Appendix A.

2017 Program Plans

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Appendix A, Table 1: Measure level summary of unit throughput, incentives and cost-effectiveness

Measure description	Program	WA Units	Incentive	Est. Sub TRC	Est. Sub UCT
E AIR INFILTRATION (per 1000 cfm50)*	Low Income	75	$ 730.00	1.2	1.1
E ENERGY STAR DOORS	Low Income	20	$ 374.00	0.4	0.9
E ENERGY STAR WINDOWS	Low Income	10	$ 42.49	0.9	0.9
E INS - CEIL/ATTIC	Low Income	60	$ 553.00	0.8	0.9
E INS - DUCT	Low Income	10	$ 217.00	0.6	0.9
E INS - FLOOR	Low Income	75	$ 2,313.00	0.8	0.9
E INS - WALL	Low Income	25	$ 951.00	2.0	1.8
E Ductsealing	Low Income	25	$ 1,132.85	0.4	0.9
E Ductless Heatpump *	Low Income	15	$ 2,512.49	0.8	0.9
LEDs (Giveaway) *	Low Income	6105	$ 8.76	1.9	1.1
Elec Res --> Heat Pump *	Low Income	6	$ 3,297.00	1.6	1.4
Estar Refrigerator	Low Income	7	$ 201.00	0.4	0.9
E to G Furnace Conversion	Low Income	100	3231	2.4	1.8
E to G DHW Conversion	Low Income	100	1353.45	1.2	0.8
Estar Home - SF, Elec/DF	Residential	7	$ 600.00	2.6	11.4
Storm Windows	Residential	5000	$ 1.00	1.2	11.0
Web Tstat Elec DIY	Residential	4	$ 75.00	2.6	6.4
Web Tstat Elec Contractor	Residential	20	$ 100.00	1.5	4.8
DHP 9.0 and Above	Residential	20	$ 450.00	0.8	4.9
DHP 9.0-11.0	Residential	20	$ 450.00	0.8	4.9
DHP 11.1-12.5	Residential	20	$ 450.00	0.8	5.1
DHP 12.6 and above	Residential	20	$ 450.00	0.9	5.4
Variable Speed Motor	Residential	635	$ 80.00	2.1	6.7
Elec Res --> ASHP	Residential	60	$ 700.00	1.3	5.0
Elec Res --> Natural Gas Furnace	Residential	342	$ 1,500.00	1.7	4.7
E DHW--> NG DHW	Residential	270	$ 750.00	0.9	2.0
Elec Res--> NG Direct Vent Wall Heat	Residential	3	$ 1,200.00	4.2	8.3
CFL - General Purpose and Dimmable - 1490- 2600 lumens	Simple Steps	4433	$ 0.15	54.8	51.5
CFL - General Purpose and Dimmable - 250- 1049 lumens	Simple Steps	15491	$ 0.55	9.0	7.7
CFL - General Purpose and Dimmable - 1050- 1489 lumens	Simple Steps	373	$ 0.15	44.6	35.9
CFL - Decorative and Mini-Base - 1490- 2600 lumens	Simple Steps	2	$ 0.22	13.9	2.5
CFL - Decorative and Mini-Base - 250- 1049 lumens	Simple Steps	75	$ 0.31	21.8	19.5

CFL - Decorative and Mini-Base - 1050- 1489 lumens	Simple Steps	7	$	0.40	32.7	12.1
CFL - Globe - 1490- 2600 lumens	Simple Steps	0	$	0.47	26.6	19.3
CFL - Globe - 250- 1049 lumens	Simple Steps	12	$	2.00	5.9	3.6
CFL - Globe - 1050- 1489 lumens	Simple Steps	2	$	0.10	34.5	6.4
CFL - Reflectors and Outdoor - 1490- 2600 lumens	Simple Steps	159	$	0.12	25.7	19.0
CFL - Reflectors and Outdoor - 250- 1049 lumens	Simple Steps	294	$	0.32	35.6	21.6
CFL - Reflectors and Outdoor - 1050- 1489 lumens	Simple Steps	40	$	0.46	33.7	17.8
LED - Decorative and Mini-Base - 1490- 2600 lumens	Simple Steps	42	$	0.20	23.6	14.4
LED - Decorative and Mini-Base - 250 - 1049 lumens	Simple Steps	21943	$	2.00	5.6	9.1
LED - Decorative and Mini-Base - 1050- 1489 lumens	Simple Steps	840	$	0.15	156.4	103.0
LED - General Purpose and Dimmable - 1490- 2600 lumens	Simple Steps	4751	$	2.00	4.5	7.8
LED - General Purpose and Dimmable - 250- 1049 lumens	Simple Steps	162094	$	1.00	8.2	10.2
LED - General Purpose and Dimmable - 1050- 1489 lumens	Simple Steps	25081	$	3.00	4.3	5.9
LED - Globe - 1490 - 2600 lumens	Simple Steps	23	$	3.00	10.4	7.8
LED - Globe - 250- 1049 lumens	Simple Steps	3236	$	1.00	4.7	9.4
LED - Globe - 1050 - 1489 lumens	Simple Steps	23	$	0.25	5.9	6.2
LED - Reflectors and Outdoor - 1490 - 2600 lumens	Simple Steps	852	$	2.00	3.7	8.2
LED - Reflectors and Outdoor - 250 - 1049 lumens	Simple Steps	109146	$	2.00	24.3	13.7
LED - Reflectors and Outdoor - 1050 - 1489 lumens	Simple Steps	4846	$	4.00	14.8	8.7
Showerhead 2.0 GPM	Simple Steps	2189	$	8.00	6.7	6.3
Showerhead 1.75 GPM	Simple Steps	61	$	8.00	9.1	8.6
Showerhead 1.5 GPM	Simple Steps	19	$	8.00	11.2	10.6
LED - Downlight (Retrofit Kit) Kit Fixture	Simple Steps	27013	$	3.00	1.5	11.3
LED - Decorative Ceiling Flush Mount Fixture	Simple Steps	9081	$	3.00	1.0	7.1
LED - Track Light Fixture	Simple Steps	560	$	2.00	0.9	7.3
LED - Linear Shop Light Fixture	Simple Steps	280	$	1.50	0.6	6.2
LED - Linear Flush Mount Fixture	Simple Steps	420	$	1.50	0.5	6.6
LED - Exterior Porch Light Fixture	Simple Steps	2739	$	5.00	2.3	8.2
LED - Exterior Security Fixture	Simple Steps	280	$	10.00	5.1	12.3
400 watt HID to 100-175 watt LED 2X4 Troffers	NR Int Lighting	1348	$	185.00	2.2	3.5
40-100 watt Incandescent to 6-20 watt LED lamp (Combine)	NR Int Lighting	4000	$	8.00	10.2	7.7
Over 150 watt Incandescent to 50-60W LED	NR Int Lighting	253	$	55.00	2.4	3.4

20 watt MR16 (GU10 Base) to MR16 LED 2-4 watt	NR Int Lighting	42	$ 10.00	11.2	3.8
35 watt MR16 (GU10 Base) to MR16 LED 4-6 watt	NR Int Lighting	42	$ 10.00	19.6	2.9
50 watt MR16 (GU10 Base) to MR16 LED 6-9 watt	NR Int Lighting	674	$ 10.00	30.4	9.6
75-100 watt Incandescent to LED* 12-20 watt Fixture	NR Int Lighting	126	$ 20.00	8.1	7.2
Occupancy sensors built in with relays (not switch sensors)	NR Int Lighting	84	$ 40.00	3.6	4.6
4-Lamp T12/T8 Fixture to 2-Lamp LED (50-75 Watt)	NR Int Lighting	4211	$ 35.00	1.2	3.6
4-Lamp T12/T8 Fixture to 2-Lamp HP T8 Fixture/Retrofit	NR Int Lighting	34	$ 35.00	1.9	3.8
3-Lamp T12/T8 Fixture to LED Qualified 2x4 Fixture (40-60 Watt)	NR Int Lighting	1263	$ 29.00	1.3	3.2
3-Lamp T12/T8 Fixture to 2-Lamp HP T8 Fixture/Retrofit	NR Int Lighting	34	$ 25.00	1.1	3.0
2-Lamp T12/T8 Fixture to 1-Lamp HP T8 Fixture/Retrofit	NR Int Lighting	34	$ 18.00	2.5	3.2
250 watt HID to 85-140 LED (60 hour/week)	NR Int Lighting	842	$ 120.00	1.3	3.2
1000 watt HID to 300-400 wattLED	NR Int Lighting	253	$ 460.00	2.0	3.3
4': 1-Lamp LED 22-28 watt T5HO Retro Tube Lamp	NR Int Lighting	1684	$ 15.00	2.1	4.0
4': 1-Lamp LED 8-23 watt T8 RetroTube Lamp	NR Int Lighting	16845	$ 6.50	2.4	3.4
70-89 watt HID Fixture to 15-25 watt LED Fixture	NR Ext Lighting	71	$ 60.00	2.6	3.9
90 - 100 W HID to 25-30W LED	NR Ext Lighting	71	$ 80.00	2.8	3.8
150 W HID to 30-50W LED	NR Ext Lighting	36	$ 125.00	3.7	3.7
175 W HID to 35-85W LED	NR Ext Lighting	107	$ 130.00	3.8	3.7
250 W HID to 85-140W LED	NR Ext Lighting	36	$ 140.00	1.8	3.7
320 W HID to 118-160W LED	NR Ext Lighting	71	$ 180.00	2.1	3.6
400 W HID to 118 -175W LED	NR Ext Lighting	107	$ 255.00	2.2	3.6
250 watt HID Canopy Fixture to 85-140 watt LED Canopy Fixture	NR Ext Lighting	0	$ 160.00	2.0	3.6
320 watt HID Canopy Fixture to 118-160 watt LED Canopy Fixture	NR Ext Lighting	0	$ 200.00	2.7	3.7
400 watt HID Canopy Fixture to 118-175 watt LED Canopy Fixture	NR Ext Lighting	0	$ 250.00	2.4	3.7
175 watt HID Fixture to 35-85 watt LED Fixture	NR Ext Lighting	36	$ 130.00	6.1	3.7
250 watt HID Fixture to 85-118 watt LED Fixture	NR Ext Lighting	71	$ 140.00	2.4	3.7
320 & 400 watt HID Fixture to 118-175 watt LED Fixture	NR Ext Lighting	107	$ 175.00	2.8	3.7
1000W HID to 300W-400W LED	NR Ext Lighting	142	$ 610.00	2.6	3.6
Sign Lighting LED	NR Ext Lighting	4260	$ 17.00	4.2	5.3

Less than R11 attic insulation (E/E) to R30-R44 Attic Insulation	NR Shell	250	$ 0.20	2.1	7.3
Less than R11 attic insulation (E/E) to R45+ Attic Insulation	NR Shell	250	$ 0.25	2.5	8.0
Less than R11 roof insulation (E/E) to R30+ Roof Insulation	NR Shell	6000	$ 0.25	3.5	7.8
Less than R4 wall insulation (E/E) to R11-R18 Wall Insulation	NR Shell	1800	$ 0.40	7.3	10.1
Less than R4 wall insulation (E/E) to R19+ Wall Insulation	NR Shell	1800	$ 0.45	10.0	13.1
Prescriptive VFDs - HVAC Cooling Pump	NR VFD	85	$ 130.00	4.7	6.5
Prescriptive VFDs - HVAC Fan	NR VFD	85	$ 130.00	4.4	6.1
Prescriptive VFDS - HVAC Heating Pump or combo	NR VFD	140	$ 130.00	7.5	10.5
0.61 to 0.80 GPM electric pre-rinse sprayer	NR Food Service	1	$ 70	1.5	2.1
0.61 to 0.80 GPM gas pre-rinse sprayer	NR Food Service	0	$ 39	0.4	1.0
0.81 to 1.00 GPM electric pre-rinse sprayer	NR Food Service	0	$ 65	0.9	1.4
0.81 to 1.00 GPM gas pre-rinse sprayer	NR Food Service	0	$ 2	0.1	3.2
3 pan electric steamer	NR Food Service	0	$ 70	31.5	128.7
3 pan gas steamer	NR Food Service	0	$ 934	1.3	2.4
4 pan electric steamer	NR Food Service	0	$ 100	109.6	119.9
4 pan gas steamer	NR Food Service	0	$ 1,245	1.3	2.4
5 pan electric steamer	NR Food Service	0	$ 135	69.9	110.9
5 pan gas steamer	NR Food Service	0	$ 1,556	1.3	2.4
6 pan electric steamer	NR Food Service	0	$ 160	37.8	112.2
6 pan gas steamer	NR Food Service	0	$ 1,867	1.3	2.4
10 or larger pan electric steamer	NR Food Service	0	$ 180	9.2	166.3
10 or larger pan gas steamer	NR Food Service	0	$ 2,144	3.0	5.5
Efficient combination oven (>= 16 pan and <= 20 pan) electric	NR Food Service	1	$ 1,000.00	23.6	8.4
Efficient combination oven (>= 16 pan and <= 20 pan) gas	NR Food Service	0	$ 1,150.00	0.4	1.9
Efficient combination oven (>= 6 pan and <= 15 pan) electric	NR Food Service	0	$ 995.00	4.7	6.1
Efficient combination oven (>= 6 pan and <= 15 pan) gas	NR Food Service	0	$ 927.00	0.3	1.9
Efficient convection oven full size	NR Food Service	0	$ 330.00	0.9	2.4
Efficient convection oven half size	NR Food Service	1	$ 270.00	1.2	2.9
H.E. gas convection oven, 40% effic. or better	NR Food Service	0	$ 743.00	0.9	2.2

Gas rack oven	NR Food Service	0	$ 2,378.00	0.8	1.5
Efficient hot food holding cabinet, full size	NR Food Service	0	$ 165.00	1.2	4.9
Electric fryer	NR Food Service	1	$ 295.00	1.5	3.1
Energy Star 50% effic.gas fryer	NR Food Service	0	$ 1,162.00	1.1	2.2
H.E. gas griddle, 40% effic. or better	NR Food Service	0	$ 200.00	1.0	2.2
Standard Efficiency Appliance to H.E. electric griddle, 70% effic. or better	NR Food Service	1	$ 325.00	1.1	2.9
High temp electric hot water dishwasher	NR Food Service	0	$ 820.00	1.6	2.9
High temp gas hot water dishwasher	NR Food Service	0	$ 236.00	1.2	6.4
Low temp electric hot water dishwasher	NR Food Service	0	$ 760.00	1.7	2.9
Low temp gas hot water dishwasher	NR Food Service	1	$ 322.00	1.1	3.1
Standard Efficiency Appliance to Energy Star 65% effic. or greater 3-pan electric steam cooker	NR Food Service	1	$ 70.00	4.6	7.4
Standard Efficiency Appliance to Energy Star 65% effic. or greater 4-pan electric steam cooker	NR Food Service	1	$ 70.00	4.6	7.4
Standard Efficiency Appliance to Energy Star 65% effic. or greater 5-pan electric steam cooker	NR Food Service	0	$ 135.00	5.3	7.2
Standard Efficiency Appliance to Energy Star 65% effic. or greater 6-pan electric steam cooker	NR Food Service	0	$ 135.00	6.7	8.7
Standard Efficiency Appliance to Energy Star electric hot food holding cabinet, between 12 & 20 cu.ft. (CEE tier 2)	NR Food Service	0	$ 210.00	1.3	3.7
Standard Efficiency Appliance to Energy Star electric hot food holding cabinet, less than 12 cu.ft. (CEE tier 2)	NR Food Service	0	$ 175.00	0.8	2.9
Standard Efficiency Appliance to Energy Star electric hot food holding cabinet, over 20 cu.ft. (CEE tier 2)	NR Food Service	0	$ 350.00	0.8	2.9
Standard Efficiency Appliance to Energy Star ice maker, air cooled, ice making head, 1000 to 1199 lbs./day capacity	NR Food Service	0	$ 140.00	2.4	3.9
Standard Efficiency Appliance to Energy Star ice maker, air cooled, ice making head, 1200 to 1399 lbs./day capacity	NR Food Service	0	$ 160.00	2.3	3.9
Standard Efficiency Appliance to Energy Star ice maker, air cooled, ice making head, 1400 to 1599 lbs./day capacity	NR Food Service	0	$ 180.00	2.4	3.9
Standard Efficiency Appliance to Energy Star ice maker, air cooled, ice making head, 1600 or greater lbs./day capacity	NR Food Service	0	$ 195.00	2.2	3.9

Standard Efficiency Appliance to Energy Star ice maker, air cooled, ice making head, 200 to 399 lbs./day capacity	NR Food Service	1	$ 65.00	1.4	3.0
Standard Efficiency Appliance to Energy Star ice maker, air cooled, ice making head, 400 to 599 lbs./day capacity	NR Food Service	1	$ 70.00	1.6	4.0
Standard Efficiency Appliance to Energy Star ice maker, air cooled, ice making head, 600 to 799 lbs./day capacity	NR Food Service	1	$ 95.00	2.0	4.0
Standard Efficiency Appliance to Energy Star ice maker, air cooled, ice making head, 800 to 999 lbs./day capacity	NR Food Service	0	$ 120.00	2.3	3.9
Standard Efficiency Appliance to Energy Star ice maker, air cooled, ice making head, under 200 lbs./day capacity	NR Food Service	1	$ 35.00	0.7	2.3
Standard Efficiency Appliance to Energy Star ice maker, air cooled, remote condensing, 1000 to 1199 lbs./day capacity	NR Food Service	0	$ 115.00	1.5	3.8
Standard Efficiency Appliance to Energy Star ice maker, air cooled, remote condensing, 1200 to 1399 lbs./day capacity	NR Food Service	0	$ 135.00	1.6	3.8
Standard Efficiency Appliance to Energy Star ice maker, air cooled, remote condensing, 1400 to 1599 lbs./day capacity	NR Food Service	0	$ 155.00	1.7	3.9
Standard Efficiency Appliance to Energy Star ice maker, air cooled, remote condensing, 1600 to 1799 lbs./day capacity	NR Food Service	0	$ 175.00	1.7	3.9
Standard Efficiency Appliance to Energy Star ice maker, air cooled, remote condensing, 1800 or greater lbs./day capacity	NR Food Service	0	$ 195.00	1.8	3.9
Standard Efficiency Appliance to Energy Star ice maker, air cooled, remote condensing, 400 to 599 lbs./day capacity	NR Food Service	0	$ 70.00	1.5	4.0
Standard Efficiency Appliance to Energy Star ice maker, air cooled, remote condensing, 600 to 799 lbs./day capacity	NR Food Service	0	$ 90.00	1.6	4.0
Standard Efficiency Appliance to Energy Star ice maker, air cooled, remote condensing, 800 to 999 lbs./day capacity	NR Food Service	0	$ 105.00	1.6	3.9
Standard Efficiency Appliance to Energy Star ice maker, air cooled, remote condensing, less than 400 lbs./day capacity & under	NR Food Service	0	$ 65.00	1.2	2.8

Standard Efficiency Appliance to Energy Star ice maker, air cooled, self contained, 100 to 149 lbs./day capacity	NR Food Service	1	$ 40.00	0.7	2.4
Standard Efficiency Appliance to Energy Star ice maker, air cooled, self contained, 150 to 199 lbs./day capacity	NR Food Service	0	$ 45.00	0.7	2.3
Standard Efficiency Appliance to Energy Star ice maker, air cooled, self contained, 200 to 249 lbs./day capacity & under	NR Food Service	0	$ 60.00	0.7	2.3
Standard Efficiency Appliance to Energy Star ice maker, air cooled, self contained, 250 to 299 lbs./day capacity	NR Food Service	0	$ 70.00	0.8	2.4
Standard Efficiency Appliance to Energy Star ice maker, air cooled, self contained, 300 to 349 lbs./day capacity	NR Food Service	0	$ 85.00	0.9	2.3
Standard Efficiency Appliance to Energy Star ice maker, air cooled, self contained, 350 to 399 lbs./day capacity	NR Food Service	0	$ 95.00	0.9	2.4
Standard Efficiency Appliance to Energy Star ice maker, air cooled, self contained, 400 or greater lbs./day capacity	NR Food Service	0	$ 110.00	0.9	2.3
Standard Efficiency Appliance to Energy Star ice maker, air cooled, self contained, 50 to 99 lbs./day capacity	NR Food Service	0	$ 30.00	0.6	2.3
Standard Efficiency Appliance to Energy Star ice maker, air cooled, self contained, less than 50 lbs./day capacity & under	NR Food Service	0	$ -	0.3	1.8
Visi Cooler	NR Food Service	0	$ 20.00	4.6	7.4
15 HP Agricultural	NR Green Motors	0	$ 134.00	2.2	9.0
15 HP Industrial	NR Green Motors	1	$ 134.00	1.8	7.2
20 HP	NR Green Motors	0	$ 150.00	2.7	9.1
20 HP Ind	NR Green Motors	1	$ 150.00	2.1	7.2
25 HP	NR Green Motors	0	$ 171.00	3.1	9.6
25 HP Ind	NR Green Motors	1	$ 171.00	2.4	7.6
30 HP	NR Green Motors	0	$ 188.00	3.0	8.6
30 HP Ind	NR Green Motors	1	$ 188.00	2.4	6.8
40 HP	NR Green Motors	0	$ 230.00	2.9	7.5
40 HP Ind	NR Green Motors	1	$ 230.00	2.3	5.9
50 HP	NR Green Motors	0	$ 254.00	2.8	6.5
50 HP Ind	NR Green Motors	0	$ 254.00	2.2	5.1
60 HP	NR Green Motors	0	$ 300.00	2.6	6.0
60 HP Ind	NR Green Motors	0	$ 300.00	2.2	5.0

75 HP	NR Green Motors	0	$ 324.00	2.5	5.0
75 HP Ind	NR Green Motors	0	$ 324.00	2.1	4.1
100 HP	NR Green Motors	0	$ 402.00	2.7	4.9
100 HP Ind	NR Green Motors	0	$ 402.00	2.2	4.1
125 HP	NR Green Motors	0	$ 451.00	2.7	4.4
125 HP Ind	NR Green Motors	0	$ 451.00	2.3	3.7
150 HP	NR Green Motors	0	$ 503.00	2.8	4.3
150 HP Ind	NR Green Motors	0	$ 503.00	2.4	3.7
200 HP	NR Green Motors	0	$ 605.00	3.1	4.3
200 HP Ind	NR Green Motors	0	$ 605.00	2.7	3.7
250 HP	NR Green Motors	0	$ 778.00	2.8	4.0
250 HP	NR Green Motors	0	$ 778.00	3.6	5.1
300 HP	NR Green Motors	0	$ 786.00	3.4	4.0
300 HP	NR Green Motors	0	$ 786.00	4.2	5.1
350 HP	NR Green Motors	0	$ 824.00	3.7	4.0
350 HP	NR Green Motors	0	$ 824.00	4.7	5.1
400 HP	NR Green Motors	0	$ 921.00	3.8	4.0
400 HP	NR Green Motors	0	$ 921.00	4.8	5.0
450 HP	NR Green Motors	0	$ 1,006.00	3.9	4.0
450 HP	NR Green Motors	0	$ 1,006.00	4.9	5.0
4500 HP	NR Green Motors	0	$ 7,479.00	4.8	3.6
4500 HP	NR Green Motors	0	$ 7,479.00	5.1	3.9
500 HP	NR Green Motors	0	$ 1,087.00	4.0	4.0
500 HP	NR Green Motors	0	$ 1,087.00	5.1	5.0
600 HP	NR Green Motors	0	$ 1,611.00	3.1	3.8
600 HP	NR Green Motors	0	$ 1,611.00	4.0	4.9
700 HP	NR Green Motors	0	$ 1,747.00	3.3	3.8
700 HP	NR Green Motors	0	$ 1,747.00	4.3	4.9
800 HP	NR Green Motors	0	$ 1,939.00	3.4	3.8
800 HP	NR Green Motors	0	$ 1,939.00	4.4	4.8
900 HP	NR Green Motors	0	$ 2,137.00	3.5	3.8
900 HP	NR Green Motors	0	$ 2,137.00	4.5	4.8
1000 HP	NR Green Motors	0	$ 2,303.00	3.6	3.8
1000 HP	NR Green Motors	0	$ 2,303.00	4.6	4.8
1250 HP	NR Green Motors	0	$ 2,752.00	3.7	3.7
1250 HP	NR Green Motors	0	$ 2,752.00	4.0	4.0
1500 HP	NR Green Motors	0	$ 3,152.00	3.9	3.7
1500 HP	NR Green Motors	0	$ 3,152.00	4.2	4.0
1750 HP	NR Green Motors	0	$ 3,598.00	4.0	3.7
1750 HP	NR Green Motors	0	$ 3,598.00	4.3	4.0
2000 HP	NR Green Motors	0	$ 4,036.00	4.0	3.7

2000 HP	NR Green Motors	0	$ 4,036.00	4.3	4.0
2250 HP	NR Green Motors	0	$ 4,397.00	4.1	3.7
2250 HP	NR Green Motors	0	$ 4,397.00	4.4	3.9
2500 HP	NR Green Motors	0	$ 4,811.00	4.2	3.7
2500 HP	NR Green Motors	0	$ 4,811.00	4.5	3.9
3000 HP	NR Green Motors	0	$ 5,625.00	4.3	3.6
3000 HP	NR Green Motors	0	$ 5,625.00	4.6	3.9
3500 HP	NR Green Motors	0	$ 6,216.00	4.5	3.6
3500 HP	NR Green Motors	0	$ 6,216.00	4.8	3.9
4000 HP	NR Green Motors	0	$ 6,940.00	4.6	3.6
4000 HP	NR Green Motors	0	$ 6,940.00	4.9	3.9
5000 HP	NR Green Motors	0	$ 7,983.00	5.0	3.6
5000 HP	NR Green Motors	0	$ 7,983.00	5.3	3.9
Washington Air Guardian	NR Air Guardian	10	$ 1,440.00	2.2	2.0
Washington Fleet Heat	NR Fleet Heat	67	$ 150.00	6.4	5.8
Controls - Anti Sweat heat - Dedicated ASHC Device - Low Temp	Energy Smart Grocer	7	$ 40.00	4.4	3.4
Controls - Anti Sweat heat - Dedicated ASHC Device - Med Temp	Energy Smart Grocer	7	$ 40.00	2.8	2.1
Controls - Anti-Sweat Heat - Energy Management System - Low Temp	Energy Smart Grocer	7	$ 14.00	0.9	9.8
Controls - Anti-Sweat Heat - Energy Management System - Med Temp	Energy Smart Grocer	7	$ 14.00	0.6	6.1
Gaskets Reach In Low Temp	Energy Smart Grocer	2	$ 40.00	2.6	4.5
Gaskets Reach In Medium Temp	Energy Smart Grocer	2	$ 25.00	0.7	7.9
Gaskets Walk In Low Temp	Energy Smart Grocer	2	$ 65.00	6.7	4.2
Gaskets Walk In Medium Temp	Energy Smart Grocer	2	$ 25.00	9.6	6.5
Evap motors: shaded pole to ECM in Walk-in - Greater than 23 watts	Energy Smart Grocer	105	$ 140.00	2.7	5.8
Evap motors: shaded pole to ECM in Walk-in - less than 23 watts	Energy Smart Grocer	105	$ 140.00	1.5	3.1
Floating Head Pressure for Single Compressor Systems, LT Condensing Unit	Energy Smart Grocer	42	$ 100.00	0.9	6.4
Floating Head Pressure for Single Compressor Systems, LT Remote Condenser	Energy Smart Grocer	70	$ 100.00	0.1	5.4
Floating Head Pressure for Single Compressor Systems, MT Condensing Unit	Energy Smart Grocer	105	$ 100.00	0.9	6.0

Floating Head Pressure for Single Compressor Systems, MT Remote Condenser	Energy Smart Grocer	0	$ 100.00	2.5	3.5
Evaporated Fan - Walk-In ECM Controller - Low Temp - 1/10-1/20 HP	Energy Smart Grocer	0	$ 35.00	1.1	5.3
Evaporated Fan - Walk-In ECM Controller - Medium Temp - 1/10-1/20 HP	Energy Smart Grocer	0	$ 35.00	2.0	4.4
Strip Curtains for Convenience Store Walk-in Freezers	Energy Smart Grocer	0	$ 5.00	0.2	3.6
Strip Curtains for Restaurant Walk-in Freezers	Energy Smart Grocer	0	$ 5.00	1.0	15.1
Strip Curtains for Supermarket Walk-in Coolers	Energy Smart Grocer	0	$ 5.00	0.9	14.4
Strip Curtains for Supermarket Walk-in Freezers	Energy Smart Grocer	0	$ 5.00	37.6	29.1
Evap motors: shaded pole to ECM in Display Case	Energy Smart Grocer	0	$ 55.00	6.3	6.4
Add doors to Open Medium Temp Cases	Energy Smart Grocer	266	$ 253.60	1.5	2.1
Cases - Low Temp Reach-in to High Efficiency Reach-in	Energy Smart Grocer	140	$ 192.60	2.8	3.7
Cases - Medium Temp Open Case to New High Efficiency Open Case	Energy Smart Grocer	210	$ 44.40	2.1	3.7
Cases - Medium Temp Open Case to New Reach In	Energy Smart Grocer	210	$ 117.00	5.4	3.7
Floating Head Pressure Control - Air Cooled	Energy Smart Grocer	14	$ 66.40	5.2	3.7
Floating Head Pressure Control - Evap Cooled	Energy Smart Grocer	35	$ 141.60	11.2	3.7
Floating Head Pressure Control w/ VFD- Air Cooled	Energy Smart Grocer	35	$ 183.00	3.7	3.7
VFD - Condenser Fan Motors - Air Cooled	Energy Smart Grocer	35	$ 186.00	4.0	3.7
VFD - Condenser Fan Motors - Evap Cooled	Energy Smart Grocer	35	$ 186.00	4.0	3.7
Single Row T8_Low Power LED_Inside Refrigerated Space_Medium Temperature Case	Energy Smart Grocer	3500	$ 10.00	0.6	3.7
Single Row T12_Low Power LED_Inside Refrigerated Space_Medium Temperature Case	Energy Smart Grocer	1400	$ 10.00	1.1	6.4
Double Row T8 _High Power LED_Inside Refrigerated Space_Medium Temperature Case	Energy Smart Grocer	700	$ 18.00	1.4	4.7
Double Row T12 _High Power LED_Inside Refrigerated Space_Medium Temperature Case	Energy Smart Grocer	700	$ 18.00	2.3	7.5

Single Row T8_Low Power LED_Outside Refrigerated Space_HVAC Interaction	Energy Smart Grocer	0	$ 7.00	0.1	3.9
Single Row T12_Low Power LED_Outside Refrigerated Space_HVAC Interaction	Energy Smart Grocer	0	$ 7.00	0.3	6.7
Double Row T8 _High Power LED_Outside Refrigerated Space_HVAC Interaction	Energy Smart Grocer	0	$ 10.00	0.2	6.2
Double Row T12 _High Power LED_Outside Refrigerated Space_HVAC Interaction	Energy Smart Grocer	0	$ 10.00	0.5	9.9
Single Row T8_Low Power LED_Inside Refrigerated Space_Low Temperature Case	Energy Smart Grocer	700	$ 10.00	0.6	5.2
Single Row T12_Low Power LED_Inside Refrigerated Space_Low Temperature Case	Energy Smart Grocer	700	$ 10.00	1.4	8.8
Double Row T8 _High Power LED_Inside Refrigerated Space_Low Temperature Case	Energy Smart Grocer	700	$ 18.00	1.9	6.5
Double Row T12 _High Power LED_Inside Refrigerated Space_Low Temperature Case	Energy Smart Grocer	700	$ 18.00	2.1	10.4
Low-flow faucet aerator (0.5 gpm) Electric Water Heat	Small Business	2052	$ 8.00	20.1	18.3
Low-flow faucet aerator (1.0 gpm) Electric Water Heat	Small Business	2052	$ 8.00	11.8	10.7
Low-flow faucet aerator (0.5 gpm) Gas Water Heat	Small Business	2052	$ 8.00	5.3	4.8
Low-flow faucet aerator (1.0 gpm) Gas Water Heat	Small Business	2052	$ 8.00	4.1	3.7
Pre-Rinse Spray Valve Electric Heat	Small Business	76	$ 129.00	2.2	2.0
Pre-Rinse Spray Valve Gas Heat	Small Business	76	$ 129.00	1.1	1.0
Shower Head Fitness Electric	Small Business	53	$ 41.00	58.5	51.1
Shower Head Fitness Gas	Small Business	53	$ 41.00	24.1	19.8
Shower Head Electric	Small Business	205	$ 41.00	3.1	2.7
Shower Head Gas	Small Business	205	$ 41.00	1.3	1.0
Vending Miser	Small Business	53	$ 225.00	1.6	1.4
Tier 1 smart power strip	Small Business	912	$ 39.00	0.5	0.4
Screw in LED lamp 40W	Small Business	266	$ 17.00	3.1	2.3
Screw in LED lamp 60W	Small Business	912	$ 17.00	4.4	3.4
Screw in LED lamp 75W	Small Business	91	$ 27.00	3.3	2.7
Screw in LED lamp 100W	Small Business	91	$ 31.00	3.8	3.1
Screw in LED BR30	Small Business	1976	$ 22.00	4.1	3.3
Screw in LED BR40	Small Business	456	$ 28.00	4.2	3.5
Screw in LED PAR30	Small Business	456	$ 28.00	3.2	2.6
Screw in LEDPAR38	Small Business	456	$ 32.00	3.7	3.0
Multifamily NG Market Transformation (per unit)	MF Market Transformation	400	$ 3,500.00	0.9	1.6

Low Income Program

The Company utilizes the infrastructure of seven Community Action Partner (CAP) agencies to deliver low income energy efficiency programs (aka Weatherization). The CAPs have the ability to income-qualify customers, generate referrals through their energy assistance efforts, and have access to a variety of weatherization funding resources which can be utilized to meet customer needs. The seven agencies serving Avista's entire Washington service territory receive an aggregate annual funding amount of $2,000,000 while the single agency serving Avista's Idaho territory receives $700,000.

In 2016 the Company added a seventh agency to the mix; Spokane Indian Housing Authority (SIHA) to serve Avista's Washington customers in Stevens County. This organization has been mentored and certified by the Department of Commerce and is part of the same rigor and oversight as other traditional "network" agencies. While portions of SIHA territory overlap with an existing agency the Company wanted to test the potential of utilizing SIHA's services to see if additional homes could be reached in the Stevens County area. While SIHA received an allocation for 2016, there was no adjustment to the shares the other agencies receive. Over the years, the total low income funding allotment may not be fully spent out due to a variety of circumstances. 2016 was a test year to determine whether or not the funding could support the services of a 7th agency to assist with serving more homes. At the time of this writing, Avista is presuming that SIHA will receive an allocation for 2017 similar to 2016. Below is the breakdown by agency:

2017 Low Income Funding by CAP Agency

CAP Agency	County	Funding
SNAP	Spokane	$1,335,000
Rural Resources Community Action	Ferry, Lincoln, Pend Oreille, Stevens	$194,000
Community Action Center	Whitman	$146,000
Opportunities Industrialization Council	Adams, Grant	$75,000
Spokane Indian Housing Authority	Stevens County	$20,000 *
Washington Gorge Action Program	Klickitat, Skamania	$10,000
Community Action Partnership	Asotin	$240,000
Community Action Partnership	10 counties in Avista's Idaho service territory	$700,000

*Pilot agency for 2016/2017

In both Idaho and Washington the agencies may spend their annual allocated funds on either electric or natural gas efficiency measures depending on customer need. The home must demonstrate a minimum level of electric or natural gas energy use for space heating use. Both states are allowed a 15% administration reimbursement as part of their annual funding. Avista also allows funds to be used towards health and safety improvements to be made up to an amount not to exceed 15% of the agency's total annual allocation.

Avista develops and administers annual contracts with the Agencies to deliver efficiency programs for low income customers. Both "Approved" and "Rebate" lists are made available to the agencies during the contracting process so they are aware of the eligible measures and the designated amounts if applicable.

Should the Agency have an efficiency opportunity that does not appear on either list, the Company will review each the merits of that measure individually to determine an appropriate funding amount.

To guide the agency toward projects that are most beneficial and cost-effective for the Company's energy efficiency efforts, an "Approved" measure list is provided that in the majority of cases have a Total Resource Cost (TRC) of 1 or better for electric improvements or a Utility Cost Test (UCT) of 1 or better for natural gas improvements. The list of the 2017 Approved Measures can be found in the table below:

2017 Approved Measures - Washington

Electric Efficiency - WA	Natural Gas Efficiency - WA
Insulation for walls	Insulation for attic, walls, floors and ducts
Electric to air source heat pump	Air infiltration
Electric to natural gas furnace and water heat	Duct Sealing

2017 Approved Measures – Idaho

Electric Efficiency - ID	Natural Gas Efficiency - ID
Electric to air source heat pump	Duct Sealing
Electric to natural gas furnace and water heat	
Duct Sealing	

For efficiency measures with a TRC or UCT less than 1 a "Rebate" that is equal to the Company's avoided cost of energy is provided as the reimbursement to the Agency. Often the rebate amount will not cover the full cost of the measure. The agencies may choose to utilize their Health and Safety allotment towards covering the full cost of the "Rebate" measure if they do not have other funding sources to fill in the difference. The list of the 2017 Qualified Rebates can be found in the tables below:

2017 Qualified Rebates - Washington

Electric Efficiency - WA	Natural Gas Efficiency - WA
Air Infiltration	Energy Star Doors
Energy Star Doors	Energy Star Windows
Energy Star Windows	High Efficiency Furnace
Insulation for attic, floors and ducts	
Duct Sealing	
Ductless Heat pump	
Energy Star Refrigerator	

2017 Qualified Rebates- Idaho

Electric Efficiency - ID	Natural Gas Efficiency - ID
Air Infiltration	Energy Star Doors
Energy Star Doors	Energy Star Windows
Energy Star Windows	High Efficiency Furnace
Insulation for attic, walls, floors and ducts	Insulation for attic, walls, floors and ducts
Ductless Heat pump	Air Infiltration
Energy Star Refrigerator	

2017 Program Planning

The return of natural gas homes to Idaho has allowed the Agency to have a larger client pool in which to pull potential projects. While this agency typically spends out their funds, they are able to do that over a larger pool of homes vs. an electric only focus.

Initial review of energy efficiency measures for both Idaho and Washington low income programs resulted in a large shift of the number of Approved Measures available for the 2017 program year on both the electric and natural gas side. One of the main reasons related to the shift is the energy savings claimed for these homes for 2017 is less than when they were previously evaluated. Another reason is the low cost of natural gas makes it difficult to meet any cost effectiveness test that is applied to these programs.

While it is understood that cost-effective energy efficiency programs are a main requirement, the ability to serve the low income customer cost effectively is a constant challenge. Avista has taken steps to pay for the value of the energy saved which in some cases becomes an amount that is not meaningful to the agency to install. The concern in 2017 is that all the measures under review will only result in a small reimbursement to the agency – which makes it challenging for them to be able to spend out the funds that are allocated. The agencies tend to pursue projects on a whole house basis when they can instead of individually. This helps keep their costs lower than what they may otherwise be.

Avista Program Manager: -Renee Coelho

Measures and Incentives: As illustrated in Table 1 of Appendix A.

Evaluation, Measurement and Verification Plan: As defined within the Company's EM&V Plan contained within Appendix B.

Residential ENERGY STAR Homes Program

General Program Description:

The Energy Star Home program leverages the regional and national effort surrounding Department of Energy and Environmental Protection Agency's Energy Star label. Avista and partnering member utilities of the Northwest Energy Efficiency Alliance (NEEA) have committed significant resources to develop and implement a program that sets standards, trains contractors and provides 3rd party verification of qualifying homes. NEEA in effect administers the program and Avista pays the rebate for homes that successfully make it through the process and are labeled Energy Star. Additionally, after the launch of NEEA's regional effort, the manufactured homes industry established manufacturing standards and a labeling program to obtain Energy Star certified manufactured homes. While the two approaches are unique, they both offer 15-25% savings versus the baseline and offer comparable savings.

Program Implementation:

The Energy Star Home program promotes to builders and homeowners a sustainable, low operating cost, environmentally friendly structure as an alternative to traditional home construction. In Washington Avista offers both electric and natural gas energy efficiency programs and as a result structures the program to account for homes where either a single fuel or both fuels are utilized for space and water heating needs. The Company continues to support the regional program to encourage sustainable building practices.

The current customer descriptions of the programs with primary program requirements are available on the ENERGY STAR®/ECO-Rated Homes Rebate form.

Program Eligibility and incentives:

Any Washington and Idaho residential electric customer (Schedule 1) with a certified Energy Star Home or Energy Star/ECO-Rated Manufactured Home that is all electric are eligible. Any Washington residential electric customer (Schedule 1) with a certified Energy Star Home that has Avista electric for lights and appliances and Avista residential natural gas (Schedule 101) for space and water heating is eligible.

Proposed Rebates for 2015:

Energy Star Home, stick built $1000
Energy Star/ECORated Home, manufactured $800
Energy Star/ECORated Home, Natural Gas Only $650

A certified Energy Star Home with Avista electric or both Avista electric and natural gas service provides energy savings beyond code requirements for space heating, water heating, shell, lighting and appliances. Space heating equipment can be either electric forced air or electric heat pump in Washington and Idaho; or a natural gas furnace in Washington. This rebate may not be combined with other Avista individual measure rebate offers (e.g.: high efficiency water heaters).

Avista Program Manager: David Schafer

Measures and Incentives: As illustrated in Table 1 of Appendix A.

Evaluation, Measurement and Verification Plan: As defined within the Company's EM&V Plan contained within Appendix B.

Residential HVAC Program

General Program Description:

The HVAC program encourages residential customers to select a high efficiency solution when making energy upgrades to their home. This prescriptive rebate approach issues payment to the customer after the measure has been installed. DSM marketing efforts build considerable awareness of opportunities in the home and drive customers to the website for rebate information. Vendors generate participants in the program as they use the rebate as a sales tool for their services. Utility website promotion, vendor training, retail location visits and presentations at various customer events throughout the year are some of the other communication methods that encourage program participation.

Overall, residential customers continue to respond well to the program. High efficiency natural gas furnace provide the largest portion of the gas savings for the residential portfolio.

Program Eligibility and incentives:

Any Washington and Idaho residential electric customers (Schedule 1) who heat their homes with Avista electric may be eligible for a rebate for the installation of a variable speed motor on their forced air heating equipment or for converting their electric straight resistance space heat to an air source heat pump. Any Washington residential natural gas customers (Schedule 101) who heat their homes with natural gas may be eligible for a rebate for the installation of a high efficiency natural gas furnace or boiler.

Proposed Rebates for 2017:

Variable speed motor $80
Electric to Air Source Heat Pump $900
Electric to Ductless Heat Pump $450
High efficiency natural gas furnace $300
High efficiency natural gas boiler $300
Heat Pump Water Heater $200
Tankless Water Heater $200
Smart Thermostat $100 (contractor install)
Smart Thermostat $75 (self-install)

Avista will review energy usage as part of the program eligibility requirements; customer must demonstrate a heating season electricity usage of 8,000 kWh for replacement of electric straight resistance to air source heat pump and ductless heat pump. High efficiency natural gas furnaces and boilers must have an Annual Fuel Utilization Efficiency (AFUE) of 90% or greater. Tankless water heaters must have an efficiency of .82 or higher. Heat pump water heaters must have an efficiency of 1.8 or higher. Supporting documentation required for participation includes but may not be limited to: copies of project invoices and AHRI certification.

Avista Program Manager: David Schafer

Measures and Incentives: As illustrated in Table 1 of Appendix A.

Evaluation, Measurement and Verification Plan: As defined within the Company's EM&V Plan contained within Appendix B.

Residential Shell Program

General Program Description:

The shell program encourages residential customers to improve their home's shell or exterior envelope with upgrades to windows and storm windows. This prescriptive rebate approach issues payment to the customer after the measure has been installed. DSM marketing efforts build considerable awareness of opportunities in the home and drive customers to the website for rebate information. Vendors generate participants in the program as they use the rebate as a sales tool for their services. Utility website promotion, vendor training, retail location visits and presentations at various customer events throughout the year are some of the other communication methods that encourage program participation.

Program Implementation:

The estimates of unit throughput for 2016 remain consistent with throughput from 2015.

The current customer descriptions of the programs with primary program requirements are available on the

Program Eligibility and incentives:

Washington and Idaho residential electric customers (Schedule 1) who heat their homes with Avista electric are eligible to apply. Washington residential natural gas customers (Schedule 101) who heat their homes with natural gas are also eligible to apply.

Proposed Rebates for 2017:

Storm Windows $1.00/sq. ft
Windows $1.50/sq. ft

Storm windows (interior/exterior) must be new, the same size as existing window, not in direct contact with existing window, and exterior windows low-e coating must be facing the interior of the home. Glazing material emissivity must be less than .22 with a solar transmittance greater than .55. Windows must have a u-factor rating of .30 or lower.

Avista will review energy usage as part of the program eligibility requirements. Customers in Washington and Idaho with electric heated homes must demonstrate a heating season usage of 8,000 kWh. Customers in Washington with natural gas heated homes must demonstrate a heating season usage of 340 therms.

Avista Program Manager: -David Schafer

Measures and Incentives: As illustrated in Table 1 of Appendix A.

Evaluation, Measurement and Verification Plan: As defined within the Company's EM&V Plan contained within Appendix B.

Residential Fuel Efficiency Program

General Program Description:

The fuel efficiency rebate encourages customers to consider converting their electric space and water heat to natural gas. The direct use of natural gas continues to be the most efficient fuel choice when available, and over time offers the most economic value in the operating costs of the equipment. Since the early 1990's the Company has offered a conversion rebate. While natural gas prices have fallen in recent years, the cost of infrastructure continues to rise, both for the utility and for the customer's installation cost for this particular measure. In the fall of 2014, the Company requested and received approval from both commissions to increase the rebate level available for fuel efficiency projects by allowing these measures to receive the same cents/kWh as all other electric efficiency improvements under Tariff Schedule 90.

Program Implementation:

This is a prescriptive rebate that is paid upon installation and receipt of all relevant documentation. Customer's minimum qualifications include using Avista electricity for electric straight resistance heating and/or water heating purposes which is verified by evaluating their energy use. DSM marketing efforts build considerable awareness of opportunities in the home and drive customers to the website for rebate information. Vendors generate participants in the program as they use the rebate as a sales tool for their services. Utility website promotion, vendor training, retail location visits and presentations at various customer events throughout the year are some of the other communication methods that encourage program participation.

Program Eligibility and incentives:

Residential electric customers (Schedule 1) in Idaho and Washington who heat their homes or hot water with Avista electricity may be eligible for a rebate for the conversion to natural gas. The home's electric baseboard or furnace heat consumption must indicate a use of 4,000 kWh or more during the previous heating season.

Proposed Rebates for 2017:

Electric to natural gas furnace	$1,500	Increased September 15, 2014
Electric to natural gas water heater	$750	Increased September 15, 2014
Electric to Natural Gas Direct Vent Wall Heat	$1300	Added May 2015

Avista Program Manager: David Schafer

Measures and Incentives: As illustrated in Table 1 of Appendix A.

Evaluation, Measurement and Verification Plan: As defined within the Company's EM&V Plan contained within Appendix B.

Simple Steps, Smart Savings

General Program Description:

Avista collaborates with BPA on Simple Step, Smart Savings, a regional program designed to increase the adoption of energy-efficient residential products. To achieve energy savings, residential consumers are encouraged to purchase and install high-quality, energy-efficient compact fluorescent lamps (CFLs), light emitting diode bulbs (LEDs), light fixtures, energy-saving showerheads as well as ENERGY STAR appliances. Simple Steps has historically focused on upstream incentives for lighting and showerheads, however, in 2015, the program introduced a dynamic, new midstream model that includes retail incentives for appliances.

Simple Steps continues to provide the region's best opportunity to collectively influence both retail stocking practices and consumer purchasing. There continues to be opportunities for efficient lighting improvements in customer residences as many residential lighting sockets are still occupied by inefficient bulbs. Incentives also encourage customers to increase efficiency before burn-out of the existing less-efficient lighting. Energy savings claimed are based on Regional Technical Forum (RTF) deemed savings.

Program Implementation:

The key drivers to delivering on the objectives of this program are the incentives to encourage customer interest and marketing efforts to drive customers to using the program. The midstream model used for clothes washers focuses the incentives on larger, short term campaigns to align utility support with national and regional campaigns and help influence stocking practices while the upstream model used for lighting and showerheads uses manufacturer partnership to buy-down costs of products and allow for greater flexibility on how money is used (markdowns and/or marketing).

CLEAResult is contracted by Avista Utilities to provide the manufacturer and retail coordination. They are responsible for coordinating program marketing efforts, performing outreach to retailers, ensuring that the proper program tracking is in place and coordinating all implementation aspects of the program. Big box retailers in addition to select regional and national mass-market chains are the primary recipient of the product and typically offer a variety of the Simple Steps products at their locations. These products are clearly identified with point of purchase tags indicating they are part of the program.

Products included in program:

CFL Bulb: General Purpose and Dimmable
CFL Specialty: Decorative, Mini-Base, Globe, Reflectors, Outdoor and Three-Way
LED Bulb: General Purpose, Dimmable, Decorative, Mini-Base, Globe, Reflectors, Outdoor and Three- Way
ENERGY STAR® CFL Fixtures
ENERGY STAR® LED Fixtures
Showerhead: 2.0 GPM, 1.75 GPM, 1.5 GPM
ENERGY STAR® Clothes Washers: Amana, GE, Kenmore, LG, Maytag, Samsung, Whirlpool

Program Eligibility and incentives:

The program is applicable to existing Washington and Idaho residential customers with electric rate schedule 1 and Washington residential customers with rate schedule 101 who heat their hot water with natural gas. Simple Steps Smart Savings is available at retail locations with allocations amongst participating utilities based on estimated percent of customers shopping at specific locations.

Key external stakeholders include homeowners, landlords (and renters), retailers and trade allies. Key internal stakeholders include the contact center, accounts payable and marketing department.

Average Incentive per unit:

CFL Bulb: $0.50 - $0.75
CFL Specialty: $1.00 - $2.00
LED Bulb: $2.00 - $3.00
ENERGY STAR® CFL Fixtures: $6.00
ENERGY STAR® LED Fixtures: $5.00
Showerhead: $7.00
ENERGY STAR® Clothes Washers: $35.00

Avista Program Manager: Rachelle Humphrey

Measures and Incentives: As illustrated in Table 1 of Appendix A.

Evaluation, Measurement and Verification Plan: As defined within the Company's EM&V Plan contained within Appendix B.

Home Energy Reports

General Program Description:

June of 2013, Avista launched a three year Residential Behavioral Program using the Opower platform for Home Energy Reports (HER). 73,500 electric customers in Washington and Idaho were targeted for these reports and will continue receiving reports throughout the duration of this three year program unless they opt-out or move. No one is allowed to opt-in. These programs have proven success at saving customers energy and money, and thus providing energy acquisition for Avista.

In 2015 a 3 report interruption occurred due to Avista's CC&B migration. The program end date has been extended and will result in the last reports to customers to be generated in September 2016 rather than June 2016 as originally planned. The company choose to refill the treatment and creating a new control group for the refill group to coincide with the start of the next biennium (1/1/16) and is planning on continuing the reports through the end of the biennium 12/31/17.

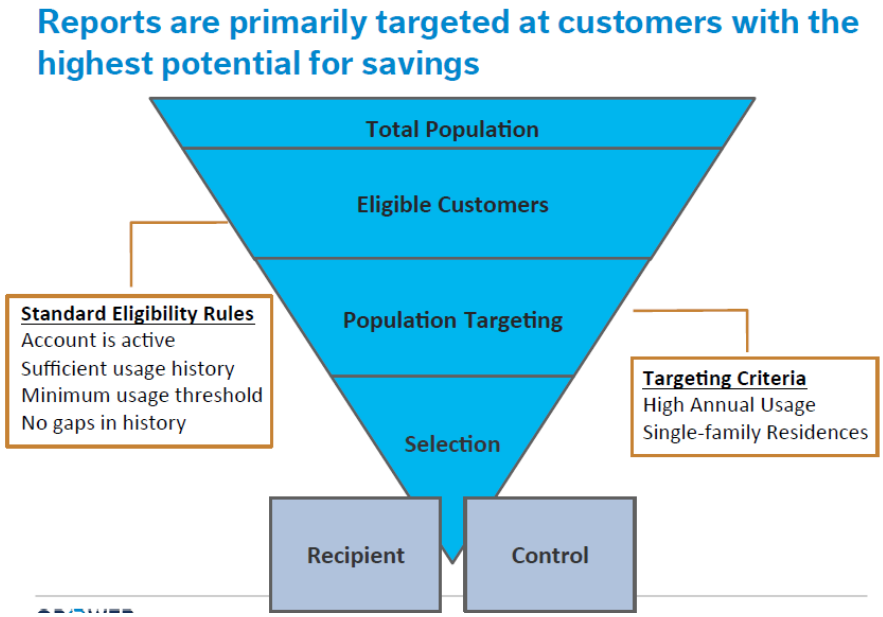
The premise of the reports is built upon comparison to neighbors, yearly usage tracker, comparison to self and three no-cost, low-cost and higher-cost energy savings tips are included on each HERs. Once or twice a year, Avista promotions are included on the HERs. These insights and comparisons drive customers towards behavior changes that can positively impact their usage and lower their energy bill. The library of energy savings tips which the HERs draws from includes over 100 measures (no/low and higher cost ideas) which are dynamically added to the reports.

Program Eligibility:
The HER Program is opt-out, which distinctly varies from Avista's normal opt-in programs historically offered.

To allow for normal attrition, a 5% increase was made to our original program size of 70,000, thus yielding the 73,500 initial HER mailings in June 2013. Initially, 48,300 HER were mailed to Washington customers and 25,200 HER were sent to Idaho customers. These customers have a load profile consistent with year round electric usage, not seasonal. Other factors are listed below.

- High electricity consumption customers which had 99 other homes with like usage in a 100 mile radius were targeted for the HER.
- All participants are an Avista electric customer.
- Approximately 42% of report recipients also have a gas meter. Reports have no gas or dual fuel focus. This is an electric only program.
- A control group of similar characteristics was randomly selected by Avista's 3rd part evaluator at the time, Cadmus. 13,000 in each state (Washington and Idaho) were selected. The refilled treatment and control group were chosen by Nexant.
- The Washington and Idaho treatment refill groups were 16,369 and 8,337 customers respectively. The Washington and Idaho control refill groups were 10,000 and 8,337 customers respectively.

A representation of the selection process is shown below.



Customer satisfaction with the reports remains consistent with Opower guidelines. Opt-Out rates remain less than 2% across both states since program inception. In addition, Avista conducted a customer satisfaction survey. Overall, 72% of customers overall satisfaction remained the same, 19% surveyed had an increase in overall satisfaction as a result of the reports while 8% surveyed indicated a decreased level of satisfaction with Avista. Customer Service Representatives at Avista suggested several ideas on how to improve the program based on the calls they receive. Those ideas are being discussed, which include but aren't limited to adding a customer web-portal so that customers may self serve to update their home's profile, and include verbiage on the reports periodically to inform customers of the benefits to them of the program. These changes would be incorporated into a new program should future discussions include a behavior program in Avista's energy efficiency portfolio. No changes are planned in the current program.

Key Avista Staff:

- Program Manager – Camille Martin. Program management responsibilities include ongoing process evaluations, coordinating program marketing efforts, vendor management, coordinating program updates and support to Customer Service and coordinating all implementation aspects of the program
- Annette Long is designated to assist with Tier 2 level Customer Support for customer calls regarding the program
- Technical support: Avista's Enterprise Technology team and Opower
- Outreach support: Colette Bottinelli
- Analytical support: Mike Dillon and Avista's 3rd party evaluator, Nexant

Evaluation, Measurement and Verification Plan: As defined within the Company's EM&V Plan contained within Appendix B.

Nonresidential Prescriptive Lighting Program

General Program Description:

This program is intended to prompt commercial electric customers to increase the energy-efficiency of their lighting equipment through direct financial incentives. It indirectly supports the infrastructure and inventory necessary to ensure that the installation of high-efficiency equipment is a viable option for the customer.

There is significant opportunity for lighting improvements in commercial facilities. Avista has been offering site specific incentives for qualified lighting projects for many years. In an effort to streamline the process and make it easier for customers and vendors to participate in the program we developed a prescriptive approach, which began in 2004. This program provides for many common retrofits to receive a pre-determined incentive amount. Incentive amounts were calculated using a baseline average for existing wattages and replacement wattages. Energy savings claimed are calculated based on actual customer run times using the averages as calculated for incentive amounts.

The prescriptive lighting program makes it easier for customers, especially smaller customers and vendors, to participate in the program. We have seen a substantial increase in the number of projects that have been completed since this approach was instituted. The measures included in the Prescriptive Lighting Program include T12/T8, HID, MR16 and incandescent retrofits to more energy efficient light sources including High Performance T8, T5 and LEDs and TLEDs.

Program Implementation:

The key drivers to delivering on the objectives of this program are the direct incentives to encourage customer interest, marketing efforts to drive customers to the program and ongoing work with trade allies to ensure that customer demand can be met.

Key to the success of this program is clear communication to lighting supply houses, distributors, electricians and customers on incentive requirements and forms. The Avista website is also a channel to communicate program requirements and highlight opportunities for customers. Avista's regionally based Account Executives (AEs) are a key part of delivering the Prescriptive Lighting Program to commercial and industrial customers. Any changes typically include advance notice of 90 days to submit under the old requirements and/or incentive levels. This usually includes at a minimum, direct mail communication to trade allies as well as internal forms and website updates.

Program Eligibility:

This program is applicable to commercial or industrial facilities with electric service provided by Avista with rate schedules 11 or above.

Avista Program Manager: Rachelle Humphrey

Key Avista Support Staff: Lorri Kirstein, Tom Lienhard, Colette Bottinelli

Measures and Incentives: As Illustrated in Table 1 of Appendix A

Evaluation Measurement and Verification Plan: As defined within Avista's EM&V Plan contained in Appendix B.

Nonresidential HVAC Program

General Program Description:

Installing energy efficient heating equipment will reduce a customer's operating costs and save energy. This program offers direct incentives for installing high efficient natural gas HVAC equipment. The HVAC program encourages customers to select a high efficiency solution when making energy upgrades to their businesses. This prescriptive rebate approach issues payment to the customer after the measure has been installed. Eligibility guidelines for participation include but may not be limited to: confirmation of natural gas space heating usage, copies of project invoices and AHRI documentation. This program is applicable to non-residential customers in Washington with Avista natural gas as their primary heat source who install qualified new natural gas equipment.

Program Implementation:
This is a prescriptive program with six measures being offered. Customers must return to Avista a completed rebate form, invoices and an AHRI certificate within 90 days after the installation has been completed. Avista will send an incentive check to the customer (or their designee) generally within six to eight weeks. Rebates will not exceed the total amount on the customer invoice. Each rebate will be qualified and processed with the current commercial natural gas HVAC calculator to determine the savings and incentive. The key drivers to delivering on the objectives of the program are the direct incentives to fuel customer interest, marketing efforts and account executives to drive customers to the program, and ongoing work with trade allies to ensure that customer demand can be met. The Avista Website is also used to communicate program requirements, incentives and forms.

Avista Program Manager: Greta Zink

Measures and Incentives: As illustrated in Table 1 of Appendix A.

Evaluation, Measurement and Verification Plan: As defined within the Company's EM&V Plan contained within Appendix B.

Site-Specific Program

General Program Description:

The site specific program is a major component in our commercial/industrial portfolio. Customers receive technical assistance and incentives in accordance with Schedule 90 in Washington and Idaho and Schedule 190 in Washington. Our program approach strives for a flexible response to energy efficiency projects that have demonstrable kWh/Therm savings within program criteria. The majority of site specific kWh/Therm savings are comprised of appliances, compressed air, HVAC, industrial process, motors, shell measures, some custom lighting projects that don't fit the prescriptive path and natural gas multifamily market transformation*. This program is available to all non-residential retail electric customers in Washington and Idaho and natural gas customers in Washington. The site specific program typically brings in the largest portion of savings to the overall energy efficiency portfolio.

Program Implementation:

This program will offer an incentive for any qualifying electric or gas energy saving measure that

- Has a simple payback under 15 years

The incentive is capped at seventy percent for all of customer incremental cost. The key drivers to delivering on the objectives of the program are the direct incentives to encourage customer interest, marketing efforts and account executives to drive customers to the program, and ongoing work with trade allies to ensure that customer demand can be met. The Avista Website is also used to communicate program requirements, incentives and forms.

*Multi-family Electric-to-Natural Gas Market Transformation Program

The Company initiated a market transformation program intended to increase the availability of natural gas space and water heating in multi-family residential developments. The focus is on new construction multi-family residential rentals, larger than a 5-plex. The goal of the program is to address the split incentive issue where developers are focused on first costs that drive poor, lost opportunity heating choices and tenants who have to pay those heating costs without sufficient choices in the rental market to demonstrate. Natural gas presents a preferred option with less expense and societal benefit of the direct use of natural gas. The program intends to create developer confidence in both the natural gas heating design for multi-family as well as understanding the added long term value. Similarly the program assists potential tenants who otherwise have no control and limited options in the market to influence their heating fuel and better manage their heating costs.

The launch of this program several years ago coincided with a substantial reduction in multi-family new construction starts due to the failing economy. While the Company has had success with a couple of local builders, the majority indicate the incremental costs continue to remain higher than the $2,000 incentive offered. Initial incremental costs were primarily focused on estimates of the difference in natural gas equipment compared to electric baseboard along with estimates for additional equipment,

timing/coordination, labor and carrying costs associated with penetrating building envelopes. In multifamily construction natural gas related installations and inspections can add up to 25% to the build time. Builders have also expressed concern with the possibility of the program not being available after the expense has been made to convert their designs to natural gas.

With construction activity revitalized in the past year the program has been modified and continues to be offered for a minimum of two years at a higher incentive amount of $3,500. Builders will continue to have two years to complete the construction of the project once contracted and will continue to provide documentation of their plans and incremental costs associated with installing natural gas over the electric straight resistance baseline. The program will be monitored for activity based on the number of units contracted through 2017 with the incentive amount to be evaluated for reduction or discontinuation.

In summary the new market transformation incentive levels for installing natural gas equipment over baseline electric straight resistance would be up to $3,500 per unit for installation of natural gas space and/or water heating improvements.

Avista Program Manager: Tom Lienhard, site-specific engineering, Renee Coelho, multifamily market transformation, Greta Zink, site-specific planning, Lorri Kirstein, site-specific contract administration and tracking

Measures, Incentives and Budget: As illustrated in Table 1 of Appendix A.

Evaluation, Measurement and Verification Plan: As defined within the Company's EM&V Plan contained within Appendix B.

Nonresidential Prescriptive Shell Program

General Program Description:

The Commercial Insulation program encourages non-residential customers to improve the envelope of their building by adding insulation. This may make a business more energy efficient and comfortable. This prescriptive rebate approach issues payments to the customer after the measure has been installed. Eligibility guidelines for participation include, but may not be limited to: confirmation of electric or natural gas heating usage, invoices and insulation certificate. Pre and/or post inspection for insulation may occur as necessary throughout the year. The program offers incentives to non-residential (Schedule 11, 21, 25) customers who have an electric primary heat source provided by Avista Utilities in Idaho or Washington and a non-residential (Schedule 101, 111 121) natural gas primary heat source provided by Avista in Washington who install qualified insulation measures in their business are eligible to apply for this program.

Program Implementation:
All customer-facing aspects of this program are prescriptively based. Customers must return to Avista a completed rebate form within 90 days after the installation has been completed. Avista will send an incentive check to the customer (or their designee) generally within six to eight weeks. Rebates will not exceed the total amount on the customer invoice. Each rebate will be qualified and processed with the current commercial insulation calculator to determine the savings and incentive. The key drivers to delivering on the objectives of the program are the direct incentives to fuel customer interest, marketing efforts and account executives to drive customers to the program, and ongoing work with trade allies to ensure that customer demand can be met. The Avista Website is also used to communicate program requirements, incentives and forms.

Avista Program Manager: Greta Zink

Measures and Incentives: As illustrated in Table 1 of Appendix A.

Evaluation, Measurement and Verification Plan: As defined within the Company's EM&V Plan contained within Appendix B.

Nonresidential Prescriptive VFD Program

General Program Description:

This program is intended to prompt the customer to increase the energy efficiency of their fan or pump applications with variable frequency drives through direct financial incentives. This prescriptive rebate approach issues payments to the customer after the measure has been installed. Eligibility guidelines for participation include, but may not be limited to: confirmation of electric usage, invoices and verification of HP of motor. Any non-residential (Schedule 11, 21, 25) Avista electric customer installing qualified equipment is eligible for this program.

Program Implementation:
All customer-facing aspects of this program are prescriptively based. Customers must return to Avista a completed rebate form within 90 days after the installation has been completed. Avista will send an incentive check to the customer (or their designee) generally within six to eight weeks. Rebates will not exceed the total amount on the customer invoice. Each rebate will be qualified and processed with the current commercial HVAC Variable Frequency Drive Retrofit calculator to determine the savings and incentive. The key drivers to delivering on the objectives of the program are the direct incentives to fuel customer interest, marketing efforts and account executives to drive customers to the program, and ongoing work with trade allies to ensure that customer demand can be met. The Avista Website is also used to communicate program requirements, incentives and forms.

Avista Program Manager: Greta Zink

Measures and Incentives: As illustrated in Table 1 of Appendix A.

Evaluation, Measurement and Verification Plan: As defined within the Company's EM&V Plan contained within Appendix B.

Nonresidential Food Service Equipment Program

General Program Description:

This program offers incentives for commercial customers who purchase or replace food service equipment with Energy Star or higher equipment. This equipment helps them save money on energy costs. This prescriptive rebate approach issues payments to the customer after the measure has been installed. Eligibility guidelines for participation include, but may not be limited to: confirmation of electric or natural gas usage, invoices and equipment data. Any non-residential (Schedule 11, 21, 25) Avista electric customer in Washington or Idaho and any non-residential (Schedule 101,111, 121) Avista natural gas customer in Washington installing qualifying equipment is eligible for this program.

Program Implementation:
All customer-facing aspects of this program are prescriptively based. Customers must return to Avista a completed rebate form within 90 days after the installation has been completed. Avista will send an incentive check to the customer (or their designee) generally within six to eight weeks. Rebates will not exceed the total amount on the customer invoice. Each rebate will be qualified and processed with the current EnergyStar Commercial Kitchen calculator to determine the savings. The key drivers to delivering on the objectives of the program are the direct incentives to fuel customer interest, marketing efforts and account executives to drive customers to the program, and ongoing work with trade allies to ensure that customer demand can be met. The Avista Website is also used to communicate program requirements, incentives and forms.

Avista Program Manager: Greta Zink

Measures and Incentives: As illustrated in Table 1 of Appendix A.

Evaluation, Measurement and Verification Plan: As defined within the Company's EM&V Plan contained within Appendix B.

Nonresidential Green Motors Program

General Program Description:

The Green Motors Initiative is to organize, identify, educate, and promote member motor service centers to commit to energy saving shop rewind practices, continuous energy improvement and motor driven system efficiency. Green Motors Program Group launched the Green Motors Initiative in 2008 to work with northwest regional utilities and other sponsoring organizations to provide incentives, through GMPG's member motor centers, for qualifying motors meeting the GMPG's standards. Avista joined this effort in offering the program to electric customers who participate in the green rewind program from 15 hp to 5,000 hp motors. This program provides an opportunity for Avista customers to participate in a regional effort. Without this program, this market is difficult for us to reach as a local utility. Any commercial (Schedule 11, 21, 25, 31) Avista electric customer that does a qualified green motors rewind is eligible for this program. Incentives are paid as a credit off the invoice at the time of the rewind. A $1 per HP incentive goes to the customer and a $1 per HP incentive is paid to the service center.

Program Implementation:
The Green Motors Initiative is a third party program that handles the measures from inception to rebate payment. There is an admin fee based on the kWh savings for Green Motors Partners. The incentive is split between the service center and the customer. The customer receives their incentive as an immediate discount off their bill. The DSM Program Management team oversees the contract, monitors the program and does input for savings and incentive information. The Avista Website is also used to communicate program requirements, incentives and forms.

Avista Program Manager: Greta Zink

Measures and Incentives: As illustrated in Table 1 of Appendix A.

Evaluation, Measurement and Verification Plan: As defined within the Company's EM&V Plan contained within Appendix B.

Nonresidential AirGuardian Program

General Program Description:

The AirGuardian program is a third party delivered turnkey program for direct install compressed air and facility efficiency. The program will target compressed air users in Avista's Washington and Idaho service territory. The direct install will be a compressed air leak reduction device which will generate energy savings by reducing the impact of compressed air leaks during off hour periods. While on site, a leak detection audit will also be conducted. Any commercial (Schedule 11, 21, 25) Avista electric customer installing qualified equipment is eligible for this program.

Program Implementation:
The AirGuardian program will be turnkey delivered by EnSave. The target market for the direct installation of AirGuardian devices are small and medium sized businesses using rotary screw compressors of at least 15 horsepower. We anticipate participants to be machine shops, tire and auto body shops, small manufacturers and others using compressed air for production and tools. These facilities represent a prime opportunity for implementation of other energy efficiency measures too. The account executives are also providing customer referrals with permission from the customers. This program is available to all non-residential retail electric customers with compressed air. The DSM Program Management team monitors the contract, inputs the monthly results and runs analysis on program measures. Account executives drive customers to the program. The Avista Website is also used to communicate program requirements, incentives and forms.

Avista Program Manager: Greta Zink

Measures and Incentives: *As illustrated in Table 1 of Appendix* A.

Evaluation, Measurement and Verification Plan: As defined within the Company's EM&V Plan contained within Appendix B.

Nonresidential Fleet Heat Program

General Program Description:

Vehicle fleet operators use heating devices to heat vehicle engine blocks in cold weather. Maintaining the block temperature eases starting, reduces internal wear, and minimizes fuel consumption due to idle warm up time. Typically block heaters use 110 Volt single phase resistive elements, with no on-board controls. Heating operation is dependent solely on either the driver or fleet maintenance staff to energize the heaters as needed. In the Inland Northwest it appears many fleet operators energize vehicle heaters between October 31st and April 1st whenever the vehicle is off-shift. This 24 hour 7 day a week operation prevents freeze up and hard starting conditions, but may incur extra energy consumption and costs heating the engine block in conditions when heating is not needed. There is currently a technology available that adds logic and sensor points to control heater operation. This technology, called a thermocord, adds the ability to sense and measure block coolant temperature and ambient Outside Air Temperature (OAT). With this information the heater will only be energized when the OAT drops below a temperature set-point and the engine mounted thermostat is calling for heat. Any commercial (Schedule 11, 21, 25) Avista electric customer installing qualified equipment is eligible for this program.

Program Implementation:
The process for the program will be that Avista will have customers fill out an order/rebate form with the specifics of their fleet vehicles. When that form is submitted to Avista, we will record that information and pass the form on to the vendor for processing. Avista will pay the vendor for the cost of the thermocord and the vendor will deliver the product directly to the customer. The customer will be responsible for installation. The vendor will notify Avista when the product has been delivered and Avista will perform an installation verification within 30 days of install. The key drivers to delivering on the objectives of the program are the direct incentives to fuel customer interest, marketing efforts and account executives to drive customers to the program, and ongoing work with trade allies to ensure that customer demand can be met. The Avista Website is also used to communicate program requirements, incentives and forms.

Avista Program Manager: Greta Zink

Measures and Incentives: As illustrated in Table 1 of Appendix A.

Evaluation, Measurement and Verification Plan: As defined within the Company's EM&V Plan contained within Appendix B.

Nonresidential EnergySmart Grocer Program

General Program Description:

This program is intended to prompt the customer to increase the energy efficiency of their refrigerated cases and related grocery equipment through direct financial incentives. The EnergySmart Program was launched in late 2007 and is delivered by a 3rd party contractor, facilitated through CLEAResult. A Field Energy Analyst with expertise in commercial refrigeration provides customers with a no cost audit of the refrigeration in their facility. The customer receives a detailed energy savings report regarding potential savings and is guided through the process from inception through the payment of incentives for qualifying equipment. CLEAResult utilizes a modeling program called Grocer Smart to determine savings. In addition to the potential savings that will be achieved through the measures implemented, customers receive technical assistance and comprehensive audits at no charge. Refrigeration often represents the primary electricity expense in a grocery store or supermarket. Although the potential for savings is high, it is often overlooked because of the technical aspect of the equipment. This program provides a concentrated effort to assist customers through the technical aspects of their refrigeration systems while providing a clear view of what savings can be achieved. Measures are continually looked at to make sure they are cost effective and new measures are considered as they become available. Any commercial (Schedule 11, 21, 25) Avista electric customer installing qualified equipment is eligible for this program. Please see above for incentives.

Program Implementation:
CLEAResult is handling the outreach effort through industry contacts, cold calling and contractor relationships. The account executives are also providing customer referrals with permission from the customers. This program is available to all non-residential retail electric customers with refrigeration facilities. Incentives are offered as a result of the facility audit report for potential savings. CLEAResult guides this process from inception through the payment of the incentives. The DSM Program Management team monitors the contract, program, evaluates new and existing measures, inputs the monthly results and runs analysis on program measures. Account executives drive customers to the program. The Avista Website is also used to communicate program requirements, incentives and forms.

Avista Program Manager: Greta Zink

Measures and Incentives: As illustrated in Table 1 of Appendix A.

Evaluation, Measurement and Verification Plan: As defined within the Company's EM&V Plan contained within Appendix B.

Nonresidential Small Business Program

General Program Description:

The Small Business program is a third party delivered turnkey program for direct install of samll energy saving measures. The program targets small businesses located in Avista's Washington and Idaho service territory. The direct install measures include LEDs, faucet aerators, showerheads, vending misers, smart strips and pres-rinse spray valves. While on site, a quick facility audit is also conducted. Any commercial Schedule 11 Avista electric customer is eligible for this program.

Program Implementation:
The Small Business program is turnkey and delivered by SBW Consulting, Inc. The target market for the direct installation of small business devices are Washington and Idaho schedule 11 customers. These facilities represent a prime opportunity for energy efficiency measures to be directly installed where customers may not have the time or resources to do so themselves. SBW Field Installers saturate an area by zip code doing a cold call method. They provide a quick facility audit, install any measures that are applicable, leave warranty and follow up information. This program is available to all non-residential schedule 11 electric customers in Washington and Idaho. The DSM Program Management team monitors the contract, inputs the monthly results and runs analysis on program measures.

Avista Program Manager: Greta Zink

Measures and Incentives: As illustrated in Table 1 of Appendix A.

Evaluation, Measurement and Verification Plan: As defined within the Company's EM&V Plan contained within Appendix B.

Avista Utilities

2017 Energy Efficiency Evaluation, Measurement and Verification Annual Plan

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2017 Energy Efficiency Evaluation, Measurement and Verification Annual Plan

I. Background

The Company's 2017 Energy Efficiency Evaluation Measurement and Verification (EM&V) Annual Plan, in combination with the Avista EM&V Framework, is intended to identify the evaluation, measurement and verification activities planned to be performed in 2017 in order to adequately inform and assess energy efficiency programs provided by Avista for its customers in Washington and Idaho. This evaluation effort is not only to verify savings estimates of the 2016 program year, but is to be used to enhance program design and improve the marketing and delivery of future programs. This document also provides the projected 2017 EM&V budget.

II. Overview

Avista's 2017 EM&V Annual Plan identifies evaluation activities intended to be performed during 2017 on the 2016 energy efficiency portfolio. For Washington, the evaluation of 2016 acquisition will be consolidated with results from the 2017 evaluation (which will take place in late 2017 and early 2018) to satisfy biennial reporting requirements associated with Washington's Energy Independence Act (EIA), also know as I-937. The scope of this Plan is consistent with prior evaluation plans as presented to Avista's Advisory Group. A comprehensive EM&V overview and definitions are included in Avista's EM&V Framework, a companion document to this Plan.

A key consideration integrated into this Plan is the role of the independent third-party evaluator that will perform the majority of evaluation planning, tasks, analysis, and external reporting as coordinated by Avista DSM Staff. Nexant is the current evaluator for the 2016-2017 biennium and an evaluator for the next biennium is unknown at the time of the writing.

Key aspects of this Plan include:

- The Company continues to pursue a portfolio approach for Impact Analysis, insuring a comprehensive annual review of all programs, to the degree necessary, based on the

magnitude of savings and uncertainty of the related unit energy savings (UES) values and magnitude of claimed energy efficiency acquisition relative to the portfolio.

- Inherent in the impact analysis for 2016, a locked UES list indentifying a significant number of UES values is available to leverage through verification rather than fundamental impact analysis, however this list of UES will be reevaluated for 2017 once the impact analysis from Nexant is provided and measures will also be updated to reflect "best science" from other sources as well, primarily the RTF.
- Portfolio impact evaluations will be conducted for all electric programs in Washington and Idaho and the natural gas program in Washington. For programs with a majority of savings or particular aspects of interest, such as a high level of uncertainty, impact evaluations will consist of detailed impact evaluations using protocols from the Uniform Methods Project, International Performance Measurement and Verification Protocol (IPMVP) and other industry-standard techniques for determining program-level impacts. Billing analyses will be incorporated as appropriate.
- Electric energy efficiency acquisition achieved during 2016 will contribute to the biennial savings acquisition for EIA compliance, which will complete its third biennium at the end of 2017.[1]
- A final evaluation of the electric programs deployed during 2016 and 2017 will be initiated prior to the end of 2017 in order to meet the June 1, 2018, filing deadline in Washington.
- The evaluation will provide energy efficiency acquisition results with 90% precision with a 10% confidence interval. Discrete measures may be represented by reduced precision and wider confidence, such as 80% with a 20% confidence interval, but must support the required portfolio criteria of 90%/10%.
- This planning document will not be construed as pre-approval by the Washington or Idaho Commissions.
- Evaluation resources will be identified through the development of the 2016 evaluation work plan in conjunction with the independent, third-party evaluator. Primary segments will include:
    - Residential
        - The impact analysis will consider the portfolio of measures provided to residential customers during the program year. Evaluation effort will be focused on measures that contribute significant portfolio savings and allow consolidation and grouping of similar measures to facilitate the evaluation.
    - Low Income
        - For the impact analysis, billing analysis on the census of measures, including conversions, will be conducted. In addition, a comparison group, possibly consisting of Low Income Home Energy Assistance Program

[1] Washington Initiative 937 was approved by voters on November 7, 2006. Codified as RCW 19.285 and WAC 480-109, the energy efficiency aspects of this law became effective on January 1, 2010.

(LIHEAP) or Low Income Rate Assistance Program (LIRAP) participants, may be incorporated into the analysis if possible.

- Nonresidential
  - Interviews of Avista staff and third-party implementers will be conducted, along with customer surveys, tracking databases, marketing materials and quality assurance documents.

- Consideration will be made recognizing most of Avista's current portfolio of electric energy efficiency offerings has been in place since 1995 and natural gas programs available since 2001.
- A Process Evaluation report will be delivered as part of the 2016 Demand Side Management Annual Report which addresses program considerations for that program year.

III. External EM&V Budget for Evaluations

For 2017, the total budget for external evaluation is estimated to be $750,000. The following table identifies evaluation activities and allocations that are anticipated for 2016. The Washington and Idaho expenses include evaluation activities for both electric and natural gas fuel types.

Individual Evaluations	Evaluation Type	Contractor	Budget (System)	WA expense	ID expense
2016Electric and Natural Gas Portfolio	Impact	Nexant	$535,000	$374,500	$160,500
Electric and Natural Gas DSM Operations (or components of)[2]	Process	Nexant	$120,000	$84,000	$36,000
Total Budget for Individual Evaluations			**$655,000**	**$458,500**	**$196,500**

[2] Process evaluation efforts may be directed to a further investigate past process evaluation findings rather than perform a new portfolio evaluation.

IV. Overall 2016 EM&V Budget

The table below captures the individual evaluations specifically identified in the previous table in aggregate and augments them with the associated expenses necessary to manage EM&V activities, perform internal EM&V evaluations, acquire physical EM&V equipment and actively participate in and fund the activities of the Regional Technical Forum (RTF).

Activity	Budget (WA/ID system)	Internal budget	External budget	WA expense	ID expense
Individual evaluations previously specified	$665,000	$10,000	$655,000	$458,500	$196,500
Regional Technical Forum dues	$85,000		85,000	59,500	25,500
Total	**$750,000**		**$740,000**	**$525,000**	**$225,000**
Expected total DSM budget	**$23,344,562**			**$15,950,196**	**$7,394,366**
EM&V as a % of total DSM budget[3]	**3.21%**			**3.29%**	**3.04%**

V. EM&V External Evaluation Contract

In September 2014 Avista published a Request for Proposal for the evaluation, measurement, and verification activities associated with the demand side management portfolio as executed by Avista during the 2014 and 2015 program years. Since Nexant was familiar with Avista's DSM programs, systems and tracking databases therefore, the decision was made to engage with Nexant for the 2016-2017 biennium in order to leverage existing evaluation and analysis tools, take advantage of previously collect data, saving considerable time, effort and money for customers.

[3] While EM&V expenditures will be directly assigned where appropriate, this illustrates the anticipated allocation of estimated EM&V expenditures

VI. Summary of Individual Evaluations

Provided below is a summary of each of the external evaluation activities anticipated to occur during the 2017-2018 time frame. All savings estimates, calculations, assumptions and recommendations will be the work product of the independent evaluator in conjunction with the respective portfolio impact, process, or market evaluation component.

- **Deliverable 1: Evaluation Work Plan**: Develop an Evaluation Work Plan (the document entailed herein) outlining all evaluation activities to be conducted for the evaluation of Avista's 2016-2017 DSM programs in WA and ID, along with the presentation to Avista's DSM Advisory Group.
- **Deliverable 2: Natural Gas Impact Evaluation**: Perform the Washington and Idaho Natural Gas Portfolio Measurement and Verification Impact Evaluation for program years 2016 and 2017.
- **Deliverable 3: Electric Impact Evaluation**: Perform the Washington and Idaho Electric Portfolio Measurement and Verification Impact Evaluation for program years 2016 and 2017.
- **Deliverable 4: Process Evaluation Report**: Perform a process evaluation of the Washington and Idaho programs for years 2016 and 2017.
- **Deliverable 5: Annual Reports with Cost Effectiveness Analysis**: In both 2016 and 2017, and for the combined years, perform a cost-effectiveness analysis for each of Avista's programs and portfolio of programs in Washington and Idaho.

Nexant Evaluation Plan

As part of Nexant's contractual requirements they provided an overall detailed evaluation plan for 2016-2017. That plan is currently under development and will be included attached to this EM&V plan when filed.

Updated UES for 2017

Measure description	Program	UES (kWh)
E AIR INFILTRATION (per 1000 cfm50)*	Low Income	620
E ENERGY STAR DOORS	Low Income	154
E ENERGY STAR WINDOWS	Low Income	17.5
E INS - CEIL/ATTIC	Low Income	228
E INS - DUCT	Low Income	169
E INS - FLOOR	Low Income	953
E INS - WALL	Low Income	777
E Ductsealing	Low Income	798
E Ductless Heatpump *	Low Income	2348
LEDs (Giveaway) *	Low Income	15
Elec Res --> Heat Pump *	Low Income	4795
Estar Refrigerator	Low Income	340
E to G Furnace Conversion	Low Income	5898
E to G DHW Conversion	Low Income	3003
Tier1 0-55Gallon HPWH	Residential	1306
Tier2 0-55Gallon HPWH	Residential	1662
Tier3 0-55Gallon HPWH	Residential	1756
Estar Home - SF, Elec/DF	Residential	3095
Storm Windows	Residential	8.5
Web Tstat Elec DIY	Residential	600
Web Tstat Elec Contractor	Residential	600
DHP 9.0 and Above	Residential	2259
DHP 9.0-11.0	Residential	2259
DHP 11.1-12.5	Residential	2375
DHP 12.6 and above	Residential	2499
Variable Speed Motor	Residential	414
Elec Res --> ASHP	Residential	3605
Elec Res --> Natural Gas Furnace	Residential	7485
E DHW--> NG DHW	Residential	3790
Elec Res--> NG Direct Vent Wall Heat	Residential	10624
CFL - General Purpose and Dimmable - 1490- 2600 lumens	Simple Steps	13
CFL - General Purpose and Dimmable - 250- 1049 lumens	Simple Steps	10
CFL - General Purpose and Dimmable - 1050- 1489 lumens	Simple Steps	13

CFL - Decorative and Mini-Base - 1490- 2600 lumens	Simple Steps	2
CFL - Decorative and Mini-Base - 250- 1049 lumens	Simple Steps	20
CFL - Decorative and Mini-Base - 1050- 1489 lumens	Simple Steps	16
CFL - Globe - 1490- 2600 lumens	Simple Steps	22
CFL - Globe - 250- 1049 lumens	Simple Steps	11
CFL - Globe - 1050- 1489 lumens	Simple Steps	1
CFL - Reflectors and Outdoor - 1490- 2600 lumens	Simple Steps	13
CFL - Reflectors and Outdoor - 250- 1049 lumens	Simple Steps	28
CFL - Reflectors and Outdoor - 1050- 1489 lumens	Simple Steps	34
LED - Decorative and Mini-Base - 1490- 2600 lumens	Simple Steps	4
LED - Decorative and Mini-Base - 250 - 1049 lumens	Simple Steps	27
LED - Decorative and Mini-Base - 1050- 1489 lumens	Simple Steps	23
LED - General Purpose and Dimmable - 1490- 2600 lumens	Simple Steps	23
LED - General Purpose and Dimmable - 250- 1049 lumens	Simple Steps	15
LED - General Purpose and Dimmable - 1050- 1489 lumens	Simple Steps	27
LED - Globe - 1490 - 2600 lumens	Simple Steps	35
LED - Globe - 250- 1049 lumens	Simple Steps	14
LED - Globe - 1050 - 1489 lumens	Simple Steps	2
LED - Reflectors and Outdoor - 1490 - 2600 lumens	Simple Steps	24
LED - Reflectors and Outdoor - 250 - 1049 lumens	Simple Steps	41
LED - Reflectors and Outdoor - 1050 - 1489 lumens	Simple Steps	52
Showerhead 2.0 GPM	Simple Steps	82
Showerhead 1.75 GPM	Simple Steps	112
Showerhead 1.5 GPM	Simple Steps	138
LED - Downlight (Retrofit Kit) Kit Fixture	Simple Steps	30

LED - Decorative Ceiling Flush Mount Fixture	Simple Steps	32
LED - Track Light Fixture	Simple Steps	22
LED - Linear Shop Light Fixture	Simple Steps	14
LED - Linear Flush Mount Fixture	Simple Steps	15
LED - Exterior Porch Light Fixture	Simple Steps	61
LED - Exterior Security Fixture	Simple Steps	183
Less than R11 attic insulation (E/E) to R30-R44 Attic Insulation	NR Shell	1.02
Less than R11 attic insulation (E/E) to R45+ Attic Insulation	NR Shell	1.39
Less than R11 roof insulation (E/E) to R30+ Roof Insulation	NR Shell	1.36
Less than R4 wall insulation (E/E) to R11-R18 Wall Insulation	NR Shell	2.82
Less than R4 wall insulation (E/E) to R19+ Wall Insulation	NR Shell	4.11
Prescriptive VFDs - HVAC Cooling Pump	NR VFD	1091
Prescriptive VFDs - HVAC Fan	NR VFD	1022
Prescriptive VFDS - HVAC Heating Pump or combo	NR VFD	1756
0.61 to 0.80 GPM electric pre-rinse sprayer	NR Food Service	891
0.61 to 0.80 GPM gas pre-rinse sprayer	NR Food Service	49
0.81 to 1.00 GPM electric pre-rinse sprayer	NR Food Service	552
0.81 to 1.00 GPM gas pre-rinse sprayer	NR Food Service	30
3 pan electric steamer	NR Food Service	21470
3 pan gas steamer	NR Food Service	0
4 pan electric steamer	NR Food Service	28564
4 pan gas steamer	NR Food Service	0
5 pan electric steamer	NR Food Service	35659
5 pan gas steamer	NR Food Service	0
6 pan electric steamer	NR Food Service	42754
6 pan gas steamer	NR Food Service	0
10 or larger pan electric steamer	NR Food Service	71333
10 or larger pan gas steamer	NR Food Service	0
Efficient combination oven (>= 16 pan and <= 20 pan) electric	NR Food Service	17877

Efficient combination oven (>= 16 pan and <= 20 pan) gas	NR Food Service	
Efficient combination oven (>= 6 pan and <= 15 pan) electric	NR Food Service	12990
Efficient combination oven (>= 6 pan and <= 15 pan) gas	NR Food Service	
Efficient convection oven full size	NR Food Service	1661
Efficient convection oven half size	NR Food Service	1683
H.E. gas convection oven, 40% effic. or better	NR Food Service	0
Gas rack oven	NR Food Service	0
Efficient hot food holding cabinet, full size	NR Food Service	820
Electric fryer	NR Food Service	2449
Energy Star 50% effic.gas fryer	NR Food Service	
H.E. gas griddle, 40% effic. or better	NR Food Service	
Standard Efficiency Appliance to H.E. electric griddle, 70% effic. or better	NR Food Service	1636
High temp electric hot water dishwasher	NR Food Service	4110
High temp gas hot water dishwasher	NR Food Service	1700
Low temp electric hot water dishwasher	NR Food Service	3801
Low temp gas hot water dishwasher	NR Food Service	517
Standard Efficiency Appliance to Energy Star 65% effic. or greater 3-pan electric steam cooker	NR Food Service	888
Standard Efficiency Appliance to Energy Star 65% effic. or greater 4-pan electric steam cooker	NR Food Service	888
Standard Efficiency Appliance to Energy Star 65% effic. or greater 5-pan electric steam cooker	NR Food Service	1671
Standard Efficiency Appliance to Energy Star 65% effic. or greater 6-pan electric steam cooker	NR Food Service	2020

Standard Efficiency Appliance to Energy Star electric hot food holding cabinet, between 12 & 20 cu.ft. (CEE tier 2)	NR Food Service	1700
Standard Efficiency Appliance to Energy Star electric hot food holding cabinet, less than 12 cu.ft. (CEE tier 2)	NR Food Service	876
Standard Efficiency Appliance to Energy Star electric hot food holding cabinet, over 20 cu.ft. (CEE tier 2)	NR Food Service	1752
Standard Efficiency Appliance to Energy Star ice maker, air cooled, ice making head, 1000 to 1199 lbs./day capacity	NR Food Service	1182
Standard Efficiency Appliance to Energy Star ice maker, air cooled, ice making head, 1200 to 1399 lbs./day capacity	NR Food Service	1350
Standard Efficiency Appliance to Energy Star ice maker, air cooled, ice making head, 1400 to 1599 lbs./day capacity	NR Food Service	1502
Standard Efficiency Appliance to Energy Star ice maker, air cooled, ice making head, 1600 or greater lbs./day capacity	NR Food Service	1640
Standard Efficiency Appliance to Energy Star ice maker, air cooled, ice making head, 200 to 399 lbs./day capacity	NR Food Service	421
Standard Efficiency Appliance to Energy Star ice maker, air cooled, ice making head, 400 to 599 lbs./day capacity	NR Food Service	592
Standard Efficiency Appliance to Energy Star ice maker, air cooled, ice making head, 600 to 799 lbs./day capacity	NR Food Service	804

Standard Efficiency Appliance to Energy Star ice maker, air cooled, ice making head, 800 to 999 lbs./day capacity	NR Food Service	1000
Standard Efficiency Appliance to Energy Star ice maker, air cooled, ice making head, under 200 lbs./day capacity	NR Food Service	173
Standard Efficiency Appliance to Energy Star ice maker, air cooled, remote condensing, 1000 to 1199 lbs./day capacity	NR Food Service	940
Standard Efficiency Appliance to Energy Star ice maker, air cooled, remote condensing, 1200 to 1399 lbs./day capacity	NR Food Service	1111
Standard Efficiency Appliance to Energy Star ice maker, air cooled, remote condensing, 1400 to 1599 lbs./day capacity	NR Food Service	1282
Standard Efficiency Appliance to Energy Star ice maker, air cooled, remote condensing, 1600 to 1799 lbs./day capacity	NR Food Service	1453
Standard Efficiency Appliance to Energy Star ice maker, air cooled, remote condensing, 1800 or greater lbs./day capacity	NR Food Service	1624
Standard Efficiency Appliance to Energy Star ice maker, air cooled, remote condensing, 400 to 599 lbs./day capacity	NR Food Service	601
Standard Efficiency Appliance to Energy Star ice maker, air cooled, remote condensing, 600 to 799 lbs./day capacity	NR Food Service	765
Standard Efficiency Appliance to Energy Star ice maker, air cooled, remote condensing, 800 to 999 lbs./day capacity	NR Food Service	885

Standard Efficiency Appliance to Energy Star ice maker, air cooled, remote condensing, less than 400 lbs./day capacity & under	NR Food Service	394
Standard Efficiency Appliance to Energy Star ice maker, air cooled, self contained, 100 to 149 lbs./day capacity	NR Food Service	206
Standard Efficiency Appliance to Energy Star ice maker, air cooled, self contained, 150 to 199 lbs./day capacity	NR Food Service	225
Standard Efficiency Appliance to Energy Star ice maker, air cooled, self contained, 200 to 249 lbs./day capacity & under	NR Food Service	289
Standard Efficiency Appliance to Energy Star ice maker, air cooled, self contained, 250 to 299 lbs./day capacity	NR Food Service	353
Standard Efficiency Appliance to Energy Star ice maker, air cooled, self contained, 300 to 349 lbs./day capacity	NR Food Service	418
Standard Efficiency Appliance to Energy Star ice maker, air cooled, self contained, 350 to 399 lbs./day capacity	NR Food Service	482
Standard Efficiency Appliance to Energy Star ice maker, air cooled, self contained, 400 or greater lbs./day capacity	NR Food Service	546
Standard Efficiency Appliance to Energy Star ice maker, air cooled, self contained, 50 to 99 lbs./day capacity	NR Food Service	146
Standard Efficiency Appliance to Energy Star ice maker, air cooled, self contained, less than 50 lbs./day capacity & under	NR Food Service	56
Visi Cooler	NR Food Service	150
15 HP Agricultural	NR Green Motors	317

15 HP Industrial	NR Green Motors	601
20 HP	NR Green Motors	425
20 HP Ind	NR Green Motors	804
25 HP	NR Green Motors	595
25 HP Ind	NR Green Motors	1052
30 HP	NR Green Motors	640
30 HP Ind	NR Green Motors	1133
40 HP	NR Green Motors	746
40 HP Ind	NR Green Motors	1319
50 HP	NR Green Motors	802
50 HP Ind	NR Green Motors	1418
60 HP	NR Green Motors	765
60 HP Ind	NR Green Motors	1476
75 HP	NR Green Motors	788
75 HP Ind	NR Green Motors	1519
100 HP	NR Green Motors	1040
100 HP Ind	NR Green Motors	2005
125 HP	NR Green Motors	1157
125 HP Ind	NR Green Motors	2598
150 HP	NR Green Motors	1376
150 HP Ind	NR Green Motors	3089
200 HP	NR Green Motors	1821
200 HP Ind	NR Green Motors	4088
250 HP	NR Green Motors	4972
250 HP	NR Green Motors	2823
300 HP	NR Green Motors	5935
300 HP	NR Green Motors	3370
350 HP	NR Green Motors	6919
350 HP	NR Green Motors	3929
400 HP	NR Green Motors	7848
400 HP	NR Green Motors	4456
450 HP	NR Green Motors	8811
450 HP	NR Green Motors	5003
4500 HP	NR Green Motors	104783
4500 HP	NR Green Motors	37021
500 HP	NR Green Motors	9804
500 HP	NR Green Motors	5567
600 HP	NR Green Motors	14689
600 HP	NR Green Motors	6193
700 HP	NR Green Motors	17065
700 HP	NR Green Motors	7195

800 HP	NR Green Motors	19461
800 HP	NR Green Motors	8205
900 HP	NR Green Motors	21847
900 HP	NR Green Motors	9211
1000 HP	NR Green Motors	24172
1000 HP	NR Green Motors	10192
1250 HP	NR Green Motors	29973
1250 HP	NR Green Motors	10590
1500 HP	NR Green Motors	35891
1500 HP	NR Green Motors	12681
1750 HP	NR Green Motors	41697
1750 HP	NR Green Motors	14732
2000 HP	NR Green Motors	47454
2000 HP	NR Green Motors	16766
2250 HP	NR Green Motors	53051
2250 HP	NR Green Motors	18744
2500 HP	NR Green Motors	58823
2500 HP	NR Green Motors	20783
3000 HP	NR Green Motors	70147
3000 HP	NR Green Motors	24784
3500 HP	NR Green Motors	81667
3500 HP	NR Green Motors	28854
4000 HP	NR Green Motors	93334
4000 HP	NR Green Motors	32976
5000 HP	NR Green Motors	116183
5000 HP	NR Green Motors	41049
Washington Fleet Heat	NR Fleet Heat	1500
Controls - Anti Sweat heat - Dedicated ASHC Device - Low Temp	Energy Smart Grocer	369
Controls - Anti Sweat heat - Dedicated ASHC Device - Med Temp	Energy Smart Grocer	230
Controls - Anti-Sweat Heat - Energy Management System - Low Temp	Energy Smart Grocer	369
Controls - Anti-Sweat Heat - Energy Management System - Med Temp	Energy Smart Grocer	230
Gaskets Reach In Low Temp	Energy Smart Grocer	243
Gaskets Reach In Medium Temp	Energy Smart Grocer	248
Gaskets Walk In Low Temp	Energy Smart Grocer	347
Gaskets Walk In Medium Temp	Energy Smart Grocer	204
Evap motors: shaded pole to ECM in Walk-in - Greater than 23 watts	Energy Smart Grocer	1094
Evap motors: shaded pole to ECM in Walk-in - less than 23 watts	Energy Smart Grocer	592

Floating Head Pressure for Single Compressor Systems, LT Condensing Unit	Energy Smart Grocer	855
Floating Head Pressure for Single Compressor Systems, LT Remote Condenser	Energy Smart Grocer	685
Floating Head Pressure for Single Compressor Systems, MT Condensing Unit	Energy Smart Grocer	757
Floating Head Pressure for Single Compressor Systems, MT Remote Condenser	Energy Smart Grocer	473
Evaporated Fan - Walk-In ECM Controller - Low Temp - 1/10-1/20 HP	Energy Smart Grocer	207
Evaporated Fan - Walk-In ECM Controller - Medium Temp - 1/10-1/20 HP	Energy Smart Grocer	264
Strip Curtains for Convenience Store Walk-in Freezers	Energy Smart Grocer	31
Strip Curtains for Restaurant Walk-in Freezers	Energy Smart Grocer	129
Strip Curtains for Supermarket Walk-in Coolers	Energy Smart Grocer	123
Strip Curtains for Supermarket Walk-in Freezers	Energy Smart Grocer	535
Evap motors: shaded pole to ECM in Display Case	Energy Smart Grocer	477
Add doors to Open Medium Temp Cases	Energy Smart Grocer	533
Cases - Low Temp Reach-in to High Efficiency Reach-in	Energy Smart Grocer	963
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Cases - Medium Temp Open Case to New Reach In	Energy Smart Grocer	585
Floating Head Pressure Control - Air Cooled	Energy Smart Grocer	332
Floating Head Pressure Control - Evap Cooled	Energy Smart Grocer	708
Floating Head Pressure Control w/ VFD-Air Cooled	Energy Smart Grocer	915
VFD - Condenser Fan Motors - Air Cooled	Energy Smart Grocer	930
VFD - Condenser Fan Motors - Evap Cooled	Energy Smart Grocer	930
Single Row T8_Low Power LED_Inside Refrigerated Space_Medium Temperature Case	Energy Smart Grocer	49
Single Row T12_Low Power LED_Inside Refrigerated Space_Medium Temperature Case	Energy Smart Grocer	83

Double Row T8 _High Power LED_Inside Refrigerated Space_Medium Temperature Case	Energy Smart Grocer	110
Double Row T12 _High Power LED_Inside Refrigerated Space_Medium Temperature Case	Energy Smart Grocer	177
Single Row T8_Low Power LED_Outside Refrigerated Space_HVAC Interaction	Energy Smart Grocer	36
Single Row T12_Low Power LED_Outside Refrigerated Space_HVAC Interaction	Energy Smart Grocer	61
Double Row T8 _High Power LED_Outside Refrigerated Space_HVAC Interaction	Energy Smart Grocer	81
Double Row T12 _High Power LED_Outside Refrigerated Space_HVAC Interaction	Energy Smart Grocer	130
Single Row T8_Low Power LED_Inside Refrigerated Space_Low Temperature Case	Energy Smart Grocer	68
Single Row T12_Low Power LED_Inside Refrigerated Space_Low Temperature Case	Energy Smart Grocer	115
Double Row T8 _High Power LED_Inside Refrigerated Space_Low Temperature Case	Energy Smart Grocer	152
Double Row T12 _High Power LED_Inside Refrigerated Space_Low Temperature Case	Energy Smart Grocer	245
Low-flow faucet aerator (0.5 gpm) Electric Water Heat	Small Business	300
Low-flow faucet aerator (1.0 gpm) Electric Water Heat	Small Business	176
Low-flow faucet aerator (0.5 gpm) Gas Water Heat	Small Business	
Low-flow faucet aerator (1.0 gpm) Gas Water Heat	Small Business	
Pre-Rinse Spray Valve Electric Heat	Small Business	1130
Pre-Rinse Spray Valve Gas Heat	Small Business	
Shower Head Fitness Electric	Small Business	4288
Shower Head Fitness Gas	Small Business	
Shower Head Electric	Small Business	228
Shower Head Gas	Small Business	
Vending Miser	Small Business	1612
Tier 1 smart power strip	Small Business	105.02
Screw in LED lamp 40W	Small Business	51.87
Screw in LED lamp 60W	Small Business	76.44
Screw in LED lamp 75W	Small Business	93.73
Screw in LED lamp 100W	Small Business	127.4

Screw in LED BR30	Small Business	93.73
Screw in LED BR40	Small Business	127.4
Screw in LED PAR30	Small Business	93.73
Screw in LEDPAR38	Small Business	127.4
Multifamily NG Market Transformation (per unit)	MF Market Transformation	5874

PLAN

Nexant
Reimagine tomorrow.

Evaluation Work Plan for 2016-2017
Demand Side Management Programs

Submitted to Avista Corporation

Submitted by Nexant
In partnership with: Research Into Action

October 14, 2016

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1 Introduction and Key Issues

Nexant, Inc. (Nexant) and its partner, Research Into Action (collectively, the evaluation team) have been retained by Avista Corporation (Avista) to evaluate the 2016-2017 demand side management (DSM) programs offered in Washington and Idaho. This project includes process and impact evaluations, to be completed and delivered with final evaluation results by April, 2018. The main deliverables for this evaluation include:

- **Deliverable 1: Evaluation Work Plan:** Develop an Evaluation Work Plan (the document entailed herein) outlining all evaluation activities to be conducted for the evaluation of Avista's 2016-2017 DSM programs in WA and ID, along with the presentation to Avista's DSM Advisory Group.
- **Deliverable 2: Natural Gas Impact Evaluation:** Perform the Washington and Idaho Natural Gas Portfolio Measurement and Verification Impact Evaluation for program years 2016 and 2017.
- **Deliverable 3: Electric Impact Evaluation:** Perform the Washington and Idaho Electric Portfolio Measurement and Verification Impact Evaluation for program years 2016 and 2017.
- **Deliverable 4: Process Evaluation Report:** Perform a process evaluation of the Washington and Idaho programs for years 2016 and 2017.
- **Deliverable 5: Annual Reports with Cost Effectiveness Analysis:** In both 2016 and 2017, and for the combined years, perform a cost-effectiveness analysis for each of Avista's programs and portfolio of programs in Washington and Idaho.

The evaluation team will perform a process evaluation that focuses on program design and theory, implementation and delivery, and market feedback. The programs will be evaluated through interviews with pertinent program actors including Avista and third-party implementation staff, contractors, trade allies, participants, and non-participants. The evaluation team will develop a unique survey instrument for each population to ensure that responses produce comparable data and allow the evaluation team to draw meaningful conclusions. Section 3 of this plan provides an overview of the process evaluation.

For the impact evaluation, the net and gross program energy impacts will be evaluated through a combination of documentation audits, telephone surveys, and engineering analysis and site inspections of completed program projects. Because it is not cost-effective to complete analysis and site inspection on a census of the implemented program projects, energy savings will only be verified for a representative sample of projects to draw statistically measurable results. Additionally, a subset of the residential portfolio programs will be evaluated through billing analysis. The program-reported savings will be adjusted based on the findings from the gross-verified evaluation activities conducted on the sample population. The net savings, which are an estimation of the savings directly attributable to the program and which account market

effects and customer influence, can be calculated by applying net-to-gross scaling factors to the gross program-reported savings. In order to estimate net-to-gross factors, the evaluation team will employ participant surveys to quantify the actual impact of the programs.

The primary goal of evaluation efforts is assurance that programs are cost-effectively addressing the hurdles customers face when it comes to implementing energy efficiency measures in their home or business. The primary findings from evaluation efforts, in turn, help utilities plan for future program offerings. Several factors must be included and thoroughly outlined prior to any evaluation activity to ensure that evaluation budgets are spent wisely and that the results of the evaluation efforts are statistically valid.

The evaluation team reviewed available material for each of Avista's 2016-2017 DSM programs to develop prioritization criteria for allocating the project's finite evaluation resources. The issues that we took into account when developing this work plan include:

- A program's estimated savings (kWh and therms) contribution to the sector and DSM portfolio (actual to-date information through August 2016 and planned values for 2017).
- A program's budget allocation relative to the sector and DSM portfolio (as outlined in Avista's 2016 DSM Business Plan).
- The expected degree of uncertainty in a program's savings.
- The status of measure UES values currently listed in the RTF.
- Findings and recommendations made during the prior evaluation cycle.
- Whether any special features of a program require extraordinary evaluation effort.

In the following sections of this work plan, the evaluation team presents a proven approach and the methodologies for developing accurate and defensible results on the portfolio evaluation of Avista's 2016-2017 DSM programs, which meet the understood regulatory requirements in Washington and Idaho.

1.1 Approach and Methodology

Techniques that we will use to conduct our EM&V activities and to meet the goals stated for this evaluation include site inspections, telephone surveys, document audits, billing analysis, best practice review, and interviews with implementation staff, trade allies, program participants and nonparticipants.

The primary determinants of evaluation costs are the sample size and the level of rigor employed in collecting measurable data for the impact and process analysis. The accuracy of the study findings is in turn dependent on these parameters. Avista's stated preference is to achieve 10%/90% statistical precision and confidence at the portfolio level at a minimum. This work plan balances cost and rigor using a value of information approach that starts with a determination of those programs that require a higher level of evaluation due to uncertainty in the program. We then assess the level of uncertainty in a program with the estimated value of

the program in order to determine the most cost-effective and accurate evaluation approach.

1.2 Evaluation Goals and Objectives

Over-arching project goals will follow the definition of impact evaluation established in the "Model Energy-Efficiency Program Impact Evaluation Guide – A Resource of the National Action Plan for Energy Efficiency," November 2007:

> *Evaluation is the process of determining and documenting the results, benefits, and lessons learned from an energy-efficiency program. Evaluation results can be used in planning future programs and determining the value and potential of a portfolio of energy-efficiency programs in an integrated resource planning process. It can also be used in retrospectively determining the performance (and resulting payments, incentives, or penalties) of contractors and administrators responsible for implementing efficiency programs.*
>
> *Evaluation has two key objectives:*
>
> *1. To document and measure the effects of a program and determine whether it met its goals with respect to being a reliable energy resource.*
>
> *2. To help understand why those effects occurred and identify ways to improve.*

Avista and evaluation team has identified the following objectives for the evaluation:

- Independently verify, measure and document energy savings impacts from Avista's electric and natural gas energy efficiency programs in 2016 and 2017,
- Calculate the cost effectiveness of the portfolio and component programs,
- Identify program improvements, if any, and
- Identify possible future opportunities.

1.3 Evaluation Management

The evaluation team has developed this general work plan to identify and outline the activities to evaluate the successes, weaknesses and market barriers for the implemented programs and assess veracity of the reported energy benefits and program cost-effectiveness. However, because this plan has been developed in the middle of the program cycle, there are areas of uncertainty and unknown key parameters. Consequently, this plan may only outline a general methodology or process until more certainty and specific data is available.

Documentation of revisions to the sampling methods, change of management memorandums, and survey instruments will be provided to Avista. In addition, quality control/assurance onsite verification activities are used to confirm measures are installed and performing as expected

beyond the quality assurance activities that the program implementation team conducts. EM&V findings will be documented in the final evaluation reports issued to Avista.

1.3.1 Project Management

In order to ensure on-going quality control, the evaluation team will adhere to professional project management procedures based on planning, monitoring, and control, as well as consistent communication with Avista. Project administration will be predicated on effective work planning, schedule and program controls, coordination of tasks, and internal reviews of work. This is accomplished in the following way:

- Closely adhering to the established processes and procedures as documented in project work plan, administrative procedures and project schedules;
- Consistently communicating with the client and other project participants via oral and written channels;
- Prioritizing and scheduling projects/tasks to best suit the needs of the client and other stakeholders; and
- Providing internal reviews of work prior to interface with customers or submission to agency clients.

The evaluation team will provide regular progress reporting to the Avista evaluation team in relation to the status and preliminary findings of the process and impact evaluation project.

1.4 Summary of Program Evaluation Activities

Table 1-1 summarizes the major survey, interview, and document audit activities for the process and impact evaluation of Avista's programs. Quantities identified are targets and could be modified by actual program participation and market actor quantities.

Table 1-1: Summary of Program Evaluation Activities

Evaluation Audience/Program	Impact	Process	Survey Quantity	Document Audit Quantity
Residential – Washington/Idaho Electric Portfolio				
Program Staff Interviews		√	1	N/A
Residential Focused Contractors		√	10-20	N/A
Water Heat Program	√		0	68
ENERGY STAR Homes	√		0	68
HVAC Program	√		0	68
Shell Program	√	√	42	68
Fuel Efficiency	√	√	42	68
Opower	√		N/A	N/A
Low Income	√		0	68

Evaluation Audience/Program	Impact	Process	Survey Quantity	Document Audit Quantity
Residential – Washington/Idaho Natural Gas Portfolio				
Program Staff Interviews		√	1	N/A
Residential Focused Contractors		√	10-20	N/A
Water Heat Program	√		0	68
ENERGY STAR Homes	√		0	68
HVAC Program	√	√	42	68
Shell Program	√	√	42	68
Low Income	√		0	68
Residential – General				
Nonparticipants		√	70	N/A
Nonresidential – Washington/Idaho Electric Portfolio				
Program & Implementation Staff Interviews		√	~5-10	N/A
Nonresidential Focused Contractors		√	~30-40	N/A
Prescriptive Other	√	√	24	24
Prescriptive Lighting	√	√	42	42
Small Business	√	√	34	34
Site Specific	√	√	68	68
Nonresidential – Washington Natural Gas Portfolio				
Program & Implementation Staff Interviews		√	~5-10	N/A
Nonresidential Focused Contractors		√	~15-20	N/A
Prescriptive (Shell)			0	0
Energy Smart Grocer	√		0	11
HVAC	√		0	11
Food Service	√	√	24	11
Small Business	√	√	34	23
Site Specific	√	√	24	24
Nonresidential – General				
Nonparticipants		√	70	N/A

The process and impact evaluation activities will be choreographed in a manner to maximize project efficiency and minimize customer fatigue caused by multiple interactions with the evaluation team and other Avista surveys of customers. Our approach will provide continuous feedback throughout the evaluation cycle via a quarterly cohort sample frame, which provides faster, more accurate feedback with participants being interviewed closer to the time of their program participation.

In addition to the quantities noted above, the evaluation team will also conduct onsite

measurement and verification (M&V) for a sample of nonresidential customers. Table 1-2 summarizes the target onsite M&V sample sizes for the electric and gas programs.

Table 1-2: Impact Evaluation Onsite M&V Sampling

Nonresidential Program	Impact Evaluation – Onsite M&V Sample
WA/ID Electric Programs	
Nonresidential Prescriptive Lighting	11
Nonresidential Prescriptive Energy Smart Grocer	11
Nonresidential Prescriptive Other	11
Site Specific	68
Small Business	16
WA/ID Natural Gas Programs	
Nonresidential HVAC	6
Nonresidential Food Service	6
Site Specific	24
Small Business	16

1.5 Areas of Research Emphasis

The evaluation team has developed an evaluation approach that targets programs and measures of high-impact and uncertainty, while balancing overall evaluation costs. In addition, the evaluation team intends to consider and build from findings and recommendations from the prior evaluation completed for Avista. Specifically, this evaluation includes the following highlights:

- **Rapid Market Feedback:** We will provide Avista with quarterly feedback on participant satisfaction, engineering review and other key metrics, so that Avista can quickly assess how the market is responding to its actions to continually improve program delivery. Program participants will be contacted when they have easy recall of their recent experiences.
- **T-12 Lighting Study:** The evaluation team will research strategies to encourage businesses to replace T12s, which are still in use by a significant portion of the existing small business market. Questions we will explore include: What are the barriers that are preventing customers from upgrading? Which approaches and value proposition messaging are likely to be effective at encouraging customers to transition to more efficient lighting technologies? This investigation will review and incorporate findings from Avista's T-12 Small Business Lighting Pilot.
- **High Participation Contractor Study:** The evaluation team will conduct in-depth interviews with "high-participation" contractors who are actively engaged in Avista's rebate programs. We will seek to understand what these contractors are doing that could be transferred to other contractors to encourage greater participation.

2 Impact Evaluation Overview

Impact evaluations seek to quantify the energy, demand, and possible non-energy impacts that have resulted from DSM program operations. These impacts may be expressed as all changes resulting from the program (gross savings), or only those changes that would not have occurred absent the program (net savings).

In general, impact evaluations consist of the following components, all of which are described in more detail in the remainder of this section:

- Understanding the Program Context
- Designing the Sample
- Conducting Gross-Verified Activities
  - Document Audits
  - Telephone Surveys
  - Onsite Verification
  - Billing Analysis
- Conducting Net-Verified Activities

2.1 Understanding the Program Context

To understand the portfolio of programs to be evaluated, the evaluation team reviewed Avista's 2016 DSM Business Plan and collected data from Avista on 2016 program performance through July 2016. Table 2-1 and Table 2-2 summarize the estimated percent of savings of each program in the portfolio as related to the total savings. Because these values are based on only part of the biennium (January through July 2016), the distribution of program contribution to the portfolio may shift as the programs progress.

Table 2-1: Percent WA/ID Electric Program Savings of Total Portfolio (2016-2017)

WA/ID Electric Programs	% of Savings of the Portfolio
Residential Portfolio (WA and ID)	
HVAC Program	4%
Water Heat Program	0.0%
ENERGY STAR HOMES	0.4%
Fuel Efficiency	30%
Residential Lighting Program	61%
Shell Program	4%
Opower Behavioral Program	not received
Low Income	1%
Total Residential Portfolio	**100%**
Nonresidential Portfolio (WA and ID)	
EnergySmart Grocer	4%
Food Service Equipment	0.3%
Green Motors Program	0.003%
Comm Motor Controls HVAC	2%
Appliance	0.21%
Prescriptive Lighting	76%
Shell Program	0.04%
Site Specific	18%
AirGuardian	0.06%
Fleet Heat	0%
Total Nonresidential Portfolio	**100%**

Table 2-2: Percent WA/ID Natural Gas Program Savings of Total Portfolio (2016-2017)

WA/ID Natural Gas Programs	% of Portfolio
Residential Portfolio	
Water Heat Program	9%
ENERGY STAR HOMES	1%
HVAC Program	56%
Shell Program	34%
Low Income	1%
Total Residential Portfolio	**100%**
Nonresidential Portfolio	
EnergySmart Grocer	22%
Prescriptive Shell	6%
HVAC	15%
Food Service Equipment	47%
Site Specific	10%
Total Nonresidential Portfolio	**100%**

2.2 Designing the Sample

Sample development is an important step that enables the evaluation team to deliver meaningful, defensible results to Avista. The evaluation team plans to use stratified random sampling approaches for much of our data collection activities. Our sampling methodology will be guided by a "value of information" (VOI) framework which allows us to target activities and respondents with expected high impact and yield, while representing the entire population of interest. VOI focuses budgets and rigor towards the programs/projects with high uncertainty and high impact.

Avista offers a large number of programs across both market segments (residential/nonresidential) and fuel type (electric/gas). For the sample design, the evaluation team organized the programs into 'bins', segmenting the programs based on two metrics:

- **Program Uncertainty:** The risks associated with a program's reported savings (i.e., custom vs. deemed vs. Regional Technical Forum status), delivery mechanism, and performance goals, etc., broken into three categories: high, medium, and low.
- **Program Size:** Either large, or small; based on projected energy savings, and planned budget allocations.

Bins are created for residential and nonresidential programs separately and for electric (WA/ID) and natural gas (WA) programs separately.

In parallel, we calculate a 'level of rigor' value for each program, and based on assumed measure complexity and RTF influence, we identify an appropriate level of sampling and

evaluation rigor.

- **Level of Sampling:** Defined as confidence/precision for calculating sample sizes, the evaluation team is using four levels: 90/10, 80/10, 85/15, or 80/20.
- **Evaluation Rigor:** Defined as the level of detail used for the evaluation activities, including four levels: document audit, surveys, onsite inspections, and billing analysis. A detailed discussion of evaluation rigor is provided in Section 2.3 below.

The evaluation bin identified for each program is one factor in determining the sample size and level of rigor for the evaluation activities. Additional factors that influence the sample size and level of rigor include evaluation costs, Regional Technical Forum (RTF) influence, and findings and recommendations from prior evaluations.

The approaches (i.e. level of rigor) for estimating the gross energy savings for the programs being evaluated include: document audit, surveys, site inspections, and statistical billing analysis. In many cases, a combination of approaches are used to both validate savings and provide insights into any identified discrepancies between reported and verified savings values. The sampling strategy for the impact evaluation will also overlay, as applicable, with the sample approach used for the process evaluation activities in order to obtain information for both the impact and process evaluations during one single onsite inspection and/or survey. This nested sampling approach will help to minimize costs while still maintaining adequate sample sizes.

Table 2-3 and Table 2-4 show the anticipated confidence/precision level, planned sample sizes and level of rigor by program separately for WA/ID Natural Gas and WA/ID Electric portfolios. The samples are drawn to meet the specified confidence/precision for each program and to meet a 90% confidence and 10% precision at the portfolio level.

Table 2-3: Sampling and Evaluation Rigor for WA/ID Natural Gas Programs

WA/ID Natural Gas Portfolio Program Name	Target Sample Sizes based on Level of Rigor				
	Target C/P[1]	Document Audit	Surveys	Onsite Inspections	Billing Analysis
Residential (WA)					
Water Heat Program	80/20	68	-	-	-
ENERGY STAR Homes	census	68	-	-	census
Shell	census	68	42	-	census
HVAC Program	census	68	42	-	census
Low Income	census	68	-	-	census
Nonresidential (WA)					
HVAC Program	80/20	11	6	6	-
Energy Smart Grocer	80/20	11	0	0	
Food Service Equipment	80/20	11	6	6	-
Small Business	90/15	23	16	16	-
Site Specific	85/15	24	24	24	based on IPMVP

[1]Sample sizes for document audit designed to meet C/P target and are based on actual 2016 participation values through July, 2016

Table 2-4: Sampling and Evaluation Rigor for WA/ID Electric Programs

WA/ID Electric Portfolio Program Name	Target Sample Sizes for each Level of Rigor				
	Target C/P[1]	Document Audit	Surveys	Onsite Inspections	Billing Analysis
Residential (WA and ID)					
HVAC Program	census	68	-	-	census
Water Heat Program	80/20	68	-	-	-
ENERGY STAR Homes	census	68	-	-	census
Fuel Efficiency	census	68	42	-	census
Residential Lighting Program	NA	NA	-	-	-
Shell Program	census	68	42	-	census
Opower Behavioral Program	census	-	-	-	census
Low Income	census	68	-	-	census
Nonresidential (WA and ID)					
Prescriptive Lighting	80/10	42	11	11	-
Prescriptive Other[2]	85/15	24	11	11	-
Small Business	90/15	34	16	16	-
Site Specific	90/10	68	68	68	based on IPMVP

[1]Sample sizes for document audit designed to meet C/P target and are based on actual 2016 participation values through July, 2016
[2]Please note that for purposes of the evaluation sampling, the evaluation team has bundled the following Nonresidential Electric Programs into one program titled 'Prescriptive Other': EnergySmart Grocer, Food Service Equipment, Green Motors, Commercial Motor Controls HVAC, Appliance, Power Management for PC Networks, Shell, Fleet Heat, AirGuardian and Standby Generator.

2.3 Conducting Gross-Verified Activities

Based on data and information gathered as part of the evaluation activities chosen for each project and program, the evaluation team will calculate the verified energy savings for each sampled project. We will leverage existing calculations and methods that are available for review and are presented in a transparent and complete way. This also applies to those cases where the RTF has existing unit energy savings for the measure being evaluated. We will review RTF workbooks for applicable measures and assess RTF parameter assumptions in context of Avista's service territory. However, for all RTF measures, the evaluation team will default to the RTF value for reporting achieved energy savings toward Avista's biennial goals and the results of the verification analysis will only be used to inform parameter assumptions used in future RTF measure workbook iterations. For all non-RTF measures, for example gas measures, the majority of nonresidential measures, or Site Specific projects, we will use accepted evaluation practices to conclude whether or not savings estimates are adequately supported, are appropriate to the weather zone or service territory and if applicable, we will calculate savings based on engineering algorithms and/or billing regression analysis to derive a verified savings value. We will calculate realization rates based on the verified savings analysis for the sample of projects and extrapolate our findings to the program population.

The following sections outline each of the approaches we will use to estimate gross verified energy savings.

2.3.1 Document Audit

The first level of rigor to be utilized in the evaluation activities is to conduct a document audit of all sampled projects, for which documentation exists. Document audits are also a critical precursor to conducting telephone surveys and onsite inspections and more specifically for the determination of project-specific variables to be collected during these activities. The document audit for each sampled project will seek to answer the following questions:

1. Are the data files of the sampled projects complete, well documented and adequate for calculation and reporting of the savings? Do the reported values match the Technical Reference Manual (TRM) when applicable?

2. Are the calculation methods used correctly applied, appropriate and accurate?

3. Are all necessary fields properly populated?

2.3.2 Telephone Survey

A second level of evaluation rigor is to conduct stand-alone telephone surveys with program participants. Telephone surveys will be utilized to gather information on the energy efficiency measure implemented, the key parameters needed to verify the assumptions utilized by RTF for approved values or to estimate verified energy savings, and any baseline data that may be available from the participant. Surveys conducted for the process evaluation activities will

include questions relevant to the impact evaluation, and vice versa, when applicable.

Standard data collection input forms will be developed for use by field and telephone survey engineers and for ease of input into a data collection database. Our standard approach and the approach we will use are as follows:

1. Select information that we need to perform the needed impact evaluation tasks and develop appropriate survey questions to gather this information during a telephone conversation.

2. Build a database form to allow for quick and easy population of tables with data and information once information is gathered through the survey implementation.

2.3.3 Onsite Inspections

A higher level of rigor for the evaluation activities is to conduct onsite measurement and verification on a select sample of projects. Prior to conducting site inspections, it is important for the field engineer to understand the project that they are going onsite to verify. This understanding, therefore, corresponds with the document audit task discussed in the prior section. For all onsite inspections, a telephone survey will serve as an introduction to the evaluation activities and will be used to confirm that the customer participated in the program, confirm the appropriate contact, and to verify basic information such as building type and building size. Onsite recruitments will be made during the telephone survey and will be scheduled with a Nexant field engineer.

Site inspections are the key to the accurate evaluation of programs and represent a significant portion of the effort for the evaluation of the nonresidential portfolio. Because of the importance of the task, the evaluation team will work to ensure that site inspections are carefully planned and executed and that site inspectors have the appropriate experience and training. Field engineers will be fully equipped to perform a comprehensive audit with all the necessary data loggers, tools, and complete survey tools or PC tablets. Steps in the site inspection process are as follows:

1. Train site inspectors so that they can successfully collect the needed site-specific information. It is important that the inspectors are trained not only on the engineering aspects, but also on proper protocols and interaction with facility staff to ensure that the necessary data is collected and that utilities' relationship with its customers is not damaged, but rather is enhanced.

2. Group inspections by geographic location to minimize time allocation, labor and direct costs associated with getting to and conducting site inspections.

3. Perform site inspections and enter all needed data into the program evaluation database developed specifically for Avista.

The evaluation team will conduct two levels of rigor associated with the onsite inspections –

measurement AND verification (M&V) and verification-only (V). Upon review of the project documents, the evaluation team will decide which level of rigor is appropriate for each sampled project/measure. In cases where the measure being evaluated has an approved RTF UES value, the evaluation team's effort will focus on verifying quality and quantity of installation to apply the RTF UES values to. We will also gather information that ties into the RTF UES value as appropriate (examples could include heating/cooling fuel type, occupancy, operating hours, etc.).

For projects selected for measurement & verification, an M&V plan will be developed for each project based on our review of the calculation methods and assumptions used for determining measure-level energy savings (if available). These plans will aid in understanding what data to collect while onsite and during the telephone survey in order to calculate gross verified savings for each sampled project. The review may result in different energy savings values as reported by Avista, depending on the accuracy of reporting and assumption used by Avista and its contractors.

M&V plans developed for each project type will be developed with adherence to the IPMVP. The broad categories of the IPMVP are as follows:

- **Option A, Retrofit Isolation:** Key Parameter Measurement: This method uses engineering calculations, along with partial site measurements, to verify the savings resulting from specific measures.
- **Option B, Retrofit Isolation:** All Parameter Measurement: This method uses engineering calculations, along with ongoing site measurements, to verify the savings resulting from specific measures.
- **Option C, Whole Facility:** This method utilizes whole-facility energy usage information, most often focusing on a utility bill analysis, to evaluate savings.
- **Option D, Calibrated Simulation:** Computer energy models are employed to calculate savings as a function of the important independent variables. The models must include verified inputs that accurately characterize the project and must be calibrated to match actual energy usage.

In addition, the evaluation team will conduct metering tasks on a subset of the onsite inspection sample chosen for M&V level of rigor. Projects will be selected for metering activities based on the measure type, project complexity, and the level of information needed in order to estimate gross savings for the project.

2.3.4 Billing Analysis

The final evaluation level of rigor to be conducted is billing analysis, which the evaluation team will conduct on a handful of residential programs in both the electric and natural gas portfolios, including the Opower Behavioral Program.

For programs in which a comparison group can be developed and for which this is an applicable approach, the evaluation team's approach for estimating the gross annual kWh and therm

savings is a difference-in-differences comparison between participants and a comparison group of non-participating customers who resemble the participants with respect to key observable characteristics. For the participating group of customers, the difference between energy consumption before and after program intervention is attributable to two things:

1. Receipt of energy efficiency measure(s).

2. Exogenous changes not related to the program. The changes can have a positive effect (increase in consumption) or a negative effect (decrease in consumption).

For the comparison group, any differences in energy consumption between the pre-implementation period and post-implementation period can only be a function of exogenous changes because no program measures were installed. By subtracting the differences observed in a well-specified comparison group from the differences observed in the treatment group, we effectively isolate the effect of the program measures because exogenous changes will impact both groups in a similar fashion. For example, a hypothetical decline in electric consumption across a portion of Avista's territory due to adverse weather has no relation to Avista's program. The effects must be captured using a comparison group and netted out to produce accurate estimates of program impacts.

2.3.4.1 Model Specification

Rather than model each customer independently, the evaluation team prefers to analyze this data as a panel. Although the choice of technique doesn't change the underlying noisiness of the data, we've found that panel regressions, stratified by groups of interest, produce more stable estimates than running individual customers regressions and averaging the results. The basic form of the model is shown below for gas usage.

$$\text{Daily Therms}_{i,t} = \beta_0 + \beta_1 * \text{AveHDD} + \beta_2 * \text{AveHDD} * \text{Cohort}_i + \beta_{3,i} * \text{AveHDD} * \text{Cohort}_i * \text{Post}$$

Where:

Daily Therms = Billed gas usage in home i during billing period t divided by the number of days in billing period t.

Ave HDD = The average number of heating degree days in billing period t. Various base temperatures can be used as the ceiling of the heating range.

Cohort = Dummy structure to separate groups of interest. We anticipate distinguishing between Single Family Treatment, Single Family Control, Multi-Family Treatment and Multi-Family Control residences at minimum, both other groups can be formed at the direction of Avista.

Post = An indicator variable indicating that the billing period after the customer received the energy efficiency measures

β terms = Regression coefficients determined from the modeling process.

The key parameter in this model is $\beta_{3,i}$. This term should be negative and represents the average therm savings, per heating degree, for $Cohort_i$. For example, if the β_3 term for single-family homes is equal to -0.0059 and the 30-year average number of base 65 heating degree days for Avista sub-program participants is 5200, the calculation of weather normalized natural gas savings would be performed as follows.

$$\text{Annual Gas Impact} = \beta_3 * \text{HDD}$$

$$\text{Annual Gas Impact} = -0.0059 * 5200$$

$$\text{Annual Gas Impact} = -30.68 \text{ therms}$$

The impact will be calculated as negative (because it is a reduction at the meter), but presented as a positive savings number in any report. Exogenous impacts from the corresponding control group would then be netted out.

2.3.5 Calculating Gross-Verified Savings

The impact evaluation approaches described above will be used to calculate verified energy savings for Avista programs. If none of the above mentioned approaches are applicable for the evaluation, we will conduct a secondary review of the reported deemed energy savings values against similar measures offered in similar programs across the region. For these cases, the findings from the secondary review will be used to assess the verified energy savings.

The impact evaluation activities will result in adjustment factors, termed realization rates, which are applied to the reported savings documented in the program tracking records. We will compare reported savings within the program databases against the technical reference manual (TRM) to ensure the measure-level reported savings align with values published in the TRM. The ratio of project savings determined from the evaluation activities to the project-reported savings is the project realization rate; the program realization rate is the weighted average for all projects in the sample. The adjusted savings obtained by multiplying the program realization rates by the program-reported savings are termed the gross verified savings and they reflect the direct energy and demand impact of the program's operations. These savings do not account for customer or market behavior that may have resulted in greater or lesser savings; these market effects (freeridership and spillover) are captured through tasks carried out in net impact analysis. The following equation outlines the calculation for determining the gross savings value.

$$\text{kWh}_{\text{adj}} = \text{kWh}_{\text{rep}} \times \text{Realization Rate}$$

Where:

kWh_{adj} = kWh adjusted by the impact team for the program, the **gross savings**

kWh_{rep} = kWh reported for the program

Realization rate = kWh_{adj} / kWh_{rep} for the research sample

Natural gas (therm) savings will be treated in a similar manner.

The evaluation team will estimate realization rates for all measures being evaluated. For RTF approved measures, we will compare these verified savings values to the RTF values to inform assumptions used in future iterations of RTF measure savings. However, we will not apply realization rates to RTF-approved measures and will report the deemed RTF savings values for establishing achievement towards goal.

2.4 Overview of Net-Verified Approach and Methods

The evaluation team will derive net savings—the savings directly attributable to the program—by adjusting the gross-verified energy savings estimates to account for freeridership and spillover when applicable. We will estimate NTG values for all programs in Avista's WA and ID service territory for which we are conducting participant surveys. For programs where we are not conducting participant surveys, we will apply the NTG values from the prior evaluation for the estimation of net savings. For those program measures that utilize an RTF defined market baseline value, we will not apply freeridership to these measures since freeridership is already accounted for in the market baseline. To rephrase, for RTF or TRM measure savings estimates based on market baselines, freeridership ratios based on the evaluation activities will not be applied and only spillover ratios will be used for the NTG adjustment.

We will rely on participant and non-participant surveys as well as interviews with trade allies, manufacturers, and other key stakeholders to estimate freeridership and spillover. "Freeridership" refers to a participant who, on some level, would have acquired the energy efficiency measure regardless of the program influence. The effect of freeriders reduces the net savings attributable to the program. "Spillover" refers to actions taken outside the program that are attributable to participation. The spillover effect of energy-efficiency programs is an impact that evaluators can add to the program's savings results (unlike the impact of freeriders). Freeridership and spillover are used to calculate NTG ratios for each program, through the following equation:

$$NTG\ Ratio = 1 - Freeridership + Spillover$$

The NTG ratio is applied to the program's gross verified impacts in order to calculate the net impacts or the savings directly attributable to the program. The following equation outlines the relationship between net and gross impacts, when applying the NTG ratio:

$$Net\ Verified\ Savings\ =\ Gross\ Verified\ Savings\ x\ NTG\ Ratio$$

We will use a battery that the evaluation team developed with Energy Trust of Oregon to assess free-ridership. This brief battery independently assesses two separate, equal, and additive

components of free-ridership: 1) the extent to which the respondent's upgrade would have differed if not for program participation (the project "change" component); and 2) the extent of program influence on the project (the "influence" component). Each component is assessed with a few brief questions and is assigned a value from 0 (no free-ridership) to 50 (complete free-ridership according to that component). The change component is assigned a value of 0 for respondents that indicate that they would have done no energy upgrade without program participation, 50 if they would have done exactly the same project without program participation, and an intermediate value if they would have done some upgrade without program participation but one that would have saved less energy. The influence component is assigned a value of 0 for respondents that report that any program assistance or service had the maximum influence (on a 5-point scale) on their decision to do the energy upgrade, a value of 50 if the maximum influence rating was 1 on the 5-point scale, and an intermediate value if the maximum influence rating was between 1 and 5. The two component scores are added to create an overall free-ridership score ranging from 0 to 100.

The evaluation team will assess spillover by asking about program influence on participant's and non-participant's decision to install non-incented equipment.

In an effort to control costs and deliver the most value to Avista, we will leverage the interviews planned as part of the impact and process evaluations for each individual program in order to capture information needed to estimate freeridership and spillover.

2.5 WA/ID Electric Program-Specific Tasks

2.5.1 Residential Programs

The following section outlines the electric residential programs offered in Avista's Washington and Idaho service territory. The general approaches used for conducting the impact evaluation activities are outlined in the sections above, therefore this section provides a brief overview of each program, the sample design for this portfolio of programs and explains any special studies or approaches that will be conducted for the impact evaluation.

2.5.1.1 Program Overview

Avista offers eight residential electric programs as summarized in Table 2-5 below. Fuel Efficiency, HVAC, Residential Shell, and Residential Water Heat are implemented directly by Avista, while ENERGY STAR Homes, Residential Lighting, Opower Behavioral, and Low-income programs have varying levels of assistance from third-party implementers.

Table 2-5: WA/ID Residential Electric Programs

WA/ID Electric Programs	Description	Implementer
ENERGY STAR Homes	Provides incentives for stick-built and manufactured homes that achieve ENERGY STAR / ECO-Rated labels.	NEEA administers, Avista pays rebate

Fuel Efficiency	The fuel efficiency prescriptive rebate encourages customers to consider converting their electric space and water heat to natural gas.	Avista
Water Heat	Provides incentives for heat pump electric water heaters as well as low-flow showerheads and clothes washers as part of the Simple Steps program	Avista and CLEAResult for Simple Steps
HVAC	The HVAC program encourages residential customers to select a high efficiency solution when making energy upgrades to their home (prescriptive).	Avista
Residential Lighting	Direct financial incentives are offered at the manufacturer level that result in cost reductions through participating retailers on select compact fluorescent lamps (CFL's).	CLEAResult
Residential Shell	The shell program encourages residential customers to improve their home's shell or exterior envelope with upgrades to insulation and windows.	Avista
Opower Behavioral Program	In January of 2016, Avista 'refilled' their existing Home Energy Reports Program by 24,000 customers bringing total distribution to 70,000 electric customers in Washington and Idaho that will receive home energy reports throughout the duration of the 2016-2017 biennium, unless they opt-out or move. No one is allowed to opt-in.	Opower
Low Income	Avista utilizes the infrastructure of six Community Action Partner (CAP) agencies to deliver low income energy efficiency programs. The CAPs have the ability to income-qualify customers and have access to a variety of funding resources, including Avista funding, which can be applied to meet customer needs.	SNAP, Rural Resources, Community Action Center Whitman County, Opportunities Industrialization Council, Washington Gorge Action Programs, Community Action Partnership (Lewiston)

2.5.1.2 Gross-Verified Approach

Each program will be assigned a specific number of desk audits and telephone surveys in order to gather necessary data to estimate energy impacts. In addition, specific programs will be evaluated using billing analysis. Once the samples are identified, desk audits of project files will verify basic information and will inform telephone surveys and billing analysis activities.

Table 2-6 outlines the planned sample sizes and level of rigor for the impact evaluation activities for the residential electric programs in WA/ID. The Water Heat Program evaluation will also include analysis of the Simple Steps, Smart Savings high efficiency showerheads component. The evaluation of the Residential Lighting Program will include an assessment of both the upstream lighting component and the giveaway component through a database review.

Table 2-6: Sampling and Evaluation Rigor for WA/ID Residential Electric Programs

WA/ID Electric Portfolio Program Name	Target Sample Sizes for each Level of Rigor				
	Target C/P	Document Audit	Surveys	Onsite Inspections	Billing Analysis
HVAC Program	census	68	-	-	census
Water Heat Program[1]	80/20	68	-	-	-
ENERGY STAR Homes	census	68	-	-	census
Fuel Efficiency	census	68	42	-	census
Residential Lighting Program[2]	NA	NA [3]	-	-	-
Shell Program	census	68	42	-	census
Opower Behavioral Program	census	NA	-	-	census
Low Income	census	68	-	-	census
Total:	**90/10**	**408**	**84**	**-**	**-**

[1]*Includes Simple Steps, Smart Savings upstream showerhead component*
[2]*Includes Simple Steps, Smart Savings upstream lighting program and CFL giveaway events*
[3]*Evaluation team will conduct a review of the Simple Step's database*

Residential Billing Analysis

The evaluation team will develop regression models to analyze billing data for the following programs, assuming that there are is enough available billing data to conduct the analysis:

- HVAC Program
- Shell Program
- Fuel Efficiency
- Low Income
- ENERGY STAR® New Homes
- Opower Behavioral Program

The Opower Behavioral Program was designed and implemented with a defined treatment and control group, thereby allowing for a randomized controlled trial (RCT) to evaluate energy impacts from the program. The Opower program design lends itself well to a RCT as there is no recruiting process. Rather, the program employs an opt-out design whereby customers are assigned either to the treatment or the control group. This design prevents customers in the control group from knowing that an experiment is occurring and therefore do not influence the program outcomes. To evaluate the program, the evaluation team will calculate estimated savings for the program using a regression model that is appropriate for estimating impacts in the context of a RCT.

If deemed applicable, the evaluation team will attempt to conduct a billing regression approach on the other five programs using a similar analysis approach. However, because these programs were not designed as RCTs, the evaluation team will attempt to define a comparison group to conduct the analysis. The comparison group will serve the same function as a control

group and will be matched based on characteristics of the treatment group with focus on energy consumption during the pre-treatment period. If an appropriate comparison group cannot be defined, the evaluation team will use a pre-post billing regression approach for the analysis.

2.5.1.3 Net-Verified Approach

The evaluation team will derive net savings (the savings directly attributable to the program) for the electric residential programs by adjusting the gross-verified energy savings estimates to account for freeridership and spillover when applicable. We will estimate NTG values for those programs being evaluated in the residential portfolio for which NTG ratios should be applied and for which participant surveys are conducted. For programs where we are not conducting participant surveys, we will apply the NTG values from the prior evaluation for the estimation of net savings.

Section 2.4 provides an overview of the approach that will be utilized to estimate free-ridership and spillover, again, when applicable.

2.5.2 Nonresidential Programs

The following section outlines the electric nonresidential programs offered in Avista's Washington and Idaho service territory. The general approaches used for conducting the impact evaluation activities are outlined in Section 2; therefore this section provides a brief overview of each program, the sample design for this portfolio of programs and explains any special studies or approaches that will be conducted for the impact evaluation.

2.5.2.1 Program Overview

Avista offers ten nonresidential electric programs as summarized in Table 2-7 below. Avista partners with implementers on the Energy Smart Grocer, Green Motors, AirGuardian, and Small Business programs, and directly implements the remaining programs.

Table 2-7: WA/ID Nonresidential Electric Portfolio Programs

WA/ID Electric Programs	Description	Implementer
Energy Smart Grocer	This program is intended to prompt the customer to increase the energy efficiency of their refrigerated cases and related grocery equipment through direct financial incentives.	CLEAResult – outreach and referrals, Avista
Food Service Equipment	This program offers incentives for commercial customers who purchase or replace food service equipment with Energy Star or higher equipment (prescriptive).	Avista
Green Motors	The Green Motors Initiative is to organize, identify, educate, and promote member motor service centers to commit to energy saving shop rewind practices, continuous energy improvement and motor driven system efficiency.	Green Motors Practices Group, Green Motors Initiative
Motor Controls HVAC	This program is intended to prompt the customer to increase the energy efficiency of their fan or pump applications with variable frequency drives through direct financial incentives.	Avista
Prescriptive Lighting	This program is intended to prompt commercial electric customer to increase the energy-efficiency of their lighting equipment through direct financial incentives.	Avista, regional Account Executives (AEs)
Prescriptive Shell	The Commercial Insulation program encourages nonresidential customers to improve the envelope of their building by adding insulation.	Avista
AirGuardian	The AirGuardian program is a third party delivered turnkey program for direct install compressed air and facility efficiency.	EnSave
Fleet Heat	Installation of technology that reduces standby losses of vehicle engine blocks by fleet operators by adding the ability to energize block heaters only when Outside Air Temperature drops below a temperature set-point and the engine mounted thermostat is calling for heat.	Avista
Site-Specific	This program approach strives for a flexible response to energy efficiency projects that have demonstrable kWh/Therm savings within program criteria. The majority of site specific kWh/Therm savings are comprised of appliances, compressed air, HVAC, industrial process, motors, shell measures, some custom lighting projects that don't fit the prescriptive path and natural gas multifamily market transformation.	Avista
Small Business	This program provides direct-install energy efficiency measures to small business customers, as well as information about eligibility for other Avista program offerings.	SBW

2.5.2.2 Gross-Verified Approach

Each program will be assigned a specific number of telephone surveys, desk audits, and site inspections based on overall portfolio savings. Once the samples are identified, desk audits of project files will verify basic information and will inform telephone surveys, onsite inspections, and M&V activities.

Table 2-8 outlines our anticipated sample sizes and level of rigor for the impact evaluation activities for the nonresidential electric programs in WA/ID. The sample frames outlined herein

may be further stratified by measure type, based on the percent of measures approved through each program, the respective reported savings values, and any known uncertainties in a particular measure-type. Nexant may also shift sample sizes between programs depending on participation levels in order to ensure defensible program-level results.

Table 2-8: Sampling and Evaluation Rigor for Nonresidential WA/ID Electric Programs

WA/ID Electric Portfolio Program Name	Target Sample Sizes for each Level of Rigor				
	Target C/P[1]	Document Audit	Surveys	Onsite Inspections	Billing Analysis
Prescriptive Lighting	80/10	42	11	11	-
Prescriptive Other[2]	85/15	24	11	11	-
Small Business	90/15	34	16	16	-
Site Specific	90/10	68	68	68	based on IPMVP
Total:	**90/10**	**168**	**106**	**106**	

[1] Sample sizes for document audit designed to meet C/P target and are based on actual 2016 participation values through July, and 2017 Business Plan values.

[2] Please note that for purposes of the evaluation sampling, the evaluation team has bundled the following Nonresidential Electric Programs into one program titled 'Prescriptive Other': Energy Smart Grocer, Food Service Equipment, Green Motors, Commercial Motor Controls HVAC, Shell, Fleet Heat, and AirGuardian.

We will conduct onsite metering for a subset of onsite visits. Variables targeted as part of the metering activities will be determined on a case-by-case basis depending on the project and measure type. Based on the evaluation team's experience evaluating commercial sector projects and the measures offered in Avista's programs, all projects will be measured for at least fourteen (14) days with onsite trend measurements. Seasonally variable measures may be metered for more than 2-3 months to better understand performance changes with weather conditions. Metering data available from building management systems (BMS) will be utilized, and the decision to implement metering equipment will be determined on each specific project based on preliminary desk audits. In addition, where RTF protocols have been established or are currently under review, the evaluation team will take the protocols into consideration and use them when appropriate during the development of the M&V plans and activities.

2.5.2.3 Net-Verified Approach

The evaluation team will derive net savings (the savings directly attributable to the program) for the electric nonresidential programs by adjusting the gross-verified energy savings estimates to account for freeridership and spillover when applicable. We will estimate NTG values for those programs being evaluated in the nonresidential portfolio, for which participant surveys are being conducted, and for which NTG ratios should be applied. However, for RTF measure savings estimates based on market baselines, freeridership ratios based on the evaluation activities will not be applied and only spillover ratios will be used for the NTG adjustment.

Section 2.4 provides an overview of the approach that will be utilized to estimate free-ridership and spillover (when applicable).

2.6 WA/ID Natural Gas Program-Specific Tasks

2.6.1 Residential Programs

The following section outlines the natural gas residential programs offered in Avista's Washington and Idaho service territories. The general approaches used for conducting the impact evaluation activities are outlined in Section 2 above, therefore this section provides a brief overview of each program, the sample design for this portfolio of programs and explains any special studies or approaches that will be conducted for the impact evaluation.

2.6.1.1 Program Overview

Six programs apply to Avista's Natural Gas customers in their Washington and Idaho service territories. Avista implements the HVAC, Residential Shell, and Residential Water Heat programs. Additional implementation contractors for ENERGY STAR Homes, Opower, and Low-Income programs are described with each program summary in Table 2-9 below. The descriptions for each program can be found in Table 2-5 in Section 2.5.

Table 2-9: WA Residential Natural Gas Portfolio Programs

WA/ID Electric Programs	Description	Implementer
HVAC	The HVAC program encourages residential customers to select a high efficiency solution when making energy upgrades to their home (prescriptive).	Avista
ENERGY STAR Homes	Provides incentives for stick-built and manufactured homes that achieve ENERGY STAR / ECO-Rated labels.	NEEA administers, Avista pays rebate
Shell	The shell program encourages residential customers to improve their home's shell or exterior envelope with upgrades to insulation and windows.	Avista
Water Heat	Provides incentives for heat pump electric water heaters as well as low-flow showerheads and clothes washers as part of the Simple Steps program.	Avista
Opower Behavioral Program	In January of 2016, Avista 'refilled' their existing Home Energy Reports Program by 24,000 customers bringing total distribution to 70,000 electric customers in Washington and Idaho that will receive home energy reports throughout the duration of the 2016-2017 biennium, unless they opt-out or move. No one is allowed to opt-in.	Opower
Low Income	Avista utilizes the infrastructure of six Community Action Partner (CAP) agencies to deliver low income energy efficiency programs. The CAPs have the ability to income-qualify customers and have access to a variety of funding resources, including Avista funding, which can be applied to meet customer needs.	SNAP, Rural Resources, Community Action Center Whitman County, Opportunities Industrialization Council, Washington Gorge Action Programs, Community Action Partnership (Lewiston)

2.6.1.2 Gross-Verified Approach

Each program in the WA/ID natural gas portfolio will be assigned a specific number of desk

audits or telephone surveys based on overall portfolio savings. Once the samples are identified, document audits of project files will verify basic information and will inform subsequent telephone surveys conducted with program participants.

Table 2-10 outlines the planned sample sizes and level of rigor for the impact evaluation activities for the residential natural gas programs. The Water Heat Program evaluation will also include analysis of the Simple Steps, Smart Savings high efficiency showerheads component. Billing analysis will be used to evaluate impacts for the HVAC, Shell, Low Income, and Opower programs. Additionally, ENERGY STAR Homes may also be evaluated via billing analysis if sufficient data is available. Please see Section 2.3.4 for additional discussion on the billing analysis approach.

Table 2-10: Sampling and Evaluation Rigor for Residential WA/ID Natural Gas Programs

WA/ID Natural Gas Portfolio Program Name	Target Sample Sizes based on Level of Rigor				
	Target C/P	Document Audit	Surveys	Onsite Inspections	Billing Analysis
Water Heat Program1	80/20	68	-	-	-
ENERGY STAR Homes	census	68	-	-	census
HVAC Program	census	68	42	-	census
Shell Program	census	68	42	-	census
Opower Behavioral Program	census	NA	-	-	census
Low Income	census	68	-	-	census
Total:	**90/10**	**340**	**84**	**-**	**-**

[1]*Includes Simple Steps, Smart Savings upstream showerhead component*

2.6.1.3 Net-Verified Approach

Net to gross ratios are not required for Avista's natural gas programs. However, information necessary for estimating net to gross ratios is collected in the process of performing participant surveys.

2.6.2 Nonresidential Programs

The following section outlines the natural gas nonresidential programs offered in Avista's Washington and Idaho service territories. The general approaches used for conducting the impact evaluation activities are outlined in Section 2 above, therefore this section provides a brief overview of each program, and the sample design and impact evaluation approaches that will be conducted for this portfolio of programs

2.6.2.1 Program Overview

Avista offers five programs to nonresidential natural gas customers in Washington and Idaho. Implementation for all five programs is managed by Avista. Program summaries are listed below in Table 2-11.

Table 2-11: WA Nonresidential Natural Gas Portfolio Programs

WA/ID Natural Gas Programs	Description	Implementer
HVAC	This program offers direct incentives for installing high efficient natural gas HVAC equipment.	Avista
Food Service Equipment	This program offers incentives for commercial customers who purchase or replace food service equipment with Energy Star or higher equipment (prescriptive).	Avista
Prescriptive Shell	The Commercial Insulation program encourages nonresidential customers to improve the envelope of their building by adding insulation.	Avista
Energy Smart Grocer	This program is intended to prompt the customer to increase the energy efficiency of their refrigerated cases and related grocery equipment through direct financial incentives.	CLEAResult – outreach and referrals, Avista
Small Business	This program provides direct-install energy efficiency measures to small business customers, as well as information about eligibility for other Avista program offerings.	SBW
Site-Specific	This program approach strives for a flexible response to energy efficiency projects that have demonstrable kWh/Therm savings within program criteria. The majority of site specific kWh/Therm savings are comprised of appliances, compressed air, HVAC, industrial process, motors, shell measures, some custom lighting projects that don't fit the prescriptive path and natural gas multifamily market transformation.	Avista

2.6.2.2 Gross Verified Approach

Each program will be assigned a specific number of telephone surveys, document audits, and site inspections based on the evaluation sample design. Once the samples are identified, desk audits of project files will verify basic information and will inform telephone surveys, onsite inspections, and M&V activities.

Table 2-12 outlines the preliminary sample sizes and level of rigor for the impact evaluation activities for the nonresidential natural gas programs in WA. We will conduct the level of sampling shown here over the two-year evaluation period. The sample frames outlined herein will be further stratified by measure type, based on the percent of measures approved through each program, the respective reported savings values, and any known uncertainties in a particular measure-type. The evaluation team is not planning on conducting any impact evaluation activities on the Prescriptive Shell program, therefore it is not listed in the table.

Table 2-12: Sampling and Evaluation Rigor for Nonresidential WA/ID Natural Gas Programs

WA/ID Natural Gas Portfolio Program	Target Sample Sizes based on Level of Rigor				
	Target C/P1	Document Audit	Surveys	Onsite Inspections	Billing Analysis
HVAC Program	80/20	11	6	6	
Food Service Equipment	80/20	11	6	6	
Energy Smart Grocer	80/20	11	0	0	
Small Business	85/15	23	16	16	
Site Specific	85/15	24	24	24	based on IPMVP
Total:	**90/10**	**80**	**52**	**52**	

[1] *Sample sizes for document audit designed to meet C/P target and are based on actual 2016 participation values through July, and 2017 planning values.*

We will conduct metering activities for a subset of onsite visits. Variables targeted as part of the metering activities will be determined on a case-by-case basis depending on the project and measure type. Based on the evaluation team's experience evaluating commercial sector projects and the measures offered in Avista's programs, projects may be measured for up to fourteen (14) days with onsite trend measurements. Seasonally variable measures may be metered for more than 2-3 months to better understand performance changes with weather conditions. Metering data available from building management systems (BMS) will be utilized, and the decision to implement metering equipment will be determined on each specific project based on preliminary desk audits.

2.6.2.3 Net-Verified Approach

Net to gross ratios are not required for Avista's natural gas programs. However, information necessary for estimating net to gross ratios is collected in the process of performing participant surveys.

2.7 Other Tasks

2.7.1 Pullman EM&V 2.0 Pilot Study

Avista currently has Advanced Metering Infrastructure (AMI) in their Pullman, WA service territory. The evaluation team will conduct a pilot evaluation comparing traditional evaluation techniques to methods proposed as part of "EM&V2.0" in the Pullman, WA area where smart meters have been deployed. This pilot study will include a brief feasibility study and limited comparison of techniques based on outcomes of the feasibility study.

The "EM&V 2.0" concept has gained traction as interval data from advanced meters has become more common throughout the country. While interval data certainly holds promise to improve EM&V, it will be important in this task to take the opportunity to discuss the nuances of this relatively nascent concept. Therefore, the evaluation team proposes to have a 1-hour kickoff meeting specifically for the EM&V 2.0 task. In the kick off meeting, the evaluation team

will lead the group through the following agenda:

- Avista's perception of EM&V 2.0 and the promise it holds
- Situations in which interval data can improve EM&V
- Strengths and weaknesses of various meter-based methods (pre-post, matching, etc.)
- Potential issues with using whole-premise data (measure-specific attribution, low "signal-to-noise" ratio and net-to-gross)
- Importance of real-time EM&V and the value it can provide
- Review of two Nexant EM&V 2.0 case studies and comparative analyses
- Identification of comparative analyses to be conducted in this project
- Next steps and timeline

The meeting should include key EM&V stakeholders and program managers at Avista who are interested in leveraging interval data and conducting more real-time ongoing EM&V.

The next step will be to prepare an EM&V 2.0-specific evaluation plan that will outline the specific comparative analyses that the evaluation team will conduct in this project and the associated timelines and deliverables.

The overarching objective of the study is to conduct comparative analyses that will assess the energy savings that are estimated from the traditional method as compared to meter-based (EM&V 2.0) methods. In many cases, various meter-based methods may be assessed, given that there are many potential methods, each with its specific strengths and weaknesses (as will be discussed in the kickoff meeting). Finally, the evaluation team will conduct these comparative analyses and provide a section in the draft and final Washington impact evaluation report.

2.7.2 Program Theory and Logic Model Review

The evaluation team will review and revise as necessary Avista's program theories and logic models. To complete this task, we will review the program documentation Avista provides us, along with the existing program theory and logic models. We will interview program managers to understand the barriers the programs address, their activities to address them, and the outputs the programs are generating. We will assess this information in light of our understanding of residential and nonresidential appliance and building markets, market barriers, and common program approaches. With this information from Avista and our understanding of markets and programs, we will confirm or revise Avista's existing theory and logic models.

If applicable, we will submit the revised logic model diagrams to Avista for review and will revise them based on comments and feedback received.

3 Process Evaluation Overview

3.1 Overview of Approach and Methods

The purpose of the process evaluation is to identify any improvements needed at the program or portfolio level to increase program effectiveness, efficiency, and opportunities for future programs. Working in collaboration with the impact activities, the process evaluation will be carried out through data and documentation analyses and by collecting primary data from program staff, program participants and nonparticipants, and participating trade allies. We will use in-depth interviews and surveys as appropriate for each of these groups.

The evaluation team has documented primary objectives and specific areas for investigation in Table 3-1 and in the following sections. In the table, a check mark illustrates the primary process evaluation objectives and the sources of information we will use to address the objective, while an “s” in a cell indicates the source will provide secondary or supporting information. We will discuss additional areas of inquiry with the Avista team in our initial round of staff interviews.

Table 3-1: Information Sources to Be Used to Meet Process Evaluation Objectives

Objective— To Assess:	Information Sources				
	Program Documents	Interviews	Surveys		
	Descriptions; procedures; design docs; application forms; participant records; marketing materials; etc.	Staff & Implementation Contractors	Participating Customers	Participating Trade Allies	Nonparticipating Customers
Appropriateness of design, participation procedures, internal communication, rebate processing activities (e.g., ease of use, cycle time)	✓	✓	✓	✓	✓
Accuracy, consistency, completeness of program records	✓	✓			
Participant satisfaction with programs		s*	✓	✓	
Barriers to participation	✓	s*	✓	✓	✓
Effectiveness of incentives in motivating action			✓	✓	✓
Effectiveness of organizational structure, communication and program processes	✓	✓			
Status of marketing research activities	✓	✓			
Effectiveness of marketing and promotional efforts	✓	✓	✓	✓	✓
Opportunities for process improvement and potential programs		✓	✓	✓	s*
Status of Avista response to previous evaluation recommendations		✓			
Obtain data for net-to-gross analysis			✓	✓	✓

**indicates the source will provide secondary or supporting information*

Table 3-2 provides a summary of our interview and survey data collection for the process evaluation. These survey sample sizes will provide 10% precision at 90% confidence for most surveys. The participant survey will provide more than 90%/10% confidence/precision at the portfolio level.

Table 3-2: Sample Sizes for Process Interviews and Surveys

Sector	Contact Group	Sample Size	Method	Confidence/ Precision
Residential	Avista Program Staff *	2	Interview	n/a
	Participating Customers (84 Electric, 84 NG)	168	Survey	90/10
	Nonparticipating Customers	70	Survey	90/10
	Residential Focused Contractors	38	Survey	80/10
Nonresidential	Program Staff (Avista and Implementation Contractors)*	5-10	Interview	n/a
	Participating Customers (192 Electric, 82 NG)	274	Survey	90/10
	Nonparticipating Customers	70	Survey	90/10
	Nonresidential Focused Contractors	57	Survey	80/10
Crosscutting	Avista Leadership and Management Staff*	16	Interview	n/a

** We will conduct two rounds of interviews. The sample size captures both rounds (for example, for residential program staff, we will interview one staff member on two occasions). The interviews may be with a single individual or with a group, as appropriate to the topic under discussion.*

We provide details of our planned evaluation activities for each of the interviewed or surveyed data sources in the subsequent section. Specifically, we identify the primary research questions that will guide instrument development, any sampling considerations, and details of how we will implement the data collection activities. In all cases, we will submit a draft data collection instrument to the Avista evaluation lead and will revise the instrument based on comments received.

We will analyze all data using the most appropriate method for the specific type of data and for the specific research questions asked. The in-depth interviews will consist primarily of open-ended questions, while the surveys will be primarily close-ended, with some brief open-ended items.

When there are a substantial number of respondents, we use NVivo, a proprietary software tool for analysis of qualitative data.[1] This tool allows any response to be associated with multiple codes. Codes may be based on a priori considerations (as identified by interview guide topics, for example) or may arise from a content analysis of the responses themselves. This tool also allows for cross-tabulation of coded responses by other variables, such as respondent subgroups.

The evaluation team will analyze survey data (close-ended responses such as scales and categorical responses) with SPSS software, using both descriptive (e.g., frequency tables) and inferential methods (e.g., chi-square or Kruskal-Wallis H for nonparametric data and ANOVA for parametric data). We will analyze responses to open-end survey questions (e.g., an "other-specify" response from a multiple-choice item) by carrying out a content-analysis of responses using spreadsheet software such as Microsoft Excel. We will use inferential methods to

[1] For more information, see: http://www.qsrinternational.com/products_nvivo.aspx.

investigate differences between specific groups. For example, we can examine whether program satisfaction or various aspects of program experience differ among subgroups.

Below, we organize our process evaluation activities into three areas:

1. Staff and implementer interviews,
2. Market feedback, and
3. Special studies.

Within each area, we describe the planned evaluation activities for each of the relevant data sources and identify any differences in approach between residential and nonresidential programs.

3.2 Staff and Implementer Interviews

As described above, a key component of a process evaluation is identifying opportunities to improve program effectiveness and efficiency as well as identify opportunities for future programs. We will review existing program documentation and interview both Avista program staff as well as representatives of program implementation contractors to help identify opportunities.

As described in more detail below, we will conduct two rounds of in-depth interviews (IDIs). The first round will occur in late 2016 and the second round will occur in summer 2017. These IDIs will enable us to:

- Identify any changes to programs since the 2014-15 evaluation;
- Learn status of Avista's response to prior evaluation recommendations;
- Understand and confirm or revise program logic;
- Understand the process flow of implementation activities and assess effectiveness of processes;
- Assess effectiveness of current organizational structure and communication;
- Understand strategic, market, and programmatic issues of concern to staff;
- Learn of ideas under consideration for portfolio and program evolution, such as pilot programs;
- Identify what staff and implementers would like to know from the process evaluation; and
- Solicit ideas for program improvements and opportunities.

3.2.1 Interview Guide Development

We will draft interview guides that cover topics common to all staff. Working from this common core of questions, we will develop guides tailored to contacts' roles, adding questions specific to their responsibilities. While preparing the guides, we will draw on available program

documentation such as the 2015, 2016, and 2017 Demand-Side Management Business Plans. As appropriate, we will request and review additional documentation such as Avista's descriptions of marketing and outreach activities.

We will explore the following topics:

- Contact's role and responsibilities and any changes from prior evaluation
- Current staff organization (Avista's or third party implementation contractor's), any changes from prior evaluation
- Changes to programs since the 2014-15 evaluation and status of Avista's response to prior evaluation recommendations
- Program logic (objectives, activities, outputs, expected outcomes), especially relating to any program changes
- Process flow of implementation activities
- Coordination and communication among staff and decision-making processes
- Program- and market-related barriers
- Program support such as marketing and outreach
- Program tracking databases (including changes since the prior evaluation)
- Expectations for current evaluation (any programmatic, strategic, or organizational questions or concerns; commission and stakeholder expectations as applicable)
- Ideas under consideration for portfolio and program evolution, such as pilot programs, and ideas for program improvements and opportunities
- Issues relevant to the special studies (section 3.4) such as understanding barriers to T12 replacement

3.2.2 Initial Interviews with Avista and Third Party Implementer Staff

The process evaluation leads for the residential and nonresidential programs will schedule and conduct approximately one-hour telephone interviews with key Avista staff. We will audio record all interviews to ensure that we accurately capture all responses provided by staff.

We identified the following individuals as having DSM leadership and/or portfolio-wide responsibilities:

- Dan Johnson (Director of Energy Efficiency)
- Chris Drake (Manager, DSM)
- Tom Lienhard (Chief Energy Efficiency Engineer)
- Mike Dillon (DSM Analytical Manager)
- Linda Gervais (Director of Policy)
- Catherine Bryan (Manager of Energy Solutions)

- Collette Bottinelli (Marketing Communication Manager for DSM)
- Mark Baker (Utility Resource Analyst)

Following our interviews with the staff identified above, we will make adjustments to the interview guide as necessary and then schedule and conduct one-on-one or small group telephone interviews with the Avista program-specific managers and implementers. The managers and implementers we will interview for this evaluation include:

- Residential Program Managers
  - David Schafer (Rebate Programs)
- Nonresidential Program Managers and Implementation Staff
  - Greta Zink (Non-lighting prescriptive and Small Business)
  - Lorri Kirstein (Site Specific and Lighting)
  - Rachelle Humphrey (Lighting)
  - Implementer contact(s) for Energy Smart Grocer
  - Implementer contact(s) for Small Business

We will revise our list of contacts as needed based on feedback and additional information from Avista.

3.2.3 Mid-program Cycle Staff Interviews

In summer 2017, approximately three-quarters of the way through the 2016-2017 program cycle, in consultation with Avista evaluation staff, we will schedule and conduct follow-up one-on-one or small group interviews with the same staff interviewed in 2016. We anticipate interviews of up to one hour with the DSM leadership/portfolio-wide staff and update interviews of up to 30 minutes with the program-specific staff.

3.2.4 Analysis and Reporting

We will use NVivo qualitative analysis software to analyze the responses from all the in-depth interviews. NVivo enables us to analyze responses by individual contact or by question across all contacts. The software also facilities the coding of responses to aid our analysis, as well as identifying relevant quotes suitable for the report.

We will document our analysis along with our conclusions and recommendations in one or more chapters in the draft process evaluation report. Section 6 presents our preliminary outline for the process evaluation report. In our report, we will discuss program-related activities and progress towards goals, identify success and challenges in current program design, program delivery and implementation, and recommendations for program improvement.

3.3 Customer and Contractor Feedback

3.3.1 Participating Customers

We will survey 2016 and 2017 program participants. We will survey the 2016 Q1 through Q3 participants in Q4 of 2016. We will survey the 2017 participants on a quarterly basis, starting in Q2 2015 and ending in Q1 2018. In each quarterly survey of the 2017 participants, we will survey participants that received incentives the previous quarter.

3.3.1.1 Instrument Development

We will take, as a starting point, the survey instruments used in the 2014-15 evaluation, and revise them as warranted based on the findings from the 2014-15 study. These instruments address the following topics:

- Satisfaction
- Source of awareness
- Decision-making
- Net-to-gross inputs (free-ridership and spillover),
- Motivations to participation
- Barriers to participation
- Ideas for program improvements
- Program opportunities

By using the same questions used in the 2014-2015 evaluation we will be able to provide a perspective on these issues over time.

The survey of 2016 program participants will assess both free-ridership and spillover. The quarterly cohort surveys for 2017 participants will assess free-ridership but will not assess spillover as insufficient time will have passed between participation and survey for customers to have engaged in much spillover behavior. We can apply the spillover estimate from the survey of 2016 participants to 2017 program year.

In addition to the above topics, in service of the Special Study noted in Section 3.4.1, nonresidential participants will be asked about their use of T12 lights and what, if anything, would encourage T12 replacement.

We will submit the draft survey instrument to Avista's evaluation lead and will revise the instrument within one business week after receiving comments.

3.3.1.2 Sample Development

As noted earlier, we will develop the sample in an effort to ensure coordination between the impact and process evaluations. The evaluation team will work with Avista to identify a schedule

for receiving the program data necessary to support the survey cohorts described above.

We have estimated quarterly cohort sample sizes under the simple assumption that participation rates do not vary across the year (see Table 3-3). We will revise the sample sizes as necessary to reflect participation rates by quarter in 2017. We will endeavor to design samples that represent the participant population with respect to state, fuel type, urban/rural, program, and measures.

Please note that we will only survey participants of rebate programs. The nonparticipant survey will capture responses of midstream Simple Steps and Opower HER program.

Table 3-3: Sample Sizes for Participant Survey

	Programs	Q1-Q3 2016	Q4 2016	Q1 2017	Q2 2017	Q3 2017	Q4 2017	Total
	Electric							
Residential	Fuel Efficiency	15	5 to 6	5 to 6	5 to 6	5 to 6	5 to 6	42
Residential	Shell Program	15	5 to 6	5 to 6	5 to 6	5 to 6	5 to 6	42
Residential	***Res. Subtotal***	***30***	***10 to 12***	***10 to 12***	***10 to 12***	***10 to 12***	***10 to 12***	***84***
Nonresidential	Prescrip. Other	9	3	3	3	3	3	24
Nonresidential	Prescrip. Lighting	16	5	5	5	5	5	42
Nonresidential	Site Specific	26	9	9	9	9	9	68
Nonresidential	Small Business	13	4	4	4	4	4	34
Nonresidential	Energy Smart Grocer	9	3	3	3	3	3	24
Nonresidential	***Nonres. Subtotal***	***73***	***24***	***24***	***24***	***24***	***24***	***192***
	Gas							
Residential	HVAC Program	15	5 to 6	5 to 6	5 to 6	5 to 6	5 to 6	42
Residential	Shell Program	15	5 to 6	5 to 6	5 to 6	5 to 6	5 to 6	42
Residential	***Res. Subtotal***	***30***	***10 to 12***	***10 to 12***	***10 to 12***	***10 to 12***	***10 to 12***	***84***
Nonresidential	Food Service	9	3	3	3	3	3	24
Nonresidential	Site Specific	9	3	3	3	3	3	24
Nonresidential	Small Business	12 to 13	4 to 5	4 to 5	4 to 5	4 to 5	4 to 5	34
Nonresidential	***Nonres. Subtotal***	***30 to 31***	***10 to 11***	***10 to 11***	***10 to 11***	***10 to 11***	***10 to 11***	***82***
Total		**163 to 164**	**54 to 56**	**54 to 56**	**54 to 56**	**54 to 56**	**54 to 56**	**433 to 444**

3.3.1.3 Survey Implementation

The team will field the survey using Nexant's in-house call center. We will field the survey of Q1-Q3 2016 participants as soon as possible in Q4 of 2016. Our goal will be to complete the Q1 to Q3 2016 survey before we begin surveying the Q4 2016 participants. However, the Q1 to Q3 2016 cohort will be large so it may be completed only shortly before the Q4 2016 survey begins, or there may be some overlap.

We will monitor results of the survey on an ongoing (e.g., weekly or biweekly) basis. This will

enable us to determine whether we should add, drop, or revise any survey questions that appear problematic.

3.3.2 Participating Contractors

We will conduct surveys with up to 95 participating contractors, 38 who focus on the residential HVAC and shell market and 57 who focus on the nonresidential HVAC and lighting market. Because contractors often work in both sectors, we will begin the survey by asking respondents to report which sector they do the majority of their work and direct questions to them accordingly.

Below, we explain how we will ensure that this survey speaks to Avista's residential and nonresidential programs, its Washington and Idaho territories, and its electric and natural gas fuels.

3.3.2.1 Instrument Development

As with the participant survey, we already have identified several research topics to explore, which we may supplement with any additional topics or research questions identified in our interviews with Avista and implementer staff.

- We will explore contractors' familiarity and satisfaction with program offerings (including qualifying measures, incentives, and application procedures), Avista's program marketing, and their experiences and satisfaction with Avista's program communications and problem-solving.
- We will explore motivations for and barriers to participation (both the contractors' and their customers') and will seek ideas for program improvements and potential program opportunities.
- We also will ask respondents about their sales practices and their roles in identifying savings opportunities and designing solutions. We know from past studies that while some installers use a "Good, Better, Best" approach to sales – an approach that can promote qualifying measures as "Best" – other installers bid only their "Good" option, for fear of losing the bid or raising customer suspicion that they are seeking a high margin. We will investigate the use of those competing approaches.
- We will assess net-to-gross inputs, including program impact on sales, stocking and nonparticipant spillover, as applicable.
- Finally, we will assess firmographic information, such as company size, type(s) of equipment sold and installed, primary type(s) of customers, and geographic area(s) covered.

Due to the special study (described in Section 3.4.1) focus on encouraging replacement of T12s, we will survey more nonresidential lighting contractors than HVAC contractors. Lighting contractors will receive additional questions about the market and messaging about T12 replacements.

We will submit the draft survey instrument to Avista's evaluation lead and will revise the

instrument within two business weeks after receiving comments.

3.3.2.2 Sample Development

We will develop the sampling plan for the contractor survey from a roster of known contractors provided to us by program staff, the Northwestern Lighting Network, and the Northwest HVAC/R Association.

We will use the available information on contractors, such as their geographic location and the type(s) of equipment they handle (HVAC, lighting, or shell) to develop the sample. Our goal will be to ensure that the sample represents contractors that serve Avista's residential and nonresidential programs, its Washington and Idaho territories, and its electric and natural gas fuels.

Table 3-4 shows our initial expectation regarding the distribution of the sample across equipment types based on the population we determined during the last evaluation and our need to ask lighting specific questions to address the special study (Section 3.4.1). We may revise this after reviewing the available information on trade allies and interviewing Avista and implementer staff. We will submit a draft sampling plan to Avista's evaluation lead by the first week of May 2017 and may revise the plan based on feedback received.

Table 3-4: Sample Sizes for Contractor Survey

Installer Type	Population from 2014-15 Evaluation	Residential	Nonresidential	Total
HVAC	89	19	19	38
Lighting	400	-	38	38
Shell	55	19	-	19
Total	**544**	**38**	**57**	**95**

3.3.2.3 Survey Implementation

The evaluation team will field the survey using Nexant's in-house call center. We anticipate fielding the survey over a three-to-four-week period in mid-2017.

3.3.3 Nonparticipating Customers

We will survey 70 residential and 70 nonresidential nonparticipating Avista customers in mid-2017.

3.3.3.1 Instrument Development

As with the participant and trade ally surveys, we already have identified several research topics to explore, which we may supplement with any additional topics or research questions identified in our interviews with Avista and implementer staff. Again, in instrument development, we will focus on identifying the most important topics to address to minimize survey burden.

We will explore, among other topics, awareness of Avista's energy efficiency programs appropriate to their fuel usage, source of awareness, purchases in the last two years of the

types of products for which Avista provides incentives (such as water heaters), purchases of efficient equipment (spillover). We also will assess motivations for and barriers to participation and decision-making, including the role that contractors and vendors have made in their decisions.

The residential and nonresidential surveys will be tailored to their specific audiences.

We will submit the draft survey instrument to Avista's evaluation lead and will revise the instrument within two business weeks after receiving comments.

3.3.3.2 Sample Development

The evaluation team will develop the nonparticipant samples from Avista customer records, when they are made available to us. This is the best possible source of data, as it ensures that we do not contact businesses and residences outside of Avista territory (as may happen with purchased lists). Further, customer records would include energy usage data, which would be particularly valuable in developing the nonresidential sample. Basing the sample on Avista customer data also will enable us to ensure that the sample accurately represents the geographic distribution of Avista customers – so that, for example, we do not over-sample customers from areas with low population density.

3.3.3.3 Survey Implementation

The evaluation team will field the survey using Nexant's in-house call center. We anticipate fielding the survey over a three-to-four-week period in mid-2017.

3.4 Special Studies

In addition to the aforementioned process evaluation activities, we will conduct two additional special studies. The first pertains to better understanding how to encourage T12 replacement in the nonresidential market and the second aims to better understand the motivations of highly active contractors. Each of these are discussed below.

3.4.1 T12 Baseline Study

The 2014-15 process evaluation activities demonstrated that T12s are still widely used in the marketplace despite the technological advances and lower costs associated with high efficiency fluorescent lighting and LEDs over the last few years. This special study will help Avista better understand what messages and strategies may be effective in encouraging T12 owners to upgrade to higher efficiency lighting.

To accomplish this, we will ask nonresidential participants and nonparticipants, in their respective surveys, about their awareness of T12s, the energy use of T12s compared to newer technologies, and about possible incentives and messaging that would encourage T12 replacement. We will ask nonresidential lighting contractors to tell us about any strategies they used for convincing customers to replace T12s particularly since the lighting baseline changed in January 2013 lowering incentives for T12 replacement. Finally, we will ask Small Business field staff about their experiences encouraging customers to replace T12s. Because this

analysis relies partially on participant surveys which will not be done till Q1 2018, this analysis will only appear in the final report, not the quarterly memos.

Primary data source: Nonresidential participant surveys (section 3.3.1), nonresidential focused contractor surveys (section 3.3.2), and Small Business field staff.

Research Questions: What are the barriers that are preventing customers from upgrading T12s? Which approaches and value proposition messaging are likely to be effective at encouraging customers to transition to more efficient lighting technologies?

3.4.2 High Participation Contractors

The 2014-15 process evaluation activities demonstrated that a subset of contractors, both residentially and non-residentially focused, are highly engaged in Avista's rebate programs and help drive customer participation and savings. We will identify and interview up to 10 of these contractors in each sector to understand and document their approach to promoting the rebate programs and their business practices. The intent of this study is to give Avista program staff insights they can share more broadly with other contractors. For example, interviews with high-participation contractors will enable Avista to learn what specific techniques or strategies high-participation contractors use to attract customers who become participants. Lessons learned from this research could increase the number of active contractors, which in turn could boost program participation and savings

Similar to all other data collection instruments, we will draft an interview guide and submit to Avista by the end of May 2017. We will respond to comments within a week and plan on fielding the instrument starting in late June 2017.

Primary data source: In-depth interviews with 10 "high-participation" contractors in each sector who are actively engaged in Avista's rebate programs.

Research Question: What are these contractors doing that could be transferred to other contractors to encourage greater participation?

4 Other Activities

This section outlines additional activities to be conducted for the evaluation, including the cost-effective analysis, interactions with the Advisory Group and Commission staff, and the evaluation team's planned reference to the Regional Technical Forum.

4.1 Cost-Effectiveness Analysis

Cost-effectiveness analysis is critical for comparing different resource options and for optimizing investments. When completed correctly, it allows for meaningful comparisons between DSM offerings and traditional resource options (generation, transmission, and distribution,) and provides a basis for prioritizing investments. Key goals of cost-effectiveness analysis are to provide factual insights, make tradeoffs transparent, improve the planning process, and help maximize value. The evaluation team also understands that submission of annual cost-effectiveness reports and findings are a regulatory compliance requirement for Avista and must follow filed agreements. Cost-effectiveness can be assessed from a variety of perspectives, including;

- Total Resource Cost (TRC) Test; including the perspective of both the participant and the sponsoring utility,
- Program Administrator Cost (PAC) Test; as known as the Utility Cost Test (UCT), which represents the perspective of both the participant and the sponsoring utility,
- Participant Cost Test (PCT); which represents the perspective of the participant,
- Ratepayer Impact Measure (RIM) Test; which represents the perspective of rates for the general population, in particular the non-participating customer, and
- Levelized Cost of Saved Energy.

The evaluation team will complete a benefit-cost analysis to compare the value of the benefits resulting from DSM program intervention to the costs incurred. The calculations will be completed consistent with standard industry practices, including prior Avista filings, the California Standard Practice Manual, and the National Action Plan for Energy Efficiency. The evaluation team understands that Avista's regulatory compliance rules require different cost-effectiveness tests, including: the Total Resource Cost Test for electricity programs and the Program Administrator Cost Test for natural gas programs. The evaluation team will directly provide the benefits, as verified gross and net demand and energy savings, as well as time of use characteristics to calculate avoided cost benefits. It is expected that the calculation of other cost-effectiveness components, including additional resource savings, program administrative costs, and incentive payments will be generated by Avista. Table 4-1 summarizes the allocation of cost-effectiveness components as a cost or benefit to each cost-effectiveness test.

Table 4-1: Cost-Effectiveness Component Inputs

Component	Program Administrator Cost Test (PACT)	Total Resource Cost (TRC)	Participant Cost Test (PCT)	Rate Impact Measure (RIM)
Utility Energy & Capacity Avoided Costs	Benefit	Benefit		Benefit
Non-Utility Energy & Capacity Energy Costs		Benefit	Benefit	
Non-Energy Benefit Impacts		Benefit	Benefit	
Incremental Equipment and Installation Costs		Cost	Cost	
Program Non-incentive (admin) Costs	Cost	Cost		Cost
Incentive Payments	Cost		Benefit	Cost
Retail Savings due to Technology Installation			Benefit	Cost

4.1.1 Key Parameters

The evaluation team's cost-effectiveness analysis methods allow for 8,760 hourly avoided cost tables to be included, especially where the evaluation team collects or has access to 8,760 hourly load shapes (e.g., CFL hourly operation) for energy-efficiency measures. We anticipate using a 10% additional benefit for utility energy avoided costs consistent with practices in the Pacific Northwest to account for conservation preference.

The cost effectiveness analysis will include key parameters from Avista filings and/or RTF and Northwest Power and Conservation Council wherever possible. Examples would include net incremental equipment costs, measure life, discount rate, etc. Included non-energy benefits will be limited to where reliable and quantifiable research is present, such as water savings and equipment maintenance. "Softer" benefits that are significantly more difficult to quantify, such as comfort, reliability, productively, safety, etc., will not be included in the analysis.

4.1.2 Reporting

The evaluation team anticipates performing an individual annual cost-effectiveness report for each program and the portfolio by fuel and state for each year by the April following each program year. In the first annual report for 2016, we will utilize "unverified" values from Avista's internal reporting, because the evaluation research will still be underway.

4.2 Interactions with Advisory Group and Commission Staff

The evaluation team understands the importance of keeping the Advisory Group and commission staff informed of pertinent evaluation activities and findings. Applicable evaluation team members will attend, either via phone conference or in-person, quarterly Advisory Group meetings and update this group on evaluation activities as deemed appropriate and necessary. In addition, quarterly reports which will provide evaluation status and updates will be available to the Advisory Group.

4.3 Use of Reference to Regional Technical Forum

The Regional Technical Forum (RTF) has developed formalized processes for calculating, approving, and updating Unit Energy Savings (UES) for a broad spectrum of energy efficiency measures applicable across customer segments. The evaluation team recognizes the economic benefits of utilizing the RTF measure workbooks to streamline the evaluation process. Where Avista energy efficiency programs incentivize measures with proven RTF values, the evaluation team will rely heavily on this resource to manage evaluation costs. There are cases, however, in which the measures Avista incentivizes may only align with RTF measures in the Provisional or Small Saver categories or where they may be an average of multiple iterations of measures in the RTF. In these circumstances, we will review the RTF UES values and measure workbooks, as well as rely on our expertise and utilize industry best practices to evaluate the impact of these measures. We will also balance the priorities for study rigor and evaluation complexity with a focus on high impact measures, new or changed programs, and measures or programs that will be flagged for deeper focus based on a review of the prior evaluation. As noted in Section 2.3, the evaluation team will report deemed RTF measure values for establishing achievement towards goal. However, we will also complete verification activities and compare these verified savings value to the RTF value to inform assumptions used in future iterations of RTF measure savings.

We will estimate NTG values for all evaluated program savings where participant surveys will be conducted. For programs where we are not conducting participant surveys, we will apply the NTG values from the prior evaluation for the estimation of net savings. However, for those program measures that utilize an RTF defined market baseline value, we will not apply freeridership to these measures, since freeridership is already accounted for in the market baseline. In other words, for RTF measure savings estimates based on market baselines, freeridership ratios based on the evaluation activities will not be applied and only spillover ratios will be used for the NTG adjustment.

5 Schedule and Key Milestones

This section presents the schedule and budget for the evaluation activities, including major and intermediate deliverables. In addition to the deliverables outlined herein, the evaluation team will also conduct regular meetings with Avista evaluation staff to keep the team apprised of current status, upcoming tasks, and to discuss any questions or concerns.

5.1 Schedule and Key Milestones

The project timelines and completion dates shown in Table 5-1 outline the expected timing of key impact and process evaluation deliverables for the EM&V of Avista's 2016-2017 DSM Programs.

Table 5-1: Evaluation Schedule

Deliverable	Start Date	Completion Date
Draft Evaluation Work Plan		9/2/2016
Review and approval of Draft Evaluation Work Plan	9/2/2016	9/14/2016
Evaluation Kick-Off Meeting		9/14/2016
Final Evaluation Work Plan		10/14/2016
2016 Process & Impact Evaluation & Cost-effectiveness Activities	10/3/2016	4/1/2017
2016 Q1-Q3 Findings Memo		11/10/2016
2016 Q4 Findings Memo		3/10/2017
Draft WA 2016 Electric Impact Memorandum		3/17/2017
Draft ID 2016 Electric Impact Memorandum		3/17/2017
Draft WA 2016 Electric Impact Memorandum Review Comments Received		3/31/2017
Draft ID 2016 Electric Impact Memorandum Review Comments Received		3/31/2017
Draft WA 2016 Natural Gas Impact Memorandum		3/31/2017
Draft ID 2016 Natural Gas Impact Memorandum		3/31/2017
Draft WA 2016 Natural Gas Impact Memorandum Review Comments Received		4/14/2017
Draft ID 2016 Natural Gas Impact Memorandum Review Comments Received		4/14/2017
Draft WA 2016 DSM Annual Report & Cost-Effectiveness Analysis		4/14/2017
Draft ID 2016 DSM Annual Report & Cost - Effectiveness Analysis		4/21/2017
Draft WA 2016 DSM Annual Report & Cost-Effectiveness Analysis Review Comments Received		4/28/2017
Draft ID 2016 DSM Annual Report & Cost - Effectiveness Analysis Review Comments Received		5/05/2017
Final WA 2016 Electric Impact Memorandum		5/25/2017
Final ID 2016 Electric Impact Memorandum		6/02/2017
Final WA 2016 Natural Gas Impact Memorandum		5/25/2017
Final ID 2016 Natural Gas Impact Memorandum		6/02/2017
Final WA 2016 DSM Annual Report & Cost-Effectiveness Analysis		5/25/2017
Final ID 2016 DSM Annual Report & Cost - Effectiveness Analysis		6/02/2017
Presentation of 2016 Portfolio Evaluation Activities & Findings		6/1/2017
2017 Process & Impact Evaluation & Cost-effectiveness Activities	2/15/2017	5/2/2018
2017 Q1 Findings Memo		5/12/2017
2017 Q2 Findings Memo		8/11/2017
2017 Q3 Findings Memo		11/10/2017
Draft Portfolio 2016-2017 Process Evaluation Report		4/6/2018
Draft Portfolio 2016-2017 Process Evaluation Report Review Comments Received		4/20/2018

Deliverable	Start Date	Completion Date
Draft WA 2017 DSM Annual Report & Cost-Effectiveness Analysis		4/13/2018
Draft WA 2016-2017 Electric Impact Report		4/13/2018
Draft WA 2016-2017 Natural Gas Impact Report		4/20/2018
Draft WA 2017 DSM Annual Report & Cost-Effectiveness Analysis Review Comments Received		4/27/2018
Draft WA 2016-2017 Electric Impact Report Advisory Group Review Comments Received		4/27/2018
Draft WA 2016-2017 Natural Gas Impact Report Advisory Group Review Comments Received		5/04/2018
Final Portfolio 2016-2017 Process Evaluation Report		5/25/2018
Final WA 2017 DSM Annual Report & Cost-Effectiveness Analysis		5/25/2018
Final WA 2016-2017 Electric Impact Report		5/25/2018
Final WA 2016-2017 Natural Gas Impact Report		5/25/2018
Draft ID 2017 DSM Annual Report & Cost-Effectiveness Analysis		4/27/2018
Draft ID 2016-2017 Electric Impact Report		4/27/2018
Draft ID 2017 DSM Annual Report & Cost-Effectiveness Analysis Review Comments Received		5/11/2018
Draft ID 2016-2017 Electric Impact Report Review Comments Received		5/11/2018
Draft ID 2016-2017 Natural Gas Impact Report		5/11/2018
Draft ID 2016-2017 Natural Gas Impact Report Review Comments Received		5/25/2018
Final ID 2017 DSM Annual Report & Cost-Effectiveness Analysis		6/15/2018
Final ID 2016-2017 Electric Impact Report		6/15/2018
Final ID 2016-2017 Natural Gas Impact Report		6/15/2018
Presentation of 2016-2017 Portfolio Evaluation Activities & Findings		6/20/2018

5.2 Budget

Table 5-2 outlines the evaluation team's cost to complete the scope of work for each deliverable outlined in this work plan. The services will be conducted on a time and materials basis (T&M) with a total not-to-exceed of **$995,291**.

Table 5-2: Evaluation Team Budget Per Deliverable

Deliverable	Cost
Deliverable 1: Evaluation Work Plan	$36,322
Deliverable 2: Natural Gas Impact Evaluation	$213,514
Deliverable 3: Electric Impact Evaluation	$420,284
Deliverable 4: Process Evaluation Report	$284,371
Deliverable 5: Annual Reports with Cost Effective Analysis	$40,800
Total Base Cost	**$995,291**

6 Evaluation Reports

The evaluation team anticipates providing quarterly and annual memos with impact and process evaluation findings as well as 2016-2017 impact evaluation reports by fuel and state and a 2016-2017 process evaluation report (see Table 5-1). The following subsections detail the preliminary outline for the 2016-2017 impact and process evaluation reports. We may revise these outlines as needed based on feedback from Avista and our judgment on how to best present findings.

6.1 2016-2017 Impact Evaluation Report

The 2016-2017 Impact Evaluation will report on activities using the following outline as guidance:

- Executive Summary
- Introduction
  - This section will summarize the purpose of the impact evaluation, evaluation goals and objectives, and provide descriptions and reported participation of evaluated programs
- Impact Evaluation Methodology
  - This section will provide an overview of the impact evaluation methods utilized for the 2016-2017 evaluation.
- Impact Evaluation (one section for Nonresidential and one section for Residential)
  - These sections will explain the specific evaluation activities and findings for each evaluated nonresidential and residential program.
- Conclusions and Recommendations
  - This section will present the overall impact evaluation findings and provide program-specific recommendations.

6.2 2016-2017 Process Evaluation Report

For the 2016-2017 process evaluation report, the team will use the following outline to guide reporting:

- Executive Summary
- Introduction
  - This section will address process evaluation objectives and descriptions of evaluated programs
- Methods

- This section will describe nonresidential, residential, and crosscutting secondary and primary data collection activities

- Nonresidential Process findings
  - This section will describe program administration and delivery, organizational structure, program awareness and engagement, program experience (including reasons for participation), barriers to participation, effectiveness of incentives and marketing promotions, opportunities for program improvement, and net-to-gross changes over time, all as related to the 2016-2017 program years.
- Residential Process findings
  - This section will describe program administration and delivery, organization structure, program awareness, program experience (including reasons for participation), barriers to participation, effectiveness of incentives and marketing promotions, and opportunities for program improvement, all as related to the 2016-2017 program years.
- Special Studies
  - This section will cover two special studies: 1) T-12 analysis of opportunities to encourage T12 replacement with advanced lighting technologies and 2) high participation contractor interviews to learn about contractor promotions of rebate programs
- Conclusions and Recommendations
  - This section will discuss conclusion and recommendations as well as Avista response to prior evaluation recommendations.

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Cost-Effectiveness Methodology

The cost-effectiveness evaluation of DSM programs has been standardized to a significant degree in order to provide for greater transparency and understanding of the metrics. Avista has brought these standardized approaches into the evaluation of the cost-effectiveness of our portfolio through a series of specific interpretations, approaches and policies. The summarization of these key policies provides a greater insight into the evaluation and how to interpret the results.

The cost-effectiveness of DSM programs can be viewed from a variety of perspectives, each of which lead to a specific standardized cost-effectiveness test.

1. The perspective of the entire customer class of a particular utility. This includes not only what they individually and directly pay for efficiency (through the incremental cost associated with higher efficiency options) but also the utility costs that they will indirectly bear through their utility bill. When looking at the full customer population incentives are considered to be a transfer between ratepayers and not a cost for the overall ratepayer class. This perspective is represented in the total resource cost (TRC) test.

2. If the objective is to minimize the utility bill, without regard to costs borne by the customer outside of that which is paid through the utility bill, then cost-effectiveness simply comes down to a comparison of reduced utility avoided cost and the full cost (incentive and non-incentive cost) of delivering the utility program. This is the utility cost test (UCT) also known as the program administrator cost test (PACT). Avista has included the 10% conservation credit within the avoided costs and thus the benefits in the numerator are reduced by 1.1 to remove the credit for the UCT.

3. A participating customer's view of cost-effectiveness is focused upon their reduced energy cost (at their retail rate). Avista also includes the value of any non-energy benefits that they may receive. Incentives received by the customer offset the incremental cost associated with the efficiency measure. This is the participant cost test (PCT). Since participation within utility programs is voluntary it could be asserted that well-informed participating customers are performing their own cost-effectiveness test based upon their own circumstances and voluntarily participate only to the extent that it is beneficial for them to do so.

4. A non-participating customer is impacted by a utility program solely through the impact upon their retail rate. Their usage, since they are a non-participant, is unaffected by the program. The impact of a DSM program on the utility rate imposed upon these non-participating customers is the result of the reduced utility energy costs, diminished utility revenues and the cost associated with the utility program. Since utility retail energy rates exceed the avoided cost under almost all scenarios (peak end-use load and a few other exceptions apply) the non-participant rarely benefits. This is the rate impact

measure (RIM), also known as the non-participant test. Avista has included the 10% conservation credit within the avoided costs and thus the benefits in the numerator are reduced by 1.1 to remove the credit for the RIM.

The following table summarizes Avista's approach to calculating the four basic cost-effectiveness tests. The categorization and nomenclature have been worded so as to provide the clarity regarding each cost and benefit component. Please note that some of the values within the table below represent negative values.

Appendix C, Table 1: Summarization of Standard Practice Test Benefits and Costs

	TRC	UCT	PCT	RIM
Benefit components				
Avoided cost of utility energy	$	$		$
Value of non-utility energy savings	$		$	
Non-energy impacts	$		$	
Reduced retail cost of energy			$	
Cost components				
Customer incremental cost	$		$	
Utility incentive cost		$	-$	$
Utility non-incentive cost	$	$		$
Imported funds (tax credits, federal funding etc)	-$		-$	
Reduced retail revenues				$

A summary of some of the approaches by which Avista measures these values and how they are applied within Avista's evaluation of cost-effectiveness is contained below.

Avoided cost of utility energy: The avoided cost of electricity and natural gas is based upon the results of the most recent Integrated Resource Plan to include the valuation of several avoided costs that are somewhat unique to energy-efficiency (e.g., distribution losses, the monetary cost of carbon etc.). The cost of electric transmission and distribution capacity benefits was adjusted to align with the upcoming 7th Power Plan and a $2.69/MWh Firm Long Term Transmission Rate was used to bring electricity into the Avista Balancing Area from the Mid-C Market.

The electric IRP provides 20 years of Mid-C prices for every hour of the year (8,760 hours) and system capacity benefits for generation and T&D. Different measures have different distribution of their savings of the year so to properly value the commodity portion for individual measures the 175,200 market prices (8,760 x 20) are multiplied by the individual load shapes yielding 23 different end use commodity avoided costs.

To calculate the capacity value the an average of the percentage of savings on January weekdays between 7:00 – 12:00 and 18:00 – 23:00 was used to estimate the peak coincidence to be multiplied by that year's generation, transmission and distribution capacity benefits.

The commodity and capacity benefits are summed for each year and the combined avoided costs are increased to account for avoided line loss rates (6.1%) and an additional 10% to include the regional conservation preference.

The avoided cost of natural gas IRP produces an annual and winter avoided therm value which an avoided delivery charge is added (represented by the demand portion of Schedule 150) to each as well as an estimated carbon tax starting in 2020 with a cost of $10/ton and escalating at 3% per year.

The application of the avoided cost of energy to a DSM measure includes all interactive impacts upon the own fuel (e.g. interactive impacts upon electric consumption by electric programs) and cross fuel (e.g. interactive impacts upon natural gas usage as a result of an electric program). This includes the natural gas usage associated with electric to natural gas (fuel conversion) programs.

Value of non-utility energy: For forms of energy not provided by the utility, such as propane or wood fuel, and for which there is no Integrated Resource Plan valuation of the avoided cost, all savings are valued based upon the customers retail cost of energy.

Non-energy impacts: Impacts of efficiency measures unrelated to energy usage are incorporated into the appropriate standard practice tests to the extent that they can be reasonably quantified and externally represented to a rational but critical audience. The company is appreciative to the RTF for the increased focus they had done on quantifying non-energy impacts. Savings most typically quantified are related to reductions in lighting maintenance, reduced replacement costs (LEDs vs. halogen) and water and sewer cost savings. Additionally when the Company pays the full cost of a measure within the low-income portfolio, and includes that full cost as a customer incremental cost, the value of the baseline measure is included as a non-energy benefit as a representation of the end-use service beyond the energy-efficiency impact. Those impacts that have been determined to be unquantifiable within reasonable standards of rigor consist of both benefits and costs. For example, the Company has not been able to quantify the value of comfort, preventing us from valuing the benefit of draft reduction from efficient windows as well as the cost of thermostat adjustments in response to Opower behavioral messages.

Reduced retail cost of energy: For the participant test it is the participating customers reduced retail cost of energy and not the utility avoided cost of energy that is relevant to that perspective.

Customer incremental cost: This represents the additional cost of an efficient measure or behavior above the baseline alternative. To the maximum extent possible the determination of customer incremental cost is based upon alternatives that are identical in all aspects other than efficiency. When a clearly comparable comparisons isn't possible an individualized adjustment is made to the extent possible. Applicable incremental sales tax and permitting fees are included in the incremental cost.

Utility incentive cost: Direct financial incentives or the utility cost of physical products distributed to customers are transfer payments between participating and non-participating customers. The provision of program delivery services is not a transfer cost and is not incorporated into the definition of the utility incentive cost.

Utility non-incentive cost: These costs consist of all utility costs that are outside of the previously defined incentive costs. It typically consists of labor, EM&V, training, organizational memberships and so on.

Imported funds: Avista includes the value of imported funds (generally tax credits or governmental co-funding of programs) to be a reduction in the customer incremental cost of the measure for purposes of calculating the TRC Test and the Participant Test. These funds are acquired from entities outside the ratepayer population or the individual participant.

The alternative approach to treating imported funds as an offset to the customer incremental cost is to consider these funds to be a benefit. For purposes of Avista's cost-effectiveness objective (maximize residual net TRC benefit) there would be no mathematical difference between these two approaches.

Reduced retail revenues: For purposes of the RIM test the loss of retail revenue is a cost to the non-participating customer.

The means by which Avista's DSM portfolio is defined for purposes of evaluation and cost allocation is also an important part of our methodology. The various definitions used to define the different levels of aggregation are explained below followed by an explanation of how these are applied in the allocation of costs.

Sub-Measure: A sub-measure is a component of a measure that cannot be coherently offered without aggregating it with other sub-measures. For example, an efficient three-pan fryer couldn't be offered as part of a sensible customer-facing program if the program did not also include two-pan and four-pan fryers. Avista may offer sub-measures that fail cost-effectiveness criteria if the overall measure is cost-effective. This is the only area where Avista permits the bundling of technologies for purposes of testing offerings against the cost-effectiveness screen. There are relatively few sub-measures meeting the criteria specified above within the portfolio.

Measure: Measures are stand-alone energy efficiency options. Consequently measures are generally expected to pass cost-effectiveness requirements barring justifiable exceptions. Exceptions include, but are not necessarily limited to, measures with market transformation value not incorporated into the assessment of the individual measure, significant non-energy benefits that cannot be quantified with reasonable rigor and cooperative participation in larger regional programs.

Programs: Programs consist of one or more related measures. The relation among the measures may be based upon technology (e.g. an aggregation of efficient lighting technologies) or market segment (e.g. aggregation of efficient food service measures). The aggregation is generally performed to improve the marketability and/or management of the component measures.

Portfolio: Portfolios are composed of aggregations of programs. The aggregating factor will vary based upon the definition of the portfolio. The following portfolios are frequently defined in the course of Avista's DSM reporting and management:

Customer segment portfolio: An aggregation of programs within a customer segment (e.g. low-income, residential, nonresidential).

Fuel portfolio: Aggregating electric or natural gas DSM programs.

Regular vs. low income portfolios: Separating income qualified measures delivered through CAP agencies from the remainder of the portfolio.

Jurisdictional portfolio: Aggregating programs within either the Washington or Idaho jurisdiction.

Local or Regional portfolio: Aggregating all elements of the local DSM portfolio vs. the regional market transformation portfolio.

Fuel/Jurisdictional portfolio: Aggregating all programs within a given fuel and jurisdiction (Washington electric, Washington natural gas, Idaho electric or the currently suspended Idaho natural gas portfolio).

Overall portfolio: Aggregating all aspects of the Washington and Idaho, electric and natural gas DSM portfolio.

Methodology for Allocation of DSM Costs

The Avista methodology for cost-allocation builds from the measure or sub-measure analysis to the program and ultimately portfolio analysis. At each level of aggregation those costs that are incremental at that stage are incorporated into the cost-effectiveness analysis. Incremental

customer cost and benefits are fully incorporated into measure-level analysis. Utility costs (both labor and non-labor) are currently fully incorporated within the program level of aggregation based upon previous Advisory Group discussions regarding the Company's ability to expand or contract the portfolio to meet acquisition target. Cost allocations are made based upon the expected adjusted BTU acquisition of the program, with adjustments by the relative retail value of electricity and natural gas(i.e. a kWh is a highly processed btu compared with an equivalent natural gas).

Generally little of the non-incentive utility cost (labor and non-labor) are allocated at the measure level with the exception of programs delivered through a third-party contractor where those costs are truly incremental. Other non-incentive utility costs are allocated at the program level in the belief that the addition or elimination of programs would lead to a change in the scale of the overall portfolio and that therefore these costs are incremental at the program level.

It should be noted that costs not associated with the delivery of local DSM within the planned year are excluded from the cost-effectiveness calculations. These are termed "supplemental costs" and consist of NEEA funding, funding low income educational outreach programs, Idaho research funding and similar expenses unrelated to the planned 2015 local portfolio.

Unit Energy Savings

The quantification of energy savings applicable towards achieving Washington EIA acquisition targets has been an ongoing topic of discussion since the effective date of this requirement became effective. The company plan will create an annual locked UES associated with the TRM that will be updated on an annual basis. The savings will primarily be derived from the RTF or previous impact evaluations. The next annual update will be utilize the upcoming Nexant evaluation for the 2014-2015 Biennium.

For planning purposes the business plan has applied the same assumptions regarding unit energy savings to the Idaho portfolio as our best current estimate of savings. However, the retrospective Energy Efficiency Annual Report may displace these assumptions with the results of actual impact evaluations when available and appropriate.

Analytical Methodology Applicable to the Low Income Programs

Avista has developed several analytical methodologies that are specific to the evaluation needs of the low income portfolio. These include the (a) accommodation of incentive levels equal to the entire cost of the measure, including the cost of the baseline measure and (b) the treatment and quantification of the considerable non-energy benefits incorporated within the low income portfolio. Beyond these two rather significant analytical issues the treatment of the low income portfolio is similar to that applied to the other portfolios.

Except for the low income program, Avista does not typically fully fund the customer incremental cost and even less frequently the full installed cost of an end-use. For low income programs

delivered with Avista funding in partnership with Community Action Program (CAP) agencies the participating customer may receive full funding of the end-use. There is a need to appropriately represent this expenditure within the overall DSM expenditure budget, but at the same time it is necessary to recognize that only a portion of this expenditure is dedicated toward energy efficiency. The Company does so by recognizing the full expenditure as a cost but also recognizing that there is a non-energy benefit associated with the provision of base case end-use services. The full cost less this non-energy benefit is equal to the amount invested in energy efficiency. Thus the assessment of the cost-effectiveness of the energy efficiency investment is appropriately based upon the value of the energy savings of the efficient measure in comparison to this incremental cost. In situations where a measure might be found cost-effective under one fuel it will be reimbursed at the full cost for both fuels.

The Company has also defined the expenditure of non-energy health and safety funds as a non-energy benefit (on a dollar-for-dollar basis). This quantification is based upon the individual assessment of each of these expenditures by the CAP agency prior to the improvements being made. This approval process provides reasonable evidence that the improvements are worth, at a minimum, the amount that has been expended upon them through CAP agency funds.

As a consequence of these two assumptions the low income portfolio accrues considerable non-energy benefits.

The 15% administrative reimbursement permitted to the CAP agency is considered to be a component of the measure cost. This amount reimburses the CAP for back office costs that would, in a typical trade ally bid, be incorporated into the project invoice.

Quick Reference to Commonly Used Terms

The following common terms are used frequently within Avista's business planning and portfolio management process. The definitions are presented here to provide greater clarity and more constructive discussion throughout the review of the business plan and for the external oversight of Avista's DSM portfolio in general.

8760

Total number of hours in a year.

Adjusted Market Baseline

Based on the RTF Guidelines, represents a measurement between the energy efficient measure and the standard efficiency case that is characterized by current market practice or the minimum requirements of applicable codes or standards, whichever is more efficient. When applying an Adjust Market Baseline, no net-to-gross factor would be applied since the resultant unit energy savings amount would represent the applicable savings to the grid.

Advisory Group (formerly known as the Triple E Board)

Avista's group of external stakeholders who comment about the Company's DSM activities.

Avoided Cost

Theoretical costs that the Company would not incur by selecting an alternative path or option. Avoided costs, as defined by the Public Utility Regulatory Policies Act (PURPA), are incremental energy or capacity or both which but for the purchase from qualifying facilities the utility would either generate itself or purchase from another source.

AFUE (Annual Fuel Utilization Efficiency)

The measure of seasonal or annual efficiency of a furnace or boiler. It takes into account the cyclic on/off operation and associated energy losses of the heating unit as it responds to changes in the load, which in turn is affected by changes in weather and occupant controls.

AMI (Advanced Metering Infrastructure)

Systems that measure, collect and analyze energy usage, from advanced devices such as electricity meters, gas meters and/or water meters through various communication media on request or on a pre-determined schedule.

AMR (Advanced Meter Reading)

The technology of automatically collecting data from energy metering devices and transferring that data to a central database for billing and/or analyzing.

aMW

The amount of energy that would be generated by one megawatt of capacity operating continuously for one full year. Equals 8,760 MWh of energy.

ANSI (American National Standards Institute)

A source for information on national, regional, international standards and conformity assessment issues.

ASHRAE (American Society of Heating, Refrigeration and Air-Conditioning Engineers)

To advance "technology to serve humanity and promote a sustainable world. Membership is open to any person associated with the field."

Base Load Generation

Electric generating facilities that are operated to the greatest extent possible to maximize system mechanical and thermal efficiency and minimize system operating costs.

BCP – Biennial Conservation Plan

Referring only to state of Washington; a result of RCW 19.285, Energy Independence Act (also known as Initiative Measure No. 937 or "I-937") mandate that utility companies obtain fifteen percent of their electricity from new renewable resources such as solar or wind by 2020 and to undertake all cost-effective energy conservation. The Washington State Utilities and Transportation Commission adopted WAC 480-109, Acquisition of Minimum Quantities of Conservation and Renewable Energy to effectuate RCW 19.285. The BCP is responsive to the energy efficiency requirements of WAC 480-109 and describes the savings targets, the programs that will achieve the targets and how those energy savings targets will be measured and presented.

Black Scholes Model

An option-pricing model derived in 1973 for securities options. It was later refined in 1976 for options on futures (commonly referred to as the Black 76 or simply "Black model"). The Black model is widely used in the commodity arena to value commodity options. The model can also be used to distinguish between underlying certain equivalent value of an asset and the risk premium associated with price volatility.

BTU (British Thermal Unit)

The amount of heat required to raise the temperature of one pound of water by one degree Fahrenheit. It is used to compare the heat producing value of different fuels. Natural gas futures and forward contracts typically are traded in MMBTU (million of Btus).

CAP (Community Action Partnership)

General term for Community Action Programs, Community Action Agencies, and Community Action Centers that through federal and state and other funding sources (e.g. utility constitutions) provide services such as low-income weatherization.

Capacity

Electricity: The rated load-carrying capability of a power generating unit or transmission line, typically expressed in megawatts. Some forward power contracts will specify the amount of capacity available that the purchaser pays a demand charge on the right to call on this amount of energy when needed. Many capacity contracts are analogous to a call option. Also, the maximum generation capability of an electric generating plant in any given hour.

Natural Gas: The rated transportation volume of natural gas pipelines, typically expressed in MMBTU. Also, the maximum amount of Dth that can pass through a pipeline in any given day.

Capacity Charge

In natural gas or electricity markets, a price set based on reserved capacity or measured demand and irrespective of energy delivered. Also know as a demand charge.

CEE (Consortium for Energy Efficiency)

Consortium of efficiency program administrators from across the U.S. and Canada who work together on common approaches to advancing efficiency. Through joining forces, the individual efficiency programs of CEE are able to partner not only with each other, but with other industries, trade associations, and government agencies. By working together at CEE, administrators leverage the effect of their funding dollars, exchange information on effective practices and by doing so achieve greater energy efficiency for the public good.

CFL (Compact Fluorescent Lamps)

CFLs use between one fifth and one third of the power of equivalent incandescent lamps. While the purchase price of an integrated CFL is typically 3 to 10 times greater than that of an equivalent incandescent lamp, the extended lifetime and lower energy use will compensate for the higher initial cost.

CNG (Compressed Natural Gas)

The compression of natural gas in storage vessels to pressures of 2,400 to 3,600 pounds per square inch, generally for use as a vehicle fuel.

COB (California Oregon Border)

Area where utilities in the Northwest connect to those in California and a very common trading hub or pricing point for forward electricity contracts.

Coincidence Factor

The ratio of the maximum simultaneous total demand of a group of customers to the sum of the maximum power demands of the individual customers comprising the group (in percent).

CPA (Conservation Potential Assessment)

An analysis of the amount of conservation available in a defined area. Provides savings amounts associated with energy efficiency measures to input into the Company's Integrated Resource Planning (IRP) process.

COP (Coefficient of Performance)

The coefficient of performance of a heat pump is the ratio of the output of heat to the supplied work or COP = Q/W ; where Q is the useful heat supplied by the condenser and W is the work consumed by the compressor.

Cost of Service

The actual costs of providing service to individual customers, groups of customers, or an entire customer base. In the energy industry, cost-of-service analyses are performed at all stages of the supply chain from generation through billing. Utilities use these studies to determine how to spread the rate increase to customer classes such as residential, commercial, industrial, and irrigation end-users.

Council

See the NPCC (Northwest Power and Conservation Council).

Critical Energy

The average energy produced under coordinated operation during the critical or highest-use period.

Customer/Customer Classes

A category(ies) of customer(s) defined by provisions found in tariff(s) published by the entity providing service, approved by the PUC. Examples of customer classes are residential, commercial, industrial, agricultural, local distribution company, core and non-core.

DCU (Digital Control Unit)

Load control switch usually associated near end-use equipment (e.g. on an exterior wall of a home to control a hot water tank).

Decoupling

In conventional utility regulation, utilities make money based on how much energy they sell. A utility's rates are set based largely on an estimation of costs of providing service over a certain set time period, with an allowed profit margin, divided by a forecasted amount of unit sales over the same time period. If the actual sales turn out to be as forecasted, the utility will recover all of its fixed costs and its set profit margin. If the actual sales exceed the forecast, the utility will earn extra profit.

DEER (Database for Energy Efficient Resources)

A California Energy Commission and California Public Utilities Commission (CPUC) sponsored database designed to provide well-documented estimates of energy and peak demand savings values, measure costs, and effective useful life (EUL) all with one data source. The Company and its third –party evaluators may reference this resource as they compile Technical Resource Manuals or Conservation Potential Assestments.

Degree-Day

A measure of the variation of one day's temperature against a standard reference temperature. There are both cooling degree-days (CDDs) and heating degree-days (HDDs). Utilities typically use degree days as a common measure of the trend amount of electric power to be consumed based on the heating or cooling demand. The difference between the mean daily temperature and 65 degrees Fahrenheit. A general measure of the need for heating (negative) or cooling (positive).

Demand

The load that is drawn from the source of supply over a specified interval of time (in kilowatts, kilovolt-amperes, or amperes). Also, the rate at which natural gas is delivered to or by a system, part of a system or piece of equipment, expressed in cubic feet, therms, BTUs or multiples thereof, for a designated period of time such as during a 24-hour day.

Demand Factor

The ratio of the maximum demand to the total connected load for a defined part of the electric system (in percent).

DG (Distributed Generation)

Electricity that is generated from many small energy sources usually at the end-use or customer site.

Distribution

The portion of the utility system from the transformer in the substation to the Point of Delivery for the customer. The Distribution System is the "last stage" in providing service to the customer. It is typically the (lower voltage) circuits that are rated for 13.8 kV in Avista's system. These are the "lines behind your house" and can be underground as well as overhead.

DR (Demand Response)

Mechanisms to manage the demand from customers in response to supply condition; for example, having electricity customers reduce their consumption at critical times or in response to market prices. Passive DR is employed to customers via pricing signals, such as inverted tier rates, time of use (TOU) or critical peak pricing (CPP).

DSM (Demand Side Management)

The process of helping customers use energy more efficiently. Used interchangeably with Energy Efficiency and Conservation although conservation technically means using less while DSM and energy efficiency means using less while still having the same useful output of function.

Dth (Decatherm)

A measure of gas volume equal to one million BTU.

EF (Energy Factor)

The measure of overall efficiency for a variety of appliances. For water heaters, the energy factor is based on three items: 1) the recovery efficiency, or how efficiently the heat from the energy source is transferred to the water; 2) stand-by losses, or the percentage of heat lost per hour from the stored water compared to the content of the water: and 3) cycling losses.

Electric PCA, ERM

The Purchase Cost Adjustment (PCA) and Energy Recovery Mechanism (ERM) are regulatory accounting mechanisms designed to recover/rebate deferred power supply costs associated with such things as abnormal stream flow conditions and changes in the wholesale market prices.

Electric Trading Time Frames

1) Heavy Load or Peak: Standard time frame for purchase/sale of electricity, 16 hours per day, Monday through Saturday, hours 0700 through 2200.

2) Light load or Off-Peak: Standard time frame for purchase/sale or electricity, Monday through Saturday, hours 0100 through 0600, 2300 and 2400, and all 24 hours on Sunday. All Hours of Flat

- 24 hours, every day of the time period. Forward electric transactions – Trade in standard time frames of balance of the month, forward individual months, calendar quarters – January- March, April - June, July - August and October – November, and calendar years. All forward transactions can be peak, off-peak or flat.

3) Real -Time or Hourly: Electricity is purchased and sold every hour.

4) Pre-Schedule - Electricity Heat Rate Swap: Selling gas and purchasing electricity or purchasing gas and selling electricity in proportions to roughly equate if generating at a specific plant with an estimated heat rate. Transaction is made to take economic advantage of changing relationship between electric and gas prices.

EM&V (Evaluation Measurement & Verification)

This is composes of impact analysis (the measurement of the impact of the installation of an efficiency measure), process analysis (the evaluation of a process with the intent of developing superior approaches through obtaining a better understanding of the process itself), market analysis (evaluating the interaction between the market and measure to include the estimation of net-to-gross ratios, technical, economic and acquirable potentials) and cost analysis (the estimation of the cost characteristics of a measure with particular attention to incremental cost and the influence that a program may have upon those cost characteristics).

EPA (United States Environmental Protection Agency)

EPA leads the nation's environmental science, research, education and assessment efforts. The mission of the Environmental Protection Agency is to protect human health and the environment.

ERM

See Electric PCA, ERM

ERV (Energy Recovery Ventilator)

An energy recovery ventilator saves energy and helps to keep indoor humidity within a healthy range. It transfers heat and moisture between the incoming and outgoing air.

everylittlebit

Avista's Energy Efficiency Campaign. "When it comes to energy efficiency, every little bit adds up."

FERC

Federal Energy Regulatory Commission

Firm Power

Power or power-producing capacity intended to be available at all times during the period covered by a commitment, even under adverse conditions.

Firm Service

Natural gas or electricity service offered to customers that anticipates no planned interruption.

Firm Transportation

Natural gas transportation services for which facilities have been designed, installed and dedicated to a certified volume. Firm transportation services takes priority over interruptible service.

Fixed Costs

Costs that the Company/customers will incur over various levels of activities.

GAMA (Gas Appliance Manufacturer's Association)

Represents manufacturers of appliances, components and products used in connection with space heating, water heating and commercial food service.

Heat Rate

The quantity (expressed as a ratio) of fuel necessary to generate one kWh of electricity, stated in British thermal units (Btu). A measure of how efficiently an electric generator converts thermal energy into electricity (i.e. the lower the heat rate, the higher the conversion efficiency).

HRV (Heat Recovery Ventilator)

A ventilation system that recovers the heat energy in the exhaust air, and transfers it to fresh air as it enters the building. HRV provides fresh air and improved climate control, while also saving energy by reducing the heating (or cooling) requirements.

HSPF (Heating Seasonal Performance Factor)

The measure of the heating efficiency of a heat pump. The HSPF is a heat pump's estimated seasonal heating output in Btu's divided by the amount of energy that it consumers in watt-hours.

HVAC (Heating, Ventilation, and Air Conditioning)

Sometimes referred to as climate control, the HVAC is particularly important in the design of medium to large industrial and office buildings where humidity and temperature must all be closely regulated whilst maintaining safe and healthy conditions within.

I-937

Initiative Measure No. 937 in state of Washington mandate that utility companies obtain fifteen percent of their electricity from new renewable resources such as solar or wind by 2020 and to undertake all cost-effective energy conservation.

IAQ (Indoor Air Quality)

IAQ is a measure of the content of interior air that could affect health and comfort of building occupants.

IHD (In Home Display)

A device used to provide energy usage feedback to a customer on a real or near-real time basis.

IOU (Investor-Owned Utility)

A utility whose stock is publically traded and owned by private shareholders.

IPUC (Idaho Public Utilities Commission)

The IPUC regulates investor-owned utilities within the state of Idaho.

IRP (Integrated Resource Plan)

An IRP is a comprehensive evaluation of future electric or natural gas resource plans. The IRP must evaluate the full range of resource alternatives to provide adequate and reliable service to a customer's needs at the lowest possible risk-adjusted system cost. These plans are filed with the state public utility commissions on a periodic basis.

IRP TAC (Technical Advisory Committee)

Internal and external advisory committee for the IRP process.

Interruptible Service

Natural gas or electricity sales that are subject to interruption for a specified number of days or hours during times of peak demand or in the event of system emergencies. In exchange for interruptibility, buyers pay lower prices. Also for natural gas transportation or sales service which is subject to interruption at the option of any of the involved parties (seller, pipeline, LDC, buyer) because of energy shortages, capacity constraints, or economic considerations.

Kilowatt (kW)

One thousand watts. A watt is 1/746 horsepower (kW = 1.34 horsepower) or the power produced by a current of one ampere across a potential difference of one volt.

Kilowatt-Hour (kWh)

One thousand watts operating for one hour. Energy over time becomes work or 1.34 horsepower operating for one hour.

LDC (Local Distribution Company)

A natural gas utility providing service to customers.

LED (Light Emitting Diode)

Electronic semiconductor device that produces light, commonly used as an efficient lamp or display.

Line Losses

The amount of electricity lost or assumed lost when transmitting over transmission or distribution lines. This is the difference between the quantity of electricity generated and the quantity delivered at some point in the electric system.

LIHEAP (Low Income Home Energy Assistance Program)

Federal energy assistance program, available to qualifying households based on income, usually distributed by community action agencies or partnerships.

LIRAP (Low Income Rate Assistance Program)

LIRAP provides funding (collected from Avista's tariff rider) to CAP agencies for distribution to Avista customers who are least able to afford their utility bill.

LMS (Load Management System)

LMS is used by Avista to send load control signals to Demand Response equipment to cycle and/or curtail customer appliances.

LNG (Liquefied Natural Gas)

Natural gas that has been liquefied by reducing its temperature to minus 260 degrees Fahrenheit at atmospheric pressure. It remains a liquid at minus 116 degrees Fahrenheit and 673 psig. In volume, it occupies 1/600 of that of the vapor.

Load

The amount of power carried by a utility system at a specified time. Load is also referred to as demand.

Load Factor

The ratio between average and peak usage for electricity and gas customers. The higher the load factor, the smaller the difference between average and peak demand. The average load of a customer, group of customers, or entire system, divided by the maximum load can be calculated over any time period. For example, assuming 3650 therms of natural gas usage over a year, the average daily load is 3650/365 or 10 therms. If the peak day load or maximum load was 20 therms, the load factor was 50 percent.

Load Growth

This is the change, +/-, in the total therms (natural gas) and kWh (electric) that is consumed by retail customers from year to year. The amount the peak load or average load in an area increases over time (usually reported as an annual load growth in some percentage).

MAP (Maximum Acquisition Potential)

The maximum amount of energy savings the Company could achieve under the Biennial Conservation Plan.

MDM/MDMS (Meter Data Management System)

Used to organize meter interval data from an automated meter reading system.

Measure

A measure is a energy-efficiency product or service that can be offered relatively independently of other similar products or services.

MEF (Modified Energy Factor)

A new equation that replaced Energy Factor as a way to compare the relative efficiency of different units of clothes washers. The higher the Modified Energy Factor, the more efficient the clothes washer.

Megawatt (MW)

One million Watts, or one thousand kilowatts. Forward power contracts are normally traded in megawatts.

Megawatt-hour (MWh)

One million watts operating for one hour, energy over time becomes work or 1,340 horsepower operating for one hour. An MWh is an average megawatt produced or consumed for one hour.

MERV (Minimum Efficiency Reporting Value)

MERV ratings are used to rate the ability of an air conditioning filter to remove dust fro, the air as it passes through the filter. MERV is a standard used to measure the overall efficiency of a filter.

Mid-Columbia (Mid-C)

Electricity transacting hub or point, and point-of-connection to the transmission lines of the Columbia River hydro-generation facilities. The most common and liquid electricity trading point in the Northwest.

MMBTU

A unit of heat equal to one million British thermal units. Natural Gas contracts are typically traded in MMBTU. One futures contract is 10,000 MMBTU/day.

NARUC

National Association of Regulatory Utility Commissioners is an association representing the State public service commissioners who regulate essential utility services, such as electricity, gas, telecommunications, water, and transportation, throughout the country. As regulators, their members are charged with protecting the public and ensuring that rates charged by regulated utilities are fair, just, and reasonable.

Native Load

The retail customer load in which Avista has responsibility to plan and provide electric supply (includes scheduled losses incurred by Avista's systems; and does not include scheduled losses incurred by other parties wheeling of power on Avista's system).

Natural Gas

A naturally occurring mixture of hydrocarbon and non-hydro carbon gases found in porous geologic formations beneath the earth's surface, often in association with petroleum. The principal constituent is methane.

NEB (Non-Energy Benefits)

Benefits (or costs) resulting from the installation of an efficiency measure that are unrelated to the energy resource. This may any value or cost but is most commonly the impact of changes in water usage, sewage cost, reduced maintenance cost, etc. Values or costs which cannot be reasonably quantified (such as security, safety, productivity) are not included in Avista's measurement of non-energy benefits

NEEA

The Northwest Energy Efficiency Alliance is a non-profit organization working to encourage the development and adoption of energy-efficient products and services. NEEA is supported by the region's electric utilities, public benefits administrators, state governments, public interest groups and efficiency industry representatives. This unique partnership has helped make the Northwest region a national leader in energy efficiency. NEEA operates programs in Idaho, Montana, Oregon and Washington. It is funded by leading Northwest electric utilities as well as Energy Trust of Oregon and the Bonneville Power Administration, which pays on behalf of its electric utility customers. This money is pooled and used to fund projects approved by our Board of Directors.

NEET

Northwest Energy Efficiency Taskforce was formed to bring together a group of high-level leaders to focus and improve the efficiency of electricity use throughout the Pacific Northwest. The taskforce will work to pull together innovative ideas from successful energy efficiency programs and explore how, through regional collaboration, energy efficiency can be delivered more efficiently. Part of the Northwest Power and Conservation Council.

NERC

North American Electricity Reliability Council Their mission is to ensure the reliability of the bulk power system in North America by developing and enforcing reliability standards; assess reliability annually via 10-year and seasonal forecasts; monitor the bulk power system; evaluate users, owners, and operators for preparedness; and educate, train, and certify industry personnel. NERC is a self-regulatory organization, subject to oversight by the U.S. Federal Energy Regulatory Commission and governmental authorities in Canada.

Net-to-Gross Ratio

This is the percentage of program participants who have been determined to have adopted the efficiency measure as a consequence of the intervention of the utility program. Participants who were influenced by the program are the "net" participants and all program participants are contained within the "gross" participation. Net-to-gross serves to determine the energy savings attributable to a particular energy efficiency program rather than naturally occurring energy efficiency in the absence of any program.

NPCC (Northwest Power and Conservation Council)

The Council was established by the Northwest Power Act in 1980 to provide the electric customers of Washington, Idaho, Oregon and Montana with regional electric power planning coordination.

Off Peak

Times of low energy demand, typically nights and weekends. Off-peak hours in the Western U.S. are typified as the time from 10 p.m. to 8 a.m. Monday through Saturday, and all day Sunday. Forward contracts typically trade as on-peak, off peak, or flat (24 hours).

On Peak

Times of high-energy demand when it is at its peak. On-peak varies by region. In the Western United States, it is typically 6 a.m. to 10 p.m. Monday through Saturday. 0600 - 2200 Monday through Saturday, excluding NERC holidays.

OPUC (Public Utility Commission of Oregon)

The agency that regulates investor-owned utilities in Oregon.

Participant Test

One of four standard practice tests developed in California as a means to evaluate the cost-effectiveness of demand side management programs from the perspectives of different participants. The Participant Test shows the cost-effectiveness for the "participating" customer. It includes the value of the energy savings among other things from the project vs. the customer project cost.

PCA

See Electric PCA, ERM

PCT (Programmable Communicating Thermostat)

A load controlling thermostat that can communicate with a utility's load management system by internet protocol or radio frequency (RF).

Peak Load

Maximum demand, Peak demand. The greatest of all demands that have occurred during a given period.

Peaking Capability

Generating capacity normally designed for use only during maximum load period of a designated interval.

PGA (Purchase Gas Adjustment)

The Purchase Gas Adjustment is a mechanism that is periodically filed with the Utility Commissions and designed to recover or rebate the deferred changes in the cost of natural gas purchased to service customer loads.

Photovoltaic (PV)

Technology and research related to the application of solar cells for energy by converting sunlight directly into electricity.

Power Plan

The Northwest Power and Conservation Council is required to complete a regional Power Plan every five years. The Plan includes both supply-side (generation) and conservation resources. (Per the definition of "conservation" in the Northwest Power Act, electric-to-natural gas conversions are not considered to be "conservation" within the Plan). The Sixth Power Plan is currently nearing approval by the Council.

PPA (Power Purchase Agreement)

A legal contract between an electricity generator and a purchaser of energy or capacity.

Prescriptive

A prescriptive program is a standard offer for incentives for the installation of an energy efficiency measure. Prescriptive programs are generally applied when the measures are relatively low cost and are employed in relatively similar applications.

Program

A program is an aggregation of one or more energy-efficiency measures into a package that can be marketed to customers.

PUC (Public Utility Commission)

State agencies that regulate the tariffs (pricing) of investor-owned utility companies.

PUD (Public Utility District)

A political subdivision with territorial boundaries greater than a municipality and sometimes larger than a county for the purpose of generating, transmitting and distributing electric energy and/or other utility commodities.

RAP (Realistic Acquisition Potential)

The amount of energy savings the Company could realistically achieve under the Biennial Conservation Plan.

Rate Base

The capital investment (plant assets on the balance sheet) that regulatory commissions deem to be prudent and, therefore, allow to be recovered from customers. Further, it is the only utility cost that is allowed to have a profit component (return on equity) imputed upon it. All other costs are only returned dollar for dollar at the time of a rate case.

Rate Design

The manner in which retail prices are structured to recover the cost of service from each customer class. Rate design includes pricing components such as basic charges, demand charges and energy charges.

Ratepayer Impact

This concept is applied to analyses of projects to determine if the project will increase, decrease or be neutral to existing rates that customers currently are charged. This impact can be interpreted in total over the life of the project or year-by-year during the project's duration.

RGI (Renewable Generation Incentive)

Avista's distributed renewable incentive in Washington.

RIM (Rate Impact Measure Test)

One of four standard practice tests developed in California as a means to evaluate the cost-effectiveness of demand side management programs from the perspectives of different participants. The RIM Test (aka the "non-Participant Test") indicates if the program will result in a rate increase or decrease. The non-participating customer bears the cost of the rate increase without obtaining any program benefits.

RTF (Regional Technical Forum)

An advisory committee established in 1999 to develop standards to verify and evaluate conservation savings. Members are appointed by the Council and include individuals experienced in conservation program planning, implementation and evaluation. The RTF is also responsible for developing a conservation and renewable rate discount (C&RD) for the Bonneville Power Administration. The C&RD program awards rate discounts to customers who have implemented effective energy conservation measures. The RTF serves as a subcommittee to the Northwest Power and Conservation Council.

R-Value

A measure of thermal resistance used in the building and construction industry. The bigger the number, the better the building insulation's effectiveness. R value is the reciprocal of U factor.

Schedules 90 and 190

These tariffs authorize Avista to operate electric-efficiency (Schedule 90) and natural gas efficiency (Schedule 190) programs within Washington and Idaho. Electric to natural gas conversions are considered electric-efficiency programs, subject to achieving a specified net BTU efficiency.

Schedules 91 and 191

These tariffs establish a surcharge levied upon retail electric (Schedule 91) and natural gas (Schedule 191) sales to fund electric and natural gas-efficiency portfolios respectively.

Seasonality

The seasonal cycle or pattern refers to the tendency of market prices to move in a given direction at certain times of the year. Generally, seasonality refers to the changing supply and demand over various times of the year.

SEER (Seasonal Energy Efficiency Factor)

Performance Rating of Air-Conditioning and Air-Source Heat Pump Equipment. The higher the SEER rating of a unit, the more energy efficient it is. The SEER rating is the Btu of cooling output during a typical cooling-season divided by the total electric energy input in watt-hours during the same period.

Site Specific

A nonresidential program offering individualized calculations for incentives upon any electric or natural gas-efficiency measure not incorporated into a prescriptive program.

SNAP (Spokane Neighborhood Action Program)

A Spokane organization that provides financial, housing, and human services assistance to low-income customers.

Societal Test

The Societal Test is one of four standard practice tests developed in California as a means to evaluate the cost-effectiveness of demand-side management programs from the perspectives of different participants. This is a true societal cost-benefit test in that all transfer payments are excluded and externalities are fully incorporated into the calculations.

T-5

Usually most efficient Tubular Type, 5/8 inch diameter fluorescent lighting.

T-8

More efficiency Tubular Type, 1 inch diameter fluorescent lighting.

T-12

Tubular Type, 12/8 inch diameter fluorescent lighting.

Tariff Rider

The surcharge on retail electric and natural gas sales that provides the funding for Avista's DSM programs. This surcharge is authorized under Schedule 91 (for electric programs) and Schedule 191 (for natural gas programs).

T&D (Transmission and Distribution)

Transmission is the portion of the utility plant used to transmit electric energy in bulk to other principal parts of the system. Distribution is the portion of the utility system from the transformer in the substation to the Point of Delivery for the customer. These are the "lines behind your house" and can be underground as well as overhead.

Technical Committee

Avista's group of external stakeholders who comment about the company's approach to the measures and measurements associated with DSM activities.

Therm

A measure of the heat content of gas equal to 100,000 Btu.

Throughput

Related to natural gas load change, but usually referenced to the energy use per customer/premises/meter from year to year.

TRC (Total Resource Cost)

One of the four standard practice tests commonly used to evaluate the cost-effectiveness of DSM programs. The TRC Test evaluates the cost-effectiveness from the viewpoint of all customers on the utility system. The primary benefits include the avoided cost of energy and non-energy benefits in comparison to the customer incremental cost and non-incentive utility expenditures. The California standard practice allows for tax credits to be considered offsets to the customer incremental cost (though Avista calculates the TRC Test with and without this offset).

TRM (Technical Resource Manual)

A central document that provides a list energy efficiency measures and their associated savings values. Useful with regards to program management and evaluation, measurement and verification activities.

Triple-E (External Energy Efficiency Board – see Advisory Group)

Avista's group of external stakeholders who comment about the company's DSM activities.

U-Factor

U-Factor measures the heat transfer through a window, door, or skylight and tells you how well the product insulates. The lower the U-Factor, the greater resistance to heat flow (in and out) and the better its insulation value. (1/U = R-Value)

UCT (Utility Cost Test)

One of the four standard practice tests commonly used to evaluate the cost-effectiveness of DSM programs. The UCT evaluates the cost-effectiveness based upon a programs ability to minimize overall utility costs. The primary benefits are the avoided cost of energy in comparison to the incentive and non-incentive utility costs.

UES (Unit Energy Savings)

The amount of energy saved per unit of specific conservation measure; referenced in the Technical Resource Manual, Conservation Potential Assessment or Regional Technical Forum documentation.

UTC (Washington Utilities and Transportation Commission)

The agency that regulates investor-owned utilities in Washington.

WACOG (Weighted Average Cost of Gas)

The price paid for natural gas delivered to an LDC's city gate, purchased from various entities, such as pipelines, producers or brokers, based on the individual volumes of gas that make up the total quantity of supplies to a certain region.

Weather Normalized

This is an adjustment that is made to actual energy usage, stream-flows, etc., which would have happened if "normal" weather conditions would have taken place.

AVISTA CORPORATION
dba Avista Utilities

SCHEDULE 90
ELECTRIC ENERGY EFFICIENCY PROGRAMS
WASHINGTON

1. AVAILABILITY

The services described herein are available to specified residential, commercial, and industrial, retail electric distribution customers of Avista for the purpose of promoting the efficient use of electricity. Customers receiving electric distribution service provided under special contract and/or customers receiving electric services not specified under Tariff Schedule 91 (Energy Efficiency Rider Adjustment) are not eligible for services contained in this schedule unless specifically stated in such contract or other service agreement. The Company may provide partial funding for the installation of electric efficiency measures and may provide other services to customers for the purpose of identification and implementation of cost effective electric efficiency measures as described in this schedule. These services are available to owners of facilities, and also may be provided to tenants who have obtained appropriate owner consent.

Assistance provided under this schedule is limited to end uses where electricity is the primary energy source. Assistance may take the form of monetary incentives or non-monetary support, as further defined within this tariff. The Company shall strive to develop a portfolio of programs that is cost-effective on an aggregate basis. Customer participation under this schedule shall be based on eligibility requirements contained herein.

2. ELIGIBLE CUSTOMER SEGMENTS

All customers in all customer segments to whom this tariff is available are eligible for participation in electric efficiency programs developed in compliance with this tariff. The broad availability of this tariff does not preclude the Company from targeting measures, markets and customer segments as part of an overall effort to increase the cost-effectiveness and access to the benefits of electric efficiency.

3. MEASURES

Only electric efficiency measures with verifiable energy savings and demand response measures intended to achieve capacity reductions are eligible for assistance. (N)
Measure eligibility may not necessarily apply to all customer segments. Final determination of applicable measures will be made by the Company. Eligible technologies may include, but are not limited to, energy-efficient appliances, assistive technologies, controls, distributed renewable energy, motors, heating, ventilation and air-conditioning (HVAC) systems, lighting, maintenance, monitoring, new technologies, and shell.

Incentives for distributed renewable energy measures will be limited to net-metering facilities operating under Avista Utilities Idaho/Washington Rate Schedule 63 Net Metering rules. Incentives will be limited to energy production not to exceed 100% of the average annual energy use of the facility for the preceding three years or if new, a similar facility's annual use as calculated by the Company. Incentives will be limited to

SCHEDULE 90 continued

the amount specified in section 4.1 below. This market transformation effort supports renewable energy measures in the residential and small commercial segments.

Market transformation ventures will be considered eligible for funding to the extent that they improve the adoption of electric efficiency measures that are not fully accepted in the marketplace. These market transformation efforts may include efforts funded through regional alliances or other similar opportunities.

4. FUNDING AND NONMONETARY ASSISTANCE

4.1 Funding

The Company shall offer incentives for projects with measure lives of ten years or greater based upon the simple payback of the individual project, relative to the current energy code or industry practice that is applicable to the project. Simple payback is defined as the incremental capital cost associated with the energy efficiency of the project divided by the energy savings per year. Energy savings are calculated using the current retail energy rates. Fuel-conversion incentives are available only for conversion to natural gas with an end-use efficiency of 44% or greater. The incentives shall be as follows:

Simple Pay-Back Period	**Incentive Level (cents per first year kWh saved)** ***(Minimum measure life of 10 years)***
Under 15 years	20 cents
Over 15 years	0 cents

(D)(I)

Incentives will be capped at 70% percent of the incremental project cost for all projects with simple paybacks less than fifteen years. Incentives for efficiency measures within the following categories shall not exceed 100% of the incremental cost: (C)

SCHEDULE 90 continued

4.1.1 DSM programs delivered by community action agencies contracted by the Company to serve Limited Income or vulnerable customer segments including agency administrative fees and health and human safety measures; (K)

4.1.2 Low-cost electric efficiency measures with demonstrable energy savings (e.g. compact fluorescent lamps);

4.1.3 Programs or services supporting or enhancing local, regional or national electric efficiency market transformation efforts.

4.1.4 Prescriptive programs are guided by the typical application of that measure in accordance with the previously defined incentive structure. Incentive levels for these programs are based on market conditions at the time of program design and are not dependent on actual project cost relative to incentive caps. Incentives shall not exceed project costs.

4.1.5 Incentives for demand response programs shall not exceed 75% of the calculated capacity present value of the measure if and when an interruption event is triggered. (N) (N) (N)

The Company will actively pursue electric efficiency opportunities that may not fit within the prescribed services and simple pay-back periods described in this tariff. In these circumstances the customer and the Company will enter into a site specific services agreement.

4.2 Non-Monetary Assistance

Assistance without the granting of direct monetary incentives to the customer is available across all applicable segments and may be provided in various ways, that include, but are not limited to, the following:

4.2.1. Educational, training or informational activities that enhance electric efficiency. This may include technology or customer-segment specific seminars, literature, trade-show or community events, advertising or other approaches to increasing the awareness and adoption of resource efficient measures and behaviors.

4.2.2. Financial activities intended to reduce or eliminate the financial barriers to the adoption of electric efficiency measures. This may include programs intended to reduce the payment rate for resource efficiency measures, direct provision of leased or loaned funds or other approaches to financial issues with better than existing market terms and conditions.

(K) Material has been moved to sheet 90A.

SCHEDULE 90 continued

4.2.3. Product samples may be provided directly to the customer when energy efficiency products may be available to the utility at significantly reduced cost as a result of cooperative buying or similar opportunities. (M)

4.2.4. Technical Assistance may consist of engineering, financial or other analysis provided to the customer by or under the direction of, Company staff. This may take the form of design reviews, product demonstrations, third-party bid evaluations, facility audits, measurement and evaluation analysis or other forms of technical assistance that addresses the cost- effectiveness, technical applicability or end-use characteristics of customer alternatives.

5. BUDGET & REPORTING

The electric efficiency programs defined within this tariff will be funded by surcharges levied within Schedule 91. The Company will manage these programs to obtain resources that are cost-effective from a Total Resource Cost (TRC) perspective and achievable through utility intervention. Schedule 91 will be reviewed annually and revised as necessary to provide adequate funding for electric efficiency efforts.

6. GENERAL RULES AND PROVISIONS

Service under this schedule is subject to the General Rules and Provisions contained in this tariff and is limited to facilities receiving electric service from the Company.
All installations and equipment must comply with all local code and permit requirements applicable and be properly inspected, if required, by appropriate agencies.

The Company may establish specifications regarding any electric efficiency measures and modifications to be effected under this schedule and may conduct inspections to insure that such specifications are met.

AVISTA CORPORATION
dba Avista Utilities

SCHEDULE 190
NATURAL GAS EFFICIENCY PROGRAMS
WASHINGTON

1. AVAILABILITY

The services described herein are available to qualifying residential, commercial, and industrial, retail natural gas distribution customers of Avista Corporation for the purpose of promoting the efficient use of natural gas. Customers receiving natural gas distribution service provided under special contract and/or customers receiving natural gas services not specified under Tariff Schedule 191 (Natural Gas Efficiency Rider Adjustment) are not eligible for services contained in this schedule unless specifically stated in such contract or other service agreement. The Company may provide partial funding for the installation of natural gas efficiency measures and may provide other services to customers for the purpose of identification and implementation of cost effective natural gas efficiency measures as described in this schedule. Facilities-based services are available to owners of facilities, and also may be provided to tenants who have obtained appropriate owner consent.

Assistance provided under this schedule is limited to end uses where natural gas is or would be the energy source and to measures which increase the efficient use of natural gas. Assistance may take the form of monetary incentives or non-monetary incentives, as further defined within this tariff. The acquisition of resources is cost-effective as defined by a Utility Cost Test (UCT) as a portfolio. Customer participation under this schedule shall be based on eligibility requirements contained herein. (C)

2. ELIGIBLE CUSTOMER SEGMENTS

All customers in all customer segments to whom this tariff is available are eligible for participation in natural gas efficiency programs developed in compliance with this tariff. The broad availability of this tariff does not preclude the Company from targeting measures, markets and customer segments as part of an overall effort to increase the cost-effectiveness and access to the benefits of natural gas efficiency.

3. MEASURES

Only natural gas efficiency measures with verifiable energy savings are eligible for assistance. Measure eligibility may not necessarily apply to all customer segments. Final determination of applicable measures will be made by the Company.

Market transformation ventures will be considered eligible for funding to the extent that they improve the adoption of natural gas efficiency measures that are not fully accepted in the marketplace. These market transformation efforts may include efforts funded through regional alliances or other similar opportunities.

AVISTA CORPORATION
dba Avista Utilities

SCHEDULE 190 - continued

4. FUNDING AND NONMONETARY ASSISTANCE

4.1 Funding

The Company shall offer incentives for projects with measure lives of ten years or greater based upon the simple payback of the individual project relative to the current energy code or industry practice that is applicable to the project. Simple payback is defined as the incremental capital cost associated with the energy efficiency of the project divided by the energy savings per year. Energy savings are calculated using the current energy rates. The incentives shall be as follows:

Measures	Simple Pay-Back Period	Incentive Level (dollars/first year therm saved) (Minimum measure life of 10 years)	
Natural Gas Efficiency	Under 15 years	$3.00	(D)(I)
	Over 15 years	$0	(D)

(D)

All projects will be capped at 70% of incremental project cost based upon the above tiers.

Incentives for efficiency measures within the following categories shall not exceed 100% of the project cost:

4.1.1 Energy efficiency programs delivered by community action agencies contracted by the Company to serve Limited Income or vulnerable customer segments including agency administrative fees and health and human safety measures;

4.1.2 Low-cost natural gas efficiency measures with demonstrable energy savings (e.g. rooftop unit service);

4.1.3 Programs or services supporting or enhancing local, regional or national natural gas efficiency market transformation efforts.

4.1.4 Prescriptive programs are guided by the typical application of that measure in accordance with the previously defined incentive structure. Incentive levels for these programs are based on market conditions at the time of the program design and are not dependent on actual project cost relative to incentive caps. Incentives shall not exceed project costs.

AVISTA CORPORATION
dba Avista Utilities

SCHEDULE 190 - continued

Avista Corporation will actively pursue natural gas efficiency opportunities that may not fit within the prescribed services and simple pay-back periods described in this tariff. In these circumstances the customer and Avista Corporation will enter into a site specific services agreement. (M)

4.2 Non-Monetary Assistance

Non-monetary assistance is service that does not involve the granting of direct monetary incentives to the customer. This type of assistance is available across all applicable segments. This assistance may be provided in various ways that include, but are not limited to, the following:

4.2.1. **Educational**, training or informational activities that enhance resource efficiency. This may include technology or customer-segment specific seminars, literature, trade-show booths, advertising or other approaches to increasing the awareness and adoption of resource efficient measures and behaviors.

4.2.2. **Financial** activities intended to reduce or eliminate the financial barriers to the adoption of resource efficiency measures. This may include programs intended to reduce the payment rate for resource efficiency measures, direct provision of leased or loaned funds or other approaches to financial issues by better than existing market terms and conditions.

4.2.3. **Product samples** may be provided directly to the customer when resource efficient products may be available to the utility at significantly reduced cost as a result of cooperative buying or similar opportunities.

4.2.4. **Technical Assistance** may consist of engineering, financial or other analysis provided to the customer by or under the direction of, Avista Corporation staff. This may take the form of design reviews, product demonstrations, third-party bid evaluations, facility audits, measurement and evaluation analysis or other forms of technical assistance that addresses the cost-effectiveness, technical applicability or end-use characteristics of customer alternatives.

AVISTA CORPORATION
dba Avista Utilities

SCHEDULE 190 - continued

5. BUDGET & REPORTING (M)

The natural gas efficiency programs defined within this tariff will be funded by surcharges levied within Schedule 191. The Company will manage these programs to obtain resources that are cost-effective from a Total Resource Cost perspective and achievable through utility intervention. Schedule 191 will be reviewed periodically and revised as necessary to provide adequate funding for natural gas efficiency efforts. (D)

6. GENERAL RULES AND PROVISIONS

Service under this schedule is subject to the General Rules and Provisions contained in this tariff and is limited to facilities receiving natural gas service from the Company.

All installations and equipment must comply with all local code and permit requirements applicable and be properly inspected, if required, by appropriate agencies. The Company may establish specifications regarding any natural gas efficiency measures and modifications to be effected under this schedule and may conduct inspections to insure that such specifications are met.

SCHEDULE 90
ELECTRIC ENERGY EFFICIENCY PROGRAMS
IDAHO

1. Availability

The services described herein are available to specified residential, commercial, and industrial, retail electric distribution customers of Avista Corporation for the purpose of promoting the efficient use of electricity. Customers receiving electric distribution service provided under special contract and/or customers receiving electric services not specified under Tariff Schedule 91 (Energy Efficiency Rider Adjustment) are not eligible for services contained in this schedule unless specifically stated in such contract or other service agreement. The Company may provide partial funding for the installation of electric efficiency measures and may provide other services to customers for the purpose of identification and implementation of cost effective electric efficiency measures as described in this schedule. Facilities-based services are available to owners of facilities, and also may be provided to tenants who have obtained appropriate owner consent.

Assistance provided under this schedule is limited to end uses where electricity is the energy source. Assistance may take the form of monetary incentives or non-monetary incentives, as further defined within this tariff. The acquisition of resources is cost-effective as defined by a Total Resource Cost test (TRC) as a portfolio. Customer participation under this schedule shall be based on eligibility requirements contained herein.

2. ELIGIBLE CUSTOMER SEGMENTS

All customers in all customer segments to whom this tariff is available are eligible for participation in electric efficiency programs developed in compliance with this tariff. The broad availability of this tariff does not preclude the Company from targeting measures, markets and customer segments as part of an overall effort to increase the cost-effectiveness and access to the benefits of electric efficiency.

SCHEDULE 90 - continued

3. MEASURES

Only electric efficiency measures with verifiable energy savings are eligible for assistance. Measure eligibility may not necessarily apply to all customer segments. Final determination of applicable measures will be made by the Company. Eligible technologies may include, but are not limited to, energy-efficient appliances, assistive technologies, controls, distributed renewable energy, motors, heating, ventilation and air-conditioning (HVAC) systems, lighting, maintenance, monitoring, new technologies, and shell.

Incentives for distributed renewable energy measures will be limited to net-metering facilities operating under Avista Utilities Idaho/Washington Rate Schedule 63 Net Metering rules. Incentives will be limited to energy production not to exceed 100% of the average annual energy use of the facility for the preceding three years or if new, a similar facility's annual use as calculated by the Company. Incentives will be limited to the amount specified within section 4.1 below. This market transformation effort supports renewable energy measures in the residential and small commercial segments.

Market transformation ventures will be considered eligible for funding to the extent that they improve the adoption of electric efficiency measures that are not fully accepted in the marketplace. These market transformation efforts may include efforts funded through regional alliances or other similar opportunities.

4. FUNDING AND NONMONETARY ASSISTANCE

4.1 Funding

The Company shall offer incentives for projects with measure lives of ten years or greater based upon the simple payback of the individual project relative to the current energy code or industry practice that is applicable to the project. Simple payback is defined as the incremental capital cost associated with the energy efficiency of the project divided by the energy savings at the current energy rates per year. Energy savings are calculated using the current energy rates. Fuel-conversion incentives are available only for conversion to natural gas with an end-use efficiency of 44% or greater. The incentives shall be as follows:

Simple Pay-Back Period	**Incentive Level (cents per first year kWh saved)** ***(Minimum measure life of 10 years)***
Under 15 years	20 cents
Over 15 years	0 cents

Incentives will be capped at 70% percent of the incremental project cost for all projects with simple paybacks less than fifteen years. Incentives for efficiency measures within the following categories shall not exceed 100% of the incremental cost.

AVISTA CORPORATION
d/b/a Avista Utilities

SCHEDULE 90 - continued

4.1.1 Limited Income or vulnerable customer segments and the agencies serving those customers;

4.1.2 Low-cost electric efficiency measures with demonstrable energy savings (e.g. compact fluorescent lamps);

4.1.3 Programs or services supporting or enhancing local, regional or national electric efficiency market transformation efforts.

4.1.4 Prescriptive programs are guided by the typical application of that measure in accordance with the previously defined incentive structure. Incentive levels for these programs are based on market conditions at the time of program design and are not dependent on actual project cost relative to incentive caps. Incentives shall not exceed incremental project costs.

4.2 Non-Monetary Assistance

Non-monetary assistance is service that does not involve the granting of direct monetary incentives to the customer. This type of assistance is available across all applicable segments. This assistance may be provided in various ways that include, but are not limited to, the following:

4.2.1. Educational, training or informational activities that enhance resource efficiency. This may include technology or customer-segment specific seminars, literature, trade-show booths, advertising or other approaches to increasing the awareness and adoption of resource efficient measures and behaviors.

4.2.2. Financial activities intended to reduce or eliminate the financial barriers to the adoption of resource efficiency measures. This may include programs intended to reduce the payment rate for resource efficiency measures, direct provision of leased or loaned funds or other approaches to financial issues by better than existing market terms and conditions.

4.2.3. Product samples may be provided directly to the customer when resource efficient products may be available to the utility at significantly reduced cost as a result of cooperative buying or similar opportunities.

4.2.4. Technical Assistance may consist of engineering, financial or other analysis provided to the customer by or under the direction of, Avista Corporation staff. This may take the form of design reviews, product demonstrations, third-party bid evaluations, facility audits, measurement and evaluation analysis, project management or other forms of technical assistance that addresses the cost-effectiveness, technical applicability or end-use characteristics of customer alternatives.

AVISTA CORPORATION
d/b/a Avista Utilities

SCHEDULE 90 - continued

5. BUDGET & REPORTING

The electric efficiency programs defined within this tariff will be funded by surcharges levied within Schedule 91. The Company will manage these programs to obtain resources that are cost-effective from a total resource cost perspective and achievable through utility intervention. Schedule 91 will be periodically reviewed and revised as necessary to provide adequate funding for electric efficiency efforts.

6. GENERAL RULES AND PROVISIONS

Service under this schedule is subject to the General Rules and Provisions contained in this tariff and is limited to facilities receiving electric service from the Company.

All installations and equipment must comply with all local code and permit requirements applicable and be properly inspected, if required, by appropriate agencies.

The Company may establish specifications regarding any electric efficiency measures and modifications to be effected under this schedule and may conduct inspections to insure that such specifications are met.

AVISTA CORPORATION
dba Avista Utilities

SCHEDULE 190
NATURAL GAS EFFICIENCY PROGRAMS
IDAHO

1. AVAILABILITY

The services described herein are available to qualifying residential, commercial, and industrial, retail natural gas distribution customers of Avista Corporation for the purpose of promoting the efficient use of natural gas. Customers receiving natural gas distribution service provided under special contract and/or customers receiving natural gas services not specified under Tariff Schedule 191 (Natural Gas Efficiency Rider Adjustment) are not eligible for services contained in this schedule unless specifically stated in such contract or other service agreement. The Company may provide partial funding for the installation of natural gas efficiency measures and may provide other services to customers for the purpose of identification and implementation of cost effective natural gas efficiency measures as described in this schedule. Facilities-based services are available to owners of facilities, and also may be provided to tenants who have obtained appropriate owner consent.

Assistance provided under this schedule is limited to end uses where natural gas is or would be the energy source and to measures which increase the efficient use of natural gas. Assistance may take the form of monetary incentives or non-monetary incentives, as further defined within this tariff. The acquisition of resources is cost-effective as defined by a Utility Cost Test (UCT) as a portfolio. Customer participation under this schedule shall be based on eligibility requirements contained herein.

2. ELIGIBLE CUSTOMER SEGMENTS

All customers in all customer segments to whom this tariff is available are eligible for participation in natural gas efficiency programs developed in compliance with this tariff.

3. MEASURES

Only natural gas efficiency measures with verifiable energy savings are eligible for assistance. Measure eligibility may not necessarily apply to all customer segments. Final determination of applicable measures will be made by the Company.

SCHEDULE 190 – continued
NATURAL GAS EFFICIENCY PROGRAMS - IDAHO

4. FUNDING AND NONMONETARY ASSISTANCE

4.1 Funding

The incentives specified below are provided by the Company to promote the best use of natural gas resources. Incentives are based upon the simple payback of the measure prior to the application of an incentive, as calculated by Company staff and based upon standardized measure cost(s). These incentive tiers apply to measures with energy savings at the current energy rates lasting 10 years or longer that meet or exceed current manufacturing and energy codes and/or industry standard practices that are applicable to the project. Simple payback is defined as the capital cost of the project divided by the energy savings at the current energy rates per year. Capital cost included in the calculation is the portion associated with the energy saving portion of the project only. The incentives for qualifying projects as detailed in Section 1 (Availability) shall be as follows:

Measures	**Simple Pay-Back Period**	**Incentive Level** **(dollars/first year therm saved)** **(Minimum measure life of 10 years)**
Natural Gas Efficiency	Under 15 years	3.00
	Over 15 years	0.00

All projects will be capped at 70% of incremental project cost based upon the above tiers. Incentives for efficiency measures within the following categories shall not exceed 100% of the project cost:

4.1.1 Energy efficiency programs delivered by community action agencies contracted by the Company to serve Limited Income or vulnerable customer segments including agency administrative fees and health and human safety measures;

4.1.2 Low-cost natural gas efficiency measures with demonstrable energy savings (e.g. rooftop unit service);

SCHEDULE 190 – continued
NATURAL GAS EFFICIENCY PROGRAMS – IDAHO

4.1.3 Programs or services supporting or enhancing local, regional or national natural gas efficiency market transformation efforts.

4.1.4 Prescriptive programs are guided by the typical application of that measure in accordance with the previously defined incentive structure. Incentive levels for these programs are based on market conditions at the time of the program design and are not dependent on actual project cost relative to incentive caps. Incentives shall not exceed project costs.

Avista Corporation will actively pursue natural gas efficiency opportunities that may not fit within the prescribed services and simple pay-back periods described in this tariff. In these circumstances the customer and Avista Corporation will enter into a site specific services agreement.

5. BUDGET & REPORTING

The natural gas efficiency programs defined within this tariff will be funded by surcharges levied within Schedule 191. The Company will manage these programs to obtain resources that are cost-effective and achievable through utility intervention. Schedule 191 will be reviewed annually and revised as necessary to provide adequate funding for natural gas efficiency efforts.

6. GENERAL RULES AND PROVISIONS

Service under this schedule is subject to the General Rules and Provisions contained in this tariff and is limited to facilities receiving natural gas service from the Company.

All installations and equipment must comply with all local code and permit requirements applicable and be properly inspected, if required, by appropriate agencies.

The Company may establish specifications regarding any natural gas efficiency measures and modifications to be effected under this schedule and may conduct inspections to insure that such specifications are met.

2017 Washington Electric & Natural Gas Programs Summary:

Program:	kWh	Budget	therms	Budget	Total Budget
WA LI (With out Conversions)	333,921	$ 653,888	14,593	$ 893,410	$ 1,547,298
WA LI (Conversions only)	890,100	$ 637,936			$ 637,936
Washington Low Income	1,224,021	$ 1,291,824	14,593	893,410	$ 2,185,234
Residential Prescriptive	1,217,995	$ 336,877	385,301	$ 1,526,525	$ 1,863,401
Fuel Efficiency	3,615,042	$ 1,184,279			$ 1,184,279
Simple Steps, Smart Savings	10,371,501	$ 2,087,733	13,500	$ 30,116	$ 2,117,849
Home Energy Reports	5,000	$ 250,586			$ 250,586
Residential	15,209,538	$ 3,859,474	398,801	1,556,641	$ 5,416,116
Nonresidential lighting interior	4,598,932	$ 1,258,067			$ 1,258,067
Nonresidential lighting exterior	1,510,148	$ 393,557			$ 393,557
NonResidential HVAC	-	$ -	22,690	$ 62,842	$ 62,842
Site Specific	6,368,000	$ 1,614,659	100,000	$ 382,295	$ 1,996,955
Prescriptive Shell	21,237	$ 6,691	9,200	$ 37,390	$ 44,081
Prescriptive VFD	425,445	$ 78,799			$ 78,799
Food Service Equipment	47,232	$ 5,656	40,740	$ 84,267	$ 89,923
Green Motors	9,139	$ 1,077			$ 1,077
Air Guardian	60,000	$ 17,712			$ 17,712
Fleet Heat	100,500	$ 16,896			$ 16,896
Energy Smart Grocery	1,818,066	$ 483,363			$ 483,363
Multifamily Market Transformation (Under Site Specific)	2,349,600	$ 1,753,588			$ 1,753,588
Small Business	2,039,990	$ 570,769	34,286	$ 39,796	$ 610,565
Non-Residential	19,348,289	$ 6,200,833	206,916	606,591	$ 6,807,424
WA Elec (w/o LI)	34,557,827	$ 10,060,308			$ 10,060,308
WA Elec (w/o Conversions)	28,927,106	$ 7,676,328			$ 7,676,328
WA Elec (Everything)	35,781,848	$ 11,352,131			$ 11,352,131
NEEA & CPA	3,109,800	$ 1,505,000		$ 402,939	$ 1,907,939
WA Total Electric Budget	38,891,648	$ 12,857,131			$ 12,857,131
WA NG TOTAL (Gas Only W/O LI)			605,717	$ 2,163,232	$ 2,163,232
WA NG Total (Gas Only W/LI			620,310	3,056,643	$ 3,056,643
WA Total Gas Budget			620,310	3,459,582	$ 4,964,582
WA Total DSM Budget	38,891,648	$ 12,857,131	620,310	$ 3,459,582	$ 17,821,713

Appendix G (New Program Updates)

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Appendix H:

2014 – 2015 Process and Impact Evaluation Recommendations and Statuses

1.1 Conclusions and Recommendations (Impact Evaluation)

The following outlines the key conclusions and recommendations as a result of the evaluation activities. Specific details regarding the conclusions and recommendations outlined here, along with additional conclusions and recommendations can be found in the program-specific sections of this report and in Section **Error! Reference source not found.**.

1.1.1 Nonresidential Programs

The overall realization rate for the nonresidential portfolio is 95%. The realization rates ranged from 102% for the Small Business program down to 54% for the "Prescriptive Non-Lighting Other" program. The largest program in the nonresidential portfolio, Site Specific, had a realization rate of 99%. The evaluation team found that the processes Avista is utilizing for estimating and reporting energy savings for the nonresidential programs are predominantly sound and reasonable. The following subsections outline specific key conclusions and recommendations for several of the nonresidential programs.

Conclusion: The Site Specific program constitutes more than 60% of the program energy shares. Within the last 2 years, Avista has increased their level of quality assurance and review on projects that participate through the program. The evaluation team's analysis resulted in a 99% realization rate for the Site Specific program. The high realization rate indicates that Avista's internal process for project review, savings estimation, and installation verification are working to produce high quality estimates of project impacts.

> **Recommendation**: The evaluation team recommends that Avista continue to operate this program with the current level of rigor. For interior lighting projects, Avista should consider applying the interactive factors deemed by the Regional Technical Forum (RTF) to quantify the interactive effects between lighting retrofits and their associated HVAC systems.

Status: We are in the process of changing our interactive effect values for both prescriptive lighting and site specific lighting. The RTF updated values in March 2016 and those will be reflected in our documents by November 1, 2016.

Conclusion: Avista's EnergySmart Grocer program is successfully providing retail and restaurant customers with an avenue to upgrade their refrigeration equipment.

Participation in the program includes both prescriptive and custom projects. The evaluation team's review of projects in the program resulted in a realization rate of 90%. For prescriptive projects, the evaluation team determined that RTF deemed savings values were being appropriately applied in most cases. However, low project-level realization rates for custom projects, which tend to be larger in size than prescriptive projects, are driving the program realization rate downward.

> **Recommendation**: Avista should consider more internal review of energy savings estimates submitted by vendors for custom projects under this program. Alternatively, Avista could consider tracking custom projects under the Site Specific program with other projects of similar size and complexity.

Status: In 2016, we began treating EnergySmart Grocer Site Specific measures the same way we treat our own.

Conclusion: Avista reported 2014-2015 participation in six other prescriptive programs. Of these, the HVAC Motor Controls program is the largest, constituting 65% of the energy savings for this group. The evaluation team's review of projects in these programs resulted in a 54% realization rate. Cases of ineligible VFD projects receiving incentives were cause of the low realization rate for these programs.

> **Recommendation**: Avista should revise the HVAC Motor Controls program to include more verification of motor eligibility status. More emphasis should be placed on confirming motor application and duty status to ensure compliance with the program's existing eligibility requirements. More specifically, Avista should place specific emphasis on ensuring VFDs are installed in a manner that saves energy (i.e. not just as "soft starters") and that incentivized VFDs serve primary-duty motors.

Status: To address this issue the VFD incentive application now includes two additional check boxes stating "VFD is for control and not for a soft start" and "There are not 2 VFD's on the same fluid flow system."

Conclusion: The Small Business reported savings for faucet aerators were found to be conservatively low based upon the evaluation team's secondary research. The realization rates for faucet aerators were 126% for electric savings and 204% for natural gas savings.

> **Recommendation:** It is recommended that the modified deemed savings values utilized by the evaluation team be adopted by the program for future reporting purposes.

Status: The modified deemed savings values have been updated and are included in the 2017 business plan.

1.1.2 Residential Programs

The overall realization rate for the residential portfolio is 109%. The realization rates varied significantly across the various programs evaluated with the Shell and Fuel Efficiency programs having the lowest realization rate (60% and 62% respectively). The evaluation team found that the reported savings for the majority of the programs were understating the actual impacts found from the evaluation activities. The following subsections outline specific conclusions and recommendations for several of the residential programs.

Conclusion: The evaluation team found that the reported deemed savings value (per recycled unit) for the program was lower than estimated gross savings valued from prior studies. Avista may have aligned their deemed savings values close to the RTF deemed savings values, but it is important to understand that the RTF is reporting a value that accounts for net market effects (i.e. free ridership).

> **Recommendation**: If Avista choses to offer an appliance recycling program in the future, it is recommended that a clear distinction between gross and net savings values is noted if Avista reports the most current RTF values.

Status: Avista discontinued its appliance recycling program in the middle of 2015 and is not planning on offering this program due to newer refrigerator and freezer vintages having greatly reduced savings.

Conclusion: The evaluation team found, through billing regression analysis, a relatively low realization rate for the Air Source Heat Pump (ASHP) measures (RR of 49%).

> **Recommendation:** The evaluation team recommends Avista reexamine the assumptions relating to annual per-home consumption and savings estimates in homes receiving ASHP installations. In addition, to help better understand the baseline for the ASHP replacement, Avista could consider requesting that contractors and customers provide a better description of the replaced unit

Status: Previously, Avista had been using a figure from a previous evaluation and has since updated the value to match the RTF UES, which is more in line with the evaluated results. As a result high efficiency ASHPs were not cost-effective for 2016 and were discontinued. Customers may switch from electric straight resistance to either natural gas or an ASHP but the stand alone new or replacement HE ASHP is no longer available.

Conclusion: For showerheads distributed through the Simple Steps program, Avista allocates 50% of its reported savings to electric savings and 50% to natural gas savings to account for homes that have different water heating fuel types.

Recommendation: The evaluation team recommends Avista update this allocation assumption to be based on representative water heater fuel type saturation. These data are available through the Regional Building Stock Assessment study; however, we recommend Avista base the allocation on data specific to its territory.

Status: Avista has decided to continue to utilize the RTF figure for any water heating retail showerheads, which is nearly a 50/50 split.

Conclusion: The evaluation team conducted a billing regression analysis for the Fuel Efficiency participants and found realization rates of 60-70% for rebate projects that included the conversion of a home's heating system from electricity to natural gas. When regression coefficients were examined in detail, the evaluation team noted that the estimated reduction in electric heating load was being offset by an increase in estimated base load within participating homes.

Recommendation: Because the rebate amounts and per-home savings from Fuel Efficiency are so large and the number of participants is relatively low, the evaluation team recommends Avista ask participating customers for details on any additional home renovations that were completed in parallel with the fuel conversion. Home improvement projects such as an addition, finishing a basement, or adding air conditioning can drastically change the consumption patterns within a home and render the assumed baseline inaccurate.

Status: Avista concurs with the findings and has chosen to utilize the newly evaluated fuel efficiency numbers for future program design. Interestingly a previous impact analysis found higher realization rates that resulted in the lock UES used most recently. The impact analysis aligns with anecdotal feedback from customers that the higher incentive is helping reach customers with less usage and shortening their payback to successfully encourage them to convert.

Conclusion: The evaluation team found that over half the homes receiving Fuel Efficiency rebates in 2014-2015 did not have a gas billing history with Avista prior to the conversion. These homes realized savings at a higher rate than homes that did have previous gas service.

Recommendation: The evaluation team recommends that Avista consider adding a field to the program tracking database that indicates the gas meter installation date or service start date of participating homes. This would more clearly delineate homes that were previously all electric and became dual-fuel around the same time as the Fuel Efficiency project, from homes that had been dual-fuel historically. Avista may also want to consider assuming a more conservative electric savings estimate for homes that had prior gas service

because it's possible that the home was not 100% electrically heated prior to program participation.

Status: While the database may not be able to track the additional data points, Avista will look for opportunities to track and/or communicate greater detail for evaluation. Avista has chosen to utilize the newly evaluated fuel efficiency number for future program design.

Conclusion: Avista's deemed savings estimates, which were generally the same for all similar product types and not correlated to the bulb wattage, understated the savings found by the evaluation team. This was especially the case for Avista's CFL giveaway program.

Recommendation: The evaluation team recommends that Avista consider more detailed product type deemed values in an effort to be more closely aligned with the actual participating lamps. Simple Steps has shifted its program tracking to specific product types by lumen bins in accordance with the most current BPA UES measure list. Avista should consider using these higher resolution deemed value for internal reporting with the Simple Steps program and for use with internal residential lighting programs.

Status: Avista will shift its Simple Steps tracking to align with the most recent RTF UES.

Recommendation: An overarching recommendation related to the Residential Lighting, is that Avista monitor the LED lamp market for technology cost changes and customer preferences, and consider increasing LED lamp options from the 2014-2015 portfolio in future DSM planning. Currently, LED prices are dramatically decreasing and customer preferences are shifting from CFL to LEDs as a preferred choice as an energy efficient technology. Consequently, CFLs shelf space share is declining as an abandoned technology, despite its better cost effectiveness compared to LED lamps.

Status: Avista will continue to monitor the quickly changing residential lighting market.

Conclusion: The evaluation team found a low realization rate (38%) for shell rebate measures (windows and insulation). This finding indicates that reported savings values were too aggressive on average. The evaluation team compared the end-use shares estimated via regression analysis and found that only approximately 5,500 of the 13,000 kWh of average annual consumption in residential homes in Avista's service territory was assigned to heating and cooling load. Given this end-use share, the reported savings values claimed by Avista equate to a 25% reduction in HVAC loads.

Recommendation: The evaluation team recommends Avista examine planning assumptions about per-home consumption, end-use load shares, and percent reductions in heating and cooling loads from shell improvements. It may be that

the percent reduction assumptions are sound, but they are being applied to an overstated assumption of the average electric HVAC consumption per home. Conversely, the assumed end-use shares may be accurate, but the end-use reduction percentage is inflated. This investigation should be conducted separately for electrically heated homes and dual fuel homes as the heating electric end-use share will be different.

Status: Avista had been using older RTF numbers that corresponded to the time of the Conservation Potential Assessment. The current business plan is utilizing the most recent RTF numbers.

Conclusion: The evaluation team found that savings held fairly consistent during the 6 month interruption in Home Energy Report delivery. The finding reinforces Avista's decision to assume a multi-year measure life when calculating the cost-effectiveness of the Opower program.

Recommendation: The evaluation team recommends Avista examine the program delivery model in the 2016-2017 cycle. Given the fixed and volumetric nature of program costs, measure life assumptions, and mechanisms by which measured savings are counted toward goal achievement the evaluation team believes there are alternatives to the traditional delivery model that optimize program achievements relative to costs.

Status: Avista will continue to utilize the same design for the 2016-2017 Home Energy Reports program, but will be looking at all options of different HER program design for 2018-2019.

Conclusion: The evaluation team found a high realization rate for the fuel conversion measures implemented through the Low Income program. One reason for the high realization rate could be due to the fact that Avista caps the reported savings value to 20% of the contractor estimated savings. In addition, the evaluation team found that the verified savings for these fuel conversion measures aligned closely with the verified savings found through the regular-income Fuel Conversion program.

Recommendation: The evaluation team recommends re-evaluating the current savings cap for fuel conversion projects. In addition, we recommend that Avista align assumptions for fuel switching savings for the Low Income and Fuel Efficiency programs.

Status: Avista is re-evaluating the cap for low income savings claim. Based on past impact analysis savings were capped at 20% of the home. There should be a distinction between a cap for weatherization and conversions where savings could exceed 20%.

1.3 Conclusions and Recommendations (Process Evaluation)

The evaluation team concluded the following and provides several suggestions for Avista's programs. This section begins with conclusions and recommendations pertinent across all programs (cross-cutting), followed by nonresidential and small business, and ending with residential specific conclusions and recommendations.

1.3.1 Cross-cutting

Conclusion 1: Contractors are key program partners.

Contractors are the driving force of Avista's rebate programs, as they inform both nonresidential and residential consumers about Avista's rebate opportunities and convince them to purchase qualifying equipment. The nonresidential contractors also initiate a notable portion of work in comparison to customer-initiated jobs and appear to be playing a larger role in application preparation than in years past. Both nonresidential and residential customers report being highly satisfied with contractors and are taking into account contractor's recommendations on what to install.

Recommendations: Increase support for contractors.

Consider the following suggestions to continue strengthening relationships with contractors and to improve their effectiveness in generating program savings:

1. Offer an opt-in mailing list to contractors. Contractors subscribed to this mailing list would receive regular information on program offers, changes, trainings, and other program supporting information. This list would be open to any interested contractor.
2. Promote outreach to contractors: Encourage program staff and account executives to engage further with contractors by continuing and perhaps increasing their involvement with contractor-related resources such as the Northwest Lighting Network. This work can further educate contractors and nudge them to cross- promote the rebate programs to their customers. Additionally, training may help contractors' up-sell high efficiency equipment through the program by improving their understanding of and ability to sell high efficiency solutions. Therefore, Avista should continue to support contractors attending NEEA's training sessions including their recently launched comprehensive training for lighting contractors and distributors.

3. Share effective messaging or marketing collateral with contractors. Contractors could support program and marketing staff by providing insights into how to best target certain customer types, learn from Avista on how to better target certain customer segments, and possibly promote cross-program referrals and participation. As findings from the evaluation show that most contractors specialize in the nonresidential or residential

sectors, even if they serve both, developing sector- specific messaging may be particularly effective.

4. Investigate offering cooperative (co-op) marketing. Co-op marketing can help contractors effectively market the program consistent with Avista's objectives and increase customer perceptions of contractor's credibility and cross-promote other programs.

Status: We have in the past offered quarterly updates to contractors and attempted to further engage them. There was limited engagement in the additional events and we have focused on 1-2 per year with high engagement at outreach early in the year where we reiterate program guidelines, updates and changes. We have established a web page for contractors where they can go for reference materials. We have broadened our communication of program changes sending both HVAC and Electrical (Lighting) as well as residential and non-residential in order to avoid gaps in communicating with contractors. We have discussed co-op marketing opportunities and are evaluating such opportunities with internal stakeholders.

Some other outreach efforts include our Questline newsletter which is available to businesses and vendors alike. It provides regular updates on energy related issues and Avista programs. Our commercial and industrial outreach has centered on case studies that provide customers and vendors a starting point for proposing energy efficiency measures. We have also underwritten vendor training and are active in related groups like BOMA and NEEA lighting efforts.

Conclusion 2: Avista and its implementation contractors deliver rebate programs efficiently, and promoting the programs further could help maintain or even increase participation.

Several indicators suggest program promotions could be optimized. First, participants and nonparticipants expressed high interest in learning more about Avista's rebate programs, indicating that although they may be aware of Avista's offers, their knowledge is limited. Second, a majority of residential participants who indicated learning primarily about Avista's offers through contractors were not aware of other program opportunities outside the program they participated in.

Recommendation: Develop more abilities to target marketing. For example, cross- promote programs to recent participants by acknowledging their recent participation and informing them of other program opportunities applicable to their home or business.

Status: Continue to cross-promote additional programs in our small business effort where we emphasize additional opportunities and have seen additional throughput.

Work with marketing as they evaluate Customer Relationship Management (CRM) software solutions that can enable us to track customer participation in different programs and cross-promote additional offerings. In the meantime continue to utilize our existing direct mail channels such as the customer newsletter and bill inserts.

Recommendation: For residential customers, continue improving messaging in direct mail promotions to better communicate program information since residential customers prefer to receive this information via mail.

Status: In 2014 and 2015 we utilized direct mail to promote our electric to natural gas conversion rebate. In 2016, energy efficiency was included via direct mail in our Connections customer newsletter as part of our, "Efficiencies Matter" and "Way to Save" Campaigns; we also utilize bill inserts to extend our message as appropriate.

1.3.2 Nonresidential, Including Small Business

Conclusion 3: Although declining participation rates could threaten Avista's ability to achieve long-term goals, evaluation results point to opportunities to drive additional savings.

Developing new strategies to encourage deeper savings or increased participation will be paramount to reversing the decline in participation and achieving long-term savings goals. Almost one-third of nonparticipants reported they will make a building upgrade in the next two years, indicating a continued potential for program participation. In particular, evidence suggests that much opportunity remains for converting lighting from T12s.

Recommendation: Develop a marketing approach specifically targeting replacement of T12 lamps.

The switch to a T8 baseline in 2012 had a dramatic effect on participation because the rebates became far less attractive to customers to upgrade from T12s. While it may not be feasible for Avista to alter the baseline for T12 change-outs, Avista should look into developing targeted marketing strategies for convincing nonresidential customers with T12s to replace them with more efficient lighting, focusing not only on savings but improved lighting quality and performance. Avista could begin by targeting businesses that the Small Business Program has identified as still having T12s.

Status: Currently, Avista has prescriptive incentives for electric commercial customers for replacing T12's or T8 lamps with Tubular LEDs (TLEDs). To replace T12 lamps with TLEDs, the customer will need to replace the T12 ballast with a LED driver or a ballast that supports the TLED lamp. This incentive is extremely popular and does not require additional marketing, at this time. Lighting contractors have been heavily marketing these incentives and numerous customers are changing out their lamps. Avista also has prescriptive commercial lighting incentives for replacing T12's Fixtures with new or

retrofit High Performance T8 (using low wattage T8 lamps-25 or 28 watt) or DLC qualified LED fixtures. It was found to be cost effective only for lighting with run times greater than 80 hours per week. This limits the business marketing audience-electric commercial customer that would qualify for this incentive. Target marketing only to the business customer that qualifies would be difficult.

It is believed that many customers with existing T12's fixtures are most likely rate Schedule 11's. Avista currently has a small business program that is treating those customers and cross-promoting other opportunities like lighting. Avista is also piloting additional lighting (T12 replacements) for this customer segment as an expansion of the current program.

Questline Newsletter is another avenue to let Avista electric commercial customers know about Avista's incentives for T12 conversions and other energy efficient lighting incentives.

Recommendation: Work with nonresidential lighting contractors to promote replacement of T12 lamps.

Contractors make their living by selling equipment. Avista should work with nonresidential lighting contractors to make sure they are fully aware of the advantages that more efficient lighting (including the reduced wattage tube lighting that NEEA is targeting through its Reduced Wattage Lamp Replacement Initiative) offers their customers.

Status: Avista currently markets to lighting vendors through Avista Commercial Lighting update newsletters and vendor outreach workshops about the T12 lamp conversions. The lighting vendors and contractors have been responsive and market the T12/T8 lamp replacement to TLED lamp conversions and many customers are taking advantage of the incentives.

Recommendation: Consider claiming Simple Steps savings for bulbs purchased for the nonresidential sector.

The evaluation found that about 12% of Simple Steps LED sales and somewhere from 5% to 12% of Simple Steps CFL sales go to nonresidential customers. The mean hours of use for such lighting is much higher in a nonresidential than residential settings, meaning that the total Simple Steps savings is potentially higher than currently estimated, and at a minimum, Avista should consider claiming the additional savings for these purchases.

Status: This was considered but upon further review we chose to continue to just use the RTF UES even if it might be slightly conservative given some longer runtime commercial applications.

1.3.3 Residential

Conclusion 4: Participation in the Avista rebate programs has rebounded since 2013 driven by a fivefold increase in shell program participation.

Rebate program participation reached a low point in 2013, after which participation increased year over year by 51% from 2013 to 2014 and by 43% from 2014 to 2015. This is a positive sign; however, maintaining or increasing program participation requires cost effective savings opportunities for residential customers. Avista's residential programs operate in a fast-changing market. Consumers are adopting LEDs rapidly, retailers are transitioning away from CFLs to LEDs, and the federal government and regulators are mandating higher efficiency standards for bulbs and other energy efficient technologies. The convergence of these forces has implications for the cost effectiveness of Avista's downstream rebate programs. Program administrators throughout the United States are exploring and testing alternative program designs such as upstream and midstream designs in response to the evolving market. Although Avista is currently participating in the Simple Steps, Smart Savings program (a midstream program), when asked about future opportunities, program staff did not mention any upcoming pilots or programs that apply these types of designs.

Recommendation: Continue regularly reviewing the expected savings and cost-effectiveness of the measures in residential portfolio and exploring the benefits and costs of other program designs including upstream and/or midstream designs. Consider these suggestions:

1. Continue monitoring the technological advances and availability of ductless heat pumps and water heating equipment. Surveyed contractors recommended both of these categories as candidates for inclusion in Avista's programs. NEEA, for example, has been working to promote the savings potential of heat pump water heaters in the Northwest via the Northern Climate Heat Pump Water Heater Specification, and The Northwest Power and Conservation Council has identified both of these measure types as promising technologies in the recently adopted Seventh Power Plan.

2. Explore upstream program opportunities outside of the lighting market. Upstream incentive programs offer the potential to increase the adoption of energy efficient technologies at a lower cost compared to downstream incentive programs. Program administrators in California and elsewhere have successfully tested or used upstream program designs for technologies that Avista currently incents, including HVAC equipment and water heaters.

Status: The business planning process includes an annual review of expected savings and cost-effectiveness for residential measures. We ensured that ductless heat pumps

and heat pump water heating technologies received additional review as we didn't currently have incentives. We are planning incentives for both in 2017. Also we have added upstream buydown opportunities for water heating savings in both low flow showerheads and clotheswashers.

Conclusion 5: Residential customers who rent their home are underserved. Nonparticipants say living in a rental property prohibits them from making improvements. This was the second most commonly cited barrier to making energy efficient upgrades among nonparticipants (after the up-front cost barrier). More than a quarter (27%) of nonparticipant survey respondents were renters, whereas only 3% of the participant survey respondents were renters. Renters account for about one-third of the population in Avista territory.[8]

Currently, Avista serves renters via the low-income program. The CAP agencies reported having difficulty serving the low-income renter population because it is difficult to convince landlords to participate. Additionally, there appears to be no multifamily program in the Avista portfolio that could serve this market, although Avista does offer an incentive for a natural gas space and water heating measures to multifamily property owners.

Recommendation: Investigate energy savings opportunities in the rental market. Consider the following suggestions:

1. Estimate the number and distribution of rental units in the single family, manufactured home, and among multifamily buildings. Analyzing these data geographically and by vintage would likely yield insights regarding the energy saving potential in these markets.

2. Conduct needs assessment research with landlords to understand their needs and concerns and explore ways to bolster their willingness to make energy efficiency upgrades on their properties. This research should consider the needs landlords serving low-income renters as well as renters not eligible for the low income program.

3. Conduct needs assessment research with renters to understand their needs and the barriers to participation they face. For example, although some energy savings activities may not be appropriate for renters (for example, HVAC system replacement), other activities such as installing energy efficient lighting and/or advanced power strips could be appropriate.

Status: Renters are a difficult market due to the split incentive issue where landlords are hesitant to make capital improvements where the return is to the renter rather themselves. Our billing system does not have the ability to break down customers by

single family, manufactured home and multifamily. There are some manual analysis that could be done to query customers with landlord agreements but it is a manual process at this time. We have worked with renters who inquire about energy efficiency programs and have had some success with certain programs, like electric to natural gas conversions where landlords have taken advantage of rebates that currently cover a significant portion of the retrofit and while the energy savings accrue to the renter it's an obvious and lower than otherwise out of pocket improvement to the property.

We also tailor our outreach efforts with our energy fairs and mobile outreach to include low-cost improvements that most renters can do within their rental agreement such as rope-caulk, window kits and v-seal.

Low-Income

As part of the review of evaluator recommendations we also reviewed comments from community action partners in regards to low income programs. Overall their suggestions were for additional health and human safety, home repair or measures that are not cost-effective EE measures (such as renewables). There were also comments and review of educational opportunities that we continue to try and provide outreach but also recognize the CAP funding and flexibility from LIRAP or special DSM Con/ED funding to design and deliver different educational approaches.