportunity in Claremont - closer to their clients, has ample parking and sufficient square footage; they'll contact the County in the next few days with their decision.

**4:50 Motion: adjourn meeting. Made by: Barrette. Seconded by: Callum Jr. Voice vote: All in favor.**

Respectfully submitted,

  
John M. Callum Jr., Clerk  
Board of Commissioners

JMC/sjc

Date approved: 02/21/12



**SPECIAL MEETING  
Of the  
Sullivan County NH  
Board of Commissioners**

**Date: Tuesday, January 31, 2012 3:00 PM**  
**Place: Remington Woodhull County Complex**  
County Administration Building  
Commissioners Conference Room 1<sup>st</sup> Floor  
14 Main Street  
Newport NH 03773

**AGENDA REVISED**

1. Discussion on a proposed Biomass Combined Heat & Power facility @ the County's Unity Complex
2. Proposed FY13 Vehicle Purchase Discussion
3. Letter of Support for State's Public Health Conference  
Support Application: CDC-RFA-EH12-1201
4. *Probable Executive Session Per 91-A:3.II.d. – Continued discussions regarding a proposed County building lease*
5. *Probable Executive Session Per 91-A:3.II. i. – Discussions regarding preparations for and carrying out of emergency functions*
6. Any other old or new business

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1 Original notice posted: 1/19/12 in the County Commissioners Office Window & website: [www.sullivancountynh.gov](http://www.sullivancountynh.gov), and on the Sullivan County Health Care and DOC Bulletin Boards, as well as circulated via e-mail 1/19/12. Revision posted: 1/31/12



# SULLIVAN COUNTY

*Serving the communities of:*

Acworth, Charlestown, Claremont, Cornish, Croydon, Goshen, Grantham, Langdon,  
Lempster, Newport, Plainfield, Springfield, Sunapee, Unity and Washington

January 31, 2012

**Commissioners Office**  
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**Sullivan County Health Care**  
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Laura Vincent Ford  
Healthy Homes and Environments Section  
Division of Public Health Services  
29 Hazen Drive  
Concord, NH 03301

**RE: Public Health Conference Support Program CDC-RFA-EH12-1201**

Dear Ms. Ford:

The Sullivan County Board of Commissioners is very pleased to support this application to the CDC from the New Hampshire Statewide Healthy Homes Steering Committee (Steering Committee) and the Community Action Program Belknap Merrimack Counties, Inc. (BMCAP) for New Hampshire's second statewide healthy homes conference.

Sullivan County proudly supports the Greater Sullivan County Public Health Network and its Healthy Homes program, as Fiscal Agent. Our Public Health Network is currently working to develop the *New Hampshire Healthy Homes Statewide Strategic Action Plan* and currently participates on both the Healthy Homes Steering Committee and several healthy homes working groups. We are deeply committed to supporting several shared goals, namely implementing the "One Touch" approach, developing a web-based statewide referral network for healthy homes, and helping our public health region develop strategic plans for healthy homes and implement actions based on those plans.

It is important to keep moving forward and educating stakeholders and New Hampshire residents about environmental health risks and the role healthy homes interventions can play in improving health, safety and the quality of life. Coming off of the success of the first annual conference, this conference will be an important step toward mobilizing stakeholders in further implementing healthy homes goals. With our support as the Board of Commissioners, Sullivan County will contribute by encouraging our Public Health Network to promote the statewide healthy homes conference through outreach activities; and supporting the Public Health Network coordinator to provide expertise, data, and technical assistance to the Steering Committee's Outreach & Education Workgroup as needed.

**RE: Public Health Conference Support Program CDC-RFA-EH12-1201**

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**All Day, Every Day, We Make Life Better**



# SULLIVAN COUNTY

*Serving the communities of:*

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Lempster, Newport, Plainfield, Springfield, Sunapee, Unity and Washington

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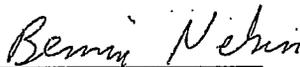
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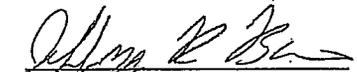
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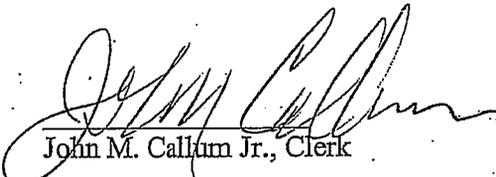
On behalf of The Sullivan County Board of Commissioners, I commend the Steering Committee and the BMCAP for their commitment in making strides to further develop a public health infrastructure that will support the state's goals of healthy homes. Please do not hesitate to contact us at [commissioners@sullivancountynh.gov](mailto:commissioners@sullivancountynh.gov) or (603) 863-2560 if additional information would be helpful.

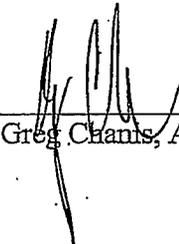
Sincerely,

County of Sullivan, NH – Board of Commissioners & County Administrator

  
Bennie Nelson, Chair

  
Jeffrey Barrette, Vice Chair

  
John M. Callum Jr., Clerk

  
Greg Chanis, Administrator  
1/31/12

**FY 2013 Vehicle Worksheet  
1/30/2012**

Appendix B

Vehicle type	Qty	Unit Cost	Sheriff	DOC	SCHC
Impala police (Sheriff)	7	20,410.86	142,876.02		
Express van	1	20,467.00	20,467.00		
Malibu	1	16,237.00			16,237.00
Wheelchair Van	1	45,000.00			45,000.00
Impala Police (DOC)	2	19,790.00		39,580.00	
Equipment swap			27,000.00	3,000.00	
<b>Sub Total Gross Expense Per Department</b>			<b>190,343.02</b>	<b>42,580.00</b>	<b>61,237.00</b>

Trade values	Qty	Unit Cost	Sheriff	DOC	SCHC
2008 Impala (Sheriff's)	6	-4,300.00	-25,800.00		
2006 Explorer (Sherriff)	1	-5,000.00	-5,000.00		
2003 Taurus (SCHC)	1	-1,250.00			-1,250.00
2007 Crown Victoria (DOC)	2	-3,400.00		-6,800.00	
1999 Wheelchair Van	1	-5,000.00			-5,000.00
2000 Ford Van (DOC)	1	-1,000.00		-1,000.00	
<b>Sub Total Gross Trade Values</b>			<b>-30,800.00</b>	<b>-7,800.00</b>	<b>-6,250.00</b>
<b>Sub Total Net Expense Per Department</b>			<b>159,543.02</b>	<b>34,780.00</b>	<b>54,987.00</b>

Estimate  
249,310.02

Adjustments for Transferred Vehicles	Sheriff	DOC	SCHC
2008 Sheriff's Van to SCHC	-10500		10500
2004 SCHC Van to DOC		2500	-2500
<b>Net Amount Financed Per Department</b>			<b>149,043.02</b>

249,310.02

<b>Total Amount Financed</b>	<b>249,310.02</b>		
<b>Annual Payment @ 2.5% for 4 Years</b>	<b>66,317.12</b>		
Percent of Total per Department		59.78%	14.95%
<b>Annual Payment Per Department FY 2013-2016</b>		<b>\$39,645.83</b>	<b>\$9,916.58</b>

25.26%

**County Debt Schedule**  
**FY 2012-2016**  
**1/30/2012**

Appendix C

Project/Item	2012		2013		2014		2015		2016	
	PRIN	INT								
CCC BOND	660,000	193,750	660,000	173,950	660,000	154,150	660,000	134,350	655,000	114,625
VAN- 14 PASSENGER	10,625	628	10,625	419	10,625	209	0	0	0	0
FORD F350 TRUCK	5,257	311	5,257	208	5,257	104	0	0	0	0
HR PAYROLL	31,000	269	0	0	0	0	0	0	0	0
Sheriff Fleet (Old Loan)	36281	1472								
Proposed Vehicle purchase			60013	6305	61531	4788	63087	3232	64682	1636
Biomass Project										
<b>Sub-Total</b>	<b>743,163</b>	<b>196,429</b>	<b>735,895</b>	<b>180,881</b>	<b>737,413</b>	<b>159,251</b>	<b>723,087</b>	<b>137,582</b>	<b>719,682</b>	<b>116,261</b>
<b>Fiscal Year Totals</b>	<b>939,592</b>		<b>916,776</b>		<b>896,663</b>		<b>860,669</b>		<b>835,943</b>	

**Greg Chanis**

**From:** Tom Wilson [TWilson@wilsonengineeringservices.com]  
**Sent:** Monday, January 30, 2012 5:02 PM  
**To:** gchanis@sullivancountynh.gov; jcrossy@sullivancountynh.gov  
**Cc:** Dan Wilson  
**Subject:** Comparison of feasibility study cost estimate and bid bond cost estimate

Greg and John,

**Feasibility Study cost estimate for Option 3, CHP at Nursing Home, Heat at Nursing Home and Prison, \$2,326,003**

This estimate assumed design, bid, build and would have 2 separate contracts; one for the boiler and a general contract. We had a direct installed quote for the boiler and all associated specialties including chip handling system so we added no contingency or profit to this quote. Because of the unknowns specific to your site we added a 15% contingency onto the GC estimate. We then added 12% for Professional Services to the total of the two separate contracts to cover design, construction management, and permitting costs.

Biomass boiler estimate	\$791,000
2% Bid bond and insurance	<u>\$ 15,820</u>
Sub total	\$806,820
General Contract	\$952,000
16% profit/insurance	<u>\$152,320</u>
Sub-total	\$1,104,320
15% contingency	<u>\$ 165,648</u>
Sub-total GC bid	\$1,269,968
Sub-total GC and Boiler bids	\$2,076,788
Professional services (12%)	<u>\$ 249,215</u>
<b>Total project estimate</b>	<b>\$2,326,003</b>

**Bonding Authority Project Cost Estimate \$2,989,056**

For this estimate we assumed that the project would be bid as a design build project. This has the advantage of having one contractor responsible for the whole project and makes coordination and management easier. However it will add some cost as the contractor will take on added responsibility for the boiler installation and performance and will add some profit margin and contingency to the cost of boiler and installation. For this estimate to be sure we had adequate funding for the project we added the 16% profit margin to the boiler quote and included the 15% contingency on the whole project. This increased the original project estimate by \$278,178. We also included additional items that added value to the project; these costs included a new transformer for electric service, relocation of a backup boiler to the biomass plant, architectural improvements over a base steel building, an office in the biomass plant and demolition of the existing dairy barn to optimize the location of the biomass plant. These costs added up to \$257,600. Adding contingency, profit and engineering brought the total for the added items to \$384,875. The total added to the original estimate is \$663,053

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Sub-Total GC and Boiler Contracts	\$ 2,000,600
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1/31/2012

	<i>Contractor profit overhead and insurance</i>	16%	\$	320,096
Sub-Total			\$	2,320,696
	<i>Contingency</i>	15%	\$	348,104
<b>Total GC and Boiler Cost</b>			\$	<b>2,668,800</b>
	<i>Professional Services<sup>3</sup></i>	12%	\$	320,256.05
<b>Base Project Cost<sup>4,5,6</sup></b>			\$	<b>2,989,056</b>

It is possible that the project cost can be reduced over the \$2,989,056 cost as the same certainty that we have with the quote from the biomass boiler manufacturer will also be provided to the contractor that bids the project so to be competitive he may reduce contingency and margin in the overall project based on the boiler cost estimate. You will be able to negotiate with the low bidders to get the best value for the project.

Please let me know if you have any questions

Thanks

Tom Wilson

Description:  
Description:  
Innn

Wilson Engineering Services, PC  
9006 Mercer Pike  
Meadville, PA 16335  
(814) 337-8223  
[www.wilsonengineeringservices.com](http://www.wilsonengineeringservices.com)

V1

## Option 3 - CHP: ██████████ Capital Cost Estimate

<b>Biomass Boiler</b>		
Line Item		Cost
5.0 mmBtu/hr biomass boiler rated at 150 psig (5,000 lb/hr steam), installed	\$	527,000
Biomass boiler room piping and specialties, installed	\$	73,000
Fuel bunker receiving, storage, material transfer, installed	\$	137,000
Boiler platform, stairs, and ladders installed	\$	19,000
Multicyclone, installed	\$	35,000
Sub-total	\$	791,000
	\$	-
<b>Biomass Boiler Cost</b>	<b>\$</b>	<b>791,000</b>
<b>General Construction</b>		
Biomass Boiler Building and Chip Storage Pit <sup>1</sup>	\$	319,000
Site work	\$	23,500
1,150 ft. of buried steam supply and condensate return piping, installed <sup>2</sup>	\$	298,000
Electrical	\$	79,000
Mechanical	\$	109,500
40 kW backpressure steam turbine, installed	\$	101,000
Steam Condensing Unit, installed	\$	22,000
Demolish and Remove Dairy Barn	\$	60,000
Additional Site work (driveway and grading for dairybarn location)	\$	16,500
Installation of control room/office in biomass building	\$	8,000
Convert Clever Brooks 150 psig boiler to propane and install in biomass bldg	\$	29,000
Addition to biomass building to accommodate Clever Brooks Boiler (270sf)	\$	32,400
Building aesthetic upgrade Pitched Roof and Siding to Boiler and Storage Buildings (\$2l	\$	59,200
4,160V to 480V/277V 3Ø 112kVA Pad Mount Transformer and Service Entrance	\$	22,500
Propane fired backup generator 100kW 480V/277V 3Ø	\$	30,000
General Contract Cost	\$	1,209,600
Sub-Total GC and Boiler Contracts	\$	2,000,600
<i>Contractor profit overhead and insurance</i>	<i>16%</i>	\$ 320,096
Sub-Total	\$	2,320,696
<i>Contingency</i>	<i>15%</i>	\$ 348,104
<b>Total GC and Boiler Cost</b>	<b>\$</b>	<b>2,668,800</b>
<i>Professional Services</i> <sup>3</sup>	<i>12%</i>	\$ 320,256.05
<b>Base Project Cost</b> <sup>4,5,6</sup>	<b>\$</b>	<b>2,989,056</b>

VICF

**Base Project - Nursing Home CHP: Heating Jail and Nursing Home  
20 Year - 4.0% Bond Financing Estimate**

Sullivan County, NH Complex

Input Variables	Value	Units	Year	Fossil Fuel Cost, Current System	Value of Generated Electricity	Wood Chip Cost	Fuel Oil Cost, w/ Wood System	Added O&M Cost	Net Operating Savings	Annual Financing Payment	Net Cash Flow	Present Value of Net Cash Flow
Project Costs Financed	2,989,056	\$	1	\$ 406,056	\$ 18,260	\$ (76,774)	\$ (40,606)	\$ (26,264)	\$ 280,674	\$ (219,940)	\$ 60,734	\$ 60,734
Financing Term	20	# years	2	\$ 419,456	\$ 18,863	\$ (78,846)	\$ (41,946)	\$ (26,973)	\$ 290,554	\$ (219,940)	\$ 70,614	\$ 68,757
Financing Rate (apr)	4.0%	Percent	3	\$ 433,298	\$ 19,485	\$ (80,975)	\$ (43,330)	\$ (27,701)	\$ 300,777	\$ (219,940)	\$ 80,837	\$ 76,642
Annual Fuel Oil Input	124,940	gal	4	\$ 447,597	\$ 20,128	\$ (83,162)	\$ (44,760)	\$ (28,449)	\$ 311,355	\$ (219,940)	\$ 91,415	\$ 84,392
Year 1 Fuel Oil Average Price	3.25	\$/gal	5	\$ 462,368	\$ 20,792	\$ (85,407)	\$ (46,237)	\$ (29,217)	\$ 322,299	\$ (219,940)	\$ 102,359	\$ 92,011
Wood Chip Usage	1,828	tons/yr	6	\$ 477,626	\$ 21,479	\$ (87,713)	\$ (47,763)	\$ (30,006)	\$ 333,623	\$ (219,940)	\$ 113,683	\$ 99,504
Year 1 Wood Chip Purchase Price	42	\$/ton	7	\$ 493,387	\$ 22,187	\$ (90,081)	\$ (49,339)	\$ (30,816)	\$ 345,339	\$ (219,940)	\$ 125,399	\$ 106,873
Annual Fuel Oil Usage w/ Wood System	12,494	gal/yr	8	\$ 509,669	\$ 22,920	\$ (92,513)	\$ (50,967)	\$ (31,648)	\$ 357,460	\$ (219,940)	\$ 137,520	\$ 114,122
Electricity generated	137,294	kWh/yr	9	\$ 526,488	\$ 23,676	\$ (95,011)	\$ (52,649)	\$ (32,503)	\$ 370,001	\$ (219,940)	\$ 150,061	\$ 121,256
Electricity value	0.133	\$/kWh	10	\$ 543,862	\$ 24,457	\$ (97,577)	\$ (54,386)	\$ (33,380)	\$ 382,977	\$ (219,940)	\$ 163,037	\$ 128,277
Fuel Oil Inflation Rate (apr)	3.3%	Percent	11	\$ 561,810	\$ 25,264	\$ (100,211)	\$ (56,181)	\$ (34,281)	\$ 396,401	\$ (219,940)	\$ 176,461	\$ 135,189
Wood Chip Inflation Rate (apr)	2.7%	Percent	12	\$ 580,350	\$ 26,098	\$ (102,917)	\$ (58,035)	\$ (35,207)	\$ 410,289	\$ (219,940)	\$ 190,349	\$ 141,995
General Inflation Rate (apr)	2.7%	Percent	13	\$ 599,501	\$ 26,959	\$ (105,696)	\$ (59,950)	\$ (36,158)	\$ 424,657	\$ (219,940)	\$ 204,717	\$ 148,698
Electric Inflation Rate (apr)	3.3%	Percent	14	\$ 619,285	\$ 27,849	\$ (108,549)	\$ (61,928)	\$ (37,134)	\$ 439,522	\$ (219,940)	\$ 219,582	\$ 155,302
Added Annual O&M Costs for Biomass Plant	\$ 26,264	\$/yr	15	\$ 639,721	\$ 28,768	\$ (111,480)	\$ (63,972)	\$ (38,137)	\$ 454,900	\$ (219,940)	\$ 234,960	\$ 161,810
			16	\$ 660,832	\$ 29,717	\$ (114,490)	\$ (66,083)	\$ (39,166)	\$ 470,810	\$ (219,940)	\$ 250,870	\$ 168,224
			17	\$ 682,639	\$ 30,698	\$ (117,581)	\$ (68,264)	\$ (40,224)	\$ 487,268	\$ (219,940)	\$ 267,328	\$ 174,548
			18	\$ 705,166	\$ 31,711	\$ (120,756)	\$ (70,517)	\$ (41,310)	\$ 504,295	\$ (219,940)	\$ 284,355	\$ 180,784
			19	\$ 728,437	\$ 32,757	\$ (124,017)	\$ (72,844)	\$ (42,425)	\$ 521,909	\$ (219,940)	\$ 301,969	\$ 186,936
			20	\$ 752,475	\$ 33,838	\$ (127,365)	\$ (75,248)	\$ (43,571)	\$ 540,131	\$ (219,940)	\$ 320,191	\$ 193,005
			21	\$ 777,307	\$ 34,955	\$ (130,804)	\$ (77,731)	\$ (44,747)	\$ 558,981	\$ -	\$ 558,981	\$ 328,085
			22	\$ 802,958	\$ 36,109	\$ (134,336)	\$ (80,296)	\$ (45,955)	\$ 578,480	\$ -	\$ 578,480	\$ 330,604
			23	\$ 829,456	\$ 37,300	\$ (137,963)	\$ (82,946)	\$ (47,196)	\$ 598,652	\$ -	\$ 598,652	\$ 333,137
			24	\$ 856,828	\$ 38,531	\$ (141,688)	\$ (85,683)	\$ (48,470)	\$ 619,518	\$ -	\$ 619,518	\$ 335,686
			25	\$ 885,103	\$ 39,803	\$ (145,513)	\$ (88,510)	\$ (49,779)	\$ 641,103	\$ -	\$ 641,103	\$ 338,249
											<b>Net Present Value</b>	<b>\$ 4,264,816</b>

Version: DRAFT

Date Modified: January 30, 2012

V2

**Add-Alternate Cost Estimates**

<b>Convert Kitchen/Dining Room Rooftop AHU to Steam</b>			
Replace Kitchen/Dining room propane roof top units with steam heated units		\$	65,000
Piping and interconnection to steam system		\$	12,000
Sub-Total		\$	77,000
	<i>Contractor profit overhead and insurance</i>	16%	\$ 12,320
Sub-Total		\$	89,320
	<i>Contingency</i>	15%	\$ 13,398
Project Sub-Total (Boiler and General Contracts)		\$	102,718
	<i>Professional Services<sup>3</sup></i>	12%	\$ 12,326
<b>Total</b>		\$	<b>115,044</b>

<b>Interconnect Ahern Building</b>			
Shell and Tube Hx (installed)		\$	2,500
Steam Piping and Condensate Return (150' trench), Installed		\$	39,000
Condensate receiver and pump, installed		\$	1,700
3 unit heaters for 4 bay garage installed		\$	8,500
Sub-Total		\$	51,700
	<i>Contractor profit overhead and insurance</i>	16%	\$ 8,272
Sub-Total		\$	59,972
	<i>Contingency</i>	15%	\$ 8,996
Project Sub-Total (Boiler and General Contracts)		\$	68,968
	<i>Professional Services<sup>3</sup></i>	12%	\$ 8,276
<b>Total</b>		\$	<b>77,244</b>

<b>Additional Boiler Room and Chip Storage Capacity</b>			
Added Bay for 2nd biomass Boiler and Stub Out		\$	95,700
Added Bay for Chip Storage		\$	66,120
Added Fuel Bunker Material Handling		\$	50,000
Additional Site Work (Excavation for footer and foundation)		\$	7,000
Sub-Total		\$	218,820
	<i>Contractor profit overhead and insurance</i>	16%	\$ 35,011
Sub-Total		\$	253,831
	<i>Contingency</i>	15%	\$ 38,075
Project Sub-Total (Boiler and General Contracts)		\$	291,906
	<i>Professional Services<sup>3</sup></i>	12%	\$ 35,029
<b>Total</b>		\$	<b>326,935</b>
<b>Sum of Add Alternate Estimates</b>		\$	<b>519,223</b>

**Notes:**

- 1 - The building is assumed to be a simple pre-engineered building.
- 2 - Exact pipe routes and connections should be evaluated in additional detail.
- 3 - Professional Services includes engineering, permitting, legal, and project management.
- 4 - Assumes that biomass boiler and general contract included in Design Build Contract
- 5 - General contract costs are approximate. A detailed geotechnical study is required to identify final site and building costs.
- 6 - Estimate is based on competitive bidding.

V2CF

**Base Project + All Alternates - Nursing Home CHP: Heating Jail and Nursing Home  
20 Year - 4.0% Bond Financing Estimate**

Sullivan County, NH Complex

Input Variables	Value	Units	Year	Fossil Fuel Cost, Current System	Propane Cost Offset w/Wood System	Value of Generated Electricity	Wood Chip Cost	Fuel Oil Cost, w/ Wood System	Added O&M Cost	Net Operating Savings	Annual Financing Payment	Net Cash Flow	Present Value of Net Cash Flow
Project Costs Financed	3,508,279	\$	1	\$ 406,056	\$ 11,385	\$ 18,260	\$ (79,044)	\$ (40,606)	\$ (26,264)	\$ 289,788	\$ (258,145)	\$ 31,643	\$ 31,643
Financing Term	20	# years	2	\$ 419,456	\$ 11,761	\$ 18,863	\$ (81,178)	\$ (41,946)	\$ (26,973)	\$ 299,983	\$ (258,145)	\$ 41,838	\$ 40,737
Financing Rate (apr)	4.0%	Percent	3	\$ 433,298	\$ 12,149	\$ 19,485	\$ (83,370)	\$ (43,330)	\$ (27,701)	\$ 310,531	\$ (258,145)	\$ 52,386	\$ 49,667
Annual Fuel Oil Input	124,940	gal	4	\$ 447,597	\$ 12,550	\$ 20,128	\$ (85,621)	\$ (44,760)	\$ (28,449)	\$ 321,445	\$ (258,145)	\$ 63,300	\$ 58,437
Year 1 Fuel Oil Average Price	3.25	\$/gal	5	\$ 462,368	\$ 12,964	\$ 20,792	\$ (87,933)	\$ (46,237)	\$ (29,217)	\$ 332,737	\$ (258,145)	\$ 74,592	\$ 67,051
<sup>1</sup> Estimated Propane Offset	5,175	gal	6	\$ 477,626	\$ 13,392	\$ 21,479	\$ (90,307)	\$ (47,763)	\$ (30,006)	\$ 344,421	\$ (258,145)	\$ 86,275	\$ 75,514
Propane Cost	2.20	\$/gal	7	\$ 493,387	\$ 13,834	\$ 22,187	\$ (92,745)	\$ (49,339)	\$ (30,816)	\$ 356,508	\$ (258,145)	\$ 98,363	\$ 83,831
<sup>2</sup> Wood Chip Usage	1,882	tons/yr	8	\$ 509,669	\$ 14,290	\$ 22,920	\$ (95,249)	\$ (50,967)	\$ (31,648)	\$ 369,014	\$ (258,145)	\$ 110,869	\$ 92,005
Year 1 Wood Chip Purchase Price	42	\$/ton	9	\$ 526,488	\$ 14,762	\$ 23,676	\$ (97,821)	\$ (52,649)	\$ (32,503)	\$ 381,953	\$ (258,145)	\$ 123,808	\$ 100,042
Annual Fuel Oil Usage w/ Wood System	12,494	gal/yr	10	\$ 543,862	\$ 15,249	\$ 24,457	\$ (100,462)	\$ (54,386)	\$ (33,380)	\$ 395,340	\$ (258,145)	\$ 137,194	\$ 107,944
Electricity generated	137,294	kWh/yr	11	\$ 561,810	\$ 15,752	\$ 25,264	\$ (103,175)	\$ (56,181)	\$ (34,281)	\$ 409,189	\$ (258,145)	\$ 151,044	\$ 115,716
Electricity value	0.133	\$/kWh	12	\$ 580,350	\$ 16,272	\$ 26,098	\$ (105,960)	\$ (58,035)	\$ (35,207)	\$ 423,517	\$ (258,145)	\$ 165,372	\$ 123,362
Fossil Fuel Inflation Rate (apr)	3.3%	Percent	13	\$ 599,501	\$ 16,809	\$ 26,959	\$ (108,821)	\$ (59,950)	\$ (36,158)	\$ 438,340	\$ (258,145)	\$ 180,195	\$ 130,886
Wood Chip Inflation Rate (apr)	2.7%	Percent	14	\$ 619,285	\$ 17,363	\$ 27,849	\$ (111,760)	\$ (61,928)	\$ (37,134)	\$ 453,675	\$ (258,145)	\$ 195,530	\$ 138,291
General Inflation Rate (apr)	2.7%	Percent	15	\$ 639,721	\$ 17,936	\$ 28,768	\$ (114,777)	\$ (63,972)	\$ (38,137)	\$ 469,540	\$ (258,145)	\$ 211,394	\$ 145,581
Electric Inflation Rate (apr)	3.3%	Percent	16	\$ 660,832	\$ 18,528	\$ 29,717	\$ (117,876)	\$ (66,083)	\$ (39,166)	\$ 485,952	\$ (258,145)	\$ 227,807	\$ 152,759
Added Annual O&M Costs for Biomass Plant	\$ 26,264	\$/yr	17	\$ 682,639	\$ 19,140	\$ 30,698	\$ (121,059)	\$ (68,264)	\$ (40,224)	\$ 502,931	\$ (258,145)	\$ 244,785	\$ 159,829
			18	\$ 705,166	\$ 19,771	\$ 31,711	\$ (124,327)	\$ (70,517)	\$ (41,310)	\$ 520,495	\$ (258,145)	\$ 262,350	\$ 166,794
			19	\$ 728,437	\$ 20,424	\$ 32,757	\$ (127,684)	\$ (72,844)	\$ (42,425)	\$ 538,665	\$ (258,145)	\$ 280,520	\$ 173,657
			20	\$ 752,475	\$ 21,098	\$ 33,838	\$ (131,132)	\$ (75,248)	\$ (43,571)	\$ 557,462	\$ (258,145)	\$ 299,317	\$ 180,422
			21	\$ 777,307	\$ 21,794	\$ 34,955	\$ (134,672)	\$ (77,731)	\$ (44,747)	\$ 576,906	\$ -	\$ 576,906	\$ 338,606
			22	\$ 802,958	\$ 22,513	\$ 36,109	\$ (138,308)	\$ (80,296)	\$ (45,955)	\$ 597,021	\$ -	\$ 597,021	\$ 341,200
			23	\$ 829,456	\$ 23,256	\$ 37,300	\$ (142,043)	\$ (82,946)	\$ (47,196)	\$ 617,828	\$ -	\$ 617,828	\$ 343,809
			24	\$ 856,828	\$ 24,024	\$ 38,531	\$ (145,878)	\$ (85,683)	\$ (48,470)	\$ 639,352	\$ -	\$ 639,352	\$ 346,432
			25	\$ 885,103	\$ 24,817	\$ 39,803	\$ (149,816)	\$ (88,510)	\$ (49,779)	\$ 661,617	\$ -	\$ 661,617	\$ 349,072
												<b>Net Present Value</b>	<b>\$ 3,913,287</b>

Notes:

- 1 - Assumes a 5,175 gallon propane offset by converting rooftop heating units to steam heat from biomass
- 2 - An additional 54 tons of wood chips is included to offset 5,175 gallons of propane

Version: DRAFT

Date Modified: January 30, 2012

**Add-Alternate Cost Estimates**

<b>Convert Kitchen/Dining Room Rooftop AHU to Steam</b>			
Replace Kitchen/Dining room propane roof top units with steam heated units		\$	65,000
Piping and interconnection to steam system		\$	12,000
Sub-Total		\$	77,000
	<i>Contractor profit overhead and insurance</i>	16%	\$ 12,320
Sub-Total		\$	89,320
	<i>Contingency</i>	15%	\$ 13,398
Project Sub-Total (Boiler and General Contracts)		\$	102,718
	<i>Professional Services<sup>3</sup></i>	12%	\$ 12,326
<b>Total</b>		\$	<b>115,044</b>

<b>Interconnect Ahern Building</b>			
Shell and Tube Hx (installed)		\$	2,500
Steam Piping and Condensate Return (150' trench), Installed		\$	39,000
Condensate receiver and pump, installed		\$	1,700
3 unit heaters for 4 bay garage installed		\$	8,500
Sub-Total		\$	51,700
	<i>Contractor profit overhead and insurance</i>	16%	\$ 8,272
Sub-Total		\$	59,972
	<i>Contingency</i>	15%	\$ 8,996
Project Sub-Total (Boiler and General Contracts)		\$	68,968
	<i>Professional Services<sup>3</sup></i>	12%	\$ 8,276
<b>Total</b>		\$	<b>77,244</b>

<b>Additional Boiler Room and Chip Storage Capacity</b>			
Added Bay for 2nd biomass Boiler and Sub Out		\$	95,700
Added Bay for Chip Storage		\$	65,130
Added Fuel Bunker Material Handling		\$	50,000
Additional Site Work (Excavation for footer and foundation)		\$	7,980
Sub-Total		\$	218,810
	<i>Contractor profit overhead and insurance</i>	16%	\$ 35,010
Sub-Total		\$	253,831
	<i>Contingency</i>	15%	\$ 38,075
Project Sub-Total (Boiler and General Contracts)		\$	291,906
	<i>Professional Services<sup>3</sup></i>	12%	\$ 35,029
<b>Total</b>		\$	<b>326,935</b>

**Sum of Add Alternate Estimates**

**7\$ 192,288.00**

**Notes:**

- 1 - The building is assumed to be a simple pre-engineered building.
- 2 - Exact pipe routes and connections should be evaluated in additional detail.
- 3 - Professional Services includes engineering, permitting, legal, and project management.
- 4 - Assumes that biomass boiler and general contract included in Design Build Contract
- 5 - General contract costs are approximate. A detailed geotechnical study is required to identify final site and building costs.
- 6 - Estimate is based on competitive bidding.

**RECOMMENDED**

V366

**Base Project + Propane Conversion + Ahern Building - Nursing Home CHP: Heating Jail and Nursing Home  
20 Year - 4.0% Bond Financing Estimate**

Input Variables	Value	Units	Year	Fossil Fuel Cost, Current System	Propane Cost Offset w/Wood System	Value of Generated Electricity	Wood Chip Cost	Fuel Oil Cost, w/ Wood System	Added O&M Cost	Net Operating Savings	Annual Financing Payment	Net Cash Flow	Present Value of Net Cash Flow
Project Costs Financed	3,181,345	\$	1	\$ 406,056	\$ 11,385	\$ 18,260	\$ (79,044)	\$ (40,606)	\$ (26,264)	\$ 289,788	\$ (234,089)	\$ 55,699	\$ 55,699
Financing Term	20	# years	2	\$ 419,456	\$ 11,761	\$ 18,863	\$ (81,178)	\$ (41,946)	\$ (26,973)	\$ 299,983	\$ (234,089)	\$ 65,894	\$ 64,161
Financing Rate (apr)	4.0%	Percent	3	\$ 433,298	\$ 12,149	\$ 19,485	\$ (83,370)	\$ (43,330)	\$ (27,701)	\$ 310,531	\$ (234,089)	\$ 76,442	\$ 72,475
Annual Fuel Oil Input	124,940	gal	4	\$ 447,597	\$ 12,550	\$ 20,128	\$ (85,621)	\$ (44,760)	\$ (28,449)	\$ 321,445	\$ (234,089)	\$ 87,356	\$ 80,645
Year 1 Fuel Oil Average Price	3.25	\$/gal	5	\$ 462,368	\$ 12,964	\$ 20,792	\$ (87,933)	\$ (46,237)	\$ (29,217)	\$ 332,737	\$ (234,089)	\$ 98,648	\$ 88,675
<sup>1</sup> Estimated Propane Offset	5,175	gal	6	\$ 477,626	\$ 13,392	\$ 21,479	\$ (90,307)	\$ (47,763)	\$ (30,006)	\$ 344,421	\$ (234,089)	\$ 110,332	\$ 96,570
Propane Cost	2.20	\$/gal	7	\$ 493,387	\$ 13,834	\$ 22,187	\$ (92,745)	\$ (49,339)	\$ (30,816)	\$ 356,508	\$ (234,089)	\$ 122,419	\$ 104,333
<sup>2</sup> Wood Chip Usage	1,882	tons/yr	8	\$ 509,669	\$ 14,290	\$ 22,920	\$ (95,249)	\$ (50,967)	\$ (31,648)	\$ 369,014	\$ (234,089)	\$ 134,926	\$ 111,969
Year 1 Wood Chip Purchase Price	42	\$/ton	9	\$ 526,488	\$ 14,762	\$ 23,676	\$ (97,821)	\$ (52,649)	\$ (32,503)	\$ 381,953	\$ (234,089)	\$ 147,864	\$ 119,480
Annual Fuel Oil Usage w/ Wood System	12,494	gal/yr	10	\$ 543,862	\$ 15,249	\$ 24,457	\$ (100,462)	\$ (54,386)	\$ (33,380)	\$ 395,340	\$ (234,089)	\$ 161,251	\$ 126,872
Electricity generated	137,294	kWh/yr	11	\$ 561,810	\$ 15,752	\$ 25,264	\$ (103,175)	\$ (56,181)	\$ (34,281)	\$ 409,189	\$ (234,089)	\$ 175,100	\$ 134,146
Electricity value	0.133	\$/kWh	12	\$ 580,350	\$ 16,272	\$ 26,098	\$ (105,960)	\$ (58,035)	\$ (35,207)	\$ 423,517	\$ (234,089)	\$ 189,428	\$ 141,308
Fossil Fuel Inflation Rate (apr)	3.3%	Percent	13	\$ 599,501	\$ 16,809	\$ 26,959	\$ (108,821)	\$ (59,950)	\$ (36,158)	\$ 438,340	\$ (234,089)	\$ 204,251	\$ 148,360
Wood Chip Inflation Rate (apr)	2.7%	Percent	14	\$ 619,285	\$ 17,363	\$ 27,849	\$ (111,760)	\$ (61,928)	\$ (37,134)	\$ 453,675	\$ (234,089)	\$ 219,586	\$ 155,305
General Inflation Rate (apr)	2.7%	Percent	15	\$ 639,721	\$ 17,936	\$ 28,768	\$ (114,777)	\$ (63,972)	\$ (38,137)	\$ 469,540	\$ (234,089)	\$ 235,451	\$ 162,148
Electric Inflation Rate (apr)	3.3%	Percent	16	\$ 660,832	\$ 18,528	\$ 29,717	\$ (117,876)	\$ (66,083)	\$ (39,166)	\$ 485,952	\$ (234,089)	\$ 251,863	\$ 168,891
Added Annual O&M Costs for Biomass Plant	\$ 26,264	\$/yr	17	\$ 682,639	\$ 19,140	\$ 30,698	\$ (121,059)	\$ (68,264)	\$ (40,224)	\$ 502,931	\$ (234,089)	\$ 268,842	\$ 175,536
			18	\$ 705,166	\$ 19,771	\$ 31,711	\$ (124,327)	\$ (70,517)	\$ (41,310)	\$ 520,495	\$ (234,089)	\$ 286,406	\$ 182,089
			19	\$ 728,437	\$ 20,424	\$ 32,757	\$ (127,684)	\$ (72,844)	\$ (42,425)	\$ 538,665	\$ (234,089)	\$ 304,576	\$ 188,550
Notes:			20	\$ 752,475	\$ 21,098	\$ 33,838	\$ (131,132)	\$ (75,248)	\$ (43,571)	\$ 557,462	\$ (234,089)	\$ 323,373	\$ 194,923
1 - Assumes a 5,175 gallon propane offset by converting rooftop heating units to steam heat from biomass			21	\$ 777,307	\$ 21,794	\$ 34,955	\$ (134,672)	\$ (77,731)	\$ (44,747)	\$ 576,906	\$ -	\$ 576,906	\$ 338,606
2 - An additional 54 tons of wood chips is included to offset 5,175 gallons of propane			22	\$ 802,958	\$ 22,513	\$ 36,109	\$ (138,308)	\$ (80,296)	\$ (45,955)	\$ 597,021	\$ -	\$ 597,021	\$ 341,200
			23	\$ 829,456	\$ 23,256	\$ 37,300	\$ (142,043)	\$ (82,946)	\$ (47,196)	\$ 617,828	\$ -	\$ 617,828	\$ 343,809
			24	\$ 856,828	\$ 24,024	\$ 38,531	\$ (145,878)	\$ (85,683)	\$ (48,470)	\$ 639,352	\$ -	\$ 639,352	\$ 346,432
			25	\$ 885,103	\$ 24,817	\$ 39,803	\$ (149,816)	\$ (88,510)	\$ (49,779)	\$ 661,617	\$ -	\$ 661,617	\$ 349,072
												<b>Net Present Value</b>	<b>\$ 4,291,254</b>



310 Hardwood Lane  
Princeton, WV 24720  
(304) 487-1510



## DRAFT MEMORANDUM

**DATE:** January 31, 2012  
**TO:** John Cressy, Sullivan County, NH  
**FROM:** Dan Wilson, WES  
**CC:** Lew McCreery, WERC  
**RE:** Strategies for Mitigating Long-Term Biomass Fuel Supply Risk

Sullivan County, NH is assessing whether to implement a biomass combined heat and power system for the nursing home and jail as a replacement for its existing fuel oil steam plant. A biomass project offers the benefits of:

- Reducing annual energy costs
- Substantially reducing net carbon emissions
- Keeping dollars spent on energy directly within the local economy

One of the key items to address in evaluating the installation of a biomass system is the availability of current and long-term supply in the region. The county will require approximately 1,900 tons of biomass on an annual basis. This memorandum provides a brief summary of strategies for limiting long-term risk associated with biomass fuel supply as well as the results of an initial survey of potential suppliers in the region.

### 1-Discussion of Fuel Types

There are many types and qualities of solid biomass fuel potentially available. Two major categories into which the fuel can be sorted are agricultural products and wood based products. Wood based products are the recommended focus for Sullivan County's biomass system. This is due to the undesirable properties of the agricultural products for combustion, including: high ash content and low ash fusion temperature which result in clinkering. Focusing on the wood fuels, there are several general types available. The following is a list of the general fuel types.

- Whole tree chips (fuel chips) – obtained by chipping the entire tree including trunk, bark, limbs, and tops.
- Bole chips – obtained by chipping just the trunk and major branches including bark. These trees have been delimbed prior to chipping.
- Mill chips and secondary mill residue – obtained as a by-product of a manufacturing process. This fuel is typically dryer than bole or whole tree chips and thus has a higher Btu content per ton. Typically this fuel does not include bark.

*The information contained herein creates no warranty either expressed or implied. The USDA Forest Service, its officers, employees, and project partners assume no liability for its contents or use thereof. Use of this information is at the sole discretion of the user.*

- Bark – obtained as a by-product of a manufacturing process where trees are debarked. This fuel has a high Btu content, but has higher ash content than the other wood fuels discussed. Bark can also contain dirt and small rocks that need to be accounted for in design of material handling to and within the boiler.
- Pallets – obtained as a by-product of various industries. Chipped pallets that have not been treated with any chemicals or painted can be used without the need for increased emission control equipment. Smaller facilities require the fuel supplier to screen out nails from chipped pallets. Larger biomass facilities may include their own magnet for screening as part of the material handling process.
- Construction and demolition waste – obtained as a by-product of construction and other industries. This fuel is likely to include lumber that has been treated with chemicals, and will not be suitable fuel for small-scale systems without expensive emission control equipment.

When comparing the value of different fuels the biggest single factor is moisture content as biomass fuel is normally priced by weight and water has no energy value and generally lowers boiler efficiency and output. Another important consideration on value is percentage of bark in the fuel, generally more bark relates to increased dirt and rocks in the fuel and increased ash handling. Other considerations are the number of oversized chips that need to be handled and uniformity of fuel from load to load including moisture, chip size and cleanliness.

## 2-Fuel Flexibility from Combustion System

The market for each of the previously listed fuels is different, and pressure on supply may increase in one fuel type while decreasing in another. A key to any strategy for mitigating long-term supply risk is to design the combustion system to handle a wide variety of wood fuels. Maximum flexibility can be designed in by selecting robust handling and conveying equipment, including the ability to screen out oversized fuel, and allowing for the handling of fines.

## 3-Internal Management of Fuel Supply

**Supply Management Strategy** – There are several strategies for managing fuel supply internally. The most common is for the owner to identify 2-4 suppliers with the capacity to supply a substantial portion of the fuel required and request bids, references and a representative sample of the fuel. The owner can then enter into a contract with one or more suppliers to provide a specific portion of the annual fuel required. Built into the contracts would be the ability to increase the amount of fuel supplied by one of the companies should another become unreliable or if demand fluctuates due to energy use. It is prudent for the owner to meet with each potential supplier and gain an understanding of their operation and to ensure that delivery equipment is compatible with the owners chip receiving and storage. There are many examples of smaller-scale projects, in the 1,000 – 5,000 ton/yr range, employing this strategy. Most of these entities are primary or secondary schools or small district heating systems.

**Initial Investigation into Suppliers** – WERC provided an initial investigation into potential fuel suppliers in the area. This investigation was limited to sawmills, chip suppliers, and wood manufacturing facilities within approximately 100 miles of Sullivan County Nursing Home. The investigation was not all inclusive. Seven suppliers stated they would be interested in supplying wood chip fuel for the county. All of the suppliers indicated they would consider long-term contracts, with some being more definitive with regard to their interest in a long-term contract. Generally the longer the term of the contract, the greater the premium the county will have to pay to lock in long-term pricing. Table 1 summarizes the companies identified through initial investigations. Letters from three of the companies are provided in Attachment A. The information from the remaining four companies is based on phone conversations.

**Table 1 – Initial List of Potential Suppliers**

Company	Contact	Contact Number	Current Annual Chip Throughput, tons/year	Location
HHP, Inc.	Ross D'Elia	603-428-3298	150,000	Henniker, NH
Timberwolf Logging	Chris Crowe	603-838-5532	50,000	Littleton, NH
D.H. Hardwick & Sons	Don Hardwick	603-588-6618	90,000	Bennington, NH
Cousineau Forest Products	Jon Baker	603-428-7155	Not Disclosed	Henniker, NH
Packard Logging	Aaron Packard	603-837-3255	Not Disclosed	Dalton, NH
King Forest Industries	Joe King	603-786-9081	180,000	Rumney, NH
HB Logging	Heath Bunnell	603-991-7144	50,000	Monroe, NH

**Long-Term Contracts** – Long-term contracts in the forest products industry for wood chip fuel supply are not particularly common. There are multiple reasons for this. One of the major reasons is that buyers are not willing to pay a significant premium to lock-in supply when it is less expensive to bid a contract on a frequent basis. Serious discussions between Sullivan County and the companies identified would be required to identify the details of a long-term contract, but these contracts would likely include the following:

- 1) A fuel price based on tons of wood and spot checks on moisture content and quality
- 2) Price escalators for diesel fuel (diesel fuel makes up a large portion of the cost to process and deliver chips)
- 3) Some guaranteed level of demand for the wood chips

#### **4-Out-Sourcing of Fuel Supply Management**

There are companies that will provide a service to broker or manage fuel supply. These companies are typically referred to as aggregators, and they generally offer two options. One option is they will act as your broker. They will identify suppliers, negotiate contracts, and manage interaction with the suppliers. Under this arrangement, the county will pay the price of the fuel as negotiated with the actual suppliers and pay a fee to the aggregator for managing the supply. The cost of this service varies, but the general idea is that the county will pay a fee

to have the supply managed for them. Services would include delivery coordination, fuel supplier stockpile monitoring, on site interaction for delivery and fuel quality confirmation, lab analysis of fuel samples, addressing fuel feedstock quality issues, and supplier invoice and payment management.

The other main option is for the aggregator to enter into a contract with the county to supply the wood fuel to the county at a negotiated price. The aggregator can enter into a long-term contract with escalators for inflation, diesel fuel, and other factors. Quality control of the fuel supply would be completed to verify fuel specification compliance. Samples would be gathered on a predetermined delivery interval to be tested for compliance. In this arrangement, it is the aggregator's responsibility to ensure long-term supply, and thus, they charge a premium to take on this risk.

## Attachment A

### Letters from Potential Suppliers:

- HHP, Inc.
- Timberwolf Logging, LLC
- D.H. Hardwick & Sons, Inc.



14 Buxton Industrial Dr.  
Post Office Box 489  
Henniker, NH 03242-0489  
Tel: (603) 428-3298  
Fax: (603) 428-3448  
E-mail: hhp@conknet.com

January 24, 2012

George Fetchko  
Wilson Engineering Services, PC  
9006 Mercer Pike  
Meadville, PA 16335

Dear Mr. Fetchko,

HHP, Inc., established in 1966, is a fully integrated forest products company (from the woods to finished products) located in Henniker, New Hampshire. We own and operate a modern hardwood sawmill, chip plant and pallet manufacturing facilities as well as maintain a steady workforce of 60 or so employees.

Our chip plant produces 150,000 tons of quality wood chips for the pulp and paper industry throughout New England annually.

We understand that you have a client located in Claremont that may have an interest in sourcing local wood fuel. When they are ready, we will be more than happy to enter into discussion with them relative to volume, market-based pricing, operations, capabilities etc. Please contact me if you should have any additional questions or concerns.

Sincerely,

A handwritten signature in black ink, appearing to read 'Ross D'Elia', written over the word 'Sincerely,'.

Ross D'Elia  
President

RD/ljc

Timberwolf Logging LLC  
PO Box 455  
Littleton, NH 03561  
603-444-7115  
603-398-3082

George Fetchko  
Wilson Engineering Services, PC  
9006 Mercer Pike  
Meadville, PA 16335

Dear Mr. Fetchko,

Our firm would be interested in negotiating a long-term contract with a Client near Claremont, NH to supply wood chip fuel. Our facilities are located in Littleton, NH 100 miles from the Claremont area. Currently we supply 50,000 tons of wood chips on an annual basis to various customers, and have been in the business of supplying wood chips for 28 years. We would be willing to entertain supply contracts in the range of 3- 5 years. Please feel free to contact me anytime if you would like to discuss our operations, the capabilities of our firm, and the varying qualities of wood chip we can offer. Our firm looks forward to the opportunity to meet with you to further discuss potential supply contracts.

Sincerely,



Chris Crowe, Manager  
Timberwolf Logging, LLC

# D.H. HARDWICK & SONS, INC.

Mailing Address: Office  
P.O. Box 430  
Antrim N.H. 03440

Shipping Address: Garage  
301 Frankestown Road  
Bennington N.H. 03442

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Telephone: Office 603-588-6618 \* Garage 603-588-6603 \* Fax 603-588-2618

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January 31, 2012

George Fetchko  
Wilson Engineering Services, PC  
9006 Mercer Pike  
Meadville, PA 16335

Dear Mr. Fetchko,

Our firm would be interested in negotiating a long-term contract with a Client near Claremont, NH to supply wood chip fuel. We are located in Bennington, NH about 50 miles (+-) from the Claremont, NH. Currently we supply 90,000 tons of wood chips on an annual basis to various customers, and have been in the business of supplying wood chips for 20 (+-) years. We would be willing to entertain supply contracts in the range of 1-5 years. Please feel free to contact me anytime if you would like to discuss our operations, the capabilities of our firm, and the varying qualities of wood chip we can offer. Our firm looks forward to the opportunity to meet with you to further discuss potential supply contracts.

Sincerely,

Teresa Hardwick, Office Manager

**NH Municipal Bond Bank  
25 Triangle Park Drive  
Concord, NH 03301**

LEVEL DEBT  
20 YEAR ESTIMATED DEBT SCHEDULE FOR  
SULLIVAN COUNTY

2011 ASSESSED VALUATION: \$0  
 ESTIMATED YEARLY INCREASE: 0%  
 DATE PREPARED: 01/31/12  
 BONDS DATED: Spring 2012 08/15/12  
 INTEREST START DATE: 205 Days 07/20/12  
 FIRST INTEREST PAYMENT: 02/15/13  
 NET INTEREST COST: 3.9990%

DEBT YEAR	PERIOD ENDING	PRINCIPAL OUTSTANDING	PRINCIPAL	RATE	INTEREST	TOTAL PAYMENT	CALENDAR YEAR TOTAL PAYMENT
	02/15/13				\$72,888.89	\$72,888.89	
1	08/15/13	\$3,200,000.00	\$110,000.00	4.000%	64,000.00	174,000.00	\$246,888.89
	02/15/14				61,800.00	61,800.00	
2	08/15/14	3,090,000.00	110,000.00	4.000%	61,800.00	171,800.00	233,600.00
	02/15/15				59,600.00	59,600.00	
3	08/15/15	2,980,000.00	115,000.00	4.000%	59,600.00	174,600.00	234,200.00
	02/15/16				57,300.00	57,300.00	
4	08/15/16	2,865,000.00	120,000.00	4.000%	57,300.00	177,300.00	234,600.00
	02/15/17				54,900.00	54,900.00	
5	08/15/17	2,745,000.00	125,000.00	4.000%	54,900.00	179,900.00	234,800.00
	02/15/18				52,400.00	52,400.00	
6	08/15/18	2,620,000.00	130,000.00	4.000%	52,400.00	182,400.00	234,800.00
	02/15/19				49,800.00	49,800.00	
7	08/15/19	2,490,000.00	135,000.00	4.000%	49,800.00	184,800.00	234,600.00
	02/15/20				47,100.00	47,100.00	
8	08/15/20	2,355,000.00	140,000.00	4.000%	47,100.00	187,100.00	234,200.00
	02/15/21				44,300.00	44,300.00	
9	08/15/21	2,215,000.00	145,000.00	4.000%	44,300.00	189,300.00	233,600.00
	02/15/22				41,400.00	41,400.00	
10	08/15/22	2,070,000.00	155,000.00	4.000%	41,400.00	196,400.00	237,800.00
	02/15/23				38,300.00	38,300.00	
11	08/15/23	1,915,000.00	160,000.00	4.000%	38,300.00	198,300.00	236,600.00
	02/15/24				35,100.00	35,100.00	
12	08/15/24	1,755,000.00	165,000.00	4.000%	35,100.00	200,100.00	235,200.00
	02/15/25				31,800.00	31,800.00	
13	08/15/25	1,590,000.00	175,000.00	4.000%	31,800.00	206,800.00	238,600.00
	02/15/26				28,300.00	28,300.00	
14	08/15/26	1,415,000.00	180,000.00	4.000%	28,300.00	208,300.00	236,600.00
	02/15/27				24,700.00	24,700.00	
15	08/15/27	1,235,000.00	185,000.00	4.000%	24,700.00	209,700.00	234,400.00
	02/15/28				21,000.00	21,000.00	
16	08/15/28	1,050,000.00	195,000.00	4.000%	21,000.00	216,000.00	237,000.00
	02/15/29				17,100.00	17,100.00	
17	08/15/29	855,000.00	200,000.00	4.000%	17,100.00	217,100.00	234,200.00
	02/15/30				13,100.00	13,100.00	
18	08/15/30	655,000.00	210,000.00	4.000%	13,100.00	223,100.00	236,200.00
	02/15/31				8,900.00	8,900.00	
19	08/15/31	445,000.00	220,000.00	4.000%	8,900.00	228,900.00	237,800.00
	02/15/32				4,500.00	4,500.00	
20	08/15/32	225,000.00	225,000.00	4.000%	4,500.00	229,500.00	234,000.00
TOTALS			\$3,200,000.00		\$1,519,688.89	\$4,719,688.89	\$4,719,688.89