Distance to first appliance 35 14 3.14 Total Circuit Current 1.293 14 3.14 Wire Gauge for balance of circuit 1.293 14 3.14 Circuit is within limits from Device previous Voltage at Drop from Percent Appliance 1 0.129 18.96 0.14 0.7% Appliance 2 0.281 40 18.61 0.49 2.6% Appliance 3 0.281 40 18.51 0.59 3.1% Appliance 4 0.125 75 18.36 0.74 3.9% Appliance 5 0.125 75 18.26 0.84 4.4% Appliance 7 0.125 50 18.24 0.86 4.5% Appliance 7 0.125 35 18.24 0.88 4.6% END 18.22 0.88 4.6% 18.22 0.88 4.6% END 18.22 0.88 4.6% 18.22 0.88 4.	NAC Circuit Voltage Drop Calculation						
Date 2/6/2017 Circuit Number Nac%14 Area Covered NAC Source Alarm Voltage 19.1 MAC Source Alarm Voltage 16 Gauge Per KFt Cable Distance to first appliance 35 14 3.14 Total Circuit Current 1.293 14 3.14 Wire Gauge for balance of circuit 14 3.14 Distance Distance 14 3.14 Current 0.129 18.96 0.14 0.7% Appliance 1 0.125 60 18.74 0.36 1.9% Appliance 2 0.125 60 18.74 0.36 1.9% Appliance 3 0.281 40 18.61 0.49 2.6% Appliance 4 0.125 75 18.36 0.74 3.9% Appliance 5 0.125 75 18.22 0.88 4.6% END 18.22 0.88 4.6% 18.22 0.88 4.6% END 18.22 0.88	Project Name		CMP- Portland Service Center				
Area Covered Wire Resistance MAC Source Alarm Voltage 19.1 Gauge Per KFt Cable Distance to first appliance 35 14 3.14 Total Circuit Current 1.293 14 3.14 Wire Gauge for balance of circuit 14 3.14 Distance from 14 3.14 Circuit is within limits from Percent 0.125 Appliance 1 0.129 18.96 0.14 0.7% Appliance 2 0.125 60 18.74 0.36 1.9% Appliance 3 0.281 40 18.61 0.49 2.6% Appliance 4 0.125 75 18.36 0.74 3.9% Appliance 5 0.125 75 18.32 0.78 4.1% Appliance 6 0.129 25 18.22 0.88 4.6% END 18.22 0.88 4.6% 18.22 0.88 4.6% END 18.22 0.88 4.6%	-						
Area Covered Wire Resistance MAC Source Alarm Voltage 19.1 Gauge Per KFt Cable Distance to first appliance 35 14 3.14 Total Circuit Current 1.293 14 3.14 Wire Gauge for balance of circuit 14 3.14 Distance Distance 14 3.14 Circuit is within limits from Percent Drop from Percent Appliance 1 0.129 18.96 0.14 0.7% Appliance 2 0.125 60 18.74 0.36 1.9% Appliance 3 0.281 40 18.61 0.49 2.6% Appliance 5 0.125 75 18.36 0.74 3.9% Appliance 6 0.129 25 18.22 0.88 4.6% END 18.22 0.88 4.6% 4.5% Appliance 7 0.125 35 18.22 0.88 4.6% END 18.22 0.88 4.6% 18.22 <td colspan="2">Circuit Number</td> <td>Nac#14</td> <td></td> <td>]</td> <td></td>	Circuit Number		Nac#14]		
Minimum Device Voltage Distance to first appliance 16 35 35 35 35 Gauge 14 Per KFt Cable 3.14 Total Circuit Current 1.293 14 3.14 Wire Gauge for balance of circuit Distance 14 3.14 Circuit is within limits from 14 3.14 Device previous Voltage at Device Drop from Percent Appliance 1 0.125 60 18.74 0.36 1.9% Appliance 2 0.125 40 18.61 0.49 2.6% Appliance 3 0.281 40 18.61 0.49 2.6% Appliance 4 0.125 75 18.36 0.74 3.9% Appliance 5 0.125 50 18.22 0.84 4.4% Appliance 6 0.125 50 18.22 0.88 4.6% END 18.22 0.88 4.6% 18.22 0.88 4.6% END 18.22 0.88 4.6% 18.22 0.88 4.6% END	Area Covered						
Minimum Device Voltage Distance to first appliance 16 35 35 35 35 Gauge 14 Per KFt Cable 3.14 Total Circuit Current 1.293 14 3.14 Wire Gauge for balance of circuit Distance 14 3.14 Circuit is within limits from 14 3.14 Device previous Voltage at Device Drop from Percent Appliance 1 0.125 60 18.74 0.36 1.9% Appliance 2 0.125 40 18.61 0.49 2.6% Appliance 3 0.281 40 18.61 0.49 2.6% Appliance 4 0.125 75 18.36 0.74 3.9% Appliance 5 0.125 50 18.22 0.84 4.4% Appliance 6 0.125 50 18.22 0.88 4.6% END 18.22 0.88 4.6% 18.22 0.88 4.6% END 18.22 0.88 4.6% 18.22 0.88 4.6% END			19.1		Wire	Resistance	
Distance to first appliance 35 14 3.14 Total Circuit Current 1.293 14 3.14 Wire Gauge for balance of circuit Distance 14 3.14 Circuit is within limits from 14 3.14 Device previous Voltage at Drop from Percent Appliance 1 0.129 8.96 0.14 0.7% Appliance 2 0.125 60 18.74 0.36 1.9% Appliance 3 0.281 40 18.61 0.49 2.6% Appliance 4 0.125 75 18.36 0.74 3.9% Appliance 5 0.125 75 18.36 0.74 3.9% Appliance 6 0.125 50 18.26 0.84 4.4% Appliance 7 0.125 50 18.22 0.88 4.6% END 18.22 0.88 4.6% 18.22 0.88 4.6% END 18.22 0.88 4.6% 18.22	•					Per KFt Cable	
Total Circuit Current 1.293 Wire Gauge for balance of circuit 14 3.14 Distance Distance 14 3.14 Circuit is within limits from Percent Drop from Percent Appliance 1 0.129 18.96 0.14 0.7% Appliance 2 0.125 60 18.74 0.36 1.9% Appliance 3 0.281 40 18.61 0.49 2.6% Appliance 4 0.125 75 18.36 0.74 3.9% Appliance 5 0.125 75 18.32 0.78 4.1% Appliance 6 0.129 25 18.32 0.78 4.1% Appliance 7 0.125 35 18.24 0.86 4.5% END 18.22 0.88 4.6% 18.22 0.88 4.6% END 18.22 0.88 4.6% 18.22 0.88 4.6% END 18.22 0.88 4.6% 18.22 0.88	-				-		
Distance Distance Circuit is within limits from Device previous Voltage at Drop from Percent Appliance 1 0.129 18.96 0.14 0.7% Appliance 2 0.125 60 18.74 0.366 1.9% Appliance 3 0.281 40 18.61 0.49 2.6% Appliance 4 0.125 40 18.51 0.59 3.1% Appliance 5 0.125 75 18.36 0.74 3.9% Appliance 6 0.129 25 18.32 0.78 4.1% Appliance 7 0.125 50 18.22 0.88 4.6% END 18.22 0.88 4.6% 18.22				I			
Distance Distance Circuit is within limits from Device previous Voltage at Drop from Percent Appliance 1 0.129 18.96 0.14 0.7% Appliance 2 0.125 60 18.74 0.366 1.9% Appliance 3 0.281 40 18.61 0.49 2.6% Appliance 4 0.125 40 18.51 0.59 3.1% Appliance 5 0.125 75 18.36 0.74 3.9% Appliance 6 0.129 25 18.32 0.78 4.1% Appliance 7 0.125 50 18.22 0.88 4.6% END 18.22 0.88 4.6% 18.22	Wire Gauge for balance of c		ircuit		14	3.14	
Circuit is within limits from previous Voltage at voltage at Drop from Drop Percent Appliance 1 0.129 18.96 0.14 0.7% Appliance 2 0.125 60 18.74 0.36 1.9% Appliance 3 0.281 40 18.61 0.49 2.6% Appliance 4 0.125 40 18.51 0.59 3.1% Appliance 5 0.125 75 18.36 0.74 3.9% Appliance 6 0.129 25 18.32 0.78 4.1% Appliance 7 0.125 50 18.26 0.84 4.4% Appliance 7 0.125 35 18.22 0.88 4.6% END 18.22 0.88 4.6% 18.22 0.88 4.6% END 18.22 0.88 4.6% 18.22 0.88 4.6% END 18.22 0.88 4.6% 18.22 0.88 4.6% END 18.22 0.88 4.6							
Device previous Voltage at Drop from Percent Appliance 1 0.129 18.96 0.14 0.7% Appliance 2 0.125 60 18.74 0.36 1.9% Appliance 3 0.281 40 18.61 0.49 2.6% Appliance 4 0.125 40 18.51 0.59 3.1% Appliance 5 0.125 75 18.36 0.74 3.9% Appliance 6 0.129 25 18.32 0.78 4.1% Appliance 7 0.125 50 18.26 0.84 4.4% Appliance 8 0.125 35 18.24 0.86 4.5% Appliance 9 0.129 45 18.22 0.88 4.6% END 18.22 0.88 4.6% 18.22 0.88 4.6% END 18.22 0.88 4.6% 18.22 0.88 4.6% END 18.22 0.88 4.6% 18.22 0.88	Circuit is within limits						
Current device Device source Drop Appliance 1 0.129 18.96 0.14 0.7% Appliance 2 0.125 60 18.74 0.36 1.9% Appliance 3 0.281 40 18.61 0.49 2.6% Appliance 4 0.125 40 18.51 0.59 3.1% Appliance 5 0.125 75 18.36 0.74 3.9% Appliance 6 0.129 25 18.32 0.78 4.1% Appliance 7 0.125 30 18.26 0.84 4.4% Appliance 8 0.125 35 18.22 0.88 4.6% END 18.22 0.88 4.6% 18.22 0.88 <td></td> <td></td> <td></td> <td>Voltage at</td> <td>Drop from</td> <td>Percent</td>				Voltage at	Drop from	Percent	
Appliance 1 0.129 18.96 0.14 0.7% Appliance 2 0.125 60 18.74 0.36 1.9% Appliance 3 0.281 40 18.61 0.49 2.6% Appliance 3 0.125 40 18.61 0.49 2.6% Appliance 4 0.125 40 18.51 0.59 3.1% Appliance 5 0.125 75 18.36 0.74 3.9% Appliance 6 0.129 25 18.32 0.78 4.1% Appliance 7 0.125 50 18.26 0.84 4.4% Appliance 8 0.125 35 18.22 0.88 4.6% END 18.22 0.88 4.6% 6 5% Appliance 9 0.129 45 18.22 0.88 4.6% END 18.22 0.88 4.6% 6%		Current	•	-	•		
Appliance 2 0.125 60 18.74 0.36 1.9% Appliance 3 0.281 40 18.61 0.49 2.6% Appliance 4 0.125 40 18.51 0.59 3.1% Appliance 5 0.125 75 18.36 0.74 3.9% Appliance 6 0.129 25 18.32 0.78 4.1% Appliance 7 0.125 50 18.26 0.84 4.4% Appliance 8 0.125 35 18.22 0.88 4.6% END 18.22 0.88 4.6% 18.22 0.88 4.6% END 18.22	Appliance 1]			•	
Appliance 3 0.281 40 18.61 0.49 2.6% Appliance 4 0.125 40 18.51 0.59 3.1% Appliance 5 0.125 75 18.36 0.74 3.9% Appliance 6 0.129 25 18.32 0.78 4.1% Appliance 7 0.125 50 18.26 0.84 4.4% Appliance 7 0.125 35 18.24 0.86 4.5% Appliance 9 0.129 45 18.22 0.88 4.6% END 18.22 0.88 4.6% 84.6% 84.6% END 18.22 0.88 4.6% 84.6%			60				
Appliance 4 0.125 40 18.51 0.59 3.1% Appliance 5 0.125 75 18.36 0.74 3.9% Appliance 6 0.129 25 18.32 0.78 4.1% Appliance 7 0.125 50 18.26 0.84 4.4% Appliance 8 0.125 35 18.22 0.88 4.6% END 0.129 45 18.22 0.88 4.6% END 18.22 0.88 4.6% 18.22 0.88 4.6% END 18.22 <td>• •</td> <td></td> <td></td> <td></td> <td></td> <td></td>	• •						
Appliance 5 0.125 75 18.36 0.74 3.9% Appliance 6 0.129 25 18.32 0.78 4.1% Appliance 7 0.125 50 18.26 0.84 4.4% Appliance 8 0.125 35 18.24 0.86 4.5% Appliance 9 0.129 45 18.22 0.88 4.6% END 18.22 0.88 4.6% <t< td=""><td>••</td><td></td><td></td><td></td><td></td><td></td></t<>	••						
Appliance 60.1292518.320.784.1%Appliance 70.1255018.260.844.4%Appliance 80.1253518.240.864.5%Appliance 90.1294518.220.884.6%END18.220.884.6%18.220.884.6%END18.220.884.6%18.220.884.6%END18.220.884.6%18.220.884.6%END18.220.884.6%18.220.884.6%END18.220.884.6%18.220.884.6%END18.220.884.6%18.220.884.6%END18.220.884.6%18.220.884.6%END18.220.884.6%18.220.884.6%END18.220.884.6%18.220.884.6%END18.220.884.6%18.220.884.6%END18.220.884.6%18.220.884.6%END18.220.884.6%18.220.884.6%END18.220.884.6%18.220.884.6%END18.220.884.6%18.220.884.6%END18.220.884.6%18.220.884.6%END18.220.884.6%18.220.884.6% <trr>END18.220.88<t< td=""><td>• •</td><td></td><td></td><td></td><td></td><td></td></t<></trr>	• •						
Appliance 7 0.125 50 18.26 0.84 4.4% Appliance 8 0.125 35 18.24 0.86 4.5% Appliance 9 0.129 45 18.22 0.88 4.6% END 18.22 0.88 4.6%	• •						
Appliance 8 0.125 35 18.24 0.86 4.5% Appliance 9 0.129 45 18.22 0.88 4.6% END 18.22	•••						
Appliance 9 0.129 45 18.22 0.88 4.6% END 18.22 0.88 4.6% <tr< td=""><td>• •</td><td></td><td></td><td></td><td></td><td></td></tr<>	• •						
END 18.22 0.88 4.6% END 18.22							
END 18.22 0.88 4.6% END 18.22		0.120					
END 18.22 0.88 4.6% END 18.22							
END 18.22 0.88 4.6%							
END 18.22 0.88 4.6%							
END 18.22 0.88 4.6%							
END 18.22 0.88 4.6%							
END 18.22 0.88 4.6%							
END 18.22 0.88 4.6%							
END 18.22 0.88 4.6%							
END 18.22 0.88 4.6%							
END 18.22 0.88 4.6%							
END 18.22 0.88 4.6%							
END 18.22 0.88 4.6% END 18.22 0.88 4.6% END 18.22 0.88 4.6% END 18.22 0.88 4.6%							
END 18.22 0.88 4.6% END 18.22 0.88 4.6%							
END 18.22 0.88 4.6%							
Totals 1.293 405		1.293	405	10.22	0.00	4.070	

Appliance circuit voltage drop calculations start at "end of battery life" as NAC Source Alarm Voltage and use 20% below nameplate rating for Minimum Appliance Voltage.

Note. Wire resistance is based on the 2014 NEC Table 8 Uncoated DC resistance. All resistance is based on solid conductors