

**Concord Steam Corporation
Cost Of Energy (COE)**

**DG 16 -
Schedule 1**

	Projected Steam Sales Mlbs	Projected Fuel Use MMBtu			Steam Revenue Energy	Cost of Energy	Projected Over/Under Collection
			\$/Mlb				
Nov-16	12,156	47,500	\$ 23.73	\$	288,422	\$ 275,167	\$ 13,255
Dec-16	18,382	65,500	23.73	\$	436,132	\$ 360,742	\$ 75,390
Jan-17	24,004	79,160	23.73	\$	569,509	\$ 457,872	\$ 111,637
Feb-17	20,010	75,400	23.73	\$	474,753	\$ 433,637	\$ 41,115
Mar-17	16,515	60,400	23.73	\$	391,839	\$ 346,204	\$ 45,635
Apr-17	9,454	33,263	23.73	\$	224,307	\$ 321,958	\$ (97,651)
May-17	5,597	24,484	23.73	\$	132,800	\$ 253,987	\$ (121,187)
TOTAL	106,119	385,707			2,517,762	\$ 2,449,567	68,195

Projected under collection from COE year 15-16 (\$68,195)

Energy Charge - \$ per Mlb \$ 23.73
Total of Cost of Energy Charge \$ 2,517,762

Average COE charge for last year \$ 27.21

Change vs last year -12.80%

**Concord Steam Corporation
Cost Of Energy (COE)**

**DG 16 -
Schedule-2
pg 1**

Projected MMBtu's and Cost:

	Projected MMBtu's			
	Nat. Gas	Additional Nat Gas	Wood	Total
Nov-16	14,500	0	33,000	47,500
Dec-16	16,000	0	49,500	65,500
Jan-17	26,000	0	53,160	79,160
Feb-17	23,500	0	51,900	75,400
Mar-17	18,000	0	42,400	60,400
Apr-17	8,700	24,563		33,263
May-17	4,665	19,819		24,484
	111,365	44,382	229,960	385,707
			tons 27,054	

	Projected Costs			Other Production costs	Total
	Nat. Gas	Additional Nat Gas	Wood		
Nov-16	\$ 117,172	\$ -	\$ 132,995	25,000	\$ 275,167
Dec-16	\$ 129,250	\$ -	\$ 199,492	32,000	\$ 360,742
Jan-17	\$ 209,630	\$ -	\$ 214,242	34,000	\$ 457,872
Feb-17	\$ 189,473	\$ -	\$ 209,164	35,000	\$ 433,637
Mar-17	\$ 145,326	\$ -	\$ 170,878	30,000	\$ 346,204
Apr-17	\$ 70,552	\$ 151,406	\$ -	100,000	\$ 321,958
May-17	\$ 77,315	\$ 101,671	\$ -	75,000	\$ 253,987
	\$ 938,718	\$ 253,078	\$ 926,772	\$ 331,000	\$ 2,449,567

Projected mmbtu costs		
	Gas	Wood
\$/MMBtu	\$ 8.43	\$ 4.03
	Decatherm	Ton
Total \$/unit	8.43	\$ 34.26
Gas Commodity	\$ 2.52	

Note: \$44,000 was added to May 2017 gas cost for cancelation charge for 16,880 decatherms of gas contracted for from June through October 2017.

	Projected	10/11 Actual	11/12 Actual	12/13 Actual	13/14 Actual	Average	
	mmbtu's/mlb sold						
Projected Mlbs							
November	12,231	3.88	2.87	3.62	3.51	2.94	3.23
December	18,513	3.54	2.63	3.27	3.00	2.56	2.86
January	25,085	3.16	2.88	2.85	2.48	2.82	2.75
February	20,800	3.62	2.37	2.64	2.76	2.31	2.52
March	16,061	3.76	3.28	3.67	3.56	3.16	3.42
April	8,845	3.76	4.22	3.92	3.93	3.96	4.01
May	4,587	5.34	5.46	7.73	7.46	7.82	7.12
	<u>106,123</u>						

Month-Year	Days/Month	\$ Nat. Gas	Meter Chg	LDC	Commodity	Basis	Total
Nov-16	30	\$ 117,172	621.12	2.84	2.52	2.68	8.04
Dec-16	31	\$ 129,250	641.82	2.84	2.52	2.68	8.04
Jan-17	31	\$ 209,630	641.82	2.84	2.52	2.68	8.04
Feb-17	28	\$ 189,473	579.71	2.84	2.52	2.68	8.04
Mar-17	31	\$ 145,326	641.82	2.84	2.52	2.68	8.04
Apr-17	30	\$ 70,552	621.12	2.84	2.52	2.68	8.04
May-17	31	\$ 33,315	641.82	1.80	2.52	2.68	7.00
		<u>\$ 894,718</u>					

Liberty Utilities/EnergyNorth Tariff - Delivery Rate Components as of 07/01/2015		
G-43 Rate Class	Summer	Winter
Customer charge per Meter	\$20.7040	\$20.7040 per Month
G-43 Delivery Charge	\$1.0110	\$2.2100 Per Dth
Local Distribution Adjustment Charge	\$0.7930	\$0.6280 Per Dth
Firm Transportation COG Charge	na	na Per Dth

**Concord Steam Corporation
Cost Of Energy (COE)**

**DG 16 -
Schedule-3**

	Actual Sales Mlbs 2015/16	Steam sold non heating	Steam sold heating	Change in customers	Actual Deg Days 2015/16	Deg Days 30 yr ave	Adjusted Base rate Sales 2014/15	
Nov-15	11,597	1,200	10,397	(815)	697	797	12,156	Nov-16
Dec-15	15,476	1,200	14,276	(1,068)	894	1163	18,382	Dec-16
Jan-16	23,325	1,200	22,125	(1,699)	1194	1333	24,004	Jan-17
Feb-16	19,983	1,200	18,783	(1,661)	1075	1181	20,010	Feb-17
Mar-16	14,155	1,200	12,955	(1,093)	742	958	16,515	Mar-17
Apr-16	11,113	1,200	9,913	(712)	661	593	9,454	Apr-17
May-16	4,581	1,200	3,381	(166)	204	279	5,597	May-17
TOTAL	100,230			(7,215)	5,467	6,304	106,119	

Degree days compared to 30 yr ave 86.7%

Concord Steam Corporation
Cost Of Energy (COE)

DG 16 -
Schedule-4

Summary of 15-16 Energy expenses/Revenue

	Nov-15	Dec-15	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	Jul-16	(projected) Aug-16	(projected) Sep-16	(projected) Oct-16	Total
Actual Mlbs. Sold	11,597	15,476	23,325	19,983	14,155	11,113	4,581	1,254	1,156	1,045	1,977	7,663	113,325
Actual Rate Per Mlb.	\$ 25.22	\$ 25.61	\$ 25.61	\$ 28.25	\$ 28.25	\$ 28.25	\$ 28.25	\$ 28.25	\$ 28.25	\$ 28.25	\$ 30.26	\$ 30.26	
Revenue:	\$ 292,513	\$ 396,340	\$ 597,353	\$ 564,520	\$ 399,879	\$ 313,942	\$ 129,413	\$ 35,426	\$ 32,657	\$ 29,521	\$ 59,824	\$ 231,886	\$ 3,083,274
Cost of Energy:	\$ 316,043	\$ 363,362	\$ 496,997	\$ 446,375	\$ 308,063	\$ 313,502	\$ 170,318	\$ 104,953	\$ 93,316	\$ 104,512	\$ 130,154	\$ 248,484	\$ 3,096,078

Over/(Under) Collection:

Beginning Balance	\$ (68,591)	\$ (92,121)	\$ (59,142)	\$ 41,214	\$ 159,359	\$ 251,175	\$ 251,615	\$ 210,710	\$ 141,182	\$ 80,523	\$ 5,533	\$ (64,797)	
Current Month	\$ (23,530)	\$ 32,979	\$ 100,356	\$ 118,145	\$ 91,816	\$ 440	\$ (40,905)	\$ (69,528)	\$ (60,659)	\$ (74,991)	\$ (70,330)	\$ (16,598)	
Ending Balance	\$ (92,121)	\$ (59,142)	\$ 41,214	\$ 159,359	\$ 251,175	\$ 251,615	\$ 210,710	\$ 141,182	\$ 80,523	\$ 5,533	\$ (64,797)	\$ (81,395)	

Purchased fuel costs: \$ 3,096,078

Over/(Under) Collection 13/14: \$ (68,591) See Sched 7 - COE reconciliation for previous year

Revenue requirement: \$ 3,164,669

Adjusted Revenue stream: \$ 3,083,274

Woodyard rental revenue \$ 13,200

-2.20%

Projected 2015-16

Over/(under) Collection: \$ (68,195)

	Projected Mlbs.	Rate per Mlb.	Projected Revenue \$	Actual/Projected Mlbs.	Rate per Mlb.	Revenue \$
Nov-15	12,887	\$ 25.10	\$ 323,465	Nov-15	11,597	\$ 25.22 \$ 292,513
Dec-15	22,147	\$ 25.10	\$ 555,885	Dec-15	15,476	\$ 25.61 \$ 396,340
Jan-16	26,187	\$ 25.10	\$ 657,290	Jan-16	23,325	\$ 25.61 \$ 597,353
Feb-16	22,798	\$ 25.10	\$ 572,221	Feb-16	19,983	\$ 28.25 \$ 564,520
Mar-16	17,859	\$ 25.10	\$ 448,259	Mar-16	14,155	\$ 28.25 \$ 399,879
Apr-16	10,372	\$ 25.10	\$ 260,329	Apr-16	11,113	\$ 28.25 \$ 313,942
May-16	2,428	\$ 25.10	\$ 60,950	May-16	4,581	\$ 28.25 \$ 129,413
Jun-16	1,161	\$ 25.10	\$ 29,129	Jun-16	1,254	\$ 28.25 \$ 35,426
Jul-16	1,064	\$ 25.10	\$ 26,696	Jul-16	1,156	\$ 28.25 \$ 32,657
Aug-16	1,045	\$ 25.10	\$ 26,230	Aug-16	1,045	\$ 28.25 \$ 29,521
Sep-16	1,977	\$ 25.10	\$ 49,623	Sep-16	1,977	\$ 30.26 \$ 59,824
Oct-16	7,663	\$ 25.10	\$ 192,344	Oct-16	7,663	\$ 30.26 \$ 231,886
Total	127,586	\$ 25.10	\$ 3,202,419	Total	113,325	\$ 27.21 \$ 3,083,274

Concord Steam Company
Cost of Energy (COE)

DG 16 -
Schedule 5

Revenue Summary

	Nov-15	Dec-15	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16	Oct-16
Cost of Energy	\$ 316,043	\$ 363,362	\$ 496,997	\$ 446,375	\$ 308,063	\$ 313,502	\$ 170,318	\$ 104,953	\$ 93,316	\$ -	\$ -	\$ -

Actual MMBtu's and Cost:

	Actual MMBtu's					Actual Costs			Projected/Actual Costs		Other Production costs	
	Nat. Gas	Market gas	Wood	Tons	Total	Nat. Gas	Wood	Total	Nat. Gas	Wood	costs	Total
Nov-15	14,154	-	28,093	3305	42,247	\$ 170,980	\$ 122,762	\$ 293,742	\$ 170,980	\$ 122,762	\$ 22,301	\$ 316,043
Dec-15	16,279	-	34,723	4085	51,001	\$ 191,930	\$ 140,839	\$ 332,769	\$ 191,930	\$ 140,839	\$ 30,593	\$ 363,362
Jan-16	23,116	-	44,328	5215	67,444	\$ 286,233	\$ 179,060	\$ 465,293	\$ 286,233	\$ 179,060	\$ 31,704	\$ 496,997
Feb-16	21,352	-	40,120	4720	61,472	\$ 252,999	\$ 163,168	\$ 416,168	\$ 252,999	\$ 163,168	\$ 30,207	\$ 446,375
Mar-16	14,089	-	29,971	3526	44,060	\$ 161,352	\$ 118,662	\$ 280,015	\$ 161,352	\$ 118,662	\$ 28,048	\$ 308,063
Apr-16	10,429	-	23,350	2747	33,779	\$ 119,438	\$ 95,458	\$ 214,895	\$ 119,438	\$ 95,458	\$ 98,607	\$ 313,502
May-16	7,278	-	16,652	1959	23,929	\$ 77,852	\$ 75,022	\$ 152,874	\$ 77,852	\$ 75,022	\$ 17,444	\$ 170,318
Jun-16	2,314	-	14,527	1709	16,840	\$ 23,912	\$ 69,846	\$ 93,758	\$ 23,912	\$ 69,846	\$ 11,196	\$ 104,953
Jul-16	1,958	-	12,861	1513	14,819	\$ 21,905	\$ 60,666	\$ 82,571	\$ 21,905	\$ 60,666	\$ 10,745	\$ 93,316
Aug-16	-	-	-	0	-	-	-	\$ -	\$ 21,649	\$ 72,863	\$ 10,000	\$ 104,512
Sep-16	-	-	-	0	-	-	-	\$ -	\$ 119,154	\$ -	\$ 11,000	\$ 130,154
Oct-16	-	-	-	0	-	-	-	\$ -	\$ 230,484	\$ -	\$ 18,000	\$ 248,484
Total	110,968	-	244,622	28,779	355,590	\$ 1,306,601	\$ 1,025,483	\$ 2,332,084	\$ 1,677,888	\$ 1,098,346	\$ 319,845	\$ 3,096,078
			BTU factor									
			8.5			\$/mmbtu						
						\$ 11.77	\$ 4.19	\$ 6.56				

Projected MMBtu's and Cost:

	Projected MMBtu's				Projected Costs		Other Production costs	
	Nat. Gas	Market gas	Wood	Total	Nat. Gas	Wood	costs	Total
Nov-15	12,931	0	31,500	44,431	\$ 160,034	\$ 127,438	30,000	\$ 317,473
Dec-15	13,145	0	49,500	62,645	\$ 162,687	\$ 200,260	40,000	\$ 402,947
Jan-16	22,000	0	53,160	75,160	\$ 271,858	\$ 215,067	42,000	\$ 528,925
Feb-16	18,000	0	51,900	69,900	\$ 222,484	\$ 209,970	42,000	\$ 474,453
Mar-16	12,245	0	42,400	54,645	\$ 151,598	\$ 171,536	37,000	\$ 360,134
Apr-16	8,700	0	28,300	37,000	\$ 107,875	\$ 114,492	29,000	\$ 251,367
May-16	4,665	0	20,600	25,265	\$ 53,328	\$ 83,341	20,000	\$ 156,669
Jun-16	1,950	0	17,250	19,200	\$ 22,644	\$ 69,788	12,000	\$ 104,432
Jul-16	1,860	0	17,000	18,860	\$ 21,649	\$ 68,776	85,000	\$ 175,425
Aug-16	1,860	0	18,010	19,870	\$ 21,649	\$ 72,863	10,000	\$ 104,512
Sep-16	11,810	7,632	-	19,442	\$ 119,154	\$ -	11,000	\$ 130,154
Oct-16	28,580	6,664	-	35,244	\$ 230,484	\$ -	18,000	\$ 248,484
Total	137,746	14,296	329,620	481,662	\$ 1,545,444	\$ 1,333,530	376,000	\$ 3,254,974
			38,779					
			tons					

Projected mmbtu costs

	Gas		Wood
\$/MMBtu	\$ 11.22		\$ 4.05
	Decatherm		Ton
\$/Unit	\$ 11.22		\$ 34.39

**Concord Steam Corporation
Cost Of Energy (COE)**

**DG 16 -
Schedule-6**

Customer Size	Annual usage M/lbs	Energy Charge at new rate 23.73	Energy Charge at 15/16 average 27.21	Meter Charge	Usage Rate	Proposed with new COE	Last year	% change over last year
Small	295	\$ 6,999	\$ 8,026	\$ 120	\$ 11,024	\$ 18,143	\$ 19,170	-5.36%
Medium	1201	\$ 28,495	\$ 32,676	\$ 400	\$ 44,437	\$ 73,332	\$ 77,513	-5.39%
Large	4797	\$ 113,813	\$ 130,514	\$ 944	\$ 172,692	\$ 287,449	\$ 304,150	-5.49%

The Small user will always use less than 500 Mlbs/month and their usage rate will always be highest tier.
The Medium user may in some months use more than 500 Mlbs, but most of their usage will also be at the highest tier.
The Large user almost always uses above 500 Mlbs/month but still never uses more than 2,000 Mlbs/month.
They end up with a blended rate due to buying steam from the two tiers

The estimate of usage rate for each user is based on a sample customers actual annual usage divided by the total usage which establishes the average useage rate that the customer paid.

**Concord Steam Company
Cost of Energy (COE)**

**DG 16 -
Schedule -7**

Reconciliation of 2014-2015 cost of energy

	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15
Revenue:	\$ 328,803	\$ 516,250	\$ 716,440	\$ 756,400	\$ 498,484	\$ 299,732	\$ 53,844	\$ 32,234	\$ 27,777	\$ 25,731	\$ 24,501	\$ 189,491
Cost of Energy:	\$ 345,133	\$ 410,281	\$ 638,427	\$ 588,862	\$ 420,884	\$ 369,054	\$ 151,322	\$ 111,150	\$ 105,630	\$ 102,960	\$ 115,538	\$ 276,842
Over/(Under) Collection:												
Beginning Balance	\$ (145,076)	\$ (161,406)	\$ (55,437)	\$ 22,577	\$ 190,115	\$ 267,715	\$ 198,393	\$ 100,915	\$ 21,999	\$ (55,855)	\$ (133,084)	\$ (224,121)
Current Month	\$ (16,330)	\$ 105,969	\$ 78,014	\$ 167,538	\$ 77,600	\$ (69,322)	\$ (97,478)	\$ (78,916)	\$ (77,853)	\$ (77,230)	\$ (91,037)	\$ (87,351)
Ending Balance	\$ (161,406)	\$ (55,437)	\$ 22,577	\$ 190,115	\$ 267,715	\$ 198,393	\$ 100,915	\$ 21,999	\$ (55,855)	\$ (133,084)	\$ (224,121)	\$ (311,472)
*Adjusted Annual Purchased fuel costs:	\$ 3,272,886	\$ 3,274,208	\$ 3,453,259	\$ 3,604,991	\$ 3,644,151	\$ 3,742,318	\$ 3,720,351	\$ 3,713,393	\$ 3,645,412	\$ 3,638,916	\$ 3,629,869	\$ 3,636,083
*Adjusted Annual Revenue requirement:	\$ 3,417,962	\$ 3,419,284	\$ 3,598,335	\$ 3,750,067	\$ 3,789,227	\$ 3,887,394	\$ 3,865,427	\$ 3,858,469	\$ 3,790,488	\$ 3,783,992	\$ 3,774,945	\$ 3,781,159
*Adjusted Annual Revenue stream:	\$ 3,352,565	\$ 3,342,586	\$ 3,401,486	\$ 3,598,700	\$ 3,602,111	\$ 3,620,252	\$ 3,539,075	\$ 3,533,326	\$ 3,533,477	\$ 3,529,610	\$ 3,497,552	\$ 3,469,687
Monthly Projection of Year-End												
Over/(under) Collection:	\$ (65,397)	\$ (76,697)	\$ (196,850)	\$ (151,367)	\$ (187,116)	\$ (267,142)	\$ (326,352)	\$ (325,143)	\$ (257,011)	\$ (254,382)	\$ (277,392)	\$ (311,472)
Purchased fuel costs:	\$ 3,636,083											
2013-14 Over/(Under) Collection:	\$ (145,076)	(2013-14 final reconciliation report dated February 27, 2015)										
PUC audit corrections	\$ -											
Revenue requirement:	\$ 3,781,159											
Revenue stream:	\$ 3,469,687											
Insurance Adjustment	\$ 242,881											
Over/(under) collection:	\$ (68,591)											

*Adjusted costs, revenues and requirements (lines A19 - A21) are representing the annual projection of each line item adjusted for the current and previous months actual fuel costs and revenues

**Concord Steam Corporation
Cost Of Energy (COE)**

**DG 16 -
Schedule-8**

Estimated cost of Wood Yard Operations

Tons of wood per year 27,054
Delivered cost of material \$ 28.00

	COE 16	Actual 11/15-5/16	Actual 8/14-7/15	Actual 8/13-7/14	Actual 8/12-7/13
Yard Lease	82,712	\$ 82,712	\$ 141,792	\$ 141,792	\$ 141,792
Diesel Fuel Yard/trucking	12,000	\$ 3,904	\$ 14,735	\$ 20,719	\$ 18,091
Electricity	3,500	\$ 2,526	\$ 4,548	\$ 3,613	\$ 3,267
Mechanical repairs	600	\$ 651	\$ 327	\$ 793	\$ 1,193
Small tools	250	\$ -	\$ -	\$ 549	\$ 137
Loader rental	30,098	\$ 30,098	\$ 51,597	\$ 51,597	\$ 51,597
Tractor rental	8,886	\$ 8,886	\$ 15,233	\$ 15,233	\$ 15,233
Truck/Loader/scale maintenance	6,000	\$ 3,254	\$ 4,451	\$ 10,209	\$ 13,392
Contract Hauling	2,000	\$ -	\$ 1,850	\$ -	\$ -
Propane heat	1,400	\$ 1,294	\$ 2,625	\$ 5,844	\$ 4,626
Veh Registration	1,200	\$ 1,159	\$ 978	\$ 2,398	\$ 687
Fees,		\$ -	\$ -	\$ -	\$ 364
Cleaning/office supplies	10	\$ 114	\$ -	\$ 10	
Highway use tax	600	\$ 570	\$ 570	\$ 983	\$ 1,966
Property tax	10,200	\$ 10,206	\$ 13,092	\$ 24,226	\$ 24,746
Wood Broker	17,500	\$ 17,500	\$ 35,000	\$ 35,000	\$ 35,000
Subtotal	\$ 176,956	\$ 162,875	\$ 284,948	\$ 312,967	\$ 312,091

Rental revenue Capital Paving \$ (7,700)

Total net cost \$ 169,256

Cost of Yard operations per ton \$ 6.26

Delivered cost of material \$ 28.00

Total Cost of wood fuel per ton \$ 34.26

**Concord Steam Corporation
Cost Of Energy (COE)**

**DG 16 -
Schedule-9**

Other production costs included in COE

	Ash Disposal	Water/Sewer	Treatment Chemicals	State Emission fee	Total 2015/16 Actual	Projected 2016/17	
Nov-15	\$1,580	\$19,013	\$1,708		22,301	25,000	
Dec-15	\$1,693	\$27,198	\$1,702		30,593	32,000	
Jan-16	\$1,634	\$27,918	\$2,152		31,704	34,000	
Feb-16	\$813	\$27,601	\$1,793		30,207	35,000	
Mar-16	\$1,453	\$22,960	\$3,635		28,048	30,000	
Apr-16	\$1,453	\$16,834	\$2,957	77,363	98,607	100,000	
May-16	\$1,453	\$12,682	\$3,309	54,154	17,444	75,000	Note 1
Jun-16	\$632	\$8,329	\$2,235		11,196		
Jul-15	\$181	\$8,329	\$2,235		10,745		
Aug-15	\$631	\$8,323	\$2,235		11,189		
Sep-15	\$350	\$8,112	\$5,106		13,568		
Oct-15	\$0	\$16,017	\$2,220		18,237		
Totals	11,873	203,316	31,287	131,517	323,839	331,000	

Note:

1 May 2017 includes the estimated amount due to NH Air Resources for emission fees for 2017.