EXHIBIT A

BEFORE THE

WASHINGTON UTILITIES & TRANSPORTATION COMMISSION

NW NATURAL SUPPORTING MATERIALS

WA EE PROGRAM COSTS (AMORTIZATION)

NWN WUTC Advice No. 17-08 / UG-____

September 12, 2017

NW NATURAL

EXHIBIT A

Supporting Materials

WA EE PROGRAM COSTS (AMORTIZATION)

NWN WUTC ADVICE NO. 17-08 / UG-_____

Description	Page
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-		Billing	WACOG &	Temps from							R&C En	ergy Efficiency Progr	sme
2	PGA Volumes page	Rate from	Demand from Pates page	Temporary	MAPGIN	Volumetric	Clistomer		Total	Proposed Amount: Bevenue Sensitive Multinlier:	1,847,776 A 372%	Temporary Increments	actor
4	Column D	Column A C	Column B+C+D	Column A	Rate	Margin	Charge	Customers	Margin	Amount to Amortize:	1,932,254	to all residential & comme	rcial sales
5 6 Schedule Block	A	-	J.	-	E=B-C-D F	F = F * A	c.	- -	= (G*H*12)+F		Multiplier	Allocation to RS K	Increment L
7 1R	185,451	\$1.12348	\$0.41759	\$0.02141	\$0.68448	\$126,937.00	\$3.47	836	\$161,748.00		1.0	8,806	\$0.04748
9 1C	29,901	\$0.83247	\$0.41759	\$0.00034	\$0.41454 \$0.41454	\$19.188.406.00	\$3.47	38 72.820	\$25.305.286.00		0.1	1.377.709	\$0.02976
10 3 CFS	17,409,108	\$0.83216	\$0.41759	-\$0.00401	\$0.41858	\$7,287,104.00	\$15.00	5,857	\$8,341,364.00		1.0	454,133	\$0.02609
11 3 IFS	441,901	\$0.80674	\$0.41759 \$0.41750	-\$0.02930	\$0.41845	\$184,913.00	\$15.00	26 717	\$189,593.00		0.0	0007.8	\$0.00000
12 27 13 41C Firm Sales Block 1	1.686.868	\$0.58449	\$0.29379	-\$0.01094	\$0.30164	\$960.675.00	\$250.00	/1/ 84	\$1.212.675.00		0.1	8,039 66.022	\$0.02073
14 Block 2	1,700,017	\$0.54573	\$0.29379	-\$0.01385	\$0.26579		00.0044	5	000001-1-1-1-4		1.0		\$0.01827
15 41C Interr Sales Block 1 16 Block 2	0 0	\$0.59214 \$0.55349	\$0.29379 \$0.29379	-\$0.00306 -\$0.00586	\$0.30141 \$0.26556	\$0.00	\$250.00	0	\$0.00		1.0 1.0	0	\$0.01942 \$0.01711
17 41 Firm Trans Block 1 18 Block 2	374,368 600 813	\$0.30077 \$0.26500	\$0.00000	\$0.00000	\$0.30077 \$0.36500	\$271,814.00	\$500.00	17	\$373,814.00		0.0	0	\$0.00000
19 411 Firm Sales Block 1 20 Rinck 2	251,387 291 828	\$0.56538 \$0.57888	\$0.29379 \$0.29379	-\$0.03009	\$0.30168 \$0.26582	\$153,412.00	\$250.00	14	\$195,412.00		0.0	0	\$0.00000
21 411 Interr Sales Block 1	0	\$0.57388	\$0.29379	-\$0.02132	\$0.30141	\$0.00	\$250.00	0	\$0.00		0.0	0	\$0.0000
23 42C Firm Sales Block 2 23 42C Firm Sales Block 1	0 460,278	\$0.39054	\$0.29379	-\$0.02195 -\$0.02202	\$0.11877	\$80,277.00	\$1,300.00	9	\$173,877.00		1.0	9,466	\$0.01400
24 Block 2 25 Block 2	215,032	\$0.37669 \$0.34910	\$0.29379 \$0.29379	-\$0.02342 -\$0.02623	\$0.10632 \$0.08154						0.1		\$0.01254 \$0.00961
26 Block 4	0	\$0.33095	\$0.29379	-\$0.02807	\$0.06523						0.1		\$0.00769
27 Block 5 28 Rlock 6	0 0	\$0.30675 \$0.27649	\$0.29379 \$0.29379	-\$0.03052 -\$0.03360	\$0.04348 \$0.01630						0.1		\$0.00513 \$0.00192
29 421 Firm Sales Block 1	988,918	\$0.37986	\$0.29379	-\$0.03264	\$0.11871	\$199,678.00	\$1,300.00	12	\$386,878.00		0.0	0	\$0.00000
30 Block 2	709,684	\$0.36712 \$0.34172	\$0.29379 *0.20270	-\$0.03293	\$0.10626						0.0		\$0.00000
31 Block 3 32 Block 4	21,000	\$0.32508	\$0.29379 \$0.29379	-\$0.03390	\$0.06519						0.0		\$0.00000 \$0.00000
33 Block 5 24 Block 5	00	\$0.30284 ¢0.27502	\$0.29379 \$0.29379	-\$0.03442 \$0.03505	\$0.04347 \$0.01620						0.0		\$0.00000
35 42 Firm Trans Block 1	1.315.288	\$0.11818	\$0.00000	\$0.00000 \$	\$0.11818 \$0.11818	\$508,752.00	\$1,550.00	10	\$694.752.00		0.0	0	\$0.00000
36 Block 2	1,569,454	\$0.10579	\$0.00000	\$0.00000	\$0.10579						0.0		\$0.0000
37 Block 3 38 Block 4	1,035,145 1.393.721	\$0.08112 \$0.06490	\$0.00000 \$0.00000	\$0.00000 \$0.00000	\$0.08112 \$0.06490						0.0		\$0.00000 \$0.00000
39 Block 5	297,087	\$0.04327	\$0.00000	\$0.00000	\$0.04327						0.0		\$0.0000
40 Block 6 41 43C Interr Saloc Block 4	0	\$0.01622	\$0.00000	\$0.00000	\$0.01622 \$0.11054	\$00 774 00	¢1 200 00	-	¢11E 224 00		0.0	026 7	\$0.00000
41 420 IIIteri Jares Block 1 42 Block 2	459,142	\$0.38261	\$0.29379	-\$0.01730	\$0.10612	\$77,124.00	00.000,1 ¢	-	00.426,011¢		0.1	6/7'0	\$0.00668
43 Block 3 44 Rhock 4	223,176 83 116	\$0.35571 \$0.33801	\$0.29379 \$0.29379	-\$0.01946 -\$0.02088	\$0.08138 \$0.06510						0.0		\$0.00512 \$0.00410
45 Block 5	00	\$0.31441	\$0.29379	-\$0.02278	\$0.04340						0.1		\$0.00273
47 421 Interr Sales Block 1	165,010	\$0.39024	\$0.29379	-\$0.02215	\$0.11870	\$35,013.00	\$1,300.00	5	\$113,013.00		0.0	0	\$0.00000
48 Block 2	141,192	\$0.37734	\$0.29379	-\$0.02270	\$0.10625						0.0		\$0.00000
49 Block 3 50 Block 4	5,213 0	\$0.35166 \$0.33477	\$0.29379 \$0.29379	-\$0.02361 -\$0.02420	\$0.08148 \$0.06518						0.0		\$0.00000 \$0.00000
51 Block 5	00	\$0.31225	\$0.29379	-\$0.02499	\$0.04345						0.0		\$0.00000
53 42 Inter Trans Block 1	829,148	\$0.11818	\$0.00000	00000°0\$	\$0.11818	\$765,890.00	\$1,550.00	11	\$970,490.00		0.0	0	\$0.00000
54 Block 2	1,626,861	\$0.10579	\$0.00000	\$0.00000	\$0.10579						0.0		\$0.00000
55 Block 3 Block 4	1,295,797 4.175.476	\$0.08112 \$0.06490	\$0.00000 \$0.00000	\$0.00000 \$0.00000	\$0.08112 \$0.06490						0.0		\$0.00000 \$0.00000
57 Block 5	2,766,172	\$0.04327	\$0.00000	\$0.00000	\$0.04327						0.0		\$0.00000
58 Block 6	0	\$0.01622	\$0.0000	\$0.00000	\$0.01622	00.04		c	00 04		0.0	c	\$0.00000
60 43 Interr Trans	0	\$0.00499	\$0.00000 \$0.00000	\$0.00000	\$0.00499	\$0.00	\$38,000.00	0 0	00.0\$		0.0	0	\$0.00000
61 Intentionally blank													
62 63 Totals	89,789,697					\$29,990,106			\$38,414,943		\$35,490,991	\$1,932,254	
64													
65 Sources for line 2 abov	ë							Column G			l ina 37		
67 Tariff Schedules:													
68 Schedule #											Sched 215		

NW Natural Rates & Regulatory Affairs 2017-2018 PGA Filing - Washington: September Filing Calculation of Increments Allocated on the EQUAL PERCENTAGE OF MARGIN BASIS

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6768 Note: Allocation to rate: schedules or blocks with zero volumes is calculated on an overall margin percentage change basis.

NW Natural Rates & Regulatory Affairs 2017-2018 PGA Filing - Washington: September Filing PGA Effects on Average Bill by Rate Schedule Calculation of Effect on Customer Average Bill by Rate Schedule [1]

Interms page Terms in Memily Memily Current Pit Resc Promy Fit Pit Pit Pit Pit Pit Pit Pit Pit Pit P	1 2			Washington PGA Normalized		Normal Therms	Minimum	Current 11/1/2016	11/1/2016	Proposed 11/1/2017	Proposed 11/1/2017	Proposed 11/1/2017
Column D Bitch Average uit Rates (2) Mearing uit Solid Name Simulation Bitch C Funct C S D Hard C S D Hard C S D Hard C S D J Simulation Bitch NA 10.0 9.31 240 9.1 1240	3			Volumes page,	Therms in	Monthly	Monthly	Billing	Current	R&C Energy Eff.	R&C Energy Eff.	R&C Energy Eff.
Stroldu Biox A B C P FULL C PULL PULL <t< td=""><td>4</td><td></td><td></td><td>Column D</td><td>Block</td><td>Average use</td><td>Charge</td><td>Rates</td><td>Average Bill</td><td>Rates [2]</td><td>Average Bill</td><td>% Bill Change</td></t<>	4			Column D	Block	Average use	Charge	Rates	Average Bill	Rates [2]	Average Bill	% Bill Change
18 18 180	5	Schedule	Block	Α	в	c	D	F	F=D+(C ^ E)	G	H=D+(C ^ G) H	1
0 10 2000 NA 660 33.47 31.1492 377.05 81.1190 577.10 0.27 11 31.5 1.4381.33 1.44 31.00 1.57.00 60.552/4 31.15 31.10 51.12 0.25 27 2.4 41.19 NA 1.416.0 1.50.00 0.552/4 31.15 31.00.07 31.00.0 51.00.00 55.00.00 0.552/4 51.00.57 52.16.624 0.554.4 0.564.41 0.554.41 0.564.41 0.554.41 0.564.41 0.554.41 0.554.51 0.55	7	1R		185,451	N/A	18.0	\$3.47	\$1.12348	\$23.69	\$1.12657	\$23.75	0.3%
9 28 4.6.285.03 14.0 53.0 13.0 0.2124 51.12 50.214 0.25 117 27 4.11.991 14.0 15.10 0.05641 15.13.0 0.05641	8	1C		29,901	N/A	66.0	\$3.47	\$1.11492	\$77.05	\$1.11701	\$77.19	0.2%
1 1/12 1/14 1/15 1/	9	2R		46,288,430	N/A	53.0	\$7.00	\$0.83247	\$51.12	\$0.83429	\$51.22	0.2%
27 421 (12) NA 0.400 136 (2) 138 (2) 138 (4) 0.138 (4)	10	3 CFS 3 IES		17,409,108	N/A N/A	248.0	\$15.00	\$0.83216	\$221.38	\$0.83371	\$221.76 \$1.157.34	0.2%
13 41 C Pm Sule Biol 1 1.086 80 2.000 3.360.0 3250.00 50.5431 S0.5699 0.00 41 C Pm Sule 707.4 70.0017 all additional 0.0 5250.00 50.5471 S0.54714 S0.54714 S0.54714 S0.54714 S0.54714 S0.54714 S0.54714 S0.5571 S0.5071 S0.30507	12	27		421,152	N/A	49.0	\$6.00	\$0.66169	\$38.42	\$0.66241	\$38.46	0.1%
Image: Bits: 1,700,77 Bits: 50,557 52,161,77 50,5774 52,166,29 62,2% 10 100 mm 7 sines Bits: 1 0 2,000 5250,00 50,5774 52,500,0 5250,00 0,095 10 411 Firm 5 me str. 27,858 2,000 4,780,0 520,00 50,5570 50,5007 0,095 11 110 20,000 3,233,0 520,000 50,5280 50,5280 50,5280 0,095 11 111 Firm 5 me str. 27,187 2,000 0,0 5230,00 50,5288 50,5288 0,096 11 110 me 7 sines Bits: 2,132,0 2,000 0,0 52,032,07 52,032,07 0,096 100 mm 7 sines Bits: 2,132,0 100,000 9,347,0 51,330,00 50,5730 50,7388 0,096 100 mm 7 sines Bits: 3,1492,0 10,000 9,347,0 51,350,00 50,578,00 50,788 0,096 100 mm 7 sines Bits:	13	41C Firm Sales	Block 1	1,686,868	2,000	3,360.0	\$250.00	\$0.58449		\$0.58609		
Image: 100 AL Image: 1	14		Block 2	1,700,017	all additional			\$0.54573		\$0.54714		
19 All Infer Sales Box 1 0 J.X00 U.D S.250.00 S.250.00 <td>15</td> <td></td> <td>TOTAL</td> <td></td> <td></td> <td></td> <td>*050.00</td> <td>*0 F004 4</td> <td>\$2,161.17</td> <td>*0 50000</td> <td>\$2,166.29</td> <td>0.2%</td>	15		TOTAL				*050.00	* 0 F 004 4	\$2,161.17	*0 50000	\$2,166.29	0.2%
International constraint Description S280.00 S2	16	41C Interr Sales	Block 1 Block 2	0	2,000 all additional	0.0	\$250.00	\$0.59214 \$0.55349		\$0.59330 \$0.55451		
19 41 Him Tram Biols 1 24,348 2,000 4,780.0 550,000 50,30077 50,30788 50,307	18		TOTAL	0				\$0.55547	\$250.00	\$0.55451	\$250.00	0.0%
Bit Model Bit Model Signal S	19	41 Firm Trans	Block 1	374,368	2,000	4,780.0	\$500.00	\$0.30077	+200100	\$0.30077	+200.00	0.070
TOTAL 51,882.4 51,882.4 51,882.24 0.0% 411 Imm Seles Bick 1 21,923 all additional 52,000 50,5538 50,5638 50,5638 50,5638 50,5638 50,5638 50,5638 50,5638 50,5638 50,5268 50,5268 50,5268 50,5268 50,5268 50,5268 50,5268 50,53740 52,000 50,53740 52,000 50,53740 52,000 50,53740 50,000 50,33740 50,000 50,3466 50,34766 50,3	20		Block 2	600,813	all additional			\$0.26500		\$0.26500		
22 411 Firm Sales Biok 1 25,1387 2,000 \$2,032.07 \$5,032,08 \$2,032.07 \$0,0788 411 Inter Sales Biok 2 0 ald additional \$2,032.07 \$5,032,08 \$2,032.07 \$0,0788 411 Inter Sales Biok 1 2,000 0 \$25,000 \$5,03746 \$2,032.07 \$0,076 400 Firm Sales Biok 1 40,0710 \$1,0000 \$0,3766 \$0,3766 \$0,3766 \$0,3766 400 Firm Sales Biok 2 21,5032 20,000 \$0,33766 \$0,3766 \$0,3766 \$0,3766 1 Biok 2 21,5032 20,000 \$0,33766 \$0,3766 \$0,37766 \$0,37766 \$0,37766 \$0,37766 \$0,37766 \$0,37766 \$0,37766 \$0,37766 \$0,37766 \$0,33766 \$0,37766 \$0,37766 \$0,37766 \$0,37766 \$0,37766 \$0,37766 \$0,37766 \$0,37766 \$0,37766 \$0,37766 \$0,37766 \$0,37766 \$0,37766 \$0,37766 \$0,37766 \$0,37766 \$0,37766 \$0,37766	21		TOTAL						\$1,838.24		\$1,838.24	0.0%
a month 21,02.0 an Automation 32,02.000 52,032.87 52,032.87 0.0% 411 Inter Sales Bick 2 0 all additional 0 5250.00 50.57308 52,032.87 0.0% 2 Vertice Vertice S250.00 50.57308 50.57308 52,032.87 0.0% 2 Vertice Vertice S250.00 50.37669 50.37969 50.37969 50.37969 50.37969 50.37969 50.37969 50.37969 50.37969 50.37969 50.37969 50.37969 50.37969 50.37969 50.37969 50.37969 50.37969 50.37969 50.37969 50.36772 50.36772 50.36772 50.34776 50.34776 50.34776 50.34776 50.34776 50.34776 50.34776 50.32784 50.32784 50.32784 50.32784 50.32784 50.32784 50.32784 50.32784 50.32784 50.32784 50.32784 50.32784 50.32784 50.32784 50.32784 50.32784 50.32784 50.32784 50.32784 5	22	411 Firm Sales	Block 1	251,387	2,000	3,233.0	\$250.00	\$0.56538		\$0.56538		
22 411 Inter Sales Bick 1 0 2000 0.0 \$520.00 50.7388 20.702 50.7378 20.702 50.7378 20.702 50.7378 20.702 50.7378 20.702 50.7378 20.702 50.7374 20.703 50.7374	23		BIOCK 2	291,828	an additional			\$0.52888	\$2 032 87	\$0.52888	\$2 032 87	0.0%
26 Beck 2 0 all additional \$250.00 \$0.53740 \$250.00 \$250.00 \$250.00 \$250.00 \$0.0% 28 427 Firm Sales Biock 1 460.278 10.0000 \$0.30064 \$0.39064 \$0.39064 \$0.39785 \$0.0% 30 Biock 3 33.3692 20.000 \$0.33095 \$0.33289 \$0.0764 \$0.33785 \$0.38064 30 Biock 4 0 100.000 \$0.30075 \$0.38084 \$0.27676 \$5,145.65 \$0.37865 \$0.7766 421 Firm Sales Biock 6 0 all additional \$1.300.00 \$1.390.00 \$0.37865 \$0.3786 \$0.27774 \$0.27776 421 Firm Sales Biock 4 20.000 12.411.0 \$1.300.00 \$0.37865 \$0.3786 \$0.3786 \$0.3786 \$0.27776 421 Firm Sales Biock 4 20.000 100.000 \$0.302764 \$0.32750 \$0.0796 421 Firm Taras Biock 5 0 60.0000 \$1.500.00 \$0.118179 \$0.04277 \$0.0279<	25	411 Interr Sales	Block 1	0	2.000	0.0	\$250.00	\$0.57388	\$2,032.07	\$0.57388	\$2,032.07	0.070
1 TOTAL Second \$250.00 \$250.00 \$250.00 \$0.0% 42 Firm Sales Block 1 460.278 10.000 \$0.3766 \$0.3766 \$0.37785 31 Block 2 215.032 20.000 \$0.34970 \$0.33785 \$0.3389 \$0.33785 31 Block 4 0 100.000 \$0.33975 \$0.3389 \$0.3786 \$0.3389 \$0.3389 \$0.3786 \$0.331617 \$0.381617	26		Block 2	0	all additional			\$0.53740		\$0.53740		
28 42 FUN 51,300.00 9,847.0 \$1,300.00 \$0,3064 \$0,39466 30 Block 2 21,50.32 20,000 \$0,30490 \$0,33490 \$0,33490 31 Block 4 0 0,000 \$0,33490 \$0,33490 \$0,33490 32 Block 4 0 0,000 \$0,33490 \$0,33490 \$0,33249 32 Block 4 0 additional \$0,3765 \$0,33249 \$0,32765 \$5,180.31 0.7% 34 TTAL o all additional \$0,3776 \$0,3776 \$0,3776 \$0,3776 35 A21 Firm Sales Block 1 988,918 10,000 \$0,32584 \$0,30284 \$0	27		TOTAL						\$250.00		\$250.00	0.0%
29 Biold 2 215,032 20,000 30,3765 30,3765 31 Biold 4 0 100,000 30,33470 30,3765 30,3224 31 Biold 5 0 0 0,000 30,3470 30,3765 30,3264 31 Biold 5 0 0 0 30,3765 30,3004 30,3765 32 Biold 2 709,644 20,000 12,411.0 \$1,300.00 \$0,33716 \$0,37712 \$0,37712 36 Biold 5 0 0 0,000.00 \$0,32508 \$0,37508 \$0,3772 37 Biold 5 0 0 0,000.00 \$0,32508 \$0,32508 \$0,32508 40 Biold 5 0 0 60,000.00 \$0,32508 \$0,32508 \$0,32508 41 TOTAL \$1,350,454 20,000 \$0,04470 \$0,00470 42 Firm Trans Biold 5 20,000 \$0,03471 \$0,04327 42 Firm Trans Biold 4 20,0100 <td>28</td> <td>42C Firm Sales</td> <td>Block 1</td> <td>460,278</td> <td>10,000</td> <td>9,847.0</td> <td>\$1,300.00</td> <td>\$0.39054</td> <td></td> <td>\$0.39406</td> <td></td> <td></td>	28	42C Firm Sales	Block 1	460,278	10,000	9,847.0	\$1,300.00	\$0.39054		\$0.39406		
one about a block s 0.00% 0 about a block s about a bl	29		Block 2	215,032	20,000			\$0.37669		\$0.37985		
Signed SigneSigned Signed Signed Signed Signed Signed Signed Signed Signed Si	30 31		Block 4	33,092	100,000			\$0.34910		\$0.33152		
Black 6 0 all additional \$0.27697 \$0.27697 \$0.27697 35 42 Firm Sales Black 1 988.918 10.000 \$1.300.00 \$0.3796 \$0.3796 \$0.3796 37 Black 3 67.540 20.000 \$0.3796 \$0.36712 \$0.36712 \$0.36712 \$0.3796 37 Black 4 27.000 100.000 \$0.32508 \$0.32768 \$0.32768 \$0.32768 \$0.32768 \$0.32768 \$0.32768 \$0.32768 \$0.32768 \$0.0284 \$0.0076 \$0.32768 \$0.32768 \$0.32768 \$0.32768 \$0.0284 \$0.30284 \$0.32769 \$0.0786 \$0.07	32		Block 5	Ő	600,000			\$0.30675		\$0.30804		
34 TOTAL S5,145,65 \$5,180.31 0.7% 442 FIRT Sales Biock 1 709,664 20,000 \$1,300.00 \$0.37966 \$0.37966 \$0.37966 36 Biock 2 709,664 20,000 \$0.30176 \$0.36172 \$0.36172 \$0.36172 38 Biock 4 21,000 100,000 \$0.32508 \$0.32508 \$0.32508 \$0.32508 40 Biock 5 0 60,000 \$0.32508 \$0.32508 \$0.32508 \$0.32508 \$0.32508 \$0.32508 \$0.32508 \$0.32508 \$0.32508 \$0.32508 \$0.32508 \$0.32508 \$0.32508 \$0.32508 \$0.32508 \$0.32508 \$0.32508 \$0.32508 \$0.9758 \$0.0579 \$0.01618 \$0.11818 \$0.11818 \$0.11818 \$0.11818 \$0.11818 \$0.01622 \$0.06490 \$0.06490 \$0.06490 \$0.06490 \$0.04327 \$0.04327 \$0.04327 \$0.03804 \$0.38061 \$0.32804 \$0.38061 \$0.32804 \$0.33804 \$0.32804 \$0.38061 \$0.0579 \$	33		Block 6	0	all additional			\$0.27649		\$0.27697		
35 421 Firm Sales Block 1 988,918 10,000 12,411.0 \$1,300.00 \$0.36712 \$0.36712 \$0.36712 37 Block 3 67,540 20,000 \$0.36712 \$0.34716 \$0.34716 38 Block 4 21,000 10,000 \$0.32508 \$0.32508 \$0.32508 39 Block 5 0 600,000 \$0.32508 \$0.32508 \$0.32508 40 Block 6 0 all additional \$0.27502 \$5.983.73 \$0.0% 42 Firm Trans Block 1 1,315.288 10,000 46.756.0 \$1.1550.00 \$0.10579 \$0.10579 43 Block 3 1,033.145 20.000 \$0.06490 \$0.04490 \$0.04490 44 Block 5 297.087 60.000 \$0.06112 \$0.01622 \$0.01622 45 Block 4 23.317 10.000 83.064.0 \$1.300.00 \$0.39261 \$0.32578 46 Block 1 231.311 10.000 83.064.0 \$0.39261 \$0.33277 \$0.0% 51 Block 2 245.142 20,000 </td <td>34</td> <td></td> <td>TOTAL</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>\$5,145.65</td> <td></td> <td>\$5,180.31</td> <td>0.7%</td>	34		TOTAL						\$5,145.65		\$5,180.31	0.7%
36 BitCk 2 /19,004 20,000 \$30,301/2 30,301/2 30,301/2 37 Bitck 3 61,540 20,000 \$30,34176 \$30,34176 \$30,34176 38 Bitck 5 0 60,000 \$30,32084 \$30,32084 \$30,32084 40 Bitck 6 0 all additional \$30,27002 \$30,27002 \$5,983,73 \$5,983,73 \$0.0% 42 42 Firm Trans Bitck 1 1,315,288 10,000 \$6,000 \$30,00490 \$5,983,73 \$0.0% 44 Bitck 2 1,569,454 20,000 \$30,06490 \$50,001579 \$0,01579 44 Bitck 5 297,087 600,000 \$30,0412 \$0,00490 \$0,03951 42 Chiter Sales Bitck 1 231,331 10,000 \$30,3614 \$0,33578 \$0,0% 42 Inter Sales Bitck 4 83,116 10,000 \$0,33528 \$0,33774 \$0,33774 5 Bitck 4 83,116 10,000 \$1,330,000	35	421 Firm Sales	Block 1	988,918	10,000	12,411.0	\$1,300.00	\$0.37986		\$0.37986		
Since Block 4 21,000 100,000 \$0.32508 \$0.32508 \$0.32508 39 Block 5 0 600,000 \$0.30284 \$0.30284 \$0.27502 41 TOTAL TOTAL \$5,983.73 \$5,983.73 \$5,983.73 \$0.0% 42 42 Firm Trans Block 1 1.315,288 10,000 46,756.0 \$1,550.00 \$0.11818 \$1.01077 \$0.0% 43 Block 2 1.569,454 20,000 \$0.0679 \$0.08112 \$0.08112 \$0.08112 44 Block 5 297,087 600,000 \$0.04327 \$0.04437 \$0.04437 45 Block 6 0 all additional \$0.01612 \$0.0812 \$0.32561 46 Block 1 23,131 10,000 \$0.33614 \$0.33261 \$0.33261 47 Block 2 23,176 20,000 \$0.33871 \$0.33261 \$0.33261 42 Interr Sales Block 1 23,176 \$0.000 \$0.33871 \$0.33261 42 </td <td>30 37</td> <td></td> <td>Block 2 Block 3</td> <td>67 540</td> <td>20,000</td> <td></td> <td></td> <td>\$0.30712 \$0.34176</td> <td></td> <td>\$0.36712</td> <td></td> <td></td>	30 37		Block 2 Block 3	67 540	20,000			\$0.30712 \$0.34176		\$0.36712		
39 Block 5 0 600,000 \$0.30284 \$0.30284 \$0.30284 41 TOTAL \$0.27502 \$0.27502 \$0.27502 \$0.27502 42 42 Firm Trans Block 1 1,315,288 10,000 \$0.11818 \$0.11818 \$0.11818 44 Block 3 1,035,145 20,000 \$0.06879 \$0.06879 44 Block 4 1,337,211 100,000 \$0.06490 \$0.06490 46 Block 5 297,087 600,000 \$0.04327 \$0.04327 47 Block 5 297,087 600,000 \$0.39611 \$0.38261 \$0.38205 48 TOTAL TOTAL \$0.39571 \$0.33205 \$0.39614 \$0.33261 49 Block 4 83,116 100,000 \$0.33801 \$0.33361 \$0.33263 50 Block 5 0 600,000 \$0.333801 \$0.33773 \$0.33767 422 Interr Sales Block 1 165.010 10.000 \$1,300.00 \$0.39734 \$0.33773	38		Block 4	21,000	100,000			\$0.32508		\$0.32508		
How Solution Block 6 0 all additional S27502 S0.27502 42 42 Firm Trans Block 1 1.315,288 10.000 46,756.0 \$1,550.00 \$0.11818 \$0.11818 \$0.11818 \$0.11818 \$0.096 44 Block 2 1.69,454 20.000 \$0.008112 \$0.008112 \$0.01817 44 Block 3 1.335,145 20.000 \$0.0490 \$0.06490 \$0.00437 45 Block 5 297,077 600,000 \$0.04527 \$0.01327 \$0.03251 46 Block 4 0.31841 \$0.39561 \$6,206.85 \$0.096 47 Block 4 23,131 10.000 \$1.300.00 \$0.33251 \$6,206.85 \$0.096 48 422 Inter Sales Block 1 23,176 20.000 \$0.33551 \$0.33551 \$0.33552 50 Block 5 0 60.0.000 \$0.334141 \$0.33477 \$0.33767 51 Block 6 0 all additional \$0.24944 \$0.339024 0	39		Block 5	0	600,000			\$0.30284		\$0.30284		
Image: constraint of the sector of	40		Block 6	0	all additional			\$0.27502		\$0.27502		
42 42 1 1,315,288 10,000 46,756.0 \$1,550.00 \$0,11818 \$0,11818 43 Block 1 1,357,288 10,000 \$0,06400 \$0,06470 44 Block 3 1,035,145 20,000 \$0,06490 \$0,06490 46 Block 4 1,337,71 100,000 \$0,06490 \$0,04327 \$0,04327 47 Block 6 0 all dditional \$0,01622 \$0,01622 \$0,01622 47 Block 1 231,331 10,000 83,064.0 \$1,300.00 \$0,39511 \$0,38205 47 Block 2 459,142 20,000 \$0,33528 \$0.0% 51 Block 3 83,116 100,000 \$0,33511 \$0,35528 \$0.3774 52 Block 4 83,116 100,000 \$1,300.00 \$0,33741 \$0,3774 \$0,3774 54 Block 5 0 600,000 \$0,31418 \$0,01818 \$0,1186 \$0,0264 56 421 Inter Sales Block 1	41	10 EL	TOTAL		10.000			+	\$5,983.73		\$5,983.73	0.0%
4.3 BIOL 2 1,307,441 20,000 \$0,10379 30,10379 30,10379 44 Biock 3 1,303,145 20,000 \$0,04490 \$0,00490 \$0,04490 45 Biock 4 1,393,721 100,000 \$0,04327 \$0,01422 \$0,01422 47 Biock 6 0 all additional \$0,01622 \$0,01622 \$0,01622 47 Biock 6 0 all additional \$0,000 \$0,33601 \$0,38205 47 Biock 3 23,176 20,000 \$0,33601 \$0,33761 \$0,33761 51 Biock 4 83,116 100,000 \$0,33801 \$0,33761 \$0,33761 52 Biock 5 0 600,000 \$0,31411 \$0,31418 \$0,3024 54 Biock 2 16,010 10,000 \$1,300.00 \$0,33734 \$0,337734 56 Biock 3 5,213 20,000 \$0,33125 \$0,3125 \$0,3125 57 Biock 5 0 all additional \$0,23477	42	42 Firm Trans	Block 1 Block 2	1,315,288	10,000	46,756.0	\$1,550.00	\$0.11818 \$0.10570		\$0.11818		
15 Biock 4 1,393,721 100,000 \$0,06490 \$0,06490 46 Biock 5 297,087 600,000 \$0,04327 \$0,04327 \$0,04327 47 Biock 6 0 all additional \$0,01622 \$0,01622 \$0,004327 48 TOTAL \$6,206.85 \$6,206.85 \$6,206.85 \$0,0956 49 223,176 20,000 \$3,064.0 \$1,300,00 \$0,38261 \$0,38205 51 Biock 3 223,176 20,000 \$0,38261 \$0,38205 52 Biock 4 83,116 100,000 \$0,33801 \$0,33471 53 Biock 5 0 600,000 \$0,31441 \$0,31418 54 Biock 6 0 all additional \$0,28492 \$0,37734 \$0,37734 59 Biock 1 165,010 100,000 \$0,331477 \$0,33477 \$0,33477 60 Biock 2 141,192 20,000 \$0,33255 \$0,337734 \$0,337734 59 Biock 1	43 44		Block 2	1,009,404	20,000			\$0.10379		\$0.08112		
46 Block 5 297,087 600,000 \$0.04327 \$0.04327 \$0.04327 47 Block 6 0 all additional \$0.01622 \$0.01622 \$0.01622 49 42C Inter Sales Block 1 231,331 10,000 \$3,064.0 \$1,300.00 \$0.38261 \$0.38205 51 Block 3 223,176 20,000 \$0.33801 \$0.33767 52 Block 4 83,116 100,000 \$0.33801 \$0.33767 53 Block 5 0 600,000 \$0.31441 \$0.39024 54 Block 6 0 all additional \$0.28492 \$0.28484 56 70 TAL \$31,203.76 \$31,16.42 -0.1% 57 Block 3 5,213 20,000 \$0.337734 \$0.33773 58 Block 4 0 100,000 \$0.33477 \$0.33477 58 Block 5 0 600,000 \$0.31734 \$0.37734 59 Block 6 0 all additional \$0.28411<	45		Block 4	1,393,721	100,000			\$0.06490		\$0.06490		
47 Block 6 0 all additional \$0.01622 \$0.01622 49 42C Interr Sales Block 1 231,331 10,000 83,064.0 \$1,300.00 \$0.38261 \$0.38205 51 Block 3 223,176 20,000 \$0.335571 \$0.33205 52 Block 4 83,116 100,000 \$0.33571 \$0.33767 53 Block 5 0 600,000 \$0.31441 \$0.31418 54 Block 6 0 all additional \$0.28492 \$0.28494 56 TOTAL \$31,166.42 -0.1% 57 Block 1 165,010 10,000 \$0.37734 \$0.37734 57 Block 2 141,192 20,000 \$0.31421 \$0.37734 58 Block 3 5.190.0 \$0.37734 \$0.37734 \$0.37734 59 Block 4 0 100,000 \$0.31225 \$0.31225 \$0.31225 61 Block 5 0 600,000 \$0.31225 \$0.31225 \$0.3225 </td <td>46</td> <td></td> <td>Block 5</td> <td>297,087</td> <td>600,000</td> <td></td> <td></td> <td>\$0.04327</td> <td></td> <td>\$0.04327</td> <td></td> <td></td>	46		Block 5	297,087	600,000			\$0.04327		\$0.04327		
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	47		Block 6	0	all additional			\$0.01622		\$0.01622		
49 42c Interr Sales Block 1 231,331 10,000 83,040.0 \$1,300.00 \$0.39014 \$0.39051 50 Block 2 459,142 20,000 \$0.35571 \$0.350528 51 Block 3 223,176 20,000 \$0.33201 \$0.33767 53 Block 4 83,116 100,000 \$0.31411 \$0.31418 54 Block 6 0 all additional \$0.28492 \$0.28442 56 TOTAL \$1,300.00 \$0.39024 \$0.39024 \$0.39734 57 Block 2 141,192 20,000 \$0.331734 \$0.37734 \$0.37734 58 Block 3 5,213 20,000 \$0.33277 \$0.33477 \$0.33477 59 Block 4 0 100,000 \$0.33477 \$0.33477 \$0.33477 60 Block 5 0 600,000 \$0.311818 \$0.28411 \$0.28411 61 Block 5 0 600,000 \$0.10579 \$0.1579 \$0.1579 63 1,295,797 20,000 \$0.06490 \$0.06490 \$0.06490 \$0.043	48	400.1.1.0.1	TOTAL	004.004	10.000	00.0(1.0	<u> </u>	*****	\$6,206.85	\$0.00FF4	\$6,206.85	0.0%
30 block 2 43,142 20,000 \$0.30201 30.30201 \$0.33201 51 Block 4 83,116 100,000 \$0.33801 \$0.33767 53 Block 5 0 600,000 \$0.31441 \$0.3528 54 Block 5 0 600,000 \$0.31441 \$0.36203 56 TOTAL \$0.3024 \$0.3024 \$0.3024 57 Block 1 165,010 10,000 \$1,300.00 \$0.3024 \$0.3024 57 Block 3 5,213 20,000 \$0.33477 \$0.3024 \$0.3024 58 Block 5 0 600,000 \$0.33477 \$0.33166 \$0.31225 59 Block 6 0 all additional \$0.28411 \$0.28411 \$0.32237 60 Block 5 0 600,000 \$0.31225 \$0.31225 \$0.31225 61 Block 6 0 all additional \$0.28411 \$0.28411 \$0.3024 63 1,226,861 20,000 \$0.04377 \$0.3225.35 \$0.096 64 Block 4 4,175,476	49 50	42C Interr Sales	Block 1 Block 2	231,331	10,000	83,064.0	\$1,300.00	\$0.39614 \$0.29261		\$0.39551		
Single Lab.rd Lab.rd <thlab.rd< th=""> <thlab.rd< th=""> <thlab.rd< td="" th<=""><td>51</td><td></td><td>Block 2</td><td>223 176</td><td>20,000</td><td></td><td></td><td>\$0.35571</td><td></td><td>\$0.35528</td><td></td><td></td></thlab.rd<></thlab.rd<></thlab.rd<>	51		Block 2	223 176	20,000			\$0.35571		\$0.35528		
53 Block 5 0 600,000 \$0.31441 \$0.31418 \$0.28492 \$0.28492 54 Block 6 0 all additional \$0.28492 \$0.28492 \$0.39024 \$0.39324 \$0.3924 \$0.3924 \$0.3924 \$0.3924 \$0.3924 \$0.3924 \$0.3924 \$0.3926 \$0.3926 \$0.3926	52		Block 4	83,116	100,000			\$0.33801		\$0.33767		
54 Block 6 0 all additional \$0.28492 \$0.28492 \$0.28484 55 TOTAL \$31,203.76 \$31,203.76 \$31,166.42 -0.1% 56 421 Interr Sales Block 1 165,010 10,000 \$1,300.00 \$0.39024 \$0.39024 \$0.39024 -0.1% 57 Block 4 106,010 10,000 \$1,300.00 \$0.37734 \$0.37734 \$0.37734 \$0.37734 \$0.37734 \$0.33477 \$0.3477 \$0.3477 \$0.3477 \$0.3477 \$0.3477 \$0.3477 \$0.3477 \$0.3477 \$0.3477 \$0.3477 \$0.3477 \$0.3477 \$0.3477 \$0.3477 \$0.3477 \$0.3477 \$0.3477 \$0.3477 \$0.3477 \$0.3473 \$0.0560 \$0.01818 \$0.01601579 <td>53</td> <td></td> <td>Block 5</td> <td>0</td> <td>600,000</td> <td></td> <td></td> <td>\$0.31441</td> <td></td> <td>\$0.31418</td> <td></td> <td></td>	53		Block 5	0	600,000			\$0.31441		\$0.31418		
55 TOTAL \$31,203.76 \$31,166.42 -0.1% 56 421 Interr Sales Block 1 165,010 10,000 \$1,300.00 \$0.39024 \$0.39024 \$0.39024 57 Block 2 141,192 20,000 \$0.37734 \$0.37734 \$0.37734 58 Block 3 5,213 20,000 \$0.35166 \$0.35166 \$0.33477 \$0.33477 \$0.33477 \$0.33477 \$0.33477 \$0.33477 \$0.28411 \$0.0812 \$0.0812 \$0.0812 \$0.0812 \$0.0812 \$0.0812 \$0.0812 \$0.0812 \$0.0812 \$0.0812 \$0.04327 \$0.0432	54		Block 6	0	all additional			\$0.28492		\$0.28484		
30 421 miteri sales bitck 1 100,000 5,190.0 \$1,300.00 \$0.39024 \$0.39024 57 Block 2 141,192 20,000 \$0.37734 \$0.37734 \$0.37734 58 Block 3 5,213 20,000 \$0.35166 \$0.35166 \$0.33477 59 Block 4 0 100,000 \$0.3427 \$0.33477 \$0.33477 60 Block 5 0 600,000 \$0.31225 \$0.31225 \$0.32611 61 Block 6 0 all additional \$0.28411 \$0.28411 \$0.28411 62 TOTAL \$3,325.35 0.0% \$0.11818 \$0.11818 \$0.11818 64 Block 2 1,626,861 20,000 \$0.08112 \$0.08112 \$0.08112 65 Block 3 1,295,797 20,000 \$0.04327 \$0.04327 \$0.04327 66 Block 5 2,766,172 600,000 \$0.04490 \$0.00499 \$38,000.00 0.0% 70 A3 Firm Trans 0 N/A 0.0 \$38,000.00 \$0.00499 \$38,000.00 0.0% <td>55</td> <td>101 Inter Colo-</td> <td>TOTAL Block 1</td> <td>1/5 010</td> <td>10.000</td> <td>E 100.0</td> <td>¢1 200 00</td> <td>\$0.20024</td> <td>\$31,203.76</td> <td>0 20024</td> <td>\$31,166.42</td> <td>-0.1%</td>	55	101 Inter Colo-	TOTAL Block 1	1/5 010	10.000	E 100.0	¢1 200 00	\$0.20024	\$31,203.76	0 20024	\$31,166.42	-0.1%
58 Block 2 1411,112 20,000 \$0.3104 \$0.3104 58 Block 3 5,213 20,000 \$0.33477 \$0.33477 60 Block 5 0 60.0000 \$0.31225 \$0.3125 61 Block 6 0 all additional \$0.28411 \$0.28411 62 TOTAL \$3,325.35 \$3,325.35 \$0.0% 63 42 Inter Trans Block 1 829,148 10,000 \$1,550.00 \$0.11818 \$0.11818 64 Block 2 1,626,861 20,000 \$0.10579 \$0.06490 \$0.06490 65 Block 3 1,295,797 20,000 \$0.04327 \$0.04327 \$0.04327 66 Block 5 2,766,172 600,000 \$0.01622 \$0.01622 \$0.01622 69 TOTAL \$0.N/A 0.0 \$38,000.00 \$0.0499 \$38,000.00 \$0.09% 74 Hinterr Trans 0 N/A 0.0 \$38,000.00 \$0.00499 \$38,000.00 0.0% 74 Intentionally blank Intentionally blank Intentional y blank <td< td=""><td>50 57</td><td>421 Interr Sales</td><td>Block 1 Block 2</td><td>165,010</td><td>20,000</td><td>5,190.0</td><td>\$1,300.00</td><td>\$0.39024 \$0.37734</td><td></td><td>\$0.39024 \$0.37734</td><td></td><td></td></td<>	50 57	421 Interr Sales	Block 1 Block 2	165,010	20,000	5,190.0	\$1,300.00	\$0.39024 \$0.37734		\$0.39024 \$0.37734		
59 Block 4 0 100,000 \$0.33477 \$0.33477 60 Block 5 0 600,000 \$0.31225 \$0.31225 61 Block 6 0 all additional \$0.28411 \$0.28411 62 TOTAL \$3,325.35 \$3,325.35 \$3,325.35 0.0% 63 42 Inter Trans Block 1 829,148 10,000 \$1,550.00 \$0.11818 \$0.11818 64 Block 2 1,626,861 20,000 \$0.0579 \$0.10579 \$0.10579 65 Block 3 1,295,797 20,000 \$0.06490 \$0.06490 \$0.06490 66 Block 4 4,175,476 100,000 \$0.06490 \$0.06490 \$0.06490 67 Block 5 2,766,172 600,000 \$0.01622 \$0.01622 \$0.01622 68 Block 6 0 all additional \$0.01622 \$0.00499 \$38,000.00 0.0% 70 Hotek 5 0 N/A 0.0 \$38,000.00 \$0.00499 \$38,000.00 0.0% 71 43 Firm Trans 0 N/A	58		Block 3	5.213	20,000			\$0.35166		\$0.35166		
60 Block 5 0 600,000 \$0.31225 \$0.31225 \$0.31225 61 Block 6 0 all additional \$0.28411 \$0.28411 \$0.28411 62 TOTAL \$3,325.35 \$3,325.35 \$0.0% 63 42 Inter Trans Block 1 829,148 10,000 \$1,550.00 \$0.11818 \$0.11818 64 Block 2 1,626,861 20,000 \$0.10579 \$0.10579 \$0.08112 65 Block 3 1,295,797 20,000 \$0.06490 \$0.06490 \$0.06490 66 Block 4 4,175,476 100,000 \$0.01622 \$0.01622 \$0.01622 67 Block 6 0 all additional \$0.01622 \$0.01622 \$0.009% 68 Block 6 0 all additional \$0.01622 \$0.00499 \$38,000.00 \$0.09% 70 43 Firm Trans 0 N/A 0.0 \$38,000.00 \$0.00499 \$38,000.00 0.0% 74 Internonally blank Internonally blank Internonally blank Internonally blank Internonaly class are not included in	59		Block 4	0	100,000			\$0.33477		\$0.33477		
61 Block 6 0 all additional \$0.28411 \$0.28411 \$0.28411 62 TOTAL \$3,325.35 \$3,325.35 \$3,325.35 0.0% 63 42 Inter Trans Block 1 829,148 10,000 81,011.0 \$1,550.00 \$0.11818 \$0.11818 0.0% 64 Block 2 1,626,861 20,000 \$0.08112 \$0.08112 \$0.08112 \$0.08112 \$0.04327 \$0.04327 \$0.04327 \$0.04327 \$0.04327 \$0.04327 \$0.04327 \$0.04327 \$0.04327 \$0.04327 \$0.04327 \$0.04327 \$0.04327 \$0.06490 \$0.06490 \$0.04327 \$0.04327 \$0.04327 \$0.04327 \$0.04327 \$0.04327 \$0.04327 \$0.04327 \$0.04327 \$0.04327 \$0.04327 \$0.04327 \$0.04327 \$0.04327 \$0.06490 \$0.0499 \$38,000.00 \$0.09% \$0.09% \$0.09% \$0.00499 \$38,000.00 \$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% \$0.0% \$0.0% \$0.0%	60		Block 5	0	600,000			\$0.31225		\$0.31225		
62 TOTAL \$3,325.35 \$3,325.35 0.0% 63 42 Inter Trans Block 1 829,148 10,000 \$1,550.00 \$0.11818 \$0.11818 \$0.11818 \$0.10579 \$0.10579 \$0.008112 \$0.08112 \$0.08112 \$0.08112 \$0.08112 \$0.04327 \$0.00499 \$38,000.00 \$0.09% \$0.00499 \$38,000.00 \$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% \$0.0%<	61		Block 6	0	all additional			\$0.28411		\$0.28411		
03 42 Inter Trails block 1 627,140 0,000 \$1,010.0 \$1,010.0 \$1,010.0 \$1,010.0 \$0.11010 \$0.01627 \$0.00410 \$0.04327 \$0.04327 \$0.00429 \$0.00499 \$38,000.00 \$0.00499 \$38,000.00 \$0.00499 \$38,000.00 \$0.00499 \$38,000.00 \$0.00499 \$38,000.00 \$0.00499 \$38,000.00 \$0.00499 \$38,000.00 \$0.006102 \$0.006102 \$0.006102 \$0.006102 \$0.006102 \$0.006102 \$0.006102 \$0.006102 \$0.006102 \$0.006102 \$0.006102 \$0.006102 \$0.006102	62 42	42 Inter Trans	TOTAL Block 1	020 140	10.000	91 011 0	¢1 550 00	¢0 11010	\$3,325.35	¢0 11010	\$3,325.35	0.0%
of block 2 1,295,797 20,000 \$0.08112 \$0.08112 \$0.08112 66 Block 3 1,295,797 20,000 \$0.06490 \$0.06490 \$0.04327 \$0.04327 66 Block 5 2,766,172 600,000 \$0.04327 \$0.04327 \$0.04327 68 Block 5 2,766,172 600,000 \$0.04327 \$0.01622 \$0.01622 69 TOTAL \$8,482.61 0.0% \$0.04397 \$38,000.00 \$0.00499 \$38,000.00 \$0.09% 70 43 Firm Trans 0 N/A 0.0 \$38,000.00 \$0.00499 \$38,000.00 \$0.09% 71 43 Interr Trans 0 N/A 0.0 \$38,000.00 \$0.00499 \$38,000.00 \$0.09% 71 Interimonally blank	63 64	42 IIItel IIalis	Block 2	1 626 861	20,000	81,011.0	\$1,550.00	\$0.11616		\$0.11618		
66 Block 4 4,175,476 100,000 \$0.06490 \$0.06490 \$0.06490 67 Block 5 2,766,172 600,000 \$0.04327 \$0.04327 \$0.04327 68 Block 6 0 all additional \$0.01622 \$0.01622 \$0.00499 69 TOTAL \$8,482.61 \$8,482.61 \$0.0% 70 43 Firm Trans 0 N/A 0.0 \$38,000.00 \$0.00499 \$38,000.00 \$0.00499 71 43 Interr Trans 0 N/A 0.0 \$38,000.00 \$0.00499 \$38,000.00 0.0% 72 Intentionally blank Interr Trans 0 N/A 0.0 \$38,000.00 \$0.00499 \$38,000.00 0.0% 74 those schedules. total schedule 41 and 42 customers may choose demand charges at a volumetric rate or based on MDDV. For convenience of presentation, demand charges are not included in the calculations for those schedules. total schedule 1	65		Block 3	1,295,797	20,000			\$0.08112		\$0.08112		
67 Block 5 2,766,172 600,000 \$0.04327 \$0.04327 \$0.04327 \$0.04327 68 Block 6 0 all additional \$0.01622 \$0.01622 \$0.01622 \$0.00% 69 TOTAL \$8,482.61 \$8,482.61 \$8,482.61 \$0.0% 70 43 Firm Trans 0 N/A 0.0 \$38,000.00 \$0.00499 \$38,000.00 \$0.00499 \$38,000.00 0.0% 71 43 Interr Trans 0 N/A 0.0 \$38,000.00 \$0.00499 \$38,000.00 \$0.00499 \$38,000.00 0.0% 72 Intentionally blank Intentionally blank Intentional data data data data data data data da	66		Block 4	4,175,476	100,000			\$0.06490		\$0.06490		
668 Block 6 0 all additional \$0.01622 \$0.01622 \$0.01622 679 TOTAL \$8,482.61 \$8,482.61 \$0.0% 70 43 Firm Trans 0 N/A 0.0 \$38,000.00 \$0.00499 \$38,000.00 \$0.00499 \$38,000.00 0.0% 71 43 Interr Trans 0 N/A 0.0 \$38,000.00 \$0.00499 \$38,000.00 \$0.00499 \$38,000.00 0.0% 72 Intentionally blank Intentionally blank	67		Block 5	2,766,172	600,000			\$0.04327		\$0.04327		
OP IOTAL \$8,482.61 0.0% 43 Firm Trans 0 N/A 0.0 \$38,000.00 \$0.00499 \$38,000.00 \$0.00499 \$38,000.00 0.0% 1 43 Interr Trans 0 N/A 0.0 \$38,000.00 \$0.00499 \$38,000.00 \$0.00499 \$38,000.00 0.0% 1 Intentionally blank Intentionally blank Intentional states are not included in the calculations for those schedules. Intentional states are not included in the calculations for those schedules.	68		Block 6	0	all additional			\$0.01622	******	\$0.01622	******	
To arrow the constraint of the constraint o	69 70	42 Eirm Trong	TOTAL	^	NI/A	0.0	\$20,000,00	\$0.00400	\$8,482.61	\$0.00400	\$8,482.61	0.0%
72 Intentionally blank Construction of presentation, demand charges are not included in the calculations for those schedules. 73 [1] Rate Schedule 41 and 42 customers may choose demand charges at a volumetric rate or based on MDDV. For convenience of presentation, demand charges are not included in the calculations for those schedules.	71	43 Interr Trans		0	N/A N/A	0.0	\$38,000.00	\$0.00499	\$38.000.00	\$0.00499	\$38,000.00	0.0%
73 [1] Rate Schedule 41 and 42 customers may choose demand charges at a volumetric rate or based on MDDV. For convenience of presentation, demand charges are not included in the calculations for 4 toose schedules.	72	Intentionally blank		0		0.0	,,				+15,000.00	0.070
74 those schedules.	73	[1] Rate Schedule 41	and 42 custo	omers may choose de	mand charges at	a volumetric rate	or based on MD	DV. For conver	nience of presentat	ion, demand charge	s are not included in	the calculations for
	74	those schedules.										

Column A

[2] Proposed rates include the effect of removing the current Schedule 215 adjustment and applying the proposed Schedule 215 adjustment. The rate shown is for illustrative purposes only and assumes no other changes to rates occur November 1. <u>Sources:</u> per Tariff

per Tariff

78 79 Direct Inputs

76 77

80 81 Rates in summary

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1005 1005 1005 1005 1005 1005 1005 1005	Company: State: Description: Account Number: Other Info: Debit (Credit) Month/Year (a) Nov-15 Jun-16 Jun-16 Jun-16 Jun-16 Jun-16 Jun-16 Apr-16 May-16 Jun-16 Jun-16 Jun-16 Jun-16 Jun-16 Jun-16 Jun-16 Jun-16		Northwest Natural Washington Energy Washington Energy Program under Sch Program under Sch Program under Sch Program under Sch Program Under Sch 1,548.59 1,548.55 1,548.55 1,548.55 1,548.55 1,548.55 1,681.31 1,460.02 1,681.32 7,526.55 8,881.90 1,681.32 1,681.33 1,552.55 8,881.30 1,681.32 1,681.32 1,552.55 8,881.30 1,681.32 1,552.55 8,881.30 1,681.32 1,552.552.55 1,552.55 1,552.55 1,552.55 1,552.55 1,552.55	Gas Company / Efficiency Program edule G nder Schedule 215 (9,749.63) (9,749.63) (9,749.63)	s - General Admin (e1) (e1) 3.25% 3.25% 3.25% 3.46% 3.46% 3.50% 3.50% 3.50% 3.50% 3.50%	r Interest (e2) (e2) (e2) (e2) (e2) (e2) (e2) (e2)	2015 Calendar Interest (e.3) 23.48 21.54 23.48 23.48 25.64 25.72 25.72 25.72 25.72 25.72 25.72 25.72 25.87	2016 Calendar Interest (e4) 5.00 8.64 115.75 115.75 115.75 115.75 115.75 115.75 115.75 115.75 115.75 115.75 115.75 115.75 115.75 116.70 8.64	2017 Calendar Interest (e.5)	Total Activity (f) (f) (g),504.63) 558.89 839.31 1,396.55 839.31 1,256.21 1,256.21 1,725.46 1,735.41 (1,327.15) 8,947.64 (1,327.15) 8,947.64	Balance (91) (91) (9,012.85 9,012.85 9,012.85 9,012.85 13,798.07 14,798.07 14,799.07000000000000	2015 Calendar Balance (92) (92) 8,649.72 8,649.72 8,649.72 8,649.72 8,767.09 8,767.09 8,767.09 8,767.09 8,767.09 8,767.09 8,767.09 8,767.09 8,767.09 8,767.09 8,767.09 8,767.09 8,767.03 8,845.37 8,895.39	2016 Calendar Balance (g3) 5,178,455,178,45 5,178,45 5,178,455,178,450,450,450,450,450,450,450,450,450,450	2017 Calendar Balance (g4)
107	Jan-17		4,726.73		3.50%	85.78		78.88	6.90	4,812.51	31,858.51		27,124.88	4,733.63
108	Feb-17		9,926.36		3.50%	107.40		79.11	28.29	10,033.76	41,892.27		27,203.99	14,688.28
109	Mar-17		11,054.54		3.50%	138.31		79.34	58.97	11,192.85	53,085.12		27,283.33	25,801.79
110	Anr-17		9.267.52		3.71%	178.45		84.35	94.10	9 445 97	62 531 09		27 367 68	35,163,41
2 5	11-14c		7, 102, 7 7 102 63		3.71%	10 100		84.61	120.30	7 607 54	70 228 63		27 452 20	12,100,100
111	Nay-17		1,442.03		3./1%	204.71		84.01	120.30	4C. 140,1	10,228.63		71,452.24	42,110.34
112	Jun-17		277.54		3.71%	217.55		84.87	132.68	495.09	70,723.72		27,537.16	43,186.56
113	Jul-17	7	462.55	(1.26)	3.96%	234.15		90.87	143.28	695.44	71,419.16		27,628.03	43,791.13
114	Aud-17	I	22 348 15	()·	3 96%	272 56		91 17	181 39	22 620 71	94 039 87		27 719 20	66.320.67
± ;			21.010.IO		2020	20.474			20.00	1.1.040,44				
115	Sep-1/				3.96%	310.33		91.47	218.86	310.33	94,350.20		27,810.67	66,539.53
116	Oct-17				3.96%	311.36		91.78	219.58	311.36	94,661.56		27,902.45	66,759.11
117														
118	History truncate	4 for ea	se of viewing											
110		5	B											

Motes:
 Transferred Dec 2014 deferral balance plus 2015 interest on the balance to account 186316 for amortization
 Transferred Dec 2015 deferral balance plus 2016 interest on the balance to account 186316 for amortization
 Transfer amount is for true-up to GL.

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1 Debt Circle 2015 2015 2015 2015 2015 2016	Obsile Other Control Other	Debit (Credit) Month/Year Note (a) (b) (b) (b) (a) (b) (a) (b) (a) (b) (b) (b) (b) (b) (c) (c) (c) (c) (c) (c) (c) (c	 Accumulation (c) (c) 0.00 0.00	Transfers (d) (1,102,538.02)	Interest Rate (e1) 3.25% 3.25% 3.46% 3.46%		100							
4 MonthYster Note Accumulation Tranefies Rate Interest Int	4 Month/Nat Mote Attendation Tranets Interest Int	Month/Year Note (a) (b) (b) (a) (b) (b) (a) (b) (b) (b) Nov-15 1 Jan-16 1 Jan-16 Apr-16 May-16 May-16 May-16 Jun-16 Jun-16 Jun-16 Jun-16 May-16 Sep-16 Control (b) (c) (c) (c) (c) (c) (c) (c) (c) (c) (c	 Accumulation (c) 0.00 	Transfers (d) (1,102,538.02)	Rate (e1) 3.25% 3.25% 3.25% 3.46% 3.46%		zuro Calendar	2016 Calendar	2017 Calendar	Total		2015 Calendar	2016 Calendar	2017 Calendar
Bigming Balance Constraine Co	0 0	Beginning Balance Nov-15 1 Dec-15 1 Jan-16 Feb-16 May-16 May-16 Jun-16 Jun-16 Jun-16 Sep-16 Sep-16 Sep-16 Sep-16	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	(1,102,538.02)	3.25% 3.25% 3.25% 3.25% 3.46% 3.46%	Interest (e2)	Interest (e3)	Interest (e4)	Interest (e5)	Activity (f)	Balance (a1)	Balance (g2)	Balance (ɑ3)	Balance (a4)
Position of the constraint of the constrain	P United biol 0.00 (1.02.53.02) 3.25% 3.93.25 3.93.25 3.93.25 3.94.26 3.94.26 3.94.26 3.94.26 3.94.26 3.94.26 <th3.24.27< th=""> 3.94.26 <th3.< td=""><td>Nov-15 1 Jan-16 Dec-15 5 Apr-16 Apr-16 Jun-16 Jun-16 Jun-16 Jun-16 Sep-16 Sep-16 Sep-16 Sep-16 Sep-16</td><td>0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0</td><td>(1,102,538.02)</td><td>3.25% 3.25% 3.25% 3.25% 3.46% 3.46%</td><td></td><td>Ì</td><td></td><td>Ì</td><td>2</td><td></td><td>Ì</td><td>68</td><td>: </td></th3.<></th3.24.27<>	Nov-15 1 Jan-16 Dec-15 5 Apr-16 Apr-16 Jun-16 Jun-16 Jun-16 Jun-16 Sep-16 Sep-16 Sep-16 Sep-16 Sep-16	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	(1,102,538.02)	3.25% 3.25% 3.25% 3.25% 3.46% 3.46%		Ì		Ì	2		Ì	68	:
i Jan 0 0 3.25% 3.94.45 3.44.45 0.00 3.944.55 1.460.376.11 1.460.376.11 1.460.376.11 1.460.376.11 1.460.376.11 0.00 1 Mar-16 0.00 3.25% 5.07.14 3.955.19 1.404.316.17 1.460.376.11 1.460.376.11 0.00 1 Mar-16 0.00 3.25% 5.07.14 3.955.10 1.041.15 0.00 1 Mar-16 0.00 3.46% 6.473.24 2.232.24 6.473.47 1.464.374.46 77.327.93 1 Mar-16 0.00 3.46% 6.473.24 2.232.54 9.497.17 2.344.61 77.56.02 77.371.91 1 Mar-16 0.00 3.46% 6.473.24 2.232.54 77.64.73 2.244.61 77.56.02 77.321.91 1 Mar-17 0.00 0.00 3.46% 6.473.46 77.56.22 77.34.46 77.325.94 1 0.00 0.00 0.00 2.224.17 0.439.17 2.445.93.7	Jarrie Lor Colo 2.25% 5.944.56 7.944.55 7.446.276.17 1.466.276.17 1.466.276.17 1.466.276.17 1.466.276.17 1.466.276.17 1.466.276.17 1.466.276.17 1.466.276.17 1.466.276.17 1.466.276.17 1.466.276.17 1.466.276.17 1.466.276.17 1.466.276.17 1.466.276.17 1.466.276.17 1.466.276.17 1.466.276.17 1.466.277.56 1.773.71010 0.00 747 0.00 3.46% 6.472.05 2.228.78.19 1.466.75.65 1.475.76.60 1.475.76.60 1.475.76.60 1.475.76.60 1.475.76.60 1.475.76.60 1.475.76.60 1.475.76.60 1.475.76.60 1.466.75.72 1.466.75.72 1.466.75.76 1.446.75.66 1.475.76.60 1.475.76.60 1.475.76.60 1.475.76.60 1.475.76.60 1.475.76.60 1.475.76.60 1.475.76.60 1.475.76.60 1.475.76.60 1.466.75.72 1.466.75.72 1.466.75.62 1.446.76.62 1.446.76.62 1.446.76.62 1.446.76.62 1.446.76.62 1.446.76.62 1.446.76.62 1.446.76.62 1.446.76.76.62 1.466.76.72 1.466.76.72 <td>Jan-16 Jan-16 Feb-16 Mar-16 May-16 Jun-16 Jun-16 Jun-16 Sep-16 Sep-16 Sep-16 Sep-16</td> <td>0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0</td> <td></td> <td>3.25% 3.25% 3.46% 3.46%</td> <td>3,923.22 3 933 85</td> <td>3,923.22 3.933.85</td> <td></td> <td></td> <td>(1,098,614.77) 3 933 88</td> <td>1,452,497.76 1 456 431 64</td> <td>1,452,497.76 1 456 431 64</td> <td></td> <td></td>	Jan-16 Jan-16 Feb-16 Mar-16 May-16 Jun-16 Jun-16 Jun-16 Sep-16 Sep-16 Sep-16 Sep-16	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0		3.25% 3.25% 3.46% 3.46%	3,923.22 3 933 85	3,923.22 3.933.85			(1,098,614.77) 3 933 88	1,452,497.76 1 456 431 64	1,452,497.76 1 456 431 64		
Wei-le 000 325% 505.19 000 3955.21 1644.31 1644.313 000 00 Wei-le 768.000 325% 507.01 3455.9 273.11 164.333 0.00 00 Wei-le 768.000 346% 6473.16 2.238.17 1.444.314.0 1.464.314.0 1.464.314.0 1.464.314.0 1.464.314.0 1.464.314.0 1.464.314.0 1.464.314.0 1.464.314.0 1.464.314.0 1.464.314.0 1.464.314.0 1.464.314.0 1.464.314.0 1.464.314.0 1.464.314.0 1.464.314.0 1.464.314.0 1.464.314.0 1.466.312.0 1.475.350.8 772.10110 1.464.314.0 1.466.313.0 1.467.310.0 1.467.313.0 1.467	e_1 -16 0.00 32% 50% 14443133 1468.9733 50.00 M^{r-16} 768,8000 32% 50%14 30557 3169 3167.2 238178.11 1468.9723 77210110 M^{r-16} 0.00 346% 6473.41 433359 23198 6453.45 2244.43192 1475.560 772.10110 M^{r-16} 0.00 346% 6470.64 4331.85 6430.46 775.500 772.500.85 772.500.85 772.500.85 775.700.732.75 1499.665.67 5573.	Feb-16 Mar-16 Apr-16 May-16 Jun-16 Jun-16 Jul-16 Sep-16 Sep-16 Cct-16	0.00 768,840.00 0.00 0.00 0.00 0.00 0.00		3.25% 3.25% 3.46% 3.46%	3,944.50	3,944.50	0.00		3,944.53	1,460,376.17	1,460,376.14	0.03	
90 Mar-16 768,340.00 3.25% 5.00.41 7.468,377.3 7.468,377.3 7.468,377.3 7.468,377.3 7.468,377.3 7.468,377.3 7.468,377.3 7.468,377.3 7.468,377.3 7.4337.3 7.468,377.3 7.468,377.3 7.468,377.3 7.4337.3 7.468,377.3 7.468,377.3 7.468,373.3 7.468,377.3 7.468,373.3 7.4737.6.5 7.7437.3 7.468,373.3 7.4337.3	0 Mar-16 768.80.00 3.25% 5.00.01 1.041.14 77.38.47.01 7.38.47.01 7.138.47.01 7.38.47.01 7.43.27.01 7.44.0	Mar-16 Apr-16 May-16 Jun-16 Jul-16 Aug-16 Sep-16 Sep-16 Cct-16	768,840.00 0.00 0.00 0.00 0.00 0.00		3.25% 3.46% 3.46%	3,955.19	3,955.19	0.00		3,955.22	1,464,331.40	1,464,331.33	0.06	
91 Apr-16 000 3.46% 6.473.03 2.25.2.2 6.490.17 2.257.594.463.173 1.475.716.62 7.172.101.10 91 Juh-16 0.00 3.46% 6.473.05 4.235.59 4.971.71 2.557.594.463 7.147.550.65 7.147.550.65 7.147.550.65 7.171.10 91 Juh-16 0.00 3.46% 6.490.66 4.356.10 6.490.71 2.557.594.49 1.481.034.65 7.171.230.10 92 Juh-16 0.00 3.50% 6.836.6 4.372.65 2.571.938 1.475.756.62 7.172.307.96 93 Dec.16 100 0.1493.389.13 3.50% 5.343.7 4.341.22 3.357.9 5.57.64.7 7.55.43 7.175.96.27 7.175.96.27 7.175.96.23 7.175.96.23 7.175.96.23 7.175.96.23 7.175.96.23 7.175.96.23 7.175.96.23 7.175.96.23 7.175.96.23 7.175.96.23 7.175.96.23 7.175.96.23 7.175.96.96.33 7.149.96.66.7 7.175.96.03 7.145.96.03 7.145.96.03 7.145.96.03 7.149.96.66.7 7.175.96.35.75.6.7	91 April 000 3.4% 6.473.05 2.744.631.95 7.176.50.02 7.147.516.60 92 Mpril 000 3.4% 6.473.05 2.744.631.95 7.147.550.02 7.147.550.02 7.147.550.02 7.147.550.02 7.147.556.003 93 Mpril 000 3.4% 6.473.05 2.744.631.97 7.147.550.02 7.147.550.02 7.147.550.03 7.147.550.03 7.147.550.03 7.147.556.003 7.147.556.003 7.147.556.003 7.147.556.003 7.147.556.003 7.147.556.003 7.147.556.003 7.147.556.003 7.147.556.003 7.147.556.003 7.147.576.56 7.147.556.003 7.147.576.003 7.147.576.003 7.147.576.003 7.147.576.003	May-16 May-16 Jun-16 Jul-16 Aug-16 Sep-16 Sep-16 . ct-16	00.0 00.0 00.0 00.0		3.46% 3.46%	5,007.04	3,965.90	1,041.14		773,847.07	2,238,178.47	1,468,297.23	769,881.24	
1 1 0 0 34% 6,400.17 2.251,40 0.111,21 0.00 717,22,154,40 717,22,154,40 717,22,154,40 717,22,154,40 717,22,154,40 717,22,154,40 717,22,154,40 717,22,154,40 717,22,154,40 717,22,154,40 717,22,154,40 716,250,33 717,22,154,40 716,250,33 716,256,03 717,251,54 716,256,03 717,251,54,41 716,256,03 717,251,54,41 716,256,03 717,251,54,41 716,256,03 717,251,24,41 716,256,03 717,251,254,04 716,256,03 716,256,03 716,256,03 716,256,03 716,256,03 716,26,23 716,26,23 716,26,23 716,26,23 716,26,23 716,26,23 716,26,23 716,26,23 716,26,23 716,26,24,24 716,26,23 716,26,23 <td>m_{11} m_{12} m_{12}</td> <td>Jun-16 Jun-16 Jul-16 Aug-16 Sep-16 Cc1-16</td> <td>0.00 0.00 0.00 0.00</td> <td></td> <td></td> <td>6,453.42 6 472 02</td> <td>4,233.59 4 245 80</td> <td>2,219.83</td> <td></td> <td>6,453.45 6 / 72 05</td> <td>2,244,631.92 2 251 102 08</td> <td>1,4/2,530.82</td> <td>01.101.277 36 703 77</td> <td></td>	m_{11} m_{12}	Jun-16 Jun-16 Jul-16 Aug-16 Sep-16 Cc1-16	0.00 0.00 0.00 0.00			6,453.42 6 472 02	4,233.59 4 245 80	2,219.83		6,453.45 6 / 72 05	2,244,631.92 2 251 102 08	1,4/2,530.82	01.101.277 36 703 77	
ull-16 0.00 3.50% 6.584.65 4.319.68 2.244.97 6.584.69 2.244.179.38 1.485.354.34 778.825.04 5 Mug-16 0.00 3.50% 6.584.65 4.314.62 2.244.97 76.853.38 7.148.332.13 718.825.04 5 Sep-16 768.890.00 3.50% 6.584.65 4.334.75 4.344.92 76.853.38 7.148.33 1.494.015.44 1.533.356.15 9 Oct-16 0.00 (1,498.389.13) 3.50% 5.140.35 1.557.865.70 1.66.7441 1.557.865.70 9 Dec-16 1 4000000 1.498.389.13 3.57.865.70 1.66.7431 1.66.7431 1.957.865.70 10 Dec-17 0.00 (1,498.389.13) 3.57.865.70 1.66.717 1.997.649.393.13 1.557.865.70 10 Dec-17 0.00 0.14 4.337.71 4.353.75 1.977.649.393.13 1.567.865.70 10 Dec-17 0.00 5.738.65 5.738.65 1.977.905 548.963.79 1.975.665 1.977.288	10+16 000 $350%$ 6584.65 $4,375.65$ 6584.65 $4,375.28$ 2271.38 $1,465.354.33$ $778.825.01$ $8-10-16$ 000 $350%$ $6,433.75$ $5,434.65$ $1,490,666.62$ $71,696.65$ $71,696.65$ $71,967.546.85$ $1,997,043.94$ $197,766.55$ $197,766.55$ $197,766.55$ $197,769.85$ $71,970.796$ $71,970.796$ $71,970.796$ $71,970.796$ $71,970.796$ $71,970.796$ $71,970.796$ $71,970.796$ $71,970.796$ $71,970.796$ $71,970.796$ $71,970.796$ $71,970.796$ $71,970.796$ $71,970.796$ $71,970.796$ $71,97$	Jul-16 Aug-16 Sep-16 Oct-16	0.00 0.00 0.00		3.46%	6.490.68	4,258.04	2.232.64		6.490.71	2.257.594.69	1,4/0,//0.02 1.481.034.66	776.560.03	
with Mug-16 0.00 350% 6.603.86 4.32.28 2.271.58 76,683.96 2.701.38.27 1,499.666.65 781.066.65 9. 58-16 10.00 (1,498.390.13) 3.50% 8.888.15 4.337.59 4.344.92 3.304.42 1.537.86.71 1.552.409.47 1.552.409.47 1.552.409.47 1.552.409.47 1.552.409.47 1.552.409.47 1.552.409.47 1.552.409.47 1.552.409.47 1.552.409.47 0.00 9. Dec-16 400.00000 3.50% 5.738.67 0.00 5.738.67 0.00 10. Han-17 0.00 (1,498.390.13) 3.50% 5.738.69 0.00 5.738.67 1.997.503.51 1.957.549.83 0.00 10. Man-17 544.0000 0.00 5.738.69 0.00 5.738.69 1.997.503.51 1.997.503.51 0.00 10. Man-17 544.000 0.00 5.738.69 1.997.509.62 1.997.509.62 1.997.509.62 1.997.509.62 1.997.509.62 1.997.509.62 1.997.509.62 1.997.509.62	6 Mug-16 0.00 3.50% 6.03.86 3.32.15 1.480.665.2 781096.55 791096.55 791096.55	Aug-16 Sep-16 Oct-16	00.0		3.50%	6,584.65	4,319.68	2,264.97		6,584.69	2,264,179.38	1,485,354.34	778,825.04	
96 Sep-16 768,339,00 7.43,34 3.30% 7.74,34 3.34,92 3.399,42 776,553,38 1.653,366 1,494,03154 1.553,365.71 97 0.00 (1,498,389,13) 3.50% 8,530.55 4,533.75 4,533.75 1,562,409,47 1,565,409,47 1,557,406,47 1,557,409,47 1,970,403,48 0.00 102 Eeb-17 0.00 (1,498,389,13) 3.50% 5,575,42 0,790,493,44 1,970,403,44 0.00 1,970,403,44 0.00 103 Mar-17 0.00 (1,498,389,13) 3.565,49 0,794,346 0.00 1,997,59783 0.90,963,44 0.00 0.45,503,517 1,997,094,582 1,997,094,582 1,997,094,582 1,997,094,544 1,997,094,544	96 Sep-16 768,339.00 3.50% $7.743.4$ $3.39,42$ 776,583.33 $3.01,366.65$ $1.941,031.54$ $1.552,306.57$ $1.562,306.37$ $1.562,306.37$ $1.562,306.37$ $1.562,306.37$ $1.562,306.37$ $1.562,306.37$ $1.562,306.37$ $1.562,409.47$ $1.962,409.47$ $1.962,409.47$ $1.962,409.47$ $1.962,409.47$ $1.962,409.47$ $1.962,409.47$ $1.962,409.47$ $1.962,409.47$ $1.962,409.47$ $1.962,409.47$ $1.997,209.394.535$ $1.997,209.394.535$ $1.997,209.394.535$ $1.997,209.364.52$ $1.962,409.47$ $1.974,209.34.536$ $1.997,207.92.544.546.57$ $1.997,207.92.544.546.57$ $1.997,207.92.544.546.57$ $1.997,207.92.544.546.57$ $1.997,207.92.544.546.57$ $1.997,207.92.544.546.57$ $1.997,207.92.546.54.546.57$ $1.997,207.92.547.526.57$ 1.9	Sep-16 Oct-16	140 020 01		3.50%	6,603.86	4,332.28	2,271.58		6,603.90	2,270,783.27	1,489,686.62	781,096.65	
97 0ct-16 0.00 (1,498,389:13) 3.50% 8,888.15 4,537.59 4,537.56 8,888.17 4,537.56 8,888.17 1,565,409.47 1,552,409.47 1,552,409.47 1,552,409.47 1,552,409.47 1,552,409.47 1,552,409.47 1,552,409.47 0.00 1,575,428.52 0.00 5,738.69 1,971,549,336.50 0.00 5,755,49 0.00 0.00 5,755,42 0.00 0.00 5,755,42 0.00 0.732,288.52 0.00	97 0ct-16 0.00 $(1,498,389,13)$ 350% $4,5377$ $4,5377$ $4,5377$ $1,57,409,47$ $1,57,409,47$ $1,572,409,47$ $1,572,409,47$ $1,552,409,47$ $1,552,409,47$ $1,552,409,47$ $1,552,409,47$ $1,552,409,47$ $1,552,409,47$ $1,552,409,47$ $1,552,409,47$ $1,552,409,47$ $1,979,649,63$ $1,967,549,83$ $1,967,549,83$ $1,967,549,83$ $1,967,549,83$ $1,967,549,83$ $1,967,549,83$ $1,967,549,83$ $1,967,549,83$ $1,967,549,83$ $1,967,549,83$ $1,967,549,83$ $1,967,549,83$ $1,967,549,83$ $1,967,549,83$ $1,967,549,83$ $1,967,549,83$ $1,967,549,83$ $1,967,549,83$ $1,967,549,83$ $1,990,525,4$ $3566,56,56,56,56,56,56,56,56,56,56,56,56,$	Oct-16	1 00,009.00		3.50%	7,744.34	4,344.92	3,399.42		776,583.38	3,047,366.65	1,494,031.54	1,553,335.11	
96 Northold 1 $(1,492,327,1)$ 5.30% $4.343,1$ $(1,493,494,32,1)$ $1.967,549,33$ $1.967,549,33$ $1.967,549,33$ $1.967,549,33$ $1.967,549,33$ $1.979,043,94$ $1.967,549,33$ $1.979,043,94$ $1.979,043,94$ $1.979,043,94$ $1.979,043,94$ $1.979,043,94$ $1.979,043,94$ $1.979,043,94$ $1.979,043,94$ $1.979,043,94$ $1.979,043,94$ $1.979,043,94$ $1.979,043,94$ $1.979,043,94$ $1.979,043,94$ $1.979,043,94$ $1.979,043,94$ $1.979,043,94$ $1.979,043,94$ $1.979,043,94$ 0.00 101 Feb-17 0.00 3.71% $7.810,02$ 3.71% $7.810,02$ 3.71% $7.810,02$ 3.71% $7.845,56$ $1.979,043,44$ $1.999,952,54$ $545,577$ $1.999,952,54$ $545,579$ $1.999,952,54$ $545,577$ $1.999,952,54$ $545,577$ $1.999,952,54$ $545,573,58$ $1.977,679,53$ $1.977,679,53$ $1.997,673,67$ $1.997,672,63$ $1.997,672,63$ $1.997,672,63$ $1.997,672,63$ $1.997,672,63$ $1.997,672,63$ $1.997,672,63$ $1.997,672,63$	We Nor-Io Image: Image in the imantriantin in the image in the i		0.0		3.50%	8,888.15 4 F 42 77	4,357.59	4,530.56		8,888.19	3,056,254.83	1,498,389.13	1,557,865.70	
0 Jan-17 0.00 5.738.69 0.00 5.738.69 1.973.285.52 0.00 101 Feb-17 0.00 5.738.69 1.973.285.52 1.979.043.94 0.00 102 Mar-17 5.44,100.00 3.50% 5,555.42 5,738.69 1.973.285.52 1.979,043.94 0.00 103 Apr-17 0.00 3.50% 5,555.42 5,738.69 1.973.285.52 1.979,043.94 0.00 103 Apr-17 0.00 3.50% 5,555.42 5,738.69 1.979,043.94 1.909,952.54 545,581.71 1.990,952.65 1.999,943.04 1.971,079 548,267.81 1.990,952.65 1.990,952.65 1.990,952.65 1.990,952.65 1.990,952.65 1.990,952.65 1.990,952.71 1.091,032.01 549,653.01 1.991,032.01 549,653.01 2.655.32.45 549,653.01 2.006,893.12 1.091,032.01 2.006,893.12 1.091,032.01 2.965.656.70 2.006,893.12 1.091,032.01 2.965.265.23 2.006,893.12 1.091,032.01 2.965.265.23 2.006,893.12 1.091,032.01 2.916.5	10^{-1} <	Dec-16		(1,496,369.13)	3.50%	4, 543.77 5, 140, 36		4,543.77 5 140 36		(1,493,845.30) 405 140 36	1, 302,409.41 1 967 549 83		1,202,409.41 1 967 549 83	
10 Feb-17 0.00 5,755.42 0.00 5,755.42 1,979,043.94 0.00 102 Mar-17 544,100.00 3.50% 6,556.69 5,752.42 1,979,043.94 1,994,816.15 5484,93.44 103 Apr-17 0.00 3.71% 7,851.02 6,572.21 793.48 550,665.69 2,537,30.65 1,990,952.54 1,990,952.54 1,990,952.54 1,990,952.54 1,991,971.07 96.566.5781 103 Apr-17 0.00 3.71% 7,845.20 6,136.39 1,689.45 7,849.45 2,637.585 1,997,107.90 548.67.79 1,997,107.90 548.26.79 1,997,107.90 548.26.79 1,997,107.90 548.26.79 1,997,107.90 548.26.79 1,997,63.71 1,091,032.01 1,485.66.79 1,485.26.79 1,997,63.71 1,091,032.01 1,485.67.72 1,997,63.72 1,997,63.27 1,997,63.27 1,997,63.27 1,997,63.27 1,091,032.01 548.26.79 2,003,893.12 1,091,032.01 2,003,893.12 1,091,032.01 2,003,893.12 1,091,032.01 2,003,893.12 1,091,032.01 2,009,893.12 1,091,032.01 2,003,805.81 1,101,032.01 2,003,85	10 Feb-17 0.00 $5,75,42$ $5,75,42$ $5,75,42$ $5,75,42$ $1,979,043.94$ $1,979,043.94$ $1,979,043.94$ $1,979,043.94$ $1,979,043.94$ $1,979,043.94$ $1,979,043.94$ $1,984,816.15$ $5,448$ $5,752,21$ $732,102$ $5537,53.65$ $1,990,952.54$ $546,57$ $1,990,922.54$ $546,57$ $1,990,922.54$ $546,57$ $1,990,922.54$ $546,57$ $1,990,922.54$ $546,57$ $1,992,107.90$ $548,52$ $1,992,107.90$ $548,52$ $546,57$ $1,990,922.54$ $546,57$ $1,992,107.90$ $548,52$ $1,992,107.90$ $549,57$ $1,992,107.90$ $549,57$ $1,992,107.90$ $549,57$ $1,992,107.90$ $549,523.45.30$ $1,991,107.90$ $549,57$ $1,991,107.90$ $549,523.77$ $1,094,532.84$ $540,500$ $1,844,53$ $2,563,245.36.55$ $1,991,032.82.29$ $549,570$ $1,991,032.82.29$ $549,570$ $1,991,032.82.29$ $549,570$ $1,991,032.82.29$ $549,520$ $1,991,032.82.29$ $1,991,032.82.29$ $1,991,032.82.29$ $1,991,032.82.29$ $1,991,032.82.29$ $1,991,032.82.29$	Jan-17	0.00		3.50%	5.738.69		5.738.69	0.00	5.738.69	1.973.288.52		1.973.288.52	00.0
102 Mar-17 544,100.00 3.50% 6,565.69 5,772.21 793.48 550,665.69 2,529,709.63 1,984,816.15 544,893.44 103 Apr-17 0.00 3.71% 7,821.02 6,136.39 7,821.02 2,537,530.65 1,997,107.90 543,673 1,997,973.95 544,833.45 1,997,973.95 544,833.45 1,997,973.95 544,833.45 1,997,971.97 900,952.54 545,679 554,530.45 545,679 543,679 1,997,107.90 543,679 1,997,973.93 1,997,907.952.54 546,63.69 2,553,530.65 1,997,971.97 96,630.76 1,997,907.90 543,679 1,997,907.90 543,679 1,997,907.90 543,679 1,997,907.90 543,679 1,997,902.91 540,63.71 1,091,032.01 1,991,032.01	102Mar-17 $544,100.00$ 3.50% $6,565.69$ $5,772.21$ 793.48 $550,665.69$ $2.529,709.63$ $1,984,816.15$ $544,89$ 103Apr-17 0.00 3.71% $7,821.02$ $6,136.39$ $1,689.84$ $7,821.02$ $2,537,530.65$ $1,990,952.54$ $546,57$ 104May-17 0.00 3.71% $7,845.20$ $6,174.39$ $1,689.84$ $7,845.20$ $2,537,530.65$ $1,997,107.90$ $548,249,46$ 105Jun-17 0.00 3.71% $7,845.20$ $6,174.39$ $1,689.84$ $7,845.20$ $2,545,375.85$ $1,997,107.90$ $548,249,46$ 106Jun-17 2 $538,367.00$ (1.18) 3.96% $10,230.25$ $549,66$ $2,703.18$ $2,703.18$ $2,703.18$ $2,709,683.12$ $1,091,03$ 106Jun-17 2 $538,367.00$ (1.18) 3.96% $10,230.65$ $1,690.66$ $2,703.18$ $2,703.18$ $2,703.18$ $2,703.18$ $2,709,683.12$ $1,091,03$ 107Aug-17 0.00 $3,96\%$ $10,230.65$ $3,600.40$ $10,225.13$ $1,091,03$ 108Sep-17 $3,96\%$ $10,266.82$ $3,600.40$ $10,230.05$ $3,111,158.18$ $2,006,893.12$ $1,091,03$ 108Sep-17 $3,96\%$ $10,266.82$ $3,600.40$ $3,121,425.00$ $2,029,856.81$ $1,101,86$ 109Cot-17 $3,96\%$ $10,266.82$ $3,602.40$ $3,624.20$ $0,202,986.81$ $1,109,86$ 118History truncated for ease of viewing $10,230$	Feb-17	0.00		3.50%	5,755.42		5,755.42	0.00	5,755.42	1,979,043.94		1,979,043.94	00.00
103 Apr-17 0.00 3.71% 7,821.02 6,136.39 1,684.63 7,821.02 2,537,530.65 1,997,107.90 546,578.11 104 May-17 0.00 3.71% 7,845.20 6,155.36 1,699.46 5,45,537,530.65 1,997,107.90 543,657.32 105 Jun-17 2 538,367.00 (1.18) 3.71% 7,845.20 6,155.36 1,697.60 7,845.20 2,567.32 549,653.01 1,997,107.90 543,67.94 525,323.53 5,607.93 1,097,107.20 5467.93 1,097,102.20 546,578.11 1,097,107.20 5467.32 549,653.01 1,097,102.20 546,537.12 2,003,893.12 1,091,032.01 2,003,893.12 1,091,032.01 2,003,893.12 1,091,032.01 2,003,893.12 1,091,032.01 2,003,893.12 1,091,032.01 2,003,893.12 1,091,032.01 2,004,40 2,023,055.13 2,016,525.77 1,091,032.01 2,016,525.17 1,091,032.01 2,016,525.17 1,091,032.01 2,016,525.17 1,091,032.01 2,016,525.17 1,091,032.01 2,016,525.17 1,091,032.01 2,016,525.17 1,091,032.01 2,016,525.17 1,091,032.01 2,016,525.17 1,	103Apr-170.00 3.71% 7,821.026,136.391,684.637,821.022,537,530.651,990,952.54546,57104May-170.00 3.71% 7,845.20 $6,155.36$ 1,689.847,845.20 $2,545,375.85$ 1,997,107.90548,249105Jun-172538,367.00(1.18) $3,96\%$ $10,230.55$ $6,610.83$ $2,763.245,30.65$ $1,997,107.90$ $548,249,45$ 106Jun-172538,367.00(1.18) 3.96% $10,230.55$ $6,610.83$ $2,763.245,30.53$ $2,009,293.12$ $1,091,03$ 107Auju-172538,367.00(1.18) 3.96% $10,230.55$ $6,610.83$ $2,763.245,30$ $2,003,282.29$ $549,96$ 108Auju-172538,367.00(1.19) 3.96% $10,230.55$ $5,676,50$ $3,111,168$ $2,009,993.12$ $1,091,03$ 108Sep-170.00 $3,111,168$ $10,266,82$ $3,600,40$ $10,266,82$ $3,111,168$ $2,006,993.12$ $1,094,668$ 108Sep-17 3.96% $10,266,82$ $3,612,20$ $3,624,20$ $0,200,925.13$ $2,003,982.79$ $1,094,668$ 109Oct-17 3.96% $10,266,82$ $3,600,40$ $3,111,168$ $1,01,36$ 109Oct-17 3.96% $10,266,82$ $3,102,00$ $3,131,725,70$ $2,029,856.81$ $1,109,46$ 101History truncated for ease of viewing $1,070,00$ $3,624,20$ $3,624,20$ $3,024,20$ $3,024,20$ $3,024,20$ $3,024,20$	Mar-17	544,100.00		3.50%	6,565.69		5,772.21	793.48	550,665.69	2,529,709.63		1,984,816.15	544,893.48
104 May-17 0.00 3.71% 7,845.20 6,155.36 1,689.84 7,845.20 2,545,375.85 1,977,107.90 548,267.95 105 Jun-17 2 538,367.00 (1.18) 3.71% 7,846,45 6,114.39 1,665.06 7,849,45 2,553,245.30 2,003,382.29 549,063.01 106 Jun-17 2 538,367.00 (1.18) 3.96%,45 6,610.83 2,703.18 547,679.83 3,110,102.01 107 Auju-17 2 538,367.00 (1.18) 3.96%,314.01 6,610.83 2,703.18 2,009,893.12 1,091,032.01 108 Sep-17 0.00 3.96% 10,2233.05 6,653.54 3,600.40 10,233.05 2,005,893.12 1,091,632.07 108 Sep-17 0.00 10,233.05 6,654.54 3,612.28 10,266.81 1,101,868.85 108 Sep-17 0.00 10,200.70 3,131,725.70 2,029,856.81 1,01,868.85 111 History truncated for ease of viewing 1,616.50 3,624.20 10,300.70 3,131,725.70 2,029,856.81 1,101,868.85 111 History truncated for ease of viewing 1,616.50 3,624.20 10,300.70 3,131,725.70 2,029,856.81 1,101,868.85	104 May-17 0.00 3.71% 7,845.20 6,155.36 1,689.84 7,845.20 2,545,375.85 1,977,107.90 548,245 106 Jun-17 2 533,367.00 (1.18) 3,71% 7,869.45 $6,174.39$ 1,665.06 7,869.45 $2,003,282.29$ 549,96 106 Jun-17 2 533,367.00 (1.18) $3,96\%$ $10,233.05$ $6,610.83$ $2,703.18$ $2,703.29$ $3,499.45$ $2,009,993.12$ $1091,03$ 107 Augl-17 2 533,67.00 (1.18) $3,96\%$ $10,233.05$ $6,610.83$ $2,703.16$ $3,711,55.00$ $2,009,993.12$ $1091,03$ 108 Sep-17 0.00 $3,96\%$ $10,230.55$ $10,200.70$ $3,111,168.00$ $2,003,993.12$ $1091,03$ 109 0ct-17 $3,96\%$ $10,200.70$ $6,676.50$ $3,6024.20$ $3,111,158.00$ $2,003,956.81$ $1,101,86$ 110 History truncated for ease of viewing 0.00 $0,300.70$ $3,674.20$ $0,300.70$ $3,113,725.70$ $2,029,856.81$ $1,101,86$ 111 History trun	Apr-17	0.00		3.71%	7,821.02		6,136.39	1,684.63	7,821.02	2,537,530.65		1,990,952.54	546,578.11
105 Jun-17 2 0.00 3.71% 7,869.45 6,114.39 1,695.06 7,869.45 2,553.245.30 2,003,282.29 549,63.01 106 Jul-17 2 538,367.00 (1.18) 3,96% 9,314,01 6,610.83 2,703.18 547,679.83 3,100,925.13 2,009,983.12 1,091,032.01 107 Aug-17 2 538,367.00 (1.18) 3,96% 10,233.05 6,610.83 2,703.18 547,679.83 3,111,158.18 2,006,983.12 1,091,032.01 108 Sep-17 0.00 3,96% 10,233.05 6,653.65 3,600.40 10,233.05 3,111,158.18 2,016,525.77 1,094,632.41 109 0ct-17 3.96% 10,300.70 6,676.50 3,624.20 10,300.70 3,131,725.70 2,029,856.81 1,101,868.86 111 History truncated for ease of viewing 11 1,01,300.70 3,667.50 3,624.20 10,300.70 2,029,856.81 1,101,868.86 111 History truncated for ease of viewing 1,0300.70 3,131,725.70 2,029,856.81 1,101,868.86	105 Jun-17 2 0.00 3.71% 7,869.45 6,174.39 1,650.6 7,869.45 2,603,82.29 549,66 106 Jun-17 2 538,367.00 (1.18) 3,96% 9,314.01 6,610.33 2,703,18 547,679.83 3,100,255.13 2,009,893,12 1091,03 107 Aug-17 2 538,367.00 (1.18) 3,96% 10,233.05 6,610.83 2,703,18 547,679.83 3,100,255.13 2,009,893,12 1091,03 107 Aug-17 0.00 3,96% 10,230.55 3,600.40 10,230.53 3,111,158.18 2,004,833,12 1,091,63 108 Sep-17 3.96% 10,300.70 6,676.50 3,624.20 10,300.70 3,131,725.70 2,029,856.81 1,101,86 111 History truncated for ease of viewing 1,101,86 6,676.50 3,624.20 10,300.70 3,131,725.70 2,029,856.81 1,101,86 111 History truncated for ease of viewing 1,101,86 6,676.50 3,624.20 10,300.70 3,131,725.70 2,029,856.81 1,101,86 112 Mistory truncated for ease of viewing 1,101,86 1,00,300.70 3,131,725.70 2,029,856.81 1,101,86 113 Mots:	May-17	0.00		3.71%	7,845.20		6,155.36	1,689.84	7,845.20	2,545,375.85		1,997,107.90	548,267.95
106 Jul-17 2 538,367.00 (1.18) 3.96% 9,314.01 6,610.83 2,703.18 547,679.83 3,100,925.13 2,009,893.12 1,091,032.01 107 Jul-17 2 538,367.00 (1.18) 3.96% 10,233.05 6,610.83 2,703.18 547,679.83 3,100,925.13 2,009,893.12 1,091,032.01 107 Jul-17 2 5,96% 10,233.05 6,632.65 3,600.40 10,233.05 3,111,158.18 2,016,525.77 1094,352.41 108 Sep-17 3.96% 10,230.70 6,654.54 3,612.28 10,226.82 2,023,180.31 1,098,244.65 109 Oct-17 3.96% 10,300.70 6,676.50 3,624.20 10,300.70 2,131,725.70 2,029,856.81 1,101,868.81 111 History truncated for ease of viewing 11 History truncated for ease of viewing 2,102,856.81 1,101,868.84 1,101,868.84	106 Jul-17 2 538,367.00 (1.18) 3.96% 9,314.01 6,610.83 2.703.18 547,679.83 3,100,925.13 2,009,893.12 1,091,03 107 Aug-17 2 538,367.00 (1.18) 3.96% 10,233.05 6,631.54 3,101,158.18 2,009,893.12 1,091,03 108 Sep-17 3.96% 10,203.05 6,654.54 3,601.40 10,233.05 3,111,158.18 2,016,555.77 1,094,63 108 Oct-17 3.96% 10,300.70 6,676.50 3,624.20 10,300.70 2,029,856.81 1,101,86 111 History truncated for ease of viewing 11 1,01300.70 5,676.50 3,624.20 10,300.70 2,029,856.81 1,101,86 111 History truncated for ease of viewing 1,101,86 1,101,86 1,101,86 2,029,856.81 1,101,86 111 History truncated for ease of viewing 1,101,86 1,01,0300.70 3,64.20 10,300.70 2,029,856.81 1,101,86 111 History truncated for ease of viewing 1,101,86 1,01,86 1,01,86 1,01,01,86 1,01,01,86 1,01,0	Jun-17	0.00		3.71%	7,869.45		6,174.39	1,695.06	7,869.45	2,553,245.30		2,003,282.29	549,963.01
107 Aug-17 0.00 3.96% 10,233.05 5,602.40 10,233.05 3,111,158.18 2,016,525.77 1,094,632.41 108 Sep-17 3.96% 10,266.82 6,654.54 3,612.28 10,266.82 3,121,425.00 2,023,856.81 1,101,868.81 109 Oct-17 3.96% 10,300.70 5,676.50 3,624.20 10,300.70 3,131,725.70 2,029,856.81 1,101,868.81 110 I11 History truncated for ease of viewing 1,101,868.81 3,676.50 3,624.20 10,300.70 3,131,725.70 2,029,856.81 1,101,868.83 110 I11 History truncated for ease of viewing 1,101,868.83 8,676.50 3,624.20 10,300.70 3,131,725.70 2,029,856.81 1,101,868.83	107 Aug-17 0.00 3.96% 10,233.05 6,632.65 3,600.40 10,233.05 3,111,158.18 2,016,525.77 1,094,63 108 Sep-17 3.96% 10,266.82 6,654.54 3,612.28 10,236.82 2,023,180.31 1,098,24 109 Oct-17 3.96% 10,300.70 5,676.50 3,624.20 10,266.82 2,029,856.81 1,101,80 110 Ithirdry truncated for ease of viewing 3,654.54 3,676.50 3,624.20 10,300.70 3,131,725.70 2,029,856.81 1,101,80 111 History truncated for ease of viewing 1,101,80 1,101,80 1,101,80 1,101,80 111 Mistory truncated for ease of viewing 1,101,80 1,101,80 1,101,80 113 Notes: 1,101,80 1,101,80 1,101,80 114 1 - Transferred Dec 2014 deferral balance plus 2015 interest on the balance to account 186316 for amortization 186316 for amortization	Jul-17 2	538,367.00	(1.18)	3.96%	9,314.01		6,610.83	2,703.18	547,679.83	3,100,925.13		2,009,893.12	1,091,032.01
108 Sep-17 3.96% 10,266.82 6,654.54 3,612.28 10,266.82 3,121,425.00 2,023,180.31 1,098,244.46 109 Oct-17 3.96% 10,300.70 5,676.50 3,624.20 10,300.70 3,131,725.70 2,029,856.81 1,101,868.88 111 History truncated for ease of viewing 11 1,101,868.88 1,101,868.88	108 Sep-17 3.96% 10,266.82 6,654.54 3,612.28 10,266.82 3,121,425.00 2,023,180.31 1,098,24 109 Oct-17 3.96% 10,300.70 5,676.50 3,624.20 10,300.70 3,131,725.70 2,029,856.81 1,101,86 111 History truncated for ease of viewing 11 1,01 1,01 1,01 1,01 111 Mistory truncated for ease of viewing 1,101,86 1,101,86 1,101,86 1,101,86 113 Notes: Notes: 1,101,86 1,101,86 1,101,86 1,101,86 113 Notes: Notes: Notes: 1,101,86 1,101,86 1,101,86	Aug-17	0.00		3.96%	10,233.05		6,632.65	3,600.40	10,233.05	3,111,158.18		2,016,525.77	1,094,632.41
109 Oct-17 3.96% 10,300.70 3,624.20 10,300.70 3,131,725.70 2,029,856.81 1,101,868.85 111 History truncated for ease of viewing 11 History truncated for ease of viewing 2,029,856.81 1,101,868.85 112 Nitsory truncated for ease of viewing 10,300.70 3,131,725.70 2,029,856.81 1,101,868.85	109 0ct-17 3.96% 10,300.70 3,131,725.70 2,029,856.81 1,101,86 110 History truncated for ease of viewing 2,029,856.81 1,101,86 1,101,86 111 History truncated for ease of viewing 3,641.65 3,624.20 10,300.70 3,131,725.70 2,029,856.81 1,101,86 111 History truncated for ease of viewing 1,11 Notes: 2,029,856.81 1,101,86 113 Motes: Notes: 2,029,856.81 1,101,86 113 Notes: Notes: 2,029,856.81 1,101,86	Sep-17			3.96%	10,266.82		6,654.54	3,612.28	10,266.82	3,121,425.00		2,023,180.31	1,098,244.69
110 111 History truncated for ease of viewing 112 Mores:	 History truncated for ease of viewing Mistory truncated for ease of viewing Motes: Transferred Dec 2014 deferral balance plus 2015 interest on the balance to account 186316 for amortization 	Oct-17			3.96%	10,300.70		6,676.50	3,624.20	10,300.70	3,131,725.70		2,029,856.81	1,101,868.89
11 History truncated for ease of viewing 112 Notes:	 History truncated for ease of viewing Motes: Transferred Dec 2014 deferral balance plus 2015 interest on the balance to account 186316 for amortization 													
11 2 11 2 11 2 11 2	11 1 13 1 - Transferred Dec 2014 deferral balance plus 2015 interest on the balance to account 186316 for amortization	HISTORY TRUNCATED TOF E	ease or viewing											
	11. 1 - Transferred Dec 2014 deferral balance plus 2015 interest on the balance to account 186316 for amortization	Notes:												

Northwest Natural Gas Company Washington Washington DSM Amortization 186316 Program under Schedule G Temp Increment under Schedule 215

Account Number:

Company: State: Description: 1 Debit (Credit)

N								
8 4	Month/Year	Note	Amortization	Transfers	Interest Rate	Interest	Activity	Balance
ا ى .	(a)	(q)	(c)	(d)	(e1)	(e2)	(f)	(6)
9								
125	Nov-15 n	ew (1)	(39,471.98)	1,112,287.65	3.25%	2,958.99	1,075,774.66	1,286,990.80
126	Dec-15		(201,294.68)		3.25%	3,213.01	(198,081.67)	1,088,909.13
127	Jan-16		(243,216.83)		3.25%	2,619.77	(240,597.06)	848,312.07
128	Feb-16		(160,551.01)		3.25%	2,080.10	(158,470.91)	689,841.16
129	Mar-16		(135,715.14)		3.25%	1,684.54	(134, 030.60)	555,810.56
130	Apr-16		(99,950.78)		3.46%	1,458.49	(98,492.29)	457,318.27
131	May-16		(60,320.33)		3.46%	1,231.64	(59,088.69)	398,229.58
132	Jun-16		(51,989.00)		3.46%	1,073.28	(50,915.72)	347,313.86
133	Jul-16		(41,160.74)		3.50%	952.97	(40,207.77)	307,106.09
134	Aug-16		(35,650.98)		3.50%	843.74	(34,807.24)	272,298.85
135	Sep-16		(38,896.56)		3.50%	737.48	(38,159.08)	234,139.77
136	Oct-16		(57,154.78)		3.50%	599.56	(56,555.22)	177,584.55
137	Nov-16 0	p	(51,481.49)		3.50%	442.88	(51,038.61)	126,545.94
138	Nov-16 n	ew (1)	(46,204.58)	1,507,284.52	3.50%	4,328.86	1,465,408.80	1,591,954.74
139	Dec-16		(240,372.94)		3.50%	4,292.66	(236,080.28)	1,355,874.46
140	Jan-17		(415,290.31)		3.50%	3,349.00	(411,941.31)	943,933.15
141	Feb-17		(311,707.27)		3.50%	2,298.57	(309,408.70)	634,524.45
142	Mar-17		(241,358.67)		3.50%	1,498.71	(239,859.96)	394,664.49
143	Apr-17		(171,859.47)		3.71%	954.50	(170,904.97)	223,759.52
144	May-17		(122,246.58)		3.71%	502.82	(121,743.76)	102,015.76
145	Jun-17		(73,486.36)		3.71%	201.80	(73,284.56)	28,731.20
146	Jul-17		(54,113.05)		3.96%	5.53	(54,107.52)	(25,376.32)
147	Aug-17		(44,673.76)		3.96%	(157.45)	(44,831.21)	(70,207.53)
148	Sep-17 F.	orecasted	(53,832.49)		3.96%	(320.51)	(54,153.00)	(124,360.53)
149	Oct-17 F	orecasted	(124,040.15)		3.96%	(615.06)	(124,655.21)	(249,015.74)
150								
151	History truncated	I for ease of	viewing					

1 - Transfer in amounts from accounts 186310 and 186312 approved for amortization. 152 153 <u>Notes</u> 154 **1** - Trans

Rates & Regulatory Affairs 2017-18 Washington: September Filing Updating Energy Efficiency Schedule 215 Tariff Advice 17-08: Schedule 215 Effects on Revenue

1		<u>Amount</u>	<u>Reference</u>
2			
3	Temporary Increments		
4			
5	Removal of Current Temporary Increments		
6	Amortization of Energy Efficiency Programs	(1,759,382)	NWN 2016-17 Washington PGA rate development file September.xlsx
7			
8	Addition of Proposed Temporary Increments		
9	Amortization of Energy Efficiency Programs	1,932,254	NWN 2017-18 Washington PGA rate development file September.xlsx
10			
11			
12	TOTAL OF ALL COMPONENTS OF RATE CHANGES	\$172,872	
13			
14			
15			
16	2016 Washington CBR Normalized Total Revenues	\$65,337,329	
17			
18	Effect of this filing, as a percentage change	0.26%	

GAIL HAMMER Tariffs and Regulatory Compliance Tel: 503.226.4211 ext. 5865 Fax: 503.721.2516 Email: gail.hammer@nwnatural.com



VIA ELECTRONIC FILING

April 25, 2017

Steven King, Executive Director & Secretary Washington Utilities and Transportation Commission 1300 S Evergreen Park Drive SW Post Office Box 47250 Olympia, Washington 98504-7250

Re: UG-152349, 2016 Annual Report on NW Natural's Energy Efficiency (EE) Program

Dear Mr. King:

Northwest Natural Gas Company, dba NW Natural ("NW Natural" or the "Company") hereby files the 2016 Annual Report on the Company's Energy Efficiency program. This report is submitted in compliance with the Company's Energy Efficiency Plan ("EE Plan") which is by reference part of the "Company's" Tariff Schedule G, "Energy Efficiency Services and Programs – Residential and Commercial," and was filed and approved in Docket UG-152349.

In 2016, the Company's Energy Efficiency program for residential and commercial customers saved 330,866 therms at a cost of \$1,818,821. The Washington Low-Income Energy Efficiency program saved 6,048 therms at a cost of \$94,735. These two programs, in addition to \$93,560 for the Northwest Energy Efficiency Alliance natural gas market transformation pilot, saved 336,914 therms at a cost of \$2,007,116.

The Company's Energy Efficiency program is monitored by the interested parties who have formed the Energy Efficiency Advisory Group (EEAG) in compliance with the stipulated agreement approved in Order 04 in the Company's last rate case, Docket UG-080546 and the Company's Energy Efficiency Plan.

If you have any questions, please call me at (503) 226-4211, extension 5865.

Respectfully submitted,

/s/ Gail Hammer

Gail Hammer Rates and Regulatory Consultant 2 NW Natural 220 NW 2nd Avenue Portland, OR 97209 503-226-4211 Ext. 5865 gail.hammer@nwnatural.com

cc: EEAG

Enclosure UG-152349-NWN's 2016 Annual EE Report_04-25-2017

2016 Annual Report NW Natural Washington

ENERGY TRUST OF OREGON APRIL 25, 2017

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I. Introduction, background, oversight and goals

A. Introduction

This annual report covers 2016, the seventh full year that Energy Trust of Oregon provided services and incentives to residential and commercial customers of NW Natural in Washington. It addresses progress toward annual goals, information on revenues and expenditures, number of completed measures, incentives paid during the year and highlights of program activity.

B. Background

At the request of NW Natural and following approval granted by the Washington Utilities and Transportation Commission (WUTC), Energy Trust began administering NW Natural's demand-side management programs in Southwest Washington on October 1, 2009. The first year was viewed as a pilot. Satisfied with results from the pilot year, in 2011 the WUTC approved Energy Trust's continued administration of conservation programs for NW Natural in Washington.

C. Oversight

The Energy Efficiency Advisory Group (EEAG) was created, at the direction of the WUTC, to provide advice and oversight for NW Natural and Energy Trust energy-efficiency offerings in Washington. The advisory group is comprised of representatives from NW Natural, Energy Trust, WUTC, Washington Public Counsel, Northwest Industrial Gas Users and the Northwest Energy Coalition.

D. Goals

NW Natural, in collaboration with the EEAG, established performance metrics for 2016. This report presents Energy Trust's performance against those goals.

II. Annual report highlights

A. Summary

- Total¹ 2016 savings were approximately 126 percent of the 2016 annual performance metric of 263,184 therms in NW Natural's 2016 Energy Efficiency Plan submitted to the WUTC.²
- Gas efficiency measures installed in 2016 by NW Natural's Washington customers saved 330,866 total annual therms of natural gas—including 112,709 annual therms in Existing Buildings, 66,106 annual therms in Existing Homes and 152,051 annual therms in New Homes programs.
- In total, savings achieved in 2016 were 64 percent higher than 2015 savings, due to a strong residential new construction market. A strong local economy was likely a contributing factor in many homeowners' decision to make home energy upgrades in 2016, including efficient gas furnace installations and window replacements.
- Existing Buildings program fell short of goal, due to low natural gas costs that made it challenging to attract and complete Existing Buildings projects and the delay of one large custom project.

B. Commercial sector highlights

Existing Buildings

- Existing Buildings saved 112,709 annual therms in 2016, 75 percent of the goal of 151,056 annual therms.
- Low natural gas costs made it more challenging to attract and complete custom and standard projects. Although Existing Buildings increased incentive levels for custom projects and some standard commercial offerings in Q1 2016, market uptake was slower than expected.
- To help boost year-end savings, Existing Buildings launched a midyear bonus for foodservice equipment, executed a direct marketing campaign for all gas measures in Q4 and expanded outreach staff with a new team member.
- The program expanded prescriptive measure offers to the new construction market to create new savings opportunites for commercial customers.
- Standard projects provided the majority of the year's savings, primarily from upgrades to foodservice equipment, tank and tankless water heaters, boilers and furnaces. Energy Trust completed 69 standard projects in 2016, up from 33 in 2015.
- Eight custom projects also contributed savings in 2016, nearly all from building controls. One large custom project was delayed and is expected to complete in 2017. Eight additional custom projects and four custom studies are in the pipeline for 2017.
- Energy Trust began serving its first large grocery customer with multiple stores in Washington, representing a new market sector and expanding savings opportunities for 2017.

¹ Energy Trust delivered program, excludes WALIEE

² Energy Trust's 2016 board-approved budgeted goal for NW Natural territory in Washington differs slightly due to timing. 2016 savings were approximately125 percent of Energy Trust's 2016 budgeted goal of 265,079 therms.

- Existing Buildings launched a new offering to replace failed steam traps at dry cleaners and laundry facilities, although market uptake has been slow. Under the new offering, the program will pay to replace failed steam traps at no cost to the customer.
- The program developed new measures to launch in 2017, including g-force washers that use less water and also remove more water from clothes to facilitate efficient drying, and moisture-sensing dryers that turn off when adequate dryness is sensed.
- Existing Buildings continued to coordinate outreach efforts with Clark Public Utilities to serve customers exploring and executing projects resulting in gas and electric savings. This coordination often allows customers to receive gas and electric incentives ensuring a greater internal rate of return.
- The program promoted market adoption of a Building Operator Certificate, a professional development program created by NEEA and available to eligible professionals working in Washington. Certification for building operators helps them identify and increase savings opportunities.

C. Residential sector highlights

• The residential sector saved 218,156 annual therms in 2016, nearly doubling the annual goal of 112,128 therms.

Existing Homes

- Existing Homes saved 66,106 annual therms in 2016, primarily through efficient gas furnaces, gas fireplaces, smart thermostats, Energy Saver Kits and LivingWise kits.
- **HVAC measures contributed 60 percent of Existing Homes savings**, primarily from gas furnaces. The remaining savings were from gas hearths and smart thermostats.
- Smart thermostats contributed significant savings in 2016, following the addition of the new measure in late 2015. Smart thermostats were bolstered by Energy Trust incentives and education, increased consumer awareness, simple online purchasing options and seasonal manufacturer promotions.
- Energy Trust partnered with Clark Public Utilities to distribute 776 LivingWise kits to sixthgrade students—more than double the number in 2015. LivingWise kits contain efficient showerheads, faucet aerators, and LEDs (supported by Clark Public Utilities) and are delivered with an energy efficiency curriculum to students through participating schools.
- Energy Trust promoted its on-bill financing repayment offering to trade allies, reducing upfront costs as a barrier to installing energy-efficient upgrades.
- On-Bill Repayment financing was utilized by 18 projects in Washington in 2016, resulting in savings of 1,479 therms. Customers installed \$136,384.36 of measures and took out \$127,949.74 in loans.

New Homes and Products

• New Homes and Products saved 152,051 annual therms in 2016, primarily through construction of new energy-efficient homes, including ENERGY STAR[®] certified homes and Energy Performance Score (EPS) homes. EPS is an energy performance scoring tool that measures a newly built home's energy consumption, carbon footprint and utility costs.

- Energy Trust engaged a thriving residential new construction market to complete 664
 Energy Performance Score (EPS) homes, nearly all built between 20 and 40 percent above code. In 2016, 2,600 residential new construction permits were issued in Clark County. The total Clark County market share of program homes reached 34 percent, up from 18 percent in 2015. EPS is an energy performance score that helps homebuyers understand and compare the energy efficiency of newly built homes.
- New Homes and Products discontinued its ENERGY STAR[®] offering for new homes and completed transition to an Energy Performance Score (EPS) offering. The successful transition from a flat incentive for home certification to the performance-based EPS rating gives builders a greater variety of energy-efficiency measures to build into their homes.
- The program started working with a new high-volume builder to build EPS homes in Washington.
- Energy Trust collaborated with the Building Industry Association of Clark County to coordinate and sponsor the first ever Green Homes Street Fair, which featured two EPS homes.

Trade Ally Network highlights

- By year-end, 207 trade allies served Washington, up from 191 in 2015, for a net difference of 16. This includes 75 trade allies based in Washington.
- Energy Trust enrolled 35 new trade allies serving Washington in 2016.
- Energy Trust held two large trade ally events in Portland's Jantzen Beach area. This venue was specifically chosen based on its proximity to the Washington border, to promote attendance of Washington trade allies.
- Approximately 25 trade allies, distributors, program representatives, utility representatives and other stakeholders attended a biannual trade ally networking event, hosted in collaboration with Clark Public Utilities.
- In 2016 Existing Buildings added an additional trade ally coordinator to support Washington trade allies.

Program evaluations

• In Q3, Energy Trust completed an Existing Homes process evaluation featuring residential programs in Washington, including installation rates of energy-saving showerheads and faucet aerators and associated customer experience. The evaluation provided recommendations on key program focus areas: trade allies, incentives, instant-savings measures and marketing. The full Existing Homes process evaluation is available on Energy Trust's website: https://www.energytrust.org/wp-

content/uploads/2017/02/Existing_Homes_Process_Evaluation_FINAL_wSR.pdf.

- Recommendations include:
 - **Trade Allies:** Consider further tailoring communications to reflect trade allies' unique businesses, level of program activity, star rating, geography and/or target market. Continue efforts to reach out individually with trade allies to raise awareness of the availability of marketing tools and information resources.
 - Incentive Structures and Midstream: Continue to explore different incentive structures that will motivate distributors to sell more efficient equipment to their contractors while reducing administrative processes.

- **Kits and Instant Savings Measures:** Explore customers' experiences and decisions around the number of items received, without actual or intended installation, including experience with the online order form. Consider changing the Energy Saver Kit order form to engage customers more directly on the number of items requested.
- **Marketing:** With the availability of cash-incentives reduced, additional program and marketing approaches may need to be considered.

D. Washington Utilities and Transportation Commission performance metrics

The table below compares 2016 quarterly and annual results to goals, as established in NW Natural's Energy Efficiency Plan for Washington (filed December 2015).

Metrics	Goal	2016 YTD	Q1 results	Q2 results	Q3 results	Q4 results
Therms Saved	223,706 - 263,184	330,866	24,195	48,227	73,153	185,291
Total Program Costs	\$1,441,218 - \$1,695,551	\$1,818,821	\$261,402	\$331,106	\$466,681	\$759,633
Average Levelized Cost Per Measure	Less than \$0.65	\$0.41	\$0.81	\$0.54	\$0.44	\$0.31
Dollars Spent Per Therm Saved	Less than \$6.50	\$5.50	\$10.80	\$6.87	\$6.38	\$4.10
Utility Costs at Portfolio Level	Greater than 1.0	1.53	Reported annually	Reported annually	Reported annually	Reported annually

2016 results compared to goals^{3, 4, 5}

2016 Utility Cost and Total Resource Cost benefit cost ratios by program ⁶

Program	Utility Cost Test benefit/cost ratio	Total Resource Cost Test benefit/cost ratio
Existing Buildings	1.18	2.16
Existing Homes	1.43	1.34
New Homes and Products	2.02	0.69
Total NW Natural Washington portfolio	1.61	0.99

2016 Total Utility Cost and Total Resource Cost benefit cost ratios

Program	Utility Cost Test benefit/cost ratio	Total Resource Cost Test benefit/cost ratio
NW Natural Washington Portfolio	1.61	0.99
NW Natural Washington Low Income	0.89	0.74
Total	1.58	0.99

³ Achievement of metrics were calculated excluding spending on Northwest Energy Efficiency Alliance gas efforts in Washington.
 ⁴ In 2016 annual budget and quarterly reports, Energy Trust applied a discount rate of 4.5 percent. This annual report is calculated

⁵ Total program costs exclude Northwest Energy Efficiency Alliance and WALIEE.

⁶ While Energy Trust is required to report the Total Resource Cost benefit cost ratio, it is not included as a performance metric for utility costs at the portfolio level.

III. Annual Results

A. Activity highlights—sites served

	Q1	Q2	Q3	Q4	Total
Existing Commercial					
Boiler	-	-	-	3	3
Commercial laundry washer	-	-	-	1	1
Commercial tankless water heater	-	-	-	6	6
Condensing tank water heater	-	1	-	4	5
Dishwasher	-	-	-	3	3
Gas convection oven	-	2	1	3	6
Gas combination oven	1	-	-	3	4
Gas fryer	4	12	5	20	41
Gas griddle	-	-	-	1	1
High-efficiency condensing furnace	-	-	-	2	2
High-efficiency condensing unit heater	-	-	1	1	2
Custom	-	-	-	8	8
Pipe insulation	-	-	-	1	1
Roof insulation	-	-	-	4	4
Studies	2	1	-	7	10
Wall insulation	-	-	-	2	2
Existing Homes					
Weatherization (insulation, air and duct sealing and windows)	29	36	37	59	161
Gas hearths	27	20	14	15	76
Energy Saver Kits	8	23	10	8	49
LivingWise Kits distributed through schools	-	360	-	416	776
Smart thermostats	19	29	46	89	183
Gas furnaces	61	74	66	134	335
Water heaters	5	3	8	6	22
Online Home Energy Reviews	22	19	18	25	84
New Homes and Products					
ENERGY STAR home certification	97	58	76	-	231
Clothes washers	-	10	-	-	10
New EPS homes	-	67	293	304	664

B. Revenue

Source	Actual revenue	i.	Budgeted revenue
NW Natural	\$ 1,937,679	\$	1,741,236

C. Expenditures

		Actual	Budgeted	
		expenditures	expenditures	Variance
	Existing Buildings	\$ 581,984	\$ 689,045	\$ 107,061
Commercial programs	NEEA commercial	\$ 25,524	\$ 26,766	\$ 1,242
	Commercial total	\$ 607,508	\$ 715,811	\$ 108,302
	Existing Homes	\$ 387,830	\$ 448,583	\$ 60,752
Residential programs	New Homes and Products	\$ 786,642	\$ 418,230	\$ (368,412)
	NEEA residential	\$ 64,827	\$ 63,998	\$ (830)
	Residential total	\$ 1,239,299	\$ 930,810	\$ (308,489)
Administration	Program administration	\$ 62,365	\$ 57,768	\$ (4,598)
Aummistration	NEEA administration	\$ 3,208	\$ 3,370	\$ 162
	Administration total	65,573	61,138	(4,436)
	Total expenditures	\$ 1,912,381	\$ 1,707,758	\$ (204,622)

Energy Trust allocated budget to NEEA for gas market transformation activities in 2016.

Energy Trust spent more on incentives than expected due to increased demand for EPS • homes, furnaces, smart thermostats and electronic ignition fireplaces than originally planned.

D. Incentives paid⁷

		Actual incentives	Actual expenditures	Percent incentives/ expenditures
Commercial programs	Existing Buildings	\$ 308,582	\$ 610,012	51%
	Commercial total	\$ 308,582	\$ 610,012	51%
Posidontial programs	Existing Homes	\$ 192,075	\$ 394,237	49%
Residential programs	New Homes and Products	\$ 531,469	\$ 814,572	65%
	Residential total	\$ 723,544	\$ 1,208,810	60%
	Total incentives	\$ 1,032,126	\$ 1,818,821	57%

Incentives paid account for approximately 57⁸ percent of year-to-date incentive program expenses, or 63 percent of year-to-date program expenses when total program expense is adjusted down by 15 percent to account for costs that a utility-delivered program would recover through rates.

⁷ Excludes NEEA and WALIEE
⁸ Excludes NEEA and WALIEE

E. Savings⁹

				Percent			
		Therms	Annual	achieved			Levelized
		saved YTD	goal	YTD	\$/therm	С	ost/therm
Commercial programs	Existing Buildings	112,709	151,056	75%	\$ 5.41	\$	0.48
	Commercial total	112,709	151,056	75%	\$ 5.41	\$	0.48
Posidential programs	Existing Homes	66,106	55,054	120%	\$ 5.96	\$	0.46
	New Homes and Products	152,051	57,074	266%	\$ 5.36	\$	0.37
	Residential total	218,156	112,128	195%	\$ 5.54	\$	0.39
	Total savings	330,866	263,184	126%	\$ 5.50	\$	0.41

Energy Trust allocated budget to NEEA for gas market transformation activities in 2016. While there were no associated savings in 2016, savings are expected in subsequent quarters. Savings also exclude WALIEE.

⁹ In 2016 annual budget and quarterly reports, Energy Trust applied a discount rate of 4.5 percent. This annual report is calculated using a 5.53 percent discount rates. The 5.53 discount rate will be used in 2017 quarterly and annual reports. The new discount rate comes as a result of a new IRP released by NW Natural in 2016.

NW Natural Appendix 1: 2016 energy efficiency measure counts and savings

Category	Measure	Measures installed	Total therms saved
Energy Sover Kite	Energy Saver Kits	49	2,036
Energy Saver Kits	LivingWise kits distributed through schools	776	8,924
í a chuir a ch	Energy Saver Kits total	825	10,960
Online Home Energy Reviews	Online Home Energy Reviews total	84	0
	Air sealing	2	51
	Ceiling insulation	15	1,320
Weatherization	Floor Insulation	6	220
Weatherization	Duct Insulation	3	37
	Wall insulation	4	299
	Windows	181	6,608
	Weatherization total	211	8,535
	Smart thermostats	183	5,824
Space heating	Furnaces	337	27,116
opace nearing	Gas fireplaces	76	4,962
	Gas fireplace retailer & distributor SPIFs	510	10,455
	Space heating total	1,106	48,357
Water heating	Tank water heaters	22	550
	Water heating total	22	550
	ENERGY STAR home certification	231	26,334
New homes and products	High-efficiency clothes washers	10	39
	New EPS homes	664	110,864
	Water saving products	1,517	12,517
	New homes and products total	2,422	149,755
	Grand total	4.670	218,156

Table 1: Residential sector measures

Category	Measures	Measures installed	Total therms saved
Commercial clothes washers	Clothes washer	1	554
	Commercial clothes washers total	1	554
	Dishwasher	3	1,027
	Gas convection oven	13	3,926
Foodservice equipment	Gas fryer	57	32,433
	Gas griddle	1	147
	Gas combination oven	6	1,740
	Foodservice equipment total	82	39,273
Shell insulation	Roof insulation	4	3,756
	Wall insulation	2	394
	Shell insulation total	6	4,149
	Gas-fired condensing boiler	4	19,950
Space heating	High-efficiency condensing furnace	57	4,156
opace nearing	High-efficiency condensing unit heater	5	3,321
	Pipe insulation	1	1,480
	Space heating total	67	28,908
	Faucet aerators	25	478
Water heating	Commercial tankless water heater	17	2,401
	Condensing tank water heater	7	1,671
	Water heating total	49	4,550
Custom	Custom other	8	35,276
	Study	10	0
	Custom total	18	35,276
	Grand Total	223	112,709

Table 2: Commercial sector measures

NW Natural Appendix 2: Customer satisfaction

In 2016, Energy Trust conducted short phone surveys of NW Natural customers in Washington to determine satisfaction with their participation in Energy Trust programs. Results from 118 residential customers and fifteen commercial customers indicate a generally high level of customer satisfaction with moderate satisfaction regarding turnaround time to receive an incentive.

In 2016, more than 10 percent of customers submitted applications with missing information, delaying turnaround time to receive incenties. Energy Trust issued incentive checks for 99 percent of all completed applications within eight weeks, the time allowed in the service level agreement.

To improve customer satisfaction with incentive application forms and turnaround time to receive incentives, Energy Trust enhanced paper and web forms to make them easier to complete. In addition, Energy Trust released a new website in 2017 featuring improvements to help Washington customers find appropriate forms faster and more easily.

Residential (n=118)	Dissatisfied	Neutral	Satisfied
Overall satisfaction	2%	7%	91%
Incentive application form	5%	10%	85%
Turnaround time to receive incentive	12%	17%	71%

Table 1: NW Natural Washington residential customer satisfaction 2016

Energy Trust surveyed fifteen commercial customers in 2016. Most respondents were satisfied with their overall program experience, incentive amount, ease of applying for the incentive and interaction with program representatives.

–			
Commercial (n=15)	Dissatisfied	Neutral	Satisfied
Overall satisfaction	0	1	14
Incentive amount	0	2	13
Ease of applying for incentive	0	1	13
Interaction with program representative	0	0	11
Performance of project or system	0	0	14
Turnaround time to receive incentive	1	1	13

Table 2: NW Natural Washington commercial customer satisfaction 2016

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WASHINGTON LOW INCOME ENERGY EFFICIENCY (WALIEE)

NW NATURAL APRIL 25, 2017

Washington Low Income Energy Efficiency Program 2016 Program Results

NW Natural partners with Clark County's Community Development Office and Skamania-Klickitat Community Action to administer its Washington Low Income Energy Efficiency (WALIEE) program. While offerings are available in Skamania and Klickitat counties, the agency that serves these counties rarely sees gas customers and did not provide services to any through WALIEE during 2016. Results below are specific to Clark County's Department of Community Services.

In previous program years, WALIEE had reimbursed up to 90% of all cost-effective measures up to the cap for that program year. After working with Clark County staff and EEAG to identify areas for improving the program, the 90% cap was removed and the reimbursement cap was adjusted to \$5,200 per home for the 2016 program year. The program changes implemented for 2016 resulted in a significant increase in total project completions.

Additionally, the agencies are allotted 15% of reimbursable job costs for administrative costs and allowed an average of \$440 per home for Health, Safety, and Repairs (HSR), which are not subject to cost effectiveness tests. A 2016 WALIEE job could cost the program no more than \$6,420.

Measure Analysis:

The figure below provides a breakdown of weatherization occurrences by measure, as well as the associated annual therms savings. Floor insulation continues to be the highest total therm saving measure and Ceiling insulation the most popular measure. Duct Insulation brought in the second most therm savings and saw the second highest number of projects.



Figure 1: measure occurrence and savings

2012-2016 Efficiency Results:

Efficiency Metric	2016	2015	2014	2013	2012
Homes served	16	9	10	20	8
Average Reimbursement per home ¹	\$4,807	\$4,313	\$4,334	\$3,984	\$3,845
Total Reimbursed	\$76,918	\$38,817	\$43,339	\$79,677	\$30,761
Average estimated therms saved per home ²	378	357	305	351	319
Total estimated therms saved	6,048	3,213	3,050	7,026	2,538
Estimated Cost per therm	\$12.72	\$12.08	\$14.21	\$11.34	\$12.12

Figure 2 Efficiency Metrics

2016 Performance Metric	Goal	Actual
Homes served	15	16
Max reimbursement per home (Actual fiture = avg per home)	\$5,200	\$4,807
Average estimated therms saved per home ³	343	378
Total estimated therms saved	5,145	6,048
Total Expenditure	\$96,300	\$94,735

Figure 3 Performance and Goal Metrics

Social Media Campaign:

From September 2016 to December 2016, NW Natural Introduced advertising through two key social media channels to increase awareness of energy-efficiency assistance available to qualifying low-income customers. Twitter and Facebook ads were geo-targeted to the greater Clark County area and segmented for audience groups that met the low-income profile and live in homes heated with natural gas. This audience primarily included customers of Russian, Ukrainian, Eastern European ethnic groups, living in homes built between 1951 and 2000.

A social media campaign targeting low-income customers to take action is unprecedented in our industry.

Channel	Ad impressions	Link clicks	Click through rate	Cost per click
Facebook	98.5% to goal	132% to goal	134% to goal	\$0.37 compared to goal of \$0.7 (above goal)
Twitter	283% to goal	161% to goal	56% to goal	\$2.68 compared to goal of \$1.60 (below goal)

Figure 4 Social Media Results

¹ Note, reimbursed costs only reflect NWN's contribution for home weatherization. HSR and Admin are excluded.

² An impact evaluation has not been conducted on these homes so the actual per therm savings has not been verified. The therm estimates are based on modeling software estimates. $^{\rm 3}$ See footnote 2



Figure 5 Highest performing ad for both Facebook and Twitter

For this campaign, Facebook was more effective in targeting people whom we wanted to take action. Compared to Twitter which has the shortest shelf life, we now know Facebook is better suited for content accompanied by images, and is proven to provide a more substantial and diverse reach.

The most successful together with the image (Figure 5) address direct home issues related to ventilation and moisture—as well as potentially heating and other weatherization issues. The other messages—weatherize before it gets cold, stay warm and comfortable, lower your energy costs, stay warm for less—may not be direct enough. (Messaging and imaging was a result of working collaboratively with Clark County.) For future low-income campaigns, we recommend the most direct messaging possible with related images.

Conclusion:

NW Natural is pleased by the progress and development of the program and looks forward to continuing to grow in 2017. The success today is a result of the dedication and support of the Clark County weatherization team. We look forward to adjusting the program over time to provide opportunities to service greater numbers of customers.

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NW NATURAL TRANSACTIONAL AUDIT 2016 PROGRAM COSTS

NW NATURAL APRIL 25, 2017

Washington Energy Efficiency Program 2016 Transactional Audit Results

With the Washington Utilities and Transportation Commission ("WUTC") review and approval of NW Natural's ("NW Natural" or "Company") request for amortization of 2013 energy efficiency program costs (Docket UG-143333), the Commission adopted the recommendation made by Commission Staff that NW Natural conduct a transactional audit of program costs relating to the Energy Trust of Oregon's ("Energy Trust") administration of the Company's Washington energy efficiency programs. NW Natural agreed to the following audit schedule:

- By April 1 of each year, NW Natural will select a random sample of prior year program cost transactions from the Energy Trust. The sample size will be based on the population of transactions. A summary of the audit process and the Company's findings or recommendations will be included in the April 25 Annual EE Report.
- By August 1 of each year, NW Natural will select a random sample of program cost transactions from the Energy Trust for the current year January through June 30 time period. The sample size will be based on the population of transactions. A summary of the audit process and the Company's findings or recommendations will be included in the August 25th second quarter EE Report.

NW Natural's Internal Audit Department (IA) has completed a review of the Energy Trust of Oregon (ETO) expenditures billed for 07/01/2016 - 12/31/2016.

The assessment consisted of a review of ETO's allocation and territory reporting policies, chart of accounts, and Report data relating to program effectiveness. IA Management and Staff visited the ETO Offices and met with employees. Additionally, IA obtained the 2016 Financial Statements audited by Moss Adams noting an unqualified opinion, which included a limited review of the internal controls environment as it related to financial reporting.

Utilizing a statistical sampling model a representative sample of 41 (based on 85% confidence level and a 10% margin of error) transactions were selected for detail review.

For selected transactions IA verified balances were correctly captured within the proper period, transactions were appropriately classified and coded to NW Natural territories, allocations were completed per ETO policy and were related to NW Natural specific programs and territories, incentive details were properly captured, and management and program expenses appeared appropriate. Lastly, IA verified that programs captured within the detail testing were included within the annual report and reviewed for program effectiveness.

IA noted no issues as a result of the review. All expenditures reviewed appear to be appropriate.