

UNITIL ENERGY SYSTEMS, INC.

DEFAULT SERVICE AND
RENEWABLE ENERGY CREDITS

LEAD/LAG STUDY

FOR G1 AND NON-G1 CUSTOMERS

2016

Unitil Energy Systems, Inc.
Default Service Costs and Renewable Energy Credits Lead / Lag Study
For the Period January 1, 2016 Through December 31, 2016
Summary of Results

The results of the Unitil Energy Systems, Inc. Default Service ("DS") and Renewable Energy Credits ("RECs") Lead / Lag Study ("Study") indicate a net lead period for DS and REC costs of 30.80 days for G1 Customers and a net lag period of 1.93 days for Non-G1 Customers. The procedures used to develop the Study are as follows:

I. Determination of Revenue Lag Period

The revenue lag period includes four calculations in determining the total lag – receipt of electric service to meter reading, meter reading to recording of accounts receivable, billing to collection, and collection to receipt of available funds.

A. Receipt of Electric Service to Meter Reading

There are 366 days in the test year January through December 2016, including one 29 day month, four 30 day months, and seven 31 day months. The weighted average day delay is 15.25 days between the time a customer receives service until the meter is read. See page 5 of this Study.

B. Meter Reading to Recording of Accounts Receivable

The average delay time from meter reading to recording of accounts receivable is 1.07 days. See pages 6 - 10 of this Study.

C. Billing to Collection

Billing to Collection lag days are determined by dividing accounts receivable sales by daily electric revenues. The daily average revenues are obtained from the monthly electric sales revenues divided by the number of days in the month. This weighted average delay period from Billing to Collection is 24.89 days for G1 customers and 43.14 days for Non-G1 customers. See pages 11 and 12 of this Study.

D. Collection to Receipt of Available Funds

On average, 1.69 days are required for checks deposited at the Company's banks to be considered available funds for banking transaction purposes. See pages 13 - 19 of this Study.

The sum of all revenue lag periods is 42.90 days for G1 customers and 61.15 days for Non-G1 customers. See page 4 of this Study.

Unitil Energy Systems, Inc.
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II. Determination of the Expense Lead Period

The expense lead period consists of the lead in payment of DS supplier costs and RECs, and is calculated for the G1 and Non-G1 customer classes based upon the following calculations: lead period, average days lead, weighted cost, days lead and weighted days lead.

A. Lead Period

The lead period is generally based on a monthly cycle and consists of (1) the average days in the period that DS purchases were provided or RECs were required; and (2) the billing period from the end of the period up to and including the payment date. See pages 20 through 23 of the Study.

B. Average Days Lead

The bills for each G-1 and Non-G-1 DS supplier are analyzed to determine the days lead. The REC days lead are also analyzed. Average days lead is calculated by multiplying the lead period by the weighted percentage of aggregate costs. The weighted days are then totaled to obtain the average days lead period for DS suppliers and for the RECs. See pages 20 and 22 of this Study.

C. Weighted Cost

The cost of purchasing default service and RECs is divided by the total combined costs to determine a weighted cost. See pages 20 and 22 of this Study.

D. Weighted Days Lead

The weighted cost is multiplied by the average days lead to calculate the weighted days lead, resulting in 73.70 days for G1 customers and 59.22 days for Non-G1 customers. See pages 20 and 22 of this Study.

III. Summary

The results of the Study indicate a net Purchased Power lead period of 30.80 days for G1 customers and net lag period of 1.93 days for Non-G1 customers. See page 4 of this Study.

Unitil Energy Systems, Inc.
Number of Days Delay Between Receipt of Revenue and
Payment of Default Service Costs and Renewable Energy Credits
Based on 2016 Data

Description	G1 Customers		Non-G1 Customers	
	Page Reference	Number of Days Delay	Page Reference	Number of Days Delay
Revenue Lag:				
Receipt of Electric Service to Meter Reading	5	15.25 days	5	15.25 days
Meter Reading to Recording of Accounts Receivable	6 - 10	1.07 days	6 - 10	1.07 days
Billing to Collection	11	24.89 days	12	43.14 days
Collection to Receipt of Available Funds	13 - 19	1.69 days	13 - 19	1.69 days
Subtotal Revenue Lag Days		42.90 days		61.15 days
Less: Lead in Payment of Default Service Costs and Renewable Energy Credits	20	73.70 days	22	59.22 days
Total Default Service and Renewable Energy Credit Lag (Line 6 Less Line 7)		-30.80 days		1.93 days

**Receipt of Electric Service to Meter Reading
Average Days Delay**

January 1, 2016 to December 31, 2016 Number of Days

January	31
February	29
March	31
April	30
May	31
June	30
July	31
August	31
September	30
October	31
November	30
December	31

1 29 Day Month	1*29	29
4 30 Day Months	4*30	120
7 31 Day Months	7*31	<u>217</u>
	Total	366 days

$$366 \text{ Days} / 12 \text{ Months} / 2 = \underline{\underline{15.25 \text{ days}}}$$

Unitil Energy Systems, Inc
Meter Reading to Recording of
Accounts Receivable

Month	Average Days
January 2016	1.02
February 2016	1.03
March 2016	1.04
April 2016	1.05
May 2016	1.34
June 2016	1.07
July 2016	1.07
August 2016	1.05
September 2016	1.06
October 2016	1.03
November 2016	1.08
December 2016	1.02
Average	1.07

Unitil Energy Systems, Inc.
Meter Reading to Recording of
Accounts Receivable
Monthly Detail

January 2016

Days Lag	Number of Meters	Percent of Meters	Days Lag Multiplier	Weighted Days Lag
1	72,832	98.59%	1	0.99
2	705	0.95%	2	0.02
3	263	0.36%	3	0.01
4	34	0.05%	4	0.00
5	13	0.02%	5	0.00
6	13	0.02%	6	0.00
7	4	0.01%	7	0.00
8-14	9	0.01%	11	0.00
Over 14	3	0.00%	14	0.00
Total	73,876	100.00%		1.02

February 2016

Days Lag	Number of Meters	Percent of Meters	Days Lag Multiplier	Weighted Days Lag
1	72,422	98.06%	1	0.98
2	1,014	1.37%	2	0.03
3	287	0.39%	3	0.01
4	82	0.11%	4	0.00
5	12	0.02%	5	0.00
6	11	0.01%	6	0.00
7	6	0.01%	7	0.00
8 to 14	20	0.03%	11	0.00
Over 14	3	0.00%	14	0.00
Total	73,857	100.00%		1.03

March 2016

Days Lag	Number of Meters	Percent of Meters	Days Lag Multiplier	Wtd Days Lag
1	71,983	97.49%	1	0.97
2	1,346	1.82%	2	0.04
3	335	0.45%	3	0.01
4	95	0.13%	4	0.01
5	35	0.05%	5	0.00
6	3	0.00%	6	0.00
7	15	0.02%	7	0.00
8 to 14	20	0.03%	11	0.00
Over 14	2	0.00%	14	0.00
Total	73,834	100.00%		1.04

Unitil Energy Systems, Inc.
Meter Reading to Recording of
Accounts Receivable
Monthly Detail

April 2016

Days Lag	Number of Meters	Percent of Meters	Days Lag Multiplier	Wtd Days Lag
1	71,872	97.24%	1	0.97
2	1,123	1.52%	2	0.03
3	679	0.92%	3	0.03
4	141	0.19%	4	0.01
5	33	0.04%	5	0.00
6	31	0.04%	6	0.00
7	11	0.01%	7	0.00
8 to 14	24	0.03%	11	0.00
Over 14	-	0.00%	14	-
Total	73,914	100.00%		1.05

May 2016

Days Lag	Number of Meters	Percent of Meters	Days Lag Multiplier	Wtd Days Lag
1	54,779	77.80%	1	0.78
2	8,785	12.48%	2	0.25
3	6,380	9.06%	3	0.27
4	129	0.18%	4	0.01
5	134	0.19%	5	0.01
6	46	0.07%	6	0.00
7	7	0.01%	7	0.00
8 to 14	144	0.20%	11	0.02
Over 14	7	0.01%	14	0.00
Total	70,411	100.00%		1.34

June 2016

Days Lag	Number of Meters	Percent of Meters	Days Lag Multiplier	Wtd Days Lag
1	72,141	96.19%	1	0.96
2	1,397	1.86%	2	0.04
3	1,078	1.44%	3	0.04
4	147	0.20%	4	0.01
5	59	0.08%	5	0.00
6	76	0.10%	6	0.01
7	46	0.06%	7	0.00
8 to 14	52	0.07%	11	0.01
Over 14	5	0.01%	14	0.00
Total	75,001	100.00%		1.07

Unitil Energy Systems, Inc.
Meter Reading to Recording of
Accounts Receivable
Monthly Detail

July 2016

Days Lag	Number of Meters	Percent of Meters	Days Lag Multiplier	Wtd Days Lag
1	72,186	96.00%	1	0.96
2	1,580	2.10%	2	0.04
3	1,028	1.37%	3	0.04
4	165	0.22%	4	0.01
5	115	0.15%	5	0.01
6	70	0.09%	6	0.01
7	15	0.02%	7	0.00
8 to 14	27	0.04%	11	0.00
Over 14	4	0.01%	14	0.00
Total	75,190	100.00%		1.07

August 2016

Days Lag	Number of Meters	Percent of Meters	Days Lag Multiplier	Wtd Days Lag
1	72,709	96.81%	1	0.97
2	1,643	2.19%	2	0.04
3	565	0.75%	3	0.02
4	113	0.15%	4	0.01
5	29	0.04%	5	0.00
6	17	0.02%	6	0.00
7	6	0.01%	7	0.00
8 to 14	25	0.03%	11	0.00
Over 14	1	0.00%	14	0.00
Total	75,108	100.00%		1.05

September 2016

Days Lag	Number of Meters	Percent of Meters	Days Lag Multiplier	Wtd Days Lag
1	72,591	96.60%	1	0.97
2	1,466	1.95%	2	0.04
3	697	0.93%	3	0.03
4	254	0.34%	4	0.01
5	74	0.10%	5	0.00
6	29	0.04%	6	0.00
7	6	0.01%	7	0.00
8 to 14	21	0.03%	11	0.00
Over 14	5	0.01%	14	0.00
Total	75,143	100.00%		1.06

Unitil Energy Systems, Inc.
Meter Reading to Recording of
Accounts Receivable
Monthly Detail

October 2016

Days Lag	Number of Meters	Percent of Meters	Days Lag Multiplier	Wtd Days Lag
1	73,370	98.29%	1	0.98
2	923	1.24%	2	0.02
3	190	0.25%	3	0.01
4	50	0.07%	4	0.00
5	73	0.10%	5	0.00
6	5	0.01%	6	0.00
7	5	0.01%	7	0.00
8 to 14	17	0.02%	11	0.00
Over 14	11	0.01%	14	0.00
Total	74,644	100.00%		1.03

November 2016

Days Lag	Number of Meters	Percent of Meters	Days Lag Multiplier	Wtd Days Lag
1	70,584	94.89%	1	0.95
2	2,882	3.87%	2	0.08
3	476	0.64%	3	0.02
4	276	0.37%	4	0.01
5	64	0.09%	5	0.00
6	29	0.04%	6	0.00
7	15	0.02%	7	0.00
8 to 14	28	0.04%	11	0.00
Over 14	33	0.04%	14	0.01
Total	74,387	100.00%		1.08

December 2016

Days Lag	Number of Meters	Percent of Meters	Days Lag Multiplier	Wtd Days Lag
1	73,312	98.62%	1	0.99
2	741	1.00%	2	0.02
3	158	0.21%	3	0.01
4	75	0.10%	4	0.00
5	22	0.03%	5	0.00
6	8	0.01%	6	0.00
7	3	0.00%	7	0.00
8 to 14	14	0.02%	11	0.00
Over 14	7	0.01%	14	0.00
Total	74,340	100.00%		1.02

Unitil Energy Systems, Inc. Number Of Days Lag In Billing To Collection Twelve Months Average 1/16 - 12/16 G1 Customers				
Month	Days in Month	Electric Sales Revenues	Daily Average (1/Days)	Accounts Receivable Electric Sales
		(1)	(2)	(3)
2016				
January	31	1,448,205	46,716	1,081,371
February	29	1,501,511	51,776	1,165,785
March	31	1,494,765	48,218	1,169,945
April	30	1,430,406	47,680	1,205,766
May	31	1,416,550	45,695	1,055,087
June	30	1,560,374	52,012	1,245,490
July	31	1,698,134	54,779	1,294,986
August	31	1,867,994	60,258	1,440,588
September	30	1,746,998	58,233	1,728,356
October	31	1,541,751	49,734	1,267,222
Novemeber	30	1,451,576	48,386	1,311,619
December	31	1,455,695	46,958	1,226,606
Total		18,613,960	610,446	15,192,820
Average		1,551,163	50,870	1,266,068
Payment Lag Days (3/2)				24.89

Unitil Energy Systems, Inc. Number Of Days Lag In Billing To Collection Twelve Months Average 1/16 - 12/16 Non-G1 Customers				
Month	Days in Month	Electric Sales Revenues	Daily Average (1/Days)	Accounts Receivable Electric Sales
		(1)	(2)	(3)
2016				
January	31	10,700,867	345,189	14,141,686
February	29	10,557,461	364,050	14,226,716
March	31	9,788,051	315,744	14,481,299
April	30	9,037,488	301,250	13,694,491
May	31	8,160,135	263,230	12,315,610
June	30	8,544,133	284,804	12,898,171
July	31	9,308,328	300,269	12,979,484
August	31	10,931,726	352,636	14,538,979
September	30	9,000,178	300,006	12,913,944
October	31	7,428,755	239,637	10,765,223
Novemeber	30	7,405,966	246,866	10,546,947
December	31	8,665,631	279,536	11,493,155
Total		\$ 109,528,719	\$ 3,593,218	\$ 154,995,705
Average		\$ 9,127,393	\$ 299,435	\$ 12,916,309
Payment Lag Days (3/2)				43.14

**Unitil Energy Systems, Inc.
Collection to Receipt of Available Funds**

Revenue Classification by Bank

Revenue is deposited into the remittance account on the day that the revenue is recorded as received.
The following day, the bank statement reflects the prior day's bank availability of funds.

Total Lag Days from Receipt of Funds to Notification of Availability of Funds 1.00 day

**Availability of Funds as reported on succeeding business day.
Source: Report on Previous Day Data, Citizens Bank**

2016	Percent of Funds				Weighted Lag Days		
	Available Same Day 0 Days Lag	1 Day Float 1Day Lag	2-Day Float 2 Days Lag	Total	1 Day	2 Days	Total
January	33%	59%	8%	100%	0.59	0.16	0.75
February	34%	62%	4%	100%	0.62	0.08	0.70
March	34%	59%	7%	100%	0.59	0.14	0.73
April	37%	59%	4%	100%	0.59	0.09	0.68
May	38%	57%	5%	100%	0.57	0.09	0.67
June	34%	60%	6%	100%	0.60	0.11	0.71
July	35%	59%	6%	100%	0.59	0.12	0.70
August	39%	58%	3%	100%	0.58	0.07	0.65
September	39%	57%	4%	100%	0.57	0.07	0.64
October	34%	62%	4%	100%	0.62	0.08	0.70
November	35%	59%	6%	100%	0.59	0.11	0.70
December	36%	58%	6%	100%	0.58	0.12	0.70

Average Weighted Lag Days for Availability of Funds 0.69 days

Summary

Total Lag Days from Receipt of Funds to Notification of Availability of Funds	1.00 day
Average Weighted Lag Days for Availability of Funds	0.69 days
Total Lag Days from Collection to Availability of Funds:	1.69 days

Unitil Energy Systems, Inc.
Remittance Accounts

January, 2016	Available Balance	1 Day Float	2 Day Float	Total Available + Float
4	414,599	533,403	27,027	
5	229,594	218,627	71,017	
6	24,381	336,409	14,424	
7	138,058	204,053	9,573	
8	160,581	220,942	7,868	
11	433,861	711,590	36,562	
12	117,596	170,340	43,784	
13	26,230	237,181	19,620	
14	50,069	234,193	12,231	
15	149,140	117,177	4,087	
19	190,799	434,843	26,814	
20	73,579	93,846	151,398	
21	(81,153)	246,237	149,375	
22	(16,023)	291,490	3,562	
25	446,454	480,626	17,008	
26	41,404	69,967	41,665	
27	236,905	36,860	4,805	
28	118,075	122,649	8,452	
29	106,719	257,441	36,959	
	2,860,867	5,017,874	686,231	8,564,972
% of Available Funds	33%	59%	8%	100%
Float Days	0	1	2	
Weighted Float Days	-	0.59	0.16	0.75

February, 2016	Available Balance	1 Day Float	2 Day Float	Total Available + Float
1	176,099	456,068	15,640	
2	143,502	187,945	21,745	
3	76,210	260,421	20,552	
4	76,403	281,766	15,141	
5	131,364	262,310	10,824	
8	475,135	587,525	20,172	
9	260,733	323,459	31,430	
10	55,539	350,135	34,880	
11	53,511	313,207	28,791	
12	170,230	223,683	17,115	
16	391,314	533,467	46,667	
17	47,818	181,362	29,174	
18	39,002	152,814	7,245	
19	133,453	158,622	5,301	
22	358,612	335,424	25,734	
23	126,070	194,965	14,023	
24	51,924	211,434	9,984	
25	51,398	124,277	5,594	
26	124,953	136,611	6,903	
29	230,136	414,306	19,537	
	3,173,403	5,689,801	386,452	9,249,656
% of Available Funds	34%	62%	4%	100%
Float Days	0	1	2	
Weighted Float Days	-	0.62	0.08	0.70

Unitil Energy Systems, Inc.
Remittance Accounts

March, 2016	Available Balance	1 Day Float	2 Day Float	Total Available + Float
1	94,187	228,662	18,736	
2	169,525	304,571	11,405	
3	94,457	326,086	103,977	
4	989	285,551	100,947	
7	380,691	611,891	30,704	
8	153,745	197,274	22,686	
9	63,057	265,177	34,563	
10	183,901	233,760	39,156	
11	181,862	279,376	18,936	
14	463,907	398,289	45,840	
15	223,897	626,478	28,637	
16	81,239	194,111	13,279	
17	39,140	135,891	9,557	
18	175,011	202,113	4,288	
21	433,189	241,768	13,021	
22	228,232	198,018	32,472	
23	34,295	190,138	10,779	
24	78,248	216,990	7,019	
25	97,892	129,956	7,723	
28	165,858	354,928	21,391	
29	90,250	164,034	59,885	
30	7,113	203,087	70,092	
31	82,988	217,226	21,132	
	3,523,675	6,205,375	726,225	10,455,275
% of Available Funds	34%	59%	7%	100%
Float Days	0	1	2	
Weighted Float Days	-	0.59	0.14	0.73

April, 2016	Available Balance	1 Day Float	2 Day Float	Total Available + Float
1	70,271	207,877	8,787	
4	313,382	574,218	34,127	
5	148,175	277,971	41,021	
6	53,907	255,397	28,117	
7	81,808	261,486	29,130	
8	189,509	237,478	20,651	
11	563,980	634,087	21,218	
12	140,809	228,810	19,637	
13	36,026	226,068	8,895	
14	45,097	134,591	9,138	
15	147,262	133,697	25,626	
18	556,795	326,397	22,487	
19	93,585	256,149	11,467	
20	45,143	76,212	9,780	
21	79,627	201,347	7,531	
22	147,396	99,575	6,954	
25	342,950	368,970	19,826	
26	42,477	161,318	17,963	
27	47,677	165,910	18,009	
28	36,438	171,518	15,336	
29	61,117	164,211	13,780	
	3,243,432	5,163,287	389,480	8,796,199
% of Available Funds	37%	59%	4%	100%
Float Days	0	1	2	
Weighted Float Days	-	0.59	0.09	0.68

Unitil Energy Systems, Inc.
Remittance Accounts

May, 2016	Available Balance	1 Day Float	2 Day Float	Total Available + Float
2	176,384	400,378	29,106	
3	123,665	128,122	81,017	
4	(3,688)	216,247	74,657	
5	35,111	284,808	13,426	
6	270,922	250,889	11,137	
9	544,132	658,154	28,961	
10	137,775	266,304	30,977	
11	55,025	298,009	23,753	
12	66,090	216,955	5,437	
13	198,155	182,187	4,381	
16	471,393	657,437	15,977	
17	166,247	152,387	13,860	
18	49,039	98,347	16,219	
19	56,261	131,347	4,280	
20	207,077	125,226	6,806	
23	488,835	369,334	23,605	
24	58,653	79,263	19,917	
25	28,770	176,897	11,844	
26	59,693	153,026	12,849	
27	86,444	122,916	7,926	
31	334,638	446,810	13,277	
	3,610,621	5,415,043	449,412	9,475,076
% of Available Funds	38%	57%	5%	100%
Float Days	0	1	2	
Weighted Float Days	-	0.57	0.09	0.67

June, 2016	Available Balance	1 Day Float	2 Day Float	Total Available + Float
1	49,604	105,757	56,655	
2	14,825	220,089	51,299	
3	39,103	218,646	8,302	
6	354,157	495,942	31,007	
7	230,967	270,195	27,951	
8	52,901	322,053	39,958	
9	40,850	185,607	16,238	
10	145,583	149,374	11,727	
13	450,770	606,625	20,872	
14	131,421	228,319	24,014	
15	44,434	100,242	11,928	
16	44,882	126,798	4,891	
17	166,677	110,371	20,394	
20	381,764	417,819	13,769	
21	146,380	162,589	4,034	
22	64,723	100,767	8,862	
23	49,959	180,200	7,488	
24	51,388	138,691	3,735	
27	291,283	413,013	24,664	
28	100,785	111,237	52,778	
29	(1,512)	195,177	38,495	
30	55,809	195,777	3,992	
	2,906,753	5,055,288	483,053	8,445,094
% of Available Funds	34%	60%	6%	100%
Float Days	0	1	2	
Weighted Float Days	-	0.60	0.11	0.71

Unitil Energy Systems, Inc.
Remittance Accounts

July, 2016	Available Balance	1 Day Float	2 Day Float	Total Available + Float
1	105,795	179,412	9,515	
5	323,995	766,537	25,997	
6	47,723	175,233	23,194	
7	69,821	110,729	15,145	
8	182,545	267,530	10,743	
11	397,251	373,261	16,708	
12	262,769	250,483	24,189	
13	51,039	252,483	72,189	
14	36,994	223,782	7,651	
15	192,588	173,097	4,150	
18	453,410	151,338	29,730	
19	108,951	429,855	62,286	
20	(6,199)	192,666	17,705	
21	38,070	124,785	16,151	
22	116,465	71,836	9,299	
25	313,556	394,143	18,304	
26	89,180	142,819	23,350	
27	24,207	186,128	15,870	
28	62,393	279,233	39,594	
29	70,946	133,909	39,743	
Total	2,941,498	4,879,259	481,513	8,302,270
% of Available Funds	35%	59%	6%	100%
Float Days	0	1	2	
Weighted Float Days	-	0.59	0.12	0.70

August, 2016	Available Balance	1 Day Float	2 Day Float	Total Available + Float
1	172,396	402,792	19,767	
2	101,587	265,285	37,713	
3	36,031	185,997	9,302	
4	86,577	223,336	8,382	
5	151,217	315,595	6,933	
8	520,817	761,880	27,280	
9	129,634	220,269	20,459	
10	44,033	102,108	18,247	
11	42,490	251,536	14,127	
12	189,573	192,361	6,959	
15	592,406	485,695	13,614	
16	168,195	156,083	17,328	
17	52,743	127,405	7,409	
18	43,877	124,950	9,718	
19	203,628	152,437	7,761	
22	383,240	239,456	22,457	
23	67,063	108,513	7,828	
24	58,769	403,311	4,311	
25	39,331	118,575	5,149	
26	432,550	225,206	5,398	
29	217,990	448,547	21,577	
30	85,773	49,858	24,741	
31	52,238	224,749	26,031	
Total	3,872,158	5,785,944	342,491	10,000,593
% of Available Funds	39%	58%	3%	100%
Float Days	0	1	2	
Weighted Float Days	-	0.58	0.07	0.65

Unitil Energy Systems, Inc.
Remittance Accounts

September, 2016	Available Balance	1 Day Float	2 Day Float	Total Available + Float
1	166,089	243,605	9,648	
2	96,370	222,590	12,444	
6	415,373	677,343	25,567	
7	87,870	314,784	32,279	
8	85,212	376,926	20,189	
9	228,895	215,672	19,900	
12	687,833	802,521	19,297	
13	195,001	229,202	20,408	
14	82,672	225,071	11,352	
15	100,204	297,799	16,628	
16	159,784	158,315	8,382	
19	602,675	327,132	24,402	
20	114,910	79,159	13,046	
21	111,016	160,342	4,558	
22	59,657	143,458	6,210	
23	153,390	150,990	7,077	
26	379,450	303,231	13,107	
27	37,484	173,541	22,690	
28	43,791	197,237	16,659	
29	40,795	195,863	28,454	
30	43,018	164,646	28,033	
	3,891,490	5,659,427	360,330	9,911,247
% of Available Funds	39%	57%	4%	100%
Float Days	0	1	2	
Weighted Float Days	-	0.57	0.07	0.64

October, 2016	Available Balance	1 Day Float	2 Day Float	Total Available + Float
3	119,750	413,985	15,994	
4	277,461	544,022	19,678	
5	93,638	383,060	22,572	
6	48,772	175,102	18,641	
7	175,989	213,352	45,571	
11	173,248	691,504	64,775	
12	55,590	118,127	15,984	
13	68,987	467,679	19,417	
14	236,515	219,057	19,462	
17	412,896	279,066	8,902	
18	288,846	198,396	14,185	
19	63,359	199,206	10,632	
20	31,948	112,474	3,351	
21	125,590	113,026	10,774	
24	273,594	335,209	17,473	
25	257,749	164,897	16,226	
26	79,278	197,409	12,818	
27	118,777	136,384	6,488	
28	83,343	152,955	6,310	
31	40,233	383,665	15,605	
	3,025,561	5,498,575	364,858	8,888,994
% of Available Funds	34%	62%	4%	100%
Float Days	0	1	2	
Weighted Float Days	-	0.62	0.08	0.70

Unitil Energy Systems, Inc.
Remittance Accounts

November, 2016	Available Balance	1 Day Float	2 Day Float	Total Available + Float
1	72,849	102,314	104,804	
2	71,443	214,767	95,240	
3	(20,648)	300,147	10,354	
4	142,284	175,853	14,448	
7	419,366	715,724	17,652	
8	182,082	172,429	21,949	
9	47,232	212,749	17,677	
10	60,180	315,476	14,152	
14	456,256	366,916	14,214	
15	208,266	200,891	16,424	
16	70,195	207,476	13,601	
17	69,446	100,284	5,397	
18	171,715	90,339	6,993	
21	288,366	342,490	13,893	
22	111,823	120,473	8,246	
23	38,491	145,847	22,819	
25	2,238	148,298	5,635	
28	174,015	301,066	11,117	
29	72,505	74,314	8,670	
30	48,952	158,138	6,159	
	2,687,056	4,465,991	429,444	7,582,491
% of Available Funds	35%	59%	6%	100%
Float Days	0	1	2	
Weighted Float Days	-	0.59	0.11	0.70

December, 2016	Available Balance	1 Day Float	2 Day Float	Total Available + Float
1	57,651	168,176	5,467	
2	137,832	133,128	71,681	
5	385,338	583,445	79,055	
6	92,056	198,356	13,988	
7	69,757	227,469	29,612	
8	17,515	104,959	25,767	
9	138,302	161,609	6,343	
12	271,750	230,641	14,735	
13	252,231	267,317	17,127	
14	26,380	132,168	7,922	
15	41,434	249,514	3,696	
16	165,932	73,290	11,859	
19	314,951	408,775	12,851	
20	91,724	190,058	8,884	
21	94,006	217,990	27,248	
22	16,113	145,662	19,195	
23	(8,314)	99,835	11,879	
27	360,959	344,156	16,603	
28	93,969	71,660	42,682	
29	87,074	296,913	33,461	
30	122,955	190,587	5,805	
	2,829,615	4,495,708	465,860	7,791,183
% of Available Funds	36%	58%	6%	100%
Float Days	0	1	2	
Weighted Float Days	-	0.58	0.12	0.70

UNITIL ENERGY SYSTEMS, INC
LEAD IN PAYMENT OF DEFAULT SERVICE COSTS AND RENEWABLE ENERGY CREDITS

	Reference Page	Cost	% of Total	Average Days Lead	Weighted Days Lead
G1 Default Service Supplier Costs	Schedule DN-2	\$ 1,925,023	89.43%	41.64 days	37.24 days
G1 Renewable Energy Credits	21	\$ 227,565	10.57%	344.91 days	36.46 days
Total		<u>\$ 2,152,588</u>	100.00%		<u>73.70 days</u>

UNITIL ENERGY SYSTEMS, INC
LEAD IN PAYMENT OF RENEWABLE ENERGY CREDITS

G1	2016															
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC				TOTAL
RECs*																
Period Begin	1/1/2016	2/1/2016	3/1/2016	4/1/2016	5/1/2016	6/1/2016	7/1/2016	8/1/2016	9/1/2016	10/1/2016	11/1/2016	12/1/2016				
Period End	1/31/2016	2/29/2016	3/31/2016	4/30/2016	5/31/2016	6/30/2016	7/31/2016	8/31/2016	9/30/2016	10/31/2016	11/30/2016	12/31/2016				
\$ Amount	\$0	\$0	\$25,435	\$24,711	\$25,593	\$14,930	\$16,371	\$16,641	\$15,892	\$14,709	\$14,101	\$7,990				\$176,375
% to Total	0.00%	0.00%	11.18%	10.86%	11.25%	6.56%	7.19%	7.31%	6.98%	6.46%	6.20%	3.51%				77.51%
Payment Date**	7/1/2017	7/1/2017	7/1/2017	7/1/2017	7/1/2017	7/1/2017	7/1/2017	7/1/2017	7/1/2017	7/1/2017	7/1/2017	7/1/2017				
Lead Period	532.50	502.50	472.50	442.00	411.50	381.00	350.50	319.50	289.00	258.50	228.00	197.50				
Weighted Days	-	-	52.81	48.00	46.28	25.00	25.22	23.36	20.18	16.71	14.13	6.93				278.62 days
REC Purchases***																
Period Begin	1/1/2016	1/1/2016	1/1/2016	1/1/2016	1/1/2016	1/1/2016	1/1/2016	2/1/2016	2/1/2016	2/1/2016	2/1/2016	2/1/2016	2/1/2016	2/1/2016	3/1/2016	3/1/2016
Period End	1/31/2016	1/31/2016	1/31/2016	1/31/2016	1/31/2016	1/31/2016	1/31/2016	2/29/2016	2/29/2016	2/29/2016	2/29/2016	2/29/2016	2/29/2016	2/29/2016	3/31/2016	3/31/2016
\$ Amount	\$1,612	1,115.80	3,107.26	\$2,197	\$2,253	\$811	\$13,860	\$2,356	\$1,168	\$1,893	\$367	\$1,043	\$199	\$18,259	\$465	\$484
% to Total	0.71%	0.49%	1.37%	0.97%	0.99%	0.36%	6.09%	1.04%	0.51%	0.83%	0.16%	0.46%	0.09%	8.02%	0.20%	0.21%
Payment Date	7/25/2016	7/27/2016	7/29/2016	8/3/2016	8/19/2016	10/31/2016	11/1/2016	11/1/2016	11/1/2016	11/10/2016	12/14/2016	1/26/2017	2/2/2017	2/3/2017	2/3/2017	2/28/2017
Lead Period	191.50	193.50	195.50	200.50	216.50	289.50	290.50	260.50	260.50	269.50	303.50	346.50	353.50	354.50	324.50	349.50
Weighted Days	1.36	0.95	2.67	1.94	2.14	1.03	17.69	2.70	1.34	2.24	0.49	1.59	0.31	28.44	0.66	0.74
Total \$ Amount	\$1,612	\$1,116	\$28,542	\$26,908	\$27,846	\$15,741	\$30,231	\$18,998	\$17,060	\$16,602	\$14,469	\$9,033	\$199	\$18,259	\$465	\$484
																\$227,565

Weighted Days 344.91 days

* Estimated cost of RECs included in rates in 2016
** The last day to acquire 2016 Renewable Energy Credits and/or make alternative compliance payments is July 1, 2017
*** Actual purchasing activity for 2016 RECs applied in chronological order to monthly budgeted amounts.

UNITIL ENERGY SYSTEMS, INC
LEAD IN PAYMENT OF DEFAULT SERVICE COSTS AND RENEWABLE ENERGY CREDITS

	Reference Page	Cost	% of Total	Average Days Lead	Weighted Days Lead
Non-G1 Default Service Supplier Costs	Schedule DN-2	\$ 39,576,528	92.19%	34.60 days	31.89 days
Non-G1 Renewable Energy Credits	23	\$ 3,354,664	7.81%	349.74 days	27.33 days
Total		<u>\$ 42,931,192</u>	100.00%		<u>59.22 days</u>

UNITIL ENERGY SYSTEMS, INC
LEAD IN PAYMENT OF RENEWABLE ENERGY CREDITS

NON-G1	2016															
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC				TOTAL
RECs*																
Period Begin	1/1/2016	2/1/2016	3/1/2016	4/1/2016	5/1/2016	6/1/2016	7/1/2016	8/1/2016	9/1/2016	10/1/2016	11/1/2016	12/1/2016				
Period End	1/31/2016	2/29/2016	3/31/2016	4/30/2016	5/31/2016	6/30/2016	7/31/2016	8/31/2016	9/30/2016	10/31/2016	11/30/2016	12/31/2016				
\$ Amount	\$0	\$114,122	\$381,925	\$349,645	\$328,891	\$192,244	\$234,775	\$264,542	\$222,505	\$184,231	\$193,251	\$147,300				\$2,613,430
% to Total	0.00%	3.40%	11.38%	10.42%	9.80%	5.73%	7.00%	7.89%	6.63%	5.49%	5.76%	4.39%				77.90%
Payment Date**	7/1/2017	7/1/2017	7/1/2017	7/1/2017	7/1/2017	7/1/2017	7/1/2017	7/1/2017	7/1/2017	7/1/2017	7/1/2017	7/1/2017				
Lead Period	532.50	502.50	472.50	442.00	411.50	381.00	350.50	319.50	289.00	258.50	228.00	197.50				
Weighted Days	-	17.09	53.79	46.07	40.34	21.83	24.53	25.20	19.17	14.20	13.13	8.67				284.02 days
REC Purchases***																
Period Begin	1/1/2016	1/1/2016	1/1/2016	1/1/2016	1/1/2016	1/1/2016	1/1/2016	1/1/2016	1/1/2016	2/1/2016	2/1/2016	2/1/2016	2/1/2016	2/1/2016	2/1/2016	
Period End	1/31/2016	1/31/2016	1/31/2016	1/31/2016	1/31/2016	1/31/2016	1/31/2016	1/31/2016	1/31/2016	2/29/2016	2/29/2016	2/29/2016	2/29/2016	2/29/2016	2/29/2016	
\$ Amount	\$23,338	\$16,157	\$44,993	\$31,809	\$32,627	\$11,739	\$234,809	\$16,913	\$17,057	\$10,350	\$5,320	\$15,103	\$2,879	\$271,128	\$7,013	\$741,234
% to Total	0.70%	0.48%	1.34%	0.95%	0.97%	0.35%	7.00%	0.50%	0.51%	0.31%	0.16%	0.45%	0.09%	8.08%	0.21%	22.10%
Payment Date	7/25/2016	7/27/2016	7/29/2016	8/3/2016	8/19/2016	10/21/2016	10/31/2016	11/1/2016	11/10/2016	11/10/2016	12/14/2016	1/26/2017	2/2/2017	2/3/2017	2/28/2017	
Lead Period	191.50	193.50	195.50	200.50	216.50	279.50	289.50	290.50	299.50	269.50	303.50	346.50	353.50	354.50	379.50	
Weighted Days	1.33	0.93	2.62	1.90	2.11	0.98	20.26	1.46	1.52	0.83	0.48	1.56	0.30	28.65	0.79	65.72 days
Total \$ Amount	\$23,338	\$130,279	\$426,918	\$381,454	\$361,518	\$203,983	\$469,583	\$281,455	\$239,561	\$194,581	\$198,571	\$162,403	\$2,879	\$271,128	\$7,013	\$3,354,664

Weighted Days

349.74 days

* Estimated cost of RECs included in rates in 2016

** The last day to acquire 2016 Renewable Energy Credits and/or make alternative compliance payments is July 1, 2017

*** Actual purchasing activity for 2016 RECs applied in chronological order to monthly budgeted amounts

UNITIL ENERGY SYSTEMS, INC.

REDACTED WORKPAPERS

FOR THE

DEFAULT SERVICE AND
RENEWABLE ENERGY CREDITS

LEAD/LAG STUDY

FOR G1 AND NON-G1 CUSTOMERS

2016

REDACTED

UNITIL ENERGY SYSTEMS, INC
LEAD IN PAYMENT OF DEFAULT SERVICE COSTS AND RENEWABLE ENERGY CREDITS

	Reference Page	Cost	% of Total	Average Days Lead	Weighted Days Lead
Summary					
Total G1 Default Service Supplier Costs	Detail below	\$ 1,925,023	89.43%	41.64 days	37.24 days
G1 Renewable Energy Credits	Schedule DN-1 p 21	\$ 227,565	10.57%	344.91 days	36.46 days
Total		<u>\$ 2,152,588</u>	100.00%		<u>73.70 days</u>
<u>Detail for G1 Default Service Supplier Costs</u>					
Supplier A	3	\$ 1,925,023	100.00%		
Total G1 Default Service Supplier Costs		\$ 1,925,023	100.00%		41.64 days

REDACTED
UNITIL ENERGY SYSTEMS, INC
LEAD IN PAYMENT OF ELECTRIC COSTS

DS SERVICE POWER SUPPLY CONTRACTS													
MONTH ENERGY PURCHASES DELIVERED													
2016													
G1 SUPPLIERS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
Supplier A													
Normal Service													
Period Begin	1/1/2016	2/1/2016	3/1/2016	4/1/2016	5/1/2016	6/1/2016	7/1/2016	8/1/2016	9/1/2016	10/1/2016	11/1/2016	12/1/2016	
Period End	1/31/2016	2/29/2016	3/31/2016	4/30/2016	5/31/2016	6/30/2016	7/31/2016	8/31/2016	9/30/2016	10/31/2016	11/30/2016	12/31/2016	
\$ Amount	\$ 154,827	\$ 125,345	\$ 97,068	\$ 118,389	\$ 111,886	\$ 119,357	\$ 167,578	\$ 258,071	\$ 171,675	\$ 119,513	\$ 128,778	\$ 261,198	\$ 1,833,684
% to Total	8.04%	6.51%	5.04%	6.15%	5.81%	6.20%	8.71%	13.41%	8.92%	6.21%	6.69%	13.57%	95.26%
Payment Date													
Lead Period													
Weighted Days													
Prior Period Adjustments (shown in billing period in 2016)													
Period Begin	1/1/2016	2/1/2016	3/1/2016	4/1/2016	5/1/2016	6/1/2016	7/1/2016	8/1/2016	9/1/2016				
Period End	1/31/2016	2/29/2016	3/31/2016	4/30/2016	5/31/2016	6/30/2016	7/31/2016	8/31/2016	9/30/2016				
\$ Amount	\$ 904	\$ (2,173)	\$ 2,382	\$ 5,142	\$ 1,675	\$ 28,846	\$ 43,854	\$ (427)	\$ 11,136				\$ 91,339
% to Total	0.05%	-0.11%	0.12%	0.27%	0.09%	1.50%	2.28%	-0.02%	0.58%				4.74%
Payment Date													
Lead Period													
Weighted Days													
Total \$ Amount	\$ 155,731	\$ 123,172	\$ 99,450	\$ 123,531	\$ 113,561	\$ 148,202	\$ 211,432	\$ 257,644	\$ 182,811	\$ 119,513	\$ 128,778	\$ 261,198	\$ 1,925,023
Weighted Days													

REDACTED

UNITIL ENERGY SYSTEMS, INC
LEAD IN PAYMENT OF DEFAULT SERVICE COSTS AND RENEWABLE ENERGY CREDITS

	Reference Page	Cost	% of Total	Average Days Lead	Weighted Days Lead
Summary					
Total Non-G1 Default Service Supplier Costs	see below	\$ 39,576,528	92.19%	34.60 days	31.89 days
Renewable Energy Credits	Schedule DN-1 p 23	\$ 3,354,664	7.81%	349.74 days	27.33 days
Total		<u>\$ 42,931,192</u>	100.00%		<u>59.22 days</u>
<u>Detail for Non-G1 Default Service Supplier Costs</u>					
Supplier B	5	\$ 11,186,602	28.27%		
Supplier C	6	\$ 9,762,759	24.67%		
Supplier D	7	\$ 4,673,687	11.81%		
Supplier E	8	\$ 13,953,480	35.26%		
Total Non-G1 Default Service Supplier Costs		<u>\$ 39,576,528</u>	100.00%		34.60 days

REDACTED
UNITIL ENERGY SYSTEMS, INC
LEAD IN PAYMENT OF ELECTRIC COSTS

DS SERVICE POWER SUPPLY CONTRACTS													
MONTH ENERGY PURCHASES DELIVERED													
2016													
NON-G1 SUPPLIERS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
Supplier B													
Normal Service - 1st Period													
Period Begin						6/1/2016	7/1/2016	8/1/2016	9/1/2016	10/1/2016	11/1/2016		
Period End						6/15/2016	7/15/2016	8/15/2016	9/15/2016	10/15/2016	11/15/2016		
\$ Amount						\$ 745,799	\$ 1,135,852	\$ 1,159,789	\$ 817,509	\$ 682,147	\$ 801,732		\$ 5,342,827
% to Total						6.67%	10.15%	10.37%	7.31%	6.10%	7.17%		47.76%
Payment Date													
Lead Period													
Weighted Days													
Normal Service - 2nd Period													
Period Begin						6/16/2016	7/16/2016	8/16/2016	9/16/2016	10/16/2016	11/16/2016		
Period End						6/30/2016	7/31/2016	8/31/2016	9/30/2016	10/31/2016	11/30/2016		
\$ Amount						\$ 877,499	\$ 1,399,145	\$ 1,138,241	\$ 716,306	\$ 751,961	\$ 894,726		\$ 5,777,878
% to Total						7.84%	12.51%	10.18%	6.40%	6.72%	8.00%		51.65%
Payment Date													
Lead Period													
Weighted Days													
Prior Period Adjustments (shown in billing period in 2016)													
Period Begin						6/1/2016	7/1/2016	8/1/2016					
Period End						6/30/2016	7/31/2016	8/31/2016					
\$ Amount						\$ 2,984	\$ 23,990	\$ 38,922					\$65,897
% to Total						0.03%	0.21%	0.35%					0.59%
Payment Date													
Lead Period													
Weighted Days													
Total \$ Amount	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 1,626,282	\$ 2,558,987	\$ 2,336,952	\$ 1,533,815	\$ 1,434,108	\$ 1,696,458	\$ -	\$ 11,186,602
Weighted Days													

REDACTED
UNITIL ENERGY SYSTEMS, INC
LEAD IN PAYMENT OF ELECTRIC COSTS

DS SERVICE POWER SUPPLY CONTRACTS													
MONTH ENERGY PURCHASES DELIVERED													
2016													
NON-G1 SUPPLIERS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
Supplier C													
Normal Service													
Period Begin	1/1/2016	2/1/2016	3/1/2016	4/1/2016	5/1/2016							12/1/2016	
Period End	1/31/2016	2/29/2016	3/31/2016	4/30/2016	5/31/2016							12/31/2016	
\$ Amount	\$ 1,740,755	\$ 1,647,282	\$ 1,270,620	\$ 866,424	\$ 721,662							\$ 3,516,015	\$ 9,762,759
% to Total	17.83%	16.87%	13.01%	8.87%	7.39%							36.01%	100.00%
Payment Date													
Lead Period													
Weighted Days													
Prior Period Adjustments (shown in billing period in 2016)													
Period Begin													
Period End													
\$ Amount													\$ -
% to Total													0.00%
Payment Date													
Lead Period													
Weighted Days													
Total \$ Amount	\$ 1,740,755	\$ 1,647,282	\$ 1,270,620	\$ 866,424	\$ 721,662	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 3,516,015	\$ 9,762,759
Weighted Days													

REDACTED
UNITIL ENERGY SYSTEMS, INC
LEAD IN PAYMENT OF ELECTRIC COSTS

DS SERVICE POWER SUPPLY CONTRACTS													
NON-G1 SUPPLIERS	MONTH ENERGY PURCHASES DELIVERED												
	2016												
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
Supplier D													
Normal Service													
Period Begin						6/1/2016	7/1/2016	8/1/2016	9/1/2016	10/1/2016	11/1/2016		
Period End						6/30/2016	7/31/2016	8/31/2016	9/30/2016	10/31/2016	11/30/2016		
\$ Amount						\$ 705,561	\$ 953,738	\$ 940,519	\$ 686,446	\$ 624,346	\$ 695,391		\$ 4,606,000
% to Total						15.10%	20.41%	20.12%	14.69%	13.36%	14.88%		98.55%
Payment Date													
Lead Period													
Weighted Days													
Prior Period Adjustments (shown in billing period in 2016)													
Period Begin						6/1/2016	7/1/2016	8/1/2016					
Period End						6/30/2016	7/31/2016	8/31/2016					
\$ Amount						\$ 15,552	\$ 39,144	\$ 12,991					\$ 67,687
% to Total						0.33%	0.84%	0.28%					1.45%
Payment Date													
Lead Period													
Weighted Days													
Total \$ Amount	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 721,113	\$ 992,882	\$ 953,510	\$ 686,446	\$ 624,346	\$ 695,391	\$ -	\$ 4,673,687
Weighted Days													

REDACTED
UNITIL ENERGY SYSTEMS, INC
LEAD IN PAYMENT OF ELECTRIC COSTS

DS SERVICE POWER SUPPLY CONTRACTS													
NON-G1 SUPPLIERS	MONTH ENERGY PURCHASES DELIVERED												
	2016												
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
Supplier E													
Normal Service													
Period Begin	1/1/2016	2/1/2016	3/1/2016	4/1/2016	5/1/2016								
Period End	1/31/2016	2/29/2016	3/31/2016	4/30/2016	5/31/2016								
\$ Amount	\$ 4,260,641	\$ 3,676,631	\$ 2,687,298	\$ 1,807,463	\$ 1,537,723								\$ 13,969,757
% to Total	30.53%	26.35%	19.26%	12.95%	11.02%								100.12%
Payment Date													
Lead Period													
Weighted Days													
Prior Period Adjustments													
(shown in billing period in 2016)													
Period Begin	1/1/2016	2/1/2016	3/1/2016	4/1/2016	5/1/2016								
Period End	1/31/2016	2/29/2016	3/31/2016	4/30/2016	5/31/2016								
\$ Amount	\$ (67,125)	\$ (7,099)	\$ 21,300	\$ 23,336	\$ 13,311								\$ (16,277)
% to Total	-0.48%	-0.05%	0.15%	0.17%	0.10%								-0.12%
Payment Date													
Lead Period													
Weighted Days													
Total \$ Amount	\$ 4,193,516	\$ 3,669,532	\$ 2,708,598	\$ 1,830,799	\$ 1,551,034	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 13,953,480
Weighted Days													