



**Addendum to
Landfill Gas-to-Energy and
Greenhouse Gas Project Feasibility Study
for the
South Wake Landfill**



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October 2, 2009
File No. 02199312.04

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1.0 COMBINED DIRECT-USE AND ELECTRIC GENERATION PROJECT

1.1 INTRODUCTION

SCS analysed an additional project scenario to supplement the document titled “Landfill Gas-to-Energy and Greenhouse Gas Project Feasibility Study for the South Wake Landfill,” dated 9/9/09. The additional project scenario involves the combined delivery of landfill gas (LFG) produced by the South Wake Landfill to the Novartis facility (for direct-use) and to an on-site power generation facility (for sale of electric power). While SCS refers to this additional project scenario as “combined direct-use and electrical generation”, the approach evaluated by SCS is distinctly different from the type of project commonly referred to as “combined heat and power.”

For the purposes of this analysis, the capital and operating costs for the direct-use and electrical generation aspects of this project scenario are based on assumptions detailed in the initial Study (cited above). Also, revenues associated with greenhouse gas credits, LFG sales, and electricity sales used consistent pricing and rates as documented in the initial Study. For more detail on these assumptions, please refer to Sections 7.2 and 8.2 of the initial Study, dated 9/9/09.

1.2 COMBINED LFGE PROJECT CONSIDERATIONS

The additional scenario involves the combined delivery of landfill gas (LFG) produced by the South Wake Landfill to Novartis (for direct-use) and to an on-site power generation facility (for sale of electric power). This scenario also includes revenues from Verified Emission Reductions (VERs) associated with monetizing greenhouse gas (GHG) credits realized by voluntary methane destruction. The various LFGE project scenarios evaluated in the initial Study concerned direct-use only (Novartis) or electrical generation only. The electrical generation scenarios reflected the practical and conservative assumption of limiting the purchase and installation of engine gensets. The direct-use scenarios reflected the assumption of limiting the delivery of LFG to Novartis at a maximum of 3,000 cfm based on the facility’s reported on-peak energy demand.

This combined project scenario seeks to maximize beneficial use of the LFG for energy production by commencing an electrical generation project once the LFG recovery rates from the South Wake Landfill exceeds the reported Novartis maximum on-peak energy demand of approximately 3,000 scfm. Thus, the combined LFGE project is structured assuming an initial direct-use project to Novartis that continues for the full 30-year period. In Year 15, the LFG recovery projections indicate that LFG flowrates from the Landfill begin to exceed the Novartis on-peak energy demand. At this time, an on-site electrical generation facility consisting of a single CAT 3520 engine genset unit will commence operation to produce electricity using the excess LFG. The addition of engine gensets continues as LFG flow is assessed to be of sufficient quantity for stable power plant operation.

Two combined LFGE project scenarios were evaluated: Scenario 4A considers a project financed with no debt, and Scenario 4B considers the identical project financed with 90% debt, 10% equity. Because of significant uncertainties in forecasting financing rates and terms (a very

difficult task in the current credit environment and a service that SCS does not provide), financing is also subject to simplifying assumptions that will have significant impact on the results of the analyses. Again, the financing input parameters and assumptions were generally consistent with those outlined in Sections 7.2 and 8.2 of the initial Study. However, Wake County requested that SCS' financial analyses for the combined LFG project scenarios reflect a 30-year term.

In addition to the general capital and operating cost assumptions, SCS prepared the analysis of this project scenario based on the following assumptions:

- **Power Plant Capital Costs** – Engine genset pricing is assumed to be scalable based on assumptions described in the initial Study, dated 9/9/09. Additionally, since the engines are added in the future, inflation of 3 percent per year is incorporated into the engine cost estimate (as performed in the initial Study).
- **Engine Additions** – A total of four CAT 3520 engine gensets, each with a rated capacity of 1.6 MW, are installed over the term of the project for a total plant generation capacity of 6.4 MW. The power plant capacity is increased via addition of engine gensets as excess LFG flow warrants the addition. Engines are added when excess LFG quantities are equivalent to at least 60 percent of the required LFG flow to a single genset, which is 550 scfm (at 50 percent methane content). Sixty percent of this fuel requirement, 330 scfm, is assumed to be the LFG flow rate necessary for sustained long-term performance. In practice, the County would likely consider multiple engine and associated equipment purchases before gas flow is sufficient for sustained operation. However, in Project Year 20, two engines are purchased for increased LFG flow in the subsequent year - to avoid purchasing two engines over two years.
- **Financing Terms**– Because of the 30-year project term and significant capital costs incurred under this scenario, financing is subject to simplifying assumptions that will have significant impact on the results of the analysis. As stated above, significant uncertainties in forecasting financing rates and terms thus far into the future should be recognized and such forecasting is not part of SCS' expertise. The financing assumptions used in this analysis applies a base assumption provided by the County of 5.25% for a 20-year term and assumes the shorter duration financing is one-point lower at 4.25% for 10 years. These rates and terms are used to provide an order of magnitude analysis for this scenario only, are scaled relative to each other, and may not be representative of the financing that Wake County is able to obtain in the distant future years of this scenario.

Table 1 illustrates the addition of capital equipment for this combined project scenario.

Table 1. Capital Equipment

Capital Equipment	Cost ¹	Project Year
LFG Treatment System and Pipeline Costs	\$2,919,400	1
LFG Compression/ Treatment System Expansion	1,500,000	6
Gas Collection and Control System (GCCS) including GHG Monitoring System	\$698,790	1
GCCS Expansion	\$315,513	3
	\$265,335	5
	\$355,047	7
	\$204,788	9
	\$308,175	11
	\$335,569	13
	\$250,767	15
CAT 3520 Engine Genset	\$2,862,198 + \$119,940 interconnection costs	14, 17, 20 ²

¹ Capital costs for equipment reflect a 3% per year escalation rate, except that the engine genset cost noted above reflects 2009 dollars. The engine genset costs used in the financial analysis considered 3% per year inflation.

² Two engine gensets purchased in Project Year 20.

1.3 RESULTS OF COMBINED LFGE PROJECT ECONOMIC ANALYSES

Scenarios 4A and 4B – Combined Direct-Use and Electricity Generation with GHG

In Scenarios 4A and 4B, the direct-use aspect of the project supplying LFG to the Novartis facility owns the rights to GHG credits from the destruction of the LFG. However, it was assumed that Novartis would be able to retain the GHG credits associated with the displacing of more carbon intensive forms of fuel. With the inclusion of the GHG revenues, the analyses also included; (1) The capital cost for the initial LFG system and all expansions through the project period; (2) the operating cost of the LFG collection system through the project period; and (3) all costs associated with the GHG project approval, verification, registration and monitoring. Also, in Scenarios 4A and 4B, the LFG-fired electricity generation facility commences operation after the period of GHG credit eligibility. It was assumed that no GHG credits would be obtained from the generation of electricity by displacing more carbon intensive forms of electricity generation. Rather, the RECs would be sold into the North Carolina compliance market. SCS also assumed that the County was the owner of the project and provides for all capital.

The results of the financial analysis for the combined direct-use and electrical generation project identified as Scenario 4A are shown in Table 2, including the Average Annual Net Cash Flow, Net Present Value (NPV), Internal Rate of Return (IRR), and simple payback period from the

sale of LFG and electricity and VERs. Scenario 4A reflects no debt such that the County provides all capital and/or grants in the form of equity. The assumptions and input parameters for the financial analysis are as described in Section 1.2.

The results of this financial analysis for the combined direct-use and electrical generation project identified as Scenario 4B are shown in Table 3, including the project revenues, investment and operating costs, debt service, annual net cash flows, NPV, IRR, and simple payback period from the sale of LFG and electricity and VERs. In Scenario 4B, 90% debt level was utilized to finance the capital costs associated with the initial LFG collection and control system construction as well as the transmission pipeline and initial compressor station initial and also the power plant and subsequent expansion of the power plant, with the County providing the remaining 10% of capital and/or grants in the form of equity. The assumptions and input parameters for the financial analysis are as described in Section 1.2.

The detailed multi-year *pro forma* depicting cash flow and other results of the economic analysis for the combined direct-use and electrical generation projects identified as Scenarios 4A and 4B are included in Appendix A.

Table 2. Scenario 4A – Combined Direct-Use and Electric Generation w/ GHG (No Debt) Summarized Financial Results

Summary of Financial Results from Scenario 4A (No Debt; 100% Equity)	
Average Annual Net Cash Flow (Average First 10 years)	\$373,777
NPV @ 6%	\$18,067,801
IRR	21%
Simple Payback (Years)	4.1

Table 3. Scenario 4B – Combined Direct-Use and Electric Generation w/ GHG (90% Debt, 10% Equity) Financial Results

Year	LFG/Electricity/GHG Revenue	Investment & Operating Costs	Debt Service	Net Cash Flow
2010	\$ 270,023	\$ 863,102	\$ 266,867	\$ (593,080)
2011	\$ 890,787	\$ 658,585	\$ 266,867	\$ 232,202
2012	\$ 1,231,686	\$ 989,371	\$ 266,867	\$ 242,316
2013	\$ 1,561,869	\$ 696,050	\$ 266,867	\$ 865,819
2014	\$ 1,912,149	\$ 984,241	\$ 266,867	\$ 927,908
2015	\$ 1,409,800	\$ 2,390,302	\$ 266,867	\$ (980,502)
2016	\$ 1,633,125	\$ 1,264,052	\$ 266,867	\$ 369,073
2017	\$ 1,859,842	\$ 928,269	\$ 266,867	\$ 931,573
2018	\$ 2,096,156	\$ 1,152,899	\$ 266,867	\$ 943,257
2019	\$ 2,355,455	\$ 968,549	\$ 266,867	\$ 1,386,906
2020	\$ 2,644,085	\$ 1,297,774	\$ 266,867	\$ 1,346,310
2021	\$ 2,900,353	\$ 1,011,281	\$ 266,867	\$ 1,889,071
2022	\$ 3,161,157	\$ 1,369,183	\$ 266,867	\$ 1,791,975
2023	\$ 3,139,087	\$ 1,986,563	\$ 758,877	\$ 1,152,524
2024	\$ 3,958,856	\$ 2,315,995	\$ 758,877	\$ 1,642,861
2025	\$ 4,392,131	\$ 2,104,419	\$ 758,877	\$ 2,287,712
2026	\$ 4,526,153	\$ 3,160,963	\$ 1,296,509	\$ 1,365,190
2027	\$ 5,630,855	\$ 3,262,612	\$ 1,296,509	\$ 2,368,243
2028	\$ 6,263,123	\$ 3,321,595	\$ 1,296,509	\$ 2,941,528
2029	\$ 6,456,822	\$ 5,558,498	\$ 2,447,851	\$ 898,324
2030	\$ 7,712,659	\$ 4,917,959	\$ 2,180,984	\$ 2,794,700
2031	\$ 10,011,690	\$ 5,606,286	\$ 2,180,984	\$ 4,405,404
2032	\$ 10,176,801	\$ 5,709,045	\$ 2,180,984	\$ 4,467,756
2033	\$ 8,928,667	\$ 4,679,741	\$ 1,688,974	\$ 4,248,926
2034	\$ 8,661,792	\$ 4,769,464	\$ 1,688,974	\$ 3,892,328
2035	\$ 7,676,600	\$ 4,179,575	\$ 1,688,974	\$ 3,497,025
2036	\$ 7,220,386	\$ 3,716,660	\$ 1,151,342	\$ 3,503,726
2037	\$ 6,238,916	\$ 3,069,764	\$ 1,151,342	\$ 3,169,152
2038	\$ 5,844,179	\$ 3,127,317	\$ 1,151,342	\$ 2,716,862
2039	\$ 4,597,651	\$ 1,267,315		\$ 3,330,336
Total	\$ 135,362,854	\$ 77,327,429	\$ 27,147,181	\$ 58,035,425
NPV @ 6%				\$ 18,241,296
IRR				63%
Simple Payback (Years)				2.8

SCS has concluded that the 2 distinct project scenarios evaluated under this assignment involving a LFGE/GHG project consisting of combined direct-use with electrical generation are both technically feasible and economically viable. While this study refers to this additional project scenario as “combined direct-use and electrical generation”, the approach evaluated by SCS is distinctly different from the approach commonly referred to as “combined heat and power.”

As expected, this project, which is structured to deliver LFG for direct-use at the Novartis facility throughout the project term and utilize excess LFG beginning in Year 15 for electrical generation up to a maximum generation capacity of 6.4 MW, is generally attractive based on the financial analyses. Per the County’s instructions, SCS evaluated the project scenarios over a 30-year term. It should be recognized that there are significant uncertainties associated with the input parameters and assumptions used for this evaluation as they relate to costs and pricing, financing terms, and technical practicality.

APPENDIX A
PRO FORMA FOR ECONOMIC ANALYSES

South Wake ADDENDUM to Landfill Gas-to-Energy & Greenhouse Gas Project
 SCS Project Number: 0219912.04
 SCENARIO 4A - Combined Direct-Use and On-site Electric Generation for Sale - w/ GHG Credits (No Debt) - 100% of LFG to Single Customer
 10/20/2009

	YEAR																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
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	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
Total LFG Available	0	446	690	925	1,153	1,375	1,590	1,800	2,006	2,207	2,405	2,600	2,792	2,983	3,172	3,359	3,547	3,734	3,921	4,109	4,297	4,487	4,679	4,872	5,066	5,261	5,456	5,651	5,846	6,041	6,236	6,431	6,626	6,821	7,016	7,211	7,406	7,601	7,796	7,991	8,186	8,381	8,576	8,771	8,966	9,161	9,356	9,551	9,746	9,941	10,136	10,331	10,526	10,721	10,916	11,111	11,306	11,501	11,696	11,891	12,086	12,281	12,476	12,671	12,866	13,061	13,256	13,451	13,646	13,841	14,036	14,231	14,426	14,621	14,816	15,011	15,206	15,401	15,596	15,791	15,986	16,181	16,376	16,571	16,766	16,961	17,156	17,351	17,546	17,741	17,936	18,131	18,326	18,521	18,716	18,911	19,106	19,301	19,496	19,691	19,886	20,081	20,276	20,471	20,666	20,861	21,056	21,251	21,446	21,641	21,836	22,031	22,226	22,421	22,616	22,811	23,006	23,201	23,396	23,591	23,786	23,981	24,176	24,371	24,566	24,761	24,956	25,151	25,346	25,541	25,736	25,931	26,126	26,321	26,516	26,711	26,906	27,101	27,296	27,491	27,686	27,881	28,076	28,271	28,466	28,661	28,856	29,051	29,246	29,441	29,636	29,831	30,026	30,221	30,416	30,611	30,806	31,001	31,196	31,391	31,586	31,781	31,976	32,171	32,366	32,561	32,756	32,951	33,146	33,341	33,536	33,731	33,926	34,121	34,316	34,511	34,706	34,901	35,096	35,291	35,486	35,681	35,876	36,071	36,266	36,461	36,656	36,851	37,046	37,241	37,436	37,631	37,826	38,021	38,216	38,411	38,606	38,801	39,000	39,195	39,390	39,585	39,780	39,975	40,170	40,365	40,560	40,755	40,950	41,145	41,340	41,535	41,730	41,925	42,120	42,315	42,510	42,705	42,900	43,095	43,290	43,485	43,680	43,875	44,070	44,265	44,460	44,655	44,850	45,045	45,240	45,435	45,630	45,825	46,020	46,215	46,410	46,605	46,800	47,000	47,195	47,390	47,585	47,780	47,975	48,170	48,365	48,560	48,755	48,950	49,145	49,340	49,535	49,730	49,925	50,120	50,315	50,510	50,705	50,900	51,095	51,290	51,485	51,680	51,875	52,070	52,265	52,460	52,655	52,850	53,045	53,240	53,435	53,630	53,825	54,020	54,215	54,410	54,605	54,800	55,000	55,195	55,390	55,585	55,780	55,975	56,170	56,365	56,560	56,755	56,950	57,145	57,340	57,535	57,730	57,925	58,120	58,315	58,510	58,705	58,900	59,095	59,290	59,485	59,680	59,875	60,070	60,265	60,460	60,655	60,850	61,045	61,240	61,435	61,630	61,825	62,020	62,215	62,410	62,605	62,800	63,000	63,195	63,390	63,585	63,780	63,975	64,170	64,365	64,560	64,755	64,950	65,145	65,340	65,535	65,730	65,925	66,120	66,315	66,510	66,705	66,900	67,095	67,290	67,485	67,680	67,875	68,070	68,265	68,460	68,655	68,850	69,045	69,240	69,435	69,630	69,825	70,020	70,215	70,410	70,605	70,800	71,000	71,195	71,390	71,585	71,780	71,975	72,170	72,365	72,560	72,755	72,950	73,145	73,340	73,535	73,730	73,925	74,120	74,315	74,510	74,705	74,900	75,095	75,290	75,485	75,680	75,875	76,070	76,265	76,460	76,655	76,850	77,045	77,240	77,435	77,630	77,825	78,020	78,215	78,410	78,605	78,800	79,000	79,195	79,390	79,585	79,780	79,975	80,170	80,365	80,560	80,755	80,950	81,145	81,340	81,535	81,730	81,925	82,120	82,315	82,510	82,705	82,900	83,095	83,290	83,485	83,680	83,875	84,070	84,265	84,460	84,655	84,850	85,045	85,240	85,435	85,630	85,825	86,020	86,215	86,410	86,605	86,800	87,000	87,195	87,390	87,585	87,780	87,975	88,170	88,365	88,560	88,755	88,950	89,145	89,340	89,535	89,730	89,925	90,120	90,315	90,510	90,705	90,900	91,095	91,290	91,485	91,680	91,875	92,070	92,265	92,460	92,655	92,850	93,045	93,240	93,435	93,630	93,825	94,020	94,215	94,410	94,605	94,800	95,000	95,195	95,390	95,585	95,780	95,975	96,170	96,365	96,560	96,755	96,950	97,145	97,340	97,535	97,730	97,925	98,120	98,315	98,510	98,705	98,900	99,095	99,290	99,485	99,680	99,875	100,070	100,265	100,460	100,655	100,850	101,045	101,240	101,435	101,630	101,825	102,020	102,215	102,410	102,605	102,800	103,000	103,195	103,390	103,585	103,780	103,975	104,170	104,365	104,560	104,755	104,950	105,145	105,340	105,535	105,730	105,925	106,120	106,315	106,510	106,705	106,900	107,095	107,290	107,485	107,680	107,875	108,070	108,265	108,460	108,655	108,850	109,045	109,240	109,435	109,630	109,825	110,020	110,215	110,410	110,605	110,800	111,000	111,195	111,390	111,585	111,780	111,975	112,170	112,365	112,560	112,755	112,950	113,145	113,340	113,535	113,730	113,925	114,120	114,315	114,510	114,705	114,900	115,095	115,290	115,485	115,680	115,875	116,070	116,265	116,460	116,655	116,850	117,045	117,240	117,435	117,630	117,825	118,020	118,215	118,410	118,605	118,800	119,000	119,195	119,390	119,585	119,780	119,975	120,170	120,365	120,560	120,755	120,950	121,145	121,340	121,535	121,730	121,925	122,120	122,315	122,510	122,705	122,900	123,095	123,290	123,485	123,680	123,875	124,070	124,265	124,460	124,655	124,850	125,045	125,240	125,435	125,630	125,825	126,020	126,215	126,410	126,605	126,800	127,000	127,195	127,390	127,585	127,780	127,975	128,170	128,365	128,560	128,755	128,950	129,145	129,340	129,535	129,730	129,925	130,120	130,315	130,510	130,705	130,900	131,095	131,290	131,485	131,680	131,875	132,070	132,265	132,460	132,655	132,850	133,045	133,240	133,435	133,630	133,825	134,020	134,215	134,410	134,605	134,800	135,000	135,195	135,390	135,585	135,780	135,975	136,170	136,365	136,560	136,755	136,950	137,145	137,340	137,535	137,730	137,925	138,120	138,315	138,510	138,705	138,900	139,095	139,290	139,485	139,680	139,875	140,070	140,265	140,460	140,655	140,850	141,045	141,240	141,435	141,630	141,825	142,020	142,215	142,410	142,605	142,800	143,000	143,195	143,390	143,585	143,780	143,975	144,170	144,365	144,560	144,755	144,950	145,145	145,340	145,535	145,730	145,925	146,120	146,315	146,510	146,705	146,900	147,095	147,290	147,485	147,680	147,875	148,070	148,265	148,460	148,655	148,850	149,045	149,240	149,435	149,630	149,825	150,020	150,215	150,410	150,605	150,800	151,000	151,195	151,390	151,585	151,780	151,975	152,170	152,365	152,560	152,755	152,950	153,145	153,340	153,535	153,730	153,925	154,120	154,315	154,510	154,705	154,900	155,095	155,290	155,485	155,680	155,875	156,070	156,265	156,460	156,655	156,850	157,045	157,240	157,435	157,630	157,825	158,020	158,215	158,410	158,605	158,800	159,000	159,195	159,390	159,585	159,780	159,975	160,170	160,365	160,560	160,755	160,950	161,145	161,340	161,535	161,730	161,925	162,120	162,315	162,510	162,705	162,900	163,095	163,290	163,485	163,680	163,875	164,070	164,265	164,460	164,655	164,850	165,045	165,240	165,435	165,630	165,825	166,020	166,215	166,410	166,605	166,800	167,000	167,195	167,390	167,585	167,780	167,975	168,170	168,365	168,560	168,755	168,950	169,145	169,340	169,535	169,730	169,925	170,120	170,315	170,510	170,705	170,900	171,095	171,290	171,485	171,680	171,875	172,070	172,265	172,460	172,655	172,850	173,045	173,240	173,435	173,630	173,825	174,020	174,215	174,410	174,605	174,800	175,000	175,195	175,390	175,585	175,780	175,975	176,170	176,365	176,560	176,755	176,950	177,145	177,340	177,535	177,730	177,925	178,120	178,315	178,510	178,705	178,900	179,095	179,290	179,485	179,680	179,875	180,070	180,265	180,460	180,655	180,850	181,045	181,240	181,435	181,630	181,825	182,020	182,215	182,410	182,605	182,800	183,000	183,195	183,390	183,585	183,780	183,975	184,170	184,365	184,560	184,755	184,950	185,145	185,340	185,535	185,730	185,925	186,120	186,315	186,510	186,705	186,900	187,095	187,290	187,485	187,680	187,875	188,070	188,265	188,460	188,655	188,850	189,045	189,240	189,435	189,630	189,825	190,020	190,215	190,410	190,605	190,800	191,000	191,195	191,390	191,585	191,780	191,975	192,170	192,365	192,560	192,755	192,950	193,145	193,340	193,535	193,730	193,925	194,120	194,315	194,510	194,705	194,900	195,095	195,290	195,485	195,680	195,875	196,070	196,265	196,460	196,655	196,850	197,045	197,240	197,435	197,630	197,825	198,020	198,215	198,410	198,605	198,800	199,000	19

South Wake ADDENDUM to Landfill Gas-to-Energy & Greenhouse Gas Project
 SCS Project Number: 0219912.04
 SCENARIO 4B - Combined Direct-Use and On-site Electric Generation for Sale - w/ GHG Credits (60% Debt / 10% Equity) - 100% of LFG to Single Customer
 10/20/2020

	YEAR																														
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039
Total LFG Available	0	446	690	925	1,153	1,375	1,590	1,800	2,006	2,207	2,405	2,600	2,792	2,983	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000

REVENUE																																
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	
LFG to Direct-Serve Customer (Non-wt)	0	446	690	925	1,153	1,375	1,590	1,800	2,006	2,207	2,405	2,600	2,792	2,983	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	
Revenue from Direct-Use Customer																																
Natural Gas Projection (EIA Annual Energy Outlook 4/2009)	\$MMBTU	5.44	6.19	6.74	6.95	7.01	7.19	7.41	7.58	7.75	7.86	8.18	8.50	8.68	8.86	8.74	8.67	8.51	8.77	9.07	9.31	9.61	9.81	10.11	10.41	10.72	11.05	11.38	11.72	12.07	12.43	12.81
LFG Discount to Natural Gas	%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%
Net Parity Sales to Direct-Use Customer	\$MMBTU	\$2.45	\$2.78	\$3.03	\$3.13	\$3.18	\$3.24	\$3.33	\$3.43	\$3.49	\$3.57	\$3.68	\$3.82	\$3.91	\$3.99	\$3.93	\$3.84	\$3.95	\$4.08	\$4.19	\$4.32	\$4.42	\$4.55	\$4.69	\$4.83	\$4.97	\$5.12	\$5.27	\$5.43	\$5.59	\$5.76	
LFG Volume Exported (NOTE: export + recovered)	SCFM	0	690	925	1,153	1,375	1,590	1,800	2,006	2,207	2,405	2,600	2,792	2,983	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	
LFG Energy Exported (8 1/2% methane, 90% biogas, entire year)	MMBTU/yr	0	59,314	183,467	246,905	306,733	363,628	422,897	478,709	531,768	586,933	639,563	691,785	742,563	792,861	797,861	797,861	797,861	797,861	797,861	797,861	797,861	797,861	797,861	797,861	797,861	797,861	797,861	797,861	797,861	797,861	
LFG Sales Revenue	\$/yr	\$0	\$165,105	\$556,235	\$769,264	\$968,062	\$1,183,038	\$1,409,800	\$1,633,125	\$1,859,842	\$2,096,156	\$2,335,455	\$2,644,085	\$2,900,353	\$3,161,157	\$3,139,087	\$3,111,138	\$3,063,973	\$3,149,805	\$3,257,031	\$3,342,786	\$3,448,875	\$3,523,717	\$3,629,428	\$3,738,311	\$3,850,460	\$3,965,974	\$4,084,953	\$4,207,502	\$4,333,727	\$4,463,739	\$4,597,651
TOTAL REVENUE FROM DIRECT-USE CUSTOMER		\$0	\$165,105	\$556,235	\$769,264	\$968,062	\$1,183,038	\$1,409,800	\$1,633,125	\$1,859,842	\$2,096,156	\$2,335,455	\$2,644,085	\$2,900,353	\$3,161,157	\$3,139,087	\$3,111,138	\$3,063,973	\$3,149,805	\$3,257,031	\$3,342,786	\$3,448,875	\$3,523,717	\$3,629,428	\$3,738,311	\$3,850,460	\$3,965,974	\$4,084,953	\$4,207,502	\$4,333,727	\$4,463,739	\$4,597,651

Revenue from Electricity Sales																																
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	
Annual Available MMBTU (506 BTU/h ³ , 50% CH ₄)	MMBTU/yr	0	446	690	925	1,153	1,375	1,590	1,800	2,006	2,207	2,405	2,600	2,792	2,983	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	
Energy Escalation Rate	%/yr	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
One CAT #320 Required SCFM approx.	SCFM	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	
Number of CAT #320 generators		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Gross Plant Capacity (kW) - Assumed # CAT #320 identified	kW	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	
Net Plant Capacity (kW) - Assumed # CAT #320 identified	kW	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	
Gross Plant Capacity after LFG Constraint (%)	%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Parasitic Load, Flare Compressor Station, & Line Losses	%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	
Net Plant Capacity (kW) - beginning Year "1"	kW	1,480	1,480	1,480	1,480	1,480	1,480	1,480	1,480	1,480	1,480	1,480	1,480	1,480	1,480	1,480	1,480	1,480	1,480	1,480	1,480	1,480	1,480	1,480	1,480	1,480	1,480	1,480	1,480	1,480	1,480	
Plant Capacity Factor	%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%
Total kWh/year generated	kWh	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

2010 Electric Power Rounded Purchase Rate (Energy, capacity & REC)																																
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	
Excess Power Sales to Grid (kWh/yr)	\$/yr	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Excess Power Sales to Grid Revenue	\$/yr	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
TOTAL REVENUE FROM ELECTRIC SALES		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Revenue from GHG Credit Generation																																
VER Escalation Factor	%/yr	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	
VER Credits Volume	MtCO ₂ e	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
VER Credits Price	\$/MtCO ₂ e	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
VER Revenue	\$/yr	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
TOTAL REVENUE FROM GHG		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

TOTAL ANNUAL REVENUE	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	
	\$0	\$270,023	\$890,787	\$1,231,686	\$1,561,869	\$1,912,149	\$2,280,800	\$2,683,125	\$3,122,687	\$3,602,687	\$4,122,311	\$4,682,687	\$5,282,687	\$5,922,687	\$6,602,687	\$6,322,687	\$6,042,687	\$5,762,687	\$5,482,687	\$5,202,687	\$4,922,687	\$4,642,687	\$4,362,687	\$4,082,687	\$3,802,687	\$3,522,687	\$3,242,687	\$2,962,687	\$2,682,687	\$2,402,687	\$2,122,687	\$1,842,687

OPERATING COSTS																															
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036			