Nova Scotia Community Feed-in Tariffs
2010 NSUARB-BRD-E-R-10

Undertaking: U-2

Provide the spreadsheet showing the offsetting adjustments to calculations in the Biomass CHP tariff

The purpose of this undertaking is to show our calculations of the effects of two errors in the biomass rate calculations. The first error is the one described in Mr. Chernick's evidence. Our direct evidence at page 5 line 16 states the fuel (escalating) portion of the proposed 2012 biomass CHP rate as $62 per MWh. This is actually the levelized fuel cost. The 2012 fuel cost is $56 per MWh. This number can be calculated by dividing total 2012 fuel cost ($702,693) by 2012 generation (12,636 MWh) on the "Cash Flow" worksheet of Exhibit K filed with our direct evidence. Making this correction would lower our proposed rate by $6 per MWh.

The second error is in the value used for the heat content of steam. For the steam-only scenario we used a value of 1,100 Btu per pound, whereas the correct value should be 1,190. For the CHP scenario, we also used 1,100, and the correct value there should be 1,240. To show the effect of these changes, we have submitted an Excel file, titled "Synapse U-2," and selected printouts from this file are attached here. In the electronic version of "Synapse U-2," the revised value of 1,190 Btu per pound for the steam-only scenario is found in the formula in cell C32 of the "Cost Scenarios" worksheet. The revised value of 1,240 Btu per pound can be found in the formulas in cells H22 and I22 of the same worksheet. These cells are boxed and highlighted in the attached hard copy.

Making these changes would increase total net fuel use in the CHP case to 189,873 mmBtu, as seen in cell F10 of the "Assumptions" worksheet. The new fuel cost per MWh would be $64. This can be derived by dividing total 2012 fuel cost ($805,062) by 2012 generation (12,636 MWh) on the "Cash Flow" worksheet. This change would increase our proposed tariff rate by $8 per MWh.

Making these two corrections would increase the 2012 biomass rate to $158 per MWh, an increase of $2 per MWh over the rate we proposed in our direct evidence on 3/2/11. To facilitate comparison, we have included this rate in the table summarizing our sensitivity analyses provided with Undertaking U-6.

Nova Scotia COMFIT Model | **Biomass CHP (condensing turbine; new boiler in steam-only scenario in year 10)** | **Synapse U-2**

Assumptions		Notes:
General Inflation Factor (revenue and expenses)	1.92%	From NSPI 2009 IRP Update
Capital Costs (Uses of Funds)		
Development	238,146	Net of steam-only scenario
Equipment & Installation	5,950,432	Net of steam-only scenario
Interconnection	199,000	Net of steam-only scenario
Reserves		
Up-Front Maintenance	21,353	Net of steam-only scenario
Working Capital	473,752	Net of steam-only scenario
Debt Service Reserve	569,289	Net of steam-only scenario
Financing		
Debt Closing Costs & Fees	292,368	Net of steam-only scenario
Equity Closing Costs & Fees	129,968	Net of steam-only scenario
Interest During Construction	243,640	Net of steam-only scenario
Total Project Cost	8,117,948	Net of steam-only scenario
Total Project Cost ($/kW)	3,960	Net of steam-only scenario
Initial Reserve Account Sizing		
Upfront Maintenance (months of Year 1 O&M)	6	
Working Capital (months of Year 1 OPEX)	6	
Debt Service Reserve (months of P&I)	6	
Capital Structure (Sources of Funds)		
Amount ($)		
Grants (net value)	0	
Debt	4,870,769	
Equity	3,247,179	
Total Sources of Funds	8,117,948	
Amount (%)		
Grants	0.0%	
Debt	60.0%	
Equity	40.0%	
Total Sources of Funds	100.0%	
Grants:		
State and Federal Incentives	0	
State/Provincial Tax 1	0	
State/Provincial Tax 2	0	
Federal tax	0	
Net Value of Grants	0	
Debt Terms		
Amount	4,870,769	(Based on target debt/equity ratio)
Loan Life	15	
Interest Rate	9.50%	
Up-Front Fee (%)	1.00%	
Up-Front Fee ($)	48,708	
Closing Costs	243,538	(5% of loan value)
Tax Depreciation Allocation		
% of Total Project Cost		
30% Double Declining	0.0%	
50% Double Declining	69.6%	95% of equipment and installation
20-yr SL	0.0%	
40-yr SL	0.0%	
Other	0.0%	
Non-Depreciable	30.37%	Interconnection, development, reserves and financing fees
Total	100.0%	
Amount Allocated		
30% Double Declining	0	
50% Double Declining	5,652,911	
20-yr SL	0	
40-yr SL	0	
Other	0	
Non-Depreciable	2,465,037	
Total	8,117,948	
Year One Depreciation		
Year One Percent	25.0%	(Based on the "half year rule")
Year One Amount	1,413,228	

Assumptions:		Notes:
Operating Inputs		
Net Generator Capacity (MW)	2.05	1.55 MW at full extraction, 2.05 MW at full condensing
Energy Production:		
Net Capacity Factor		60% of time at full extraction, another 25% at full condensing
Net Output in MWhs	12,636	
Annual Operating Expenses		
Annual Fuel Cost		
Fuel Required per Year (mmBtu)	189,873	Net of steam-only scenario
Initial year Fuel Price ($/mmBtu)	$4.24	
Annual O&M (expensed)	93,667	Escalates at inflation.
Site Maintenance	0	Escalates at inflation.
General & Administrative	0	Escalates at inflation.
Insurance	29,752	Escalates at inflation.
Land Lease	0	Escalates at inflation.
Other	0	Escalates at inflation.
Property Tax		
Project Hard Costs	5,950,432	Includes hard costs only (equipment and interconnection)
Assessed Value (%)	1.68%	Machinery and equipment is not assessed.
Assessed Value ($)	100,000	
Annual Decline in Assessed Value	1.00%	
Assessed Value Minimum %	0.00%	
Property Tax Rate	3.50%	
Revenue Assumptions		
Levelized Energy Price ($/MWh)	166.00	
% of Levelized Rate Escalating @ Infl.	0.0%	
Other Revenues (increases with inflation)	0	
Return Metrics		
20-year Equity IRR		
Pre-Tax	13.91%	
After-Tax	13.03%	
Average Debt Service Coverage Ratio	1.65	
Minimum Debt Service Coverage Ratio	1.45	
Minimum Annual After-Tax Equity Net Benefits	103,348	Includes tax benefit/(liability)
Tax Rates:		
Federal Income Tax	15.0%	
State/Provincial Income Tax		
Tax Rate 1		
Applicable Income (less than X)	400,000	
Tax Rate 1	4.5%	
Tax Rate 2 (for income greater than X)	16.0%	
Major Maintenance		Major Maintenance is funded through operations.
Replacement Occurs Every X Years	11	Major Maintenance can not occur more frequently than every five year
Cost of Replacement (Year 0 Dollars)	356,720	Escalates at inflation.
Tax Depreciation Classification of Spending	50% Double Declining	
Book Depreciation Classification of Spending	30-yr SL	
Residual Value		
Residual Value (Net Book Value)	421	
Book Depreciation Classifications		
20-yr SL	100.0%	
30-yr SL	0.0%	
37-yr SL	0.0%	
40-yr SL	0.0%	
Non-Depreciable	0.00%	
Total	100.0%	
Amount Allocated		
20-yr SL	8,117,948	
30-yr SL	0	
37-yr SL	0	
40-yr SL	0	
Non-Depreciable	0	
Total	8,117,948	

Nova Scotia COMFIT Model **Cash Flow worksheet: Top** **Synapse U-2**

Operating Year		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Generation (MWh)			12,636	12,636	12,636	12,636	12,636	12,636	12,636	12,636	12,636	12,636	12,636	12,636	12,636	12,636	12,636	12,636	12,636	12,636	12,636	12,636
Partial Income Statement																						
Revenue																						
Standard Offer Price ($/MWh)																						
Fixed Price Component	100%		166.00	166.00	166.00	166.00	166.00	166.00	166.00	166.00	166.00	166.00	166.00	166.00	166.00	166.00	166.00	166.00	166.00	166.00	166.00	166.00
Escalating Price Component	0%		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
Standard Offer Price			166.00	166.00	166.00	166.00	166.00	166.00	166.00	166.00	166.00	166.00	166.00	166.00	166.00	166.00	166.00	166.00	166.00	166.00	166.00	166.00
Revenues From Energy Production			2,097,626	2,097,626	2,097,626	2,097,626	2,097,626	2,097,626	2,097,626	2,097,626	2,097,626	2,097,626	2,097,626	2,097,626	2,097,626	2,097,626	2,097,626	2,097,626	2,097,626	2,097,626	2,097,626	2,097,626
Other Revenues			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Interest Revenue			20,436	21,189	21,942	22,696	23,449	24,202	24,955	25,708	26,461	27,214	27,967	20,436	20,436	20,436	20,436	9,506	9,506	9,506	9,506	9,506
Total Revenue			2,118,062	2,118,815	2,119,568	2,120,321	2,121,074	2,121,827	2,122,581	2,123,334	2,124,087	2,124,840	2,125,593	2,118,062	2,118,062	2,118,062	2,118,062	2,107,132	2,107,132	2,107,132	2,107,132	2,107,132
Expenses																						
Fuel Cost			(805,062)	(820,519)	(836,273)	(852,329)	(868,694)	(885,373)	(902,372)	(919,697)	(937,356)	(955,353)	(973,696)	(992,391)	(1,011,444)	(1,030,864)	(1,050,657)	(1,070,829)	(1,091,389)	(1,112,344)	(1,133,701)	(1,155,468)
O&M			(93,667)	(95,465)	(97,298)	(99,166)	(101,070)	(103,011)	(104,988)	(107,004)	(109,059)	(111,153)	(113,287)	(115,462)	(117,679)	(119,938)	(122,241)	(124,588)	(126,980)	(129,418)	(131,903)	(134,435)
Site Maintenance			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G&A			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Insurance			(29,752)	(30,323)	(30,906)	(31,499)	(32,104)	(32,720)	(33,348)	(33,989)	(34,641)	(35,306)	(35,984)	(36,675)	(37,379)	(38,097)	(38,828)	(39,574)	(40,334)	(41,108)	(41,897)	(42,702)
Land Lease			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Property tax			(3,500)	(3,465)	(3,430)	(3,395)	(3,360)	(3,325)	(3,290)	(3,255)	(3,220)	(3,185)	(3,150)	(3,115)	(3,080)	(3,045)	(3,010)	(2,975)	(2,940)	(2,905)	(2,870)	(2,835)
Total			(931,980)	(949,772)	(967,906)	(986,389)	(1,005,228)	(1,024,428)	(1,043,999)	(1,063,945)	(1,084,275)	(1,104,997)	(1,126,117)	(1,147,642)	(1,169,582)	(1,191,944)	(1,214,736)	(1,237,966)	(1,261,643)	(1,285,775)	(1,310,371)	(1,335,440)
EBITDA			1,186,082	1,169,043	1,151,662	1,133,932	1,115,847	1,097,399	1,078,582	1,059,388	1,039,811	1,019,843	999,476	970,420	948,480	926,118	903,326	869,166	845,489	821,357	796,761	771,691
Equity Return																						
Cash																						
EBITDA			1,186,082	1,169,043	1,151,662	1,133,932	1,115,847	1,097,399	1,078,582	1,059,388	1,039,811	1,019,843	999,476	970,420	948,480	926,118	903,326	869,166	845,489	821,357	796,761	771,691
Plus: Release of Debt Service Reserve			0	0	0	0	0	0	0	0	0	0	0	0	0	0	569,289	0	0	0	0	0
Plus: Release of WC & Up-Front Maint Reserves			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	495,106
Plus: Release of Major Maintenance Reserves			0	0	0	0	0	0	0	0	0	0	431,441	0	0	0	0	0	0	0	0	0
Plus: Residual Value			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	421
Less: Major Maintenance Spending			0	0	0	0	0	0	0	0	0	0	(431,441)	0	0	0	0	0	0	0	0	0
Less: Major Maintenance Reserve Funding			(39,222)	(39,222)	(39,222)	(39,222)	(39,222)	(39,222)	(39,222)	(39,222)	(39,222)	(39,222)	(39,222)	0	0	0	0	0	0	0	0	0
Less: Principal			(159,487)	(174,638)	(191,229)	(209,396)	(229,288)	(251,071)	(274,922)	(301,040)	(329,639)	(360,954)	(395,245)	(432,793)	(473,909)	(518,930)	(568,228)	0	0	0	0	0
Less: Interest			(462,723)	(447,572)	(430,981)	(412,814)	(392,922)	(371,139)	(347,288)	(321,170)	(292,571)	(261,256)	(226,965)	(189,417)	(148,301)	(103,280)	(53,982)	0	0	0	0	0
Total Cash			524,650	507,611	490,230	472,500	454,415	435,967	417,150	397,956	378,379	358,411	338,044	348,210	326,270	303,908	850,405	869,166	845,489	821,357	796,761	1,267,218
Equity Investment		(3,247,179)																				
Total Pre-Tax Equity Return		(3,247,179)	524,650	507,611	490,230	472,500	454,415	435,967	417,150	397,956	378,379	358,411	338,044	348,210	326,270	303,908	850,405	869,166	845,489	821,357	796,761	1,267,218
Pre-Tax Internal Rate of Return	13.91%																					
Taxable Income Benefit/(Liability)																						
EBITDA			1,186,082	1,169,043	1,151,662	1,133,932	1,115,847	1,097,399	1,078,582	1,059,388	1,039,811	1,019,843	999,476	970,420	948,480	926,118	903,326	869,166	845,489	821,357	796,761	771,691
Less: Interest			(462,723)	(447,572)	(430,981)	(412,814)	(392,922)	(371,139)	(347,288)	(321,170)	(292,571)	(261,256)	(226,965)	(189,417)	(148,301)	(103,280)	(53,982)	0	0	0	0	0
Less: Tax Depreciation			(1,413,228)	(2,119,842)	(1,059,921)	(529,960)	(264,980)	(132,490)	(66,245)	(33,123)	(16,561)	(8,281)	(219,861)	(109,930)	(54,965)	(27,483)	(13,741)	(6,871)	(3,435)	(1,718)	(859)	(429)
Taxable Income/(Loss)			(689,869)	(1,398,370)	(339,240)	191,157	457,945	593,769	665,049	705,096	730,679	750,307	552,650	671,072	745,213	795,355	835,603	862,295	842,053	819,639	795,902	771,262
Tax Benefit/(Liability)																						
State/Provincial 1			18,000	18,000	15,266	(8,602)	(18,000)	(18,000)	(18,000)	(18,000)	(18,000)	(18,000)	(18,000)	(18,000)	(18,000)	(18,000)	(18,000)	(18,000)	(18,000)	(18,000)	(18,000)	(18,000)
State/Provincial 2			46,379	159,739	0	0	(9,271)	(31,003)	(42,408)	(48,815)	(52,909)	(56,049)	(24,424)	(43,372)	(55,234)	(63,257)	(69,696)	(73,967)	(70,729)	(67,142)	(63,344)	(59,402)
Federal			103,480	209,756	50,886	(28,674)	(68,692)	(89,065)	(99,757)	(105,764)	(109,602)	(112,546)	(82,898)	(100,661)	(111,782)	(119,303)	(125,340)	(129,344)	(126,308)	(122,946)	(119,385)	(115,689)
Total Tax Benefit/(Liability)			167,859	387,495	66,152	(37,276)	(95,963)	(138,069)	(160,165)	(172,580)	(180,510)	(186,595)	(125,322)	(162,032)	(185,016)	(200,560)	(213,037)	(221,311)	(215,037)	(208,088)	(200,730)	(193,091)
Equity Investment		(3,247,179)																				
Total After-Tax Equity Return		(3,247,179)	692,509	895,106	556,382	435,225	358,452	297,899	256,985	225,377	197,869	171,816	212,723	186,177	141,254	103,348	637,368	647,854	630,452	613,269	596,031	1,074,127
After-Tax Internal Rate of Return	13.03%																					

Nova Scotia COMFIT Model **Cash Flow worksheet: Bottom** **Synapse U-2**

Operating Year	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Debt																					
Loan Balance	4,870,769	4,711,282	4,536,644	4,345,415	4,136,019	3,906,731	3,655,661	3,380,738	3,079,698	2,750,060	2,389,105	1,993,860	1,561,067	1,087,158	568,228	0	0	0	0	0	0
Interest 9.50%	(4,462,381)	(462,723)	(447,572)	(430,981)	(412,814)	(392,922)	(371,139)	(347,288)	(321,170)	(292,571)	(261,256)	(226,965)	(189,417)	(148,301)	(103,280)	(53,982)	0	0	0	0	0
Principal	(4,870,769)	(159,487)	(174,638)	(191,229)	(209,396)	(229,288)	(251,071)	(274,922)	(301,040)	(329,639)	(360,954)	(395,245)	(432,793)	(473,909)	(518,930)	(568,228)	0	0	0	0	0
Annual payment		(622,210)	(622,210)	(622,210)	(622,210)	(622,210)	(622,210)	(622,210)	(622,210)	(622,210)	(622,210)	(622,210)	(622,210)	(622,210)	(622,210)	(622,210)	0	0	0	0	0
Debt Service Coverage Ratio																					
EBITDA		1,186,082	1,169,043	1,151,662	1,133,932	1,115,847	1,097,399	1,078,582	1,059,388	1,039,811	1,019,843	999,476	970,420	948,480	926,118	903,326	0	0	0	0	0
Less: Major Maintenance Reserve Funding		(39,222)	(39,222)	(39,222)	(39,222)	(39,222)	(39,222)	(39,222)	(39,222)	(39,222)	(39,222)	(39,222)	0	0	0	0	0	0	0	0	0
Cash Available for Debt Service		1,146,860	1,129,821	1,112,440	1,094,710	1,076,625	1,058,177	1,039,360	1,020,166	1,000,589	980,621	960,254	970,420	948,480	926,118	903,326	0	0	0	0	0
P&I		622,210	622,210	622,210	622,210	622,210	622,210	622,210	622,210	622,210	622,210	622,210	622,210	622,210	622,210	622,210	0	0	0	0	0
Debt Service Coverage Ratio		1.84	1.82	1.79	1.76	1.73	1.70	1.67	1.64	1.61	1.58	1.54	1.56	1.52	1.49	1.45					
Average	1.65																				
Minimum	1.45																				
Reserve Accounts																					
Reserves Funded As Part of Capital Cost																					
Beginning Balance	0	1,064,394	1,064,394	1,064,394	1,064,394	1,064,394	1,064,394	1,064,394	1,064,394	1,064,394	1,064,394	1,064,394	1,064,394	1,064,394	1,064,394	1,064,394	495,106	495,106	495,106	495,106	495,106
Up-Front Maintenance Reserve	21,353	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	(21,353)
Working Capital	473,752	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	(473,752)
Debt Service Reserve	569,289	0	0	0	0	0	0	0	0	0	0	0	0	0	0	(569,289)	0	0	0	0	0
Total	1,064,394	1,064,394	1,064,394	1,064,394	1,064,394	1,064,394	1,064,394	1,064,394	1,064,394	1,064,394	1,064,394	1,064,394	1,064,394	1,064,394	1,064,394	495,106	495,106	495,106	495,106	495,106	0
Major Maintenance Reserve Funded Through Operations																					
Beginning Balance		0	39,222	78,444	117,666	156,888	196,110	235,332	274,553	313,775	352,997	392,219	0	0	0	0	0	0	0	0	0
Funding		39,222	39,222	39,222	39,222	39,222	39,222	39,222	39,222	39,222	39,222	39,222	0	0	0	0	0	0	0	0	0
Release of Funds		0	0	0	0	0	0	0	0	0	0	(431,441)	0	0	0	0	0	0	0	0	0
Ending Balance		39,222	78,444	117,666	156,888	196,110	235,332	274,553	313,775	352,997	392,219	0	0	0	0	0	0	0	0	0	0
Major Maintenance Costs																					
Occurrence 1	431,441	0	0	0	0	0	0	0	0	0	0	431,441	0	0	0	0	0	0	0	0	0
Occurrence 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Occurrence 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Occurrence 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Major Maintenance Funding																					
Occurrence 1	431,441	39,222	39,222	39,222	39,222	39,222	39,222	39,222	39,222	39,222	39,222	39,222	0	0	0	0	0	0	0	0	0
Occurrence 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Occurrence 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Occurrence 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Interest on Reserves		20,436	21,189	21,942	22,696	23,449	24,202	24,955	25,708	26,461	27,214	27,967	20,436	20,436	20,436	20,436	9,506	9,506	9,506	9,506	9,506
Property Tax Calculation																					
Original Assessed Value		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
Annual Decline in Assessed Value		100.0%	99.0%	98.0%	97.0%	96.0%	95.0%	94.0%	93.0%	92.0%	91.0%	90.0%	89.0%	88.0%	87.0%	86.0%	85.0%	84.0%	83.0%	82.0%	81.0%
Annual Assessed Value		100,000	99,000	98,000	97,000	96,000	95,000	94,000	93,000	92,000	91,000	90,000	89,000	88,000	87,000	86,000	85,000	84,000	83,000	82,000	81,000
Property Tax Rate		3.50%	3.50%	3.50%	3.50%	3.50%	3.50%	3.50%	3.50%	3.50%	3.50%	3.50%	3.50%	3.50%	3.50%	3.50%	3.50%	3.50%	3.50%	3.50%	3.50%
Property Tax Expense		3,500	3,465	3,430	3,395	3,360	3,325	3,290	3,255	3,220	3,185	3,150	3,115	3,080	3,045	3,010	2,975	2,940	2,905	2,870	2,835

Operating Year		**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
Calendar Year		**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**
Tax Depreciation																						
Calendar Year Depreciation per Classification (%)																						
30% Double Declining			30.00%	21.00%	14.70%	10.29%	7.20%	5.04%	3.53%	2.47%	1.73%	1.21%	0.85%	0.59%	0.42%	0.29%	0.20%	0.14%	0.10%	0.07%	0.05%	0.03%
50% Double Declining			50.00%	25.00%	12.50%	6.25%	3.13%	1.56%	0.78%	0.39%	0.20%	0.10%	0.05%	0.02%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
20-yr SL			2.50%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%
40-yr SL			1.25%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%
Other			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%
Calendar Year Depreciation per Classification ($)																						
Year One Capital Cost Allocation	1,413,228		1,413,228	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30% Double Declining	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
50% Double Declining	4,239,683		0	2,119,842	1,059,921	529,960	264,980	132,490	66,245	33,123	16,561	8,281	4,140	2,070	1,035	518	259	129	65	32	16	8
20-yr SL	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
40-yr SL	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Major Maintenance			0	0	0	0	0	0	0	0	0	0	215,721	107,860	53,930	26,965	13,483	6,741	3,371	1,685	843	421
Annual Depreciation	6,083,923		1,413,228	2,119,842	1,059,921	529,960	264,980	132,490	66,245	33,123	16,561	8,281	219,861	109,930	54,965	27,483	13,741	6,871	3,435	1,718	859	429
Major Maintenance																						
Timing of Spending																						
Occurrence 1			0	0	0	0	0	0	0	0	0	0	1	2	3	4	5	6	7	8	9	10
Occurrence 2			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Occurrence 3			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Occurrence 4			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Depreciation Classification	50% Double Declining																					
Year		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Depreciation Schedule		0.00%	50.00%	25.00%	12.50%	6.25%	3.13%	1.56%	0.78%	0.39%	0.20%	0.10%	0.05%	0.02%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Depreciation Expense																						
	Expense	Depreciation Amount																				
Occurrence 1	431,441	431,020	0	0	0	0	0	0	0	0	0	0	215,721	107,860	53,930	26,965	13,483	6,741	3,371	1,685	843	421
Occurrence 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Occurrence 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Occurrence 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Operating Year		**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
Calendar Year		**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**
.																						
Book Depreciation																						
Calendar Year Depreciation per Classification (%)																						
20-yr SL			5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%
30-yr SL			3.33%	3.33%	3.33%	3.33%	3.33%	3.33%	3.33%	3.33%	3.33%	3.33%	3.33%	3.33%	3.33%	3.33%	3.33%	3.33%	3.33%	3.33%	3.33%	3.33%
37-yr SL			2.70%	2.70%	2.70%	2.70%	2.70%	2.70%	2.70%	2.70%	2.70%	2.70%	2.70%	2.70%	2.70%	2.70%	2.70%	2.70%	2.70%	2.70%	2.70%	2.70%
40-yr SL			2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%
Calendar Year Depreciation per Classification ($)																						
20-yr SL	8,117,948		405,897	405,897	405,897	405,897	405,897	405,897	405,897	405,897	405,897	405,897	405,897	405,897	405,897	405,897	405,897	405,897	405,897	405,897	405,897	405,897
30-yr SL	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
37-yr SL	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
40-yr SL	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Major Maintenance			0	0	0	0	0	0	0	0	0	0	215,721	107,860	53,930	26,965	13,483	6,741	3,371	1,685	843	421
Annual Depreciation	8,548,968		405,897	405,897	405,897	405,897	405,897	405,897	405,897	405,897	405,897	405,897	621,618	513,758	459,828	432,862	419,380	412,639	409,268	407,583	406,740	406,319
Major Maintenance																						
Timing of Spending																						
Occurrence 1			0	0	0	0	0	0	0	0	0	0	1	2	3	4	5	6	7	8	9	10
Occurrence 2			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Occurrence 3			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Occurrence 4			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Depreciation Classification	30-yr SL																					
Year		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Depreciation Schedule		0.00%	3.33%	3.33%	3.33%	3.33%	3.33%	3.33%	3.33%	3.33%	3.33%	3.33%	3.33%	3.33%	3.33%	3.33%	3.33%	3.33%	3.33%	3.33%	3.33%	3.33%
Depreciation Expense																						
	Expense	Depreciation Amount																				
Occurrence 1	431,441	431,020	0	0	0	0	0	0	0	0	0	0	215,721	107,860	53,930	26,965	13,483	6,741	3,371	1,685	843	421
Occurrence 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Occurrence 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Occurrence 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Net Book Value																						
Beginning Balance			0	7,712,051	7,306,154	6,900,256	6,494,359	6,088,461	5,682,564	5,276,666	4,870,769	4,464,872	4,058,974	3,868,797	3,355,040	2,895,212	2,462,350	2,042,970	1,630,331	1,221,063	813,480	406,740
Original Book Value			8,117,948	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Plus: Major Maintenance			0	0	0	0	0	0	0	0	0	0	431,441	0	0	0	0	0	0	0	0	0
Less: Depreciation			(405,897)	(405,897)	(405,897)	(405,897)	(405,897)	(405,897)	(405,897)	(405,897)	(405,897)	(405,897)	(621,618)	(513,758)	(459,828)	(432,862)	(419,380)	(412,639)	(409,268)	(407,583)	(406,740)	(406,319)
Net Book Value			7,712,051	7,306,154	6,900,256	6,494,359	6,088,461	5,682,564	5,276,666	4,870,769	4,464,872	4,058,974	3,868,797	3,355,040	2,895,212	2,462,350	2,042,970	1,630,331	1,221,063	813,480	406,740	421

Scenarios in $2012

Component	Value for Steam-Only Scenario	Gross Value for CHP Scenario	Net Value for CHP Scenario
Project development	$42,134	$280,280	$238,146
Boiler installed cost ($)	$1,685,370	$3,057,600	$1,372,230
Turbine installed cost ($)	$0	$2,894,528	$2,894,528
Emission controls	$252,806	$305,760	$52,954
Condenser/Cooling Tower	$0	$1,630,720	$1,630,720
Equipment and Installation ($)	$1,938,176	$7,888,608	$5,950,432
Interconnection ($)	$0	$199,000	$199,000
Maintenance reserve ($)	$65,279	$86,632	$21,353
Working capital reserve ($)	$560,865	$1,034,617	$473,752
Debt service reserve ($)	$215,522	$784,811	$569,289
Debt Closing Costs & Fees	$110,685	$403,053	$292,368
Equity Closing Costs & Fees	$49,166	$179,135	$129,968
Interest During Construction	$92,238	$335,877	$243,640
Routine Maintenance ($/yr)	$130,557	$173,264	$42,707
Labour ($)	$305,760	$356,720	$50,960
General & Admin.	$0	$0	$0
Insurance	$9,691	$39,443	$29,752
Property taxes	$0	$3,567	
Year-10 Turbine overhaul ($)	$0	$152,880	$152,880
Year-10 Boiler overhaul ($)	$0	$203,840	$203,840
Annual Fuel Use (mmBtu/yr)	156,366	346,239	189,873
Annual Fuel Cost ($/yr)	$675,721	$1,496,240	$820,519
Plant capacity factor (%) - extracti	60%	60%	60%
Plant capacity factor (%) - full condensing		25%	25%
NPV of new boiler($2M) in yr 10	$1,685,370		
Steam Load (mmBtu/hr)	23.8		
Boiler size (lb/hr)	20,000	30,000	
Boiler rating (psi)	75-100	600	
Turbine type	N/A	Condensing	
Turbine size (MW)	N/A	2.05	
Total Project Costs ($)			
Total Project Costs ($/kW)			

Actual Loan Value:	$1,844,439	$6,715,208	$4,870,769
Actual Equity Amount:	$1,229,626	$4,476,805	

Steam	60%
Condensing	25%

Calculation of fuel costs:	Extraction	Condensing
Turbine size (kW):	1550	2050
Boiler efficiency (%)	80%	80%
Adjusted turbine size (kW):		
Adjusted KWhs:		
Fuel Use (Btu):		
Fuel Use (mmBtu):	244,404	101,835

Calculation of heat input:
5,256 hrs
125,093 process heat (mmBtu)
156,366 heat input (mmBtu)

Efficiency:	49%	15%
Steam energy	125092.8	
Electric Energy	43115	15318
Fuel Use	346239	101835