




2017 SMALL/MEDIUM COMMERCIAL SECTOR ESPI IMPACT EVALUATION

Final Report - Appendices

Submitted to:
California Public Utilities Commission

Prepared by:

Itron
1111 Broadway
Suite 1800
Oakland, CA 94607
www.itron.com/strategicanalytics

ERS
151 North Sunrise Avenue
Suite 1108
Roseville, CA 95661

TIERRA
Resource Consultants, LLC

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APPENDIX AA STANDARDIZED HIGH LEVEL SAVINGS

Gross Lifecycle Savings (MWh)

PA	Standard Report Group	Ex-Ante Gross	Ex-Post Gross	GRR	% Ex-Ante Gross Pass Through	Eval GRR
PGE	AG IRRIGATION	50,002	20,874	0.42	0.0%	0.42
PGE	AG PUMP MOTOR REPLACEMENT	3,377	3,377	1.00	100.0%	
PGE	AG PUMPING VFD	89,459	89,459	1.00	100.0%	
PGE	FOOD SERVICE	29,540	29,540	1.00	100.0%	
PGE	PIPE INSULATION HOT APPLICATION	0	0			
PGE	PROCESS BOILER	0	0			
PGE	PROCESS PUMPING VFD	1,289	1,289	1.00	100.0%	
PGE	REFRIGERATION CASE LED LIGHTING	74,672	12,040	0.16	0.0%	0.16
PGE	REFRIGERATION CASE REPLACEMENT	21,158	21,158	1.00	100.0%	
PGE	REFRIGERATION EVAPORATOR EC MOTORS	47,876	47,876	1.00	100.0%	
PGE	WATER HEATING BOILER	-258	-258	1.00	100.0%	
PGE	**Total**	**317,116**	**225,356**	**0.71**	**60.7%**	**0.26**
SCE	AG PUMPING VFD	11,917	11,917	1.00	100.0%	
SCE	FOOD SERVICE	11,204	11,204	1.00	100.0%	
SCE	REFRIGERATION CASE LED LIGHTING	1,961	1,265	0.64	0.0%	0.64
SCE	REFRIGERATION CASE REPLACEMENT	0	0			
SCE	**Total**	**25,083**	**24,386**	**0.97**	**92.2%**	**0.64**
SCG	FOOD SERVICE	0	0			
SCG	PIPE INSULATION HOT APPLICATION	0	0			
SCG	PROCESS BOILER	0	0			
SCG	REFRIGERATION CASE REPLACEMENT	0	0			
SCG	TANK INSULATION HOT APPLICATION	0	0			
SCG	WATER HEATING BOILER	0	0			
SCG	**Total**	**0**	**0**			
SDGE	FOOD SERVICE	25	25	1.00	100.0%	
SDGE	REFRIGERATION CASE LED LIGHTING	31,702	5,112	0.16	0.0%	0.16
SDGE	**Total**	**31,727**	**5,137**	**0.16**	**0.1%**	**0.16**
MCE	REFRIGERATION CASE LED LIGHTING	1,465	1,465	1.00	100.0%	
MCE	REFRIGERATION EVAPORATOR EC MOTORS	687	687	1.00	100.0%	
MCE	**Total**	**2,151**	**2,151**	**1.00**	**100.0%**	
	Statewide	***376,076***	***257,030***	***0.68***	***57.9%***	***0.25***

Net Lifecycle Savings (MWh)

PA	Standard Report Group	Ex-Ante Net	Ex-Post Net	NRR	% Ex-Ante Net Pass Through	Ex-Ante NTG	Ex-Post NTG	Eval Ex-Ante NTG	Eval Ex-Post NTG
PGE	AG IRRIGATION	32,501	6,778	0.21	0.0%	0.65	0.32	0.65	0.32
PGE	AG PUMP MOTOR REPLACEMENT	2,195	2,195	1.00	100.0%	0.65	0.65		
PGE	AG PUMPING VFD	59,183	59,183	1.00	100.0%	0.66	0.66		
PGE	FOOD SERVICE	22,533	16,316	0.72	45.0%	0.76	0.55	0.87	0.44
PGE	PIPE INSULATION HOT APPLICATION	0	0						
PGE	PROCESS BOILER	0	0						
PGE	PROCESS PUMPING VFD	838	838	1.00	100.0%	0.65	0.65		
PGE	REFRIGERATION CASE LED LIGHTING	48,537	7,227	0.15	0.0%	0.65	0.60	0.65	0.60
PGE	REFRIGERATION CASE REPLACEMENT	13,753	13,753	1.00	100.0%	0.65	0.65		
PGE	REFRIGERATION EVAPORATOR EC MOTORS	31,119	31,119	1.00	100.0%	0.65	0.65		
PGE	WATER HEATING BOILER	-168	-120	0.71	0.0%	0.65	0.46	0.65	0.46
PGE	**Total**	**210,491**	**137,290**	**0.65**	**55.7%**	**0.66**	**0.61**	**0.67**	**0.43**
SCE	AG PUMPING VFD	7,746	7,746	1.00	100.0%	0.65	0.65		
SCE	FOOD SERVICE	8,613	8,613	1.00	100.0%	0.77	0.77		
SCE	REFRIGERATION CASE LED LIGHTING	1,275	800	0.63	0.0%	0.65	0.63	0.65	0.63
SCE	REFRIGERATION CASE REPLACEMENT	0	0						
SCE	**Total**	**17,634**	**17,159**	**0.97**	**92.8%**	**0.70**	**0.70**	**0.65**	**0.63**
SCG	FOOD SERVICE	0	0						
SCG	PIPE INSULATION HOT APPLICATION	0	0						
SCG	PROCESS BOILER	0	0						
SCG	REFRIGERATION CASE REPLACEMENT	0	0						
SCG	TANK INSULATION HOT APPLICATION	0	0						
SCG	WATER HEATING BOILER	0	0						
SCG	**Total**	**0**	**0**						
SDGE	FOOD SERVICE	16	16	1.00	100.0%	0.65	0.65		
SDGE	REFRIGERATION CASE LED LIGHTING	20,606	3,617	0.18	0.0%	0.65	0.71	0.65	0.71
SDGE	**Total**	**20,622**	**3,633**	**0.18**	**0.1%**	**0.65**	**0.71**	**0.65**	**0.71**
MCE	REFRIGERATION CASE LED LIGHTING	1,047	1,047	1.00	100.0%	0.72	0.72		
MCE	REFRIGERATION EVAPORATOR EC MOTORS	613	613	1.00	100.0%	0.89	0.89		
MCE	**Total**	**1,660**	**1,660**	**1.00**	**100.0%**	**0.77**	**0.77**		
	Statewide	***250,407***	***159,742***	***0.64***	***54.0%***	***0.67***	***0.62***	***0.67***	***0.46***

Gross Lifecycle Savings (MW)

PA	Standard Report Group	Ex-Ante Gross	Ex-Post Gross	GRR	% Ex-Ante Gross Pass Through	Eval GRR
PGE	AG IRRIGATION	39.7	13.8	0.35	0.0%	0.35
PGE	AG PUMP MOTOR REPLACEMENT	1.5	1.5	1.00	100.0%	
PGE	AG PUMPING VFD	43.0	43.0	1.00	100.0%	
PGE	FOOD SERVICE	4.9	4.9	1.00	100.0%	
PGE	PIPE INSULATION HOT APPLICATION	0.0	0.0			
PGE	PROCESS BOILER	0.0	0.0			
PGE	PROCESS PUMPING VFD	0.0	0.0			
PGE	REFRIGERATION CASE LED LIGHTING	15.9	3.3	0.21	0.0%	0.21
PGE	REFRIGERATION CASE REPLACEMENT	4.0	4.0	1.00	100.0%	
PGE	REFRIGERATION EVAPORATOR EC MOTORS	6.0	6.0	1.00	100.0%	
PGE	WATER HEATING BOILER	0.0	0.0	1.00	100.0%	
PGE	**Total**	**115.0**	**76.5**	**0.67**	**51.7%**	**0.31**
SCE	AG PUMPING VFD	5.8	5.8	1.00	100.0%	
SCE	FOOD SERVICE	2.3	2.3	1.00	100.0%	
SCE	REFRIGERATION CASE LED LIGHTING	0.4	0.3	0.83	0.0%	0.83
SCE	REFRIGERATION CASE REPLACEMENT	0.0	0.0			
SCE	**Total**	**8.5**	**8.4**	**0.99**	**95.1%**	**0.83**
SCG	FOOD SERVICE	0.0	0.0			
SCG	PIPE INSULATION HOT APPLICATION	0.0	0.0			
SCG	PROCESS BOILER	0.0	0.0			
SCG	REFRIGERATION CASE REPLACEMENT	0.0	0.0			
SCG	TANK INSULATION HOT APPLICATION	0.0	0.0			
SCG	WATER HEATING BOILER	0.0	0.0			
SCG	**Total**	**0.0**	**0.0**			
SDGE	FOOD SERVICE	0.0	0.0	1.00	100.0%	
SDGE	REFRIGERATION CASE LED LIGHTING	5.2	1.1	0.21	0.0%	0.21
SDGE	**Total**	**5.2**	**1.1**	**0.21**	**0.1%**	**0.21**
MCE	REFRIGERATION CASE LED LIGHTING	0.3	0.3	1.00	100.0%	
MCE	REFRIGERATION EVAPORATOR EC MOTORS	0.1	0.1	1.00	100.0%	
MCE	**Total**	**0.4**	**0.4**	**1.00**	**100.0%**	
	Statewide	***129.1***	***86.4***	***0.67***	***52.6%***	***0.30***

Net Lifecycle Savings (MW)

PA	Standard Report Group	Ex-Ante Net	Ex-Post Net	NRR	% Ex-Ante Net Pass Through	Ex-Ante NTG	Ex-Post NTG	Eval Ex-Ante NTG	Eval Ex-Post NTG
PGE	AG IRRIGATION	25.8	4.5	0.17	0.0%	0.65	0.32	0.65	0.32
PGE	AG PUMP MOTOR REPLACEMENT	1.0	1.0	1.00	100.0%	0.65	0.65		
PGE	AG PUMPING VFD	28.4	28.4	1.00	100.0%	0.66	0.66		
PGE	FOOD SERVICE	3.7	2.8	0.75	51.1%	0.75	0.57	0.87	0.44
PGE	PIPE INSULATION HOT APPLICATION	0.0	0.0						
PGE	PROCESS BOILER	0.0	0.0						
PGE	PROCESS PUMPING VFD	0.0	0.0						
PGE	REFRIGERATION CASE LED LIGHTING	10.3	2.0	0.19	0.0%	0.65	0.60	0.65	0.60
PGE	REFRIGERATION CASE REPLACEMENT	2.6	2.6	1.00	100.0%	0.65	0.65		
PGE	REFRIGERATION EVAPORATOR EC MOTORS	3.9	3.9	1.00	100.0%	0.65	0.65		
PGE	WATER HEATING BOILER	0.0	0.0	0.71	0.0%	0.65	0.46	0.65	0.46
PGE	**Total**	**75.7**	**45.2**	**0.60**	**49.9%**	**0.66**	**0.59**	**0.66**	**0.38**
SCE	AG PUMPING VFD	3.7	3.7	1.00	100.0%	0.65	0.65		
SCE	FOOD SERVICE	1.8	1.8	1.00	100.0%	0.77	0.77		
SCE	REFRIGERATION CASE LED LIGHTING	0.3	0.2	0.81	0.0%	0.65	0.63	0.65	0.63
SCE	REFRIGERATION CASE REPLACEMENT	0.0	0.0						
SCE	**Total**	**5.8**	**5.7**	**0.99**	**95.3%**	**0.68**	**0.68**	**0.65**	**0.63**
SCG	FOOD SERVICE	0.0	0.0						
SCG	PIPE INSULATION HOT APPLICATION	0.0	0.0						
SCG	PROCESS BOILER	0.0	0.0						
SCG	REFRIGERATION CASE REPLACEMENT	0.0	0.0						
SCG	TANK INSULATION HOT APPLICATION	0.0	0.0						
SCG	WATER HEATING BOILER	0.0	0.0						
SCG	**Total**	**0.0**	**0.0**						
SDGE	FOOD SERVICE	0.0	0.0	1.00	100.0%	0.65	0.65		
SDGE	REFRIGERATION CASE LED LIGHTING	3.4	0.8	0.23	0.0%	0.65	0.71	0.65	0.71
SDGE	**Total**	**3.4**	**0.8**	**0.23**	**0.1%**	**0.65**	**0.71**	**0.65**	**0.71**
MCE	REFRIGERATION CASE LED LIGHTING	0.2	0.2	1.00	100.0%	0.72	0.72		
MCE	REFRIGERATION EVAPORATOR EC MOTORS	0.1	0.1	1.00	100.0%	0.89	0.89		
MCE	**Total**	**0.3**	**0.3**	**1.00**	**100.0%**	**0.75**	**0.75**		
	Statewide	***85.2***	***52.0***	***0.61***	***51.2%***	***0.66***	***0.60***	***0.66***	***0.41***

Gross Lifecycle Savings (MTherms)

PA	Standard Report Group	Ex-Ante Gross	Ex-Post Gross	GRR	% Ex-Ante Gross Pass Through	Eval GRR
PGE	AG IRRIGATION	0	0			
PGE	AG PUMP MOTOR REPLACEMENT	0	0			
PGE	AG PUMPING VFD	0	0			
PGE	FOOD SERVICE	8,568	4,892	0.57	36.4%	0.33
PGE	PIPE INSULATION HOT APPLICATION	1,503	928	0.62	0.0%	0.62
PGE	PROCESS BOILER	5,542	3,879	0.70	0.0%	0.70
PGE	PROCESS PUMPING VFD	0	0			
PGE	REFRIGERATION CASE LED LIGHTING	-1,032	-166	0.16	0.0%	0.16
PGE	REFRIGERATION CASE REPLACEMENT	637	637	1.00	100.0%	
PGE	REFRIGERATION EVAPORATOR EC MOTORS	-2	-2	1.00	100.0%	
PGE	WATER HEATING BOILER	2,886	2,886	1.00	100.0%	
PGE	**Total**	**18,101**	**13,054**	**0.72**	**36.7%**	**0.56**
SCE	AG PUMPING VFD	0	0			
SCE	FOOD SERVICE	0	0			
SCE	REFRIGERATION CASE LED LIGHTING	0	0			
SCE	REFRIGERATION CASE REPLACEMENT	0	0			
SCE	**Total**	**0**	**0**			
SCG	FOOD SERVICE	18,550	11,532	0.62	44.1%	0.32
SCG	PIPE INSULATION HOT APPLICATION	3,233	4,312	1.33	0.0%	1.33
SCG	PROCESS BOILER	4,044	3,306	0.82	0.0%	0.82
SCG	REFRIGERATION CASE REPLACEMENT	0	0			
SCG	TANK INSULATION HOT APPLICATION	1,496	1,496	1.00	100.0%	
SCG	WATER HEATING BOILER	5,569	5,569	1.00	100.0%	
SCG	**Total**	**32,892**	**26,216**	**0.80**	**46.4%**	**0.62**
SDGE	FOOD SERVICE	633	313	0.49	25.2%	0.32
SDGE	REFRIGERATION CASE LED LIGHTING	0	0			
SDGE	**Total**	**633**	**313**	**0.49**	**25.2%**	**0.32**
MCE	REFRIGERATION CASE LED LIGHTING	-18	-18	1.00	100.0%	
MCE	REFRIGERATION EVAPORATOR EC MOTORS	0	0	1.00	100.0%	
MCE	**Total**	**-18**	**-18**	**1.00**	**100.0%**	
	Statewide	***51,608***	***39,565***	***0.77***	***42.7%***	***0.59***

Net Lifecycle Savings (MTherms)

PA	Standard Report Group	Ex-Ante Net	Ex-Post Net	NRR	% Ex-Ante Net Pass Through	Ex-Ante NTG	Ex-Post NTG	Eval Ex-Ante NTG	Eval Ex-Post NTG
PGE	AG IRRIGATION	0	0						
PGE	AG PUMP MOTOR REPLACEMENT	0	0						
PGE	AG PUMPING VFD	0	0						
PGE	FOOD SERVICE	5,737	2,145	0.37	0.0%	0.67	0.44	0.67	0.44
PGE	PIPE INSULATION HOT APPLICATION	977	468	0.48	0.0%	0.65	0.50	0.65	0.50
PGE	PROCESS BOILER	3,602	1,827	0.51	0.0%	0.65	0.47	0.65	0.47
PGE	PROCESS PUMPING VFD	0	0						
PGE	REFRIGERATION CASE LED LIGHTING	-671	-100	0.15	0.0%	0.65	0.60	0.65	0.60
PGE	REFRIGERATION CASE REPLACEMENT	414	414	1.00	100.0%	0.65	0.65		
PGE	REFRIGERATION EVAPORATOR EC MOTORS	-1	-1	1.00	100.0%	0.65	0.65		
PGE	WATER HEATING BOILER	1,851	1,341	0.72	0.0%	0.64	0.46	0.64	0.46
PGE	**Total**	**11,909**	**6,093**	**0.51**	**3.5%**	**0.66**	**0.47**	**0.66**	**0.46**
SCE	AG PUMPING VFD	0	0						
SCE	FOOD SERVICE	0	0						
SCE	REFRIGERATION CASE LED LIGHTING	0	0						
SCE	REFRIGERATION CASE REPLACEMENT	0	0						
SCE	**Total**	**0**	**0**						
SCG	FOOD SERVICE	12,255	5,219	0.43	0.0%	0.66	0.45	0.66	0.45
SCG	PIPE INSULATION HOT APPLICATION	2,102	2,175	1.03	0.0%	0.65	0.50	0.65	0.50
SCG	PROCESS BOILER	2,628	1,557	0.59	0.0%	0.65	0.47	0.65	0.47
SCG	REFRIGERATION CASE REPLACEMENT	0	0						
SCG	TANK INSULATION HOT APPLICATION	973	973	1.00	100.0%	0.65	0.65		
SCG	WATER HEATING BOILER	3,733	2,587	0.69	0.0%	0.67	0.46	0.67	0.46
SCG	**Total**	**21,691**	**12,510**	**0.58**	**4.5%**	**0.66**	**0.48**	**0.66**	**0.47**
SDGE	FOOD SERVICE	422	119	0.28	0.0%	0.67	0.38	0.67	0.38
SDGE	REFRIGERATION CASE LED LIGHTING	0	0						
SDGE	**Total**	**422**	**119**	**0.28**	**0.0%**	**0.67**	**0.38**	**0.67**	**0.38**
MCE	REFRIGERATION CASE LED LIGHTING	-13	-13	1.00	100.0%	0.72	0.72		
MCE	REFRIGERATION EVAPORATOR EC MOTORS	0	0	1.00	100.0%	0.89	0.89		
MCE	**Total**	**-13**	**-13**	**1.00**	**100.0%**	**0.72**	**0.72**		
	Statewide	***34,008***	***18,709***	***0.55***	***4.0%***	***0.66***	***0.47***	***0.66***	***0.46***

Gross First Year Savings (MWh)

PA	Standard Report Group	Ex-Ante Gross	Ex-Post Gross	GRR	% Ex-Ante Gross Pass Through	Eval GRR
PGE	AG IRRIGATION	2,500	1,043	0.42	0.0%	0.42
PGE	AG PUMP MOTOR REPLACEMENT	225	225	1.00	100.0%	
PGE	AG PUMPING VFD	18,853	18,853	1.00	100.0%	
PGE	FOOD SERVICE	2,226	2,226	1.00	100.0%	
PGE	PIPE INSULATION HOT APPLICATION	0	0			
PGE	PROCESS BOILER	0	0			
PGE	PROCESS PUMPING VFD	258	258	1.00	100.0%	
PGE	REFRIGERATION CASE LED LIGHTING	4,667	2,258	0.48	0.0%	0.48
PGE	REFRIGERATION CASE REPLACEMENT	4,597	4,597	1.00	100.0%	
PGE	REFRIGERATION EVAPORATOR EC MOTORS	3,190	3,190	1.00	100.0%	
PGE	WATER HEATING BOILER	-13	-13	1.00	100.0%	
PGE	**Total**	**36,503**	**32,637**	**0.89**	**80.4%**	**0.46**
SCE	AG PUMPING VFD	1,787	1,787	1.00	100.0%	
SCE	FOOD SERVICE	934	934	1.00	100.0%	
SCE	REFRIGERATION CASE LED LIGHTING	490	237	0.48	0.0%	0.48
SCE	REFRIGERATION CASE REPLACEMENT	0	0			
SCE	**Total**	**3,211**	**2,958**	**0.92**	**84.7%**	**0.48**
SCG	FOOD SERVICE	0	0			
SCG	PIPE INSULATION HOT APPLICATION	0	0			
SCG	PROCESS BOILER	0	0			
SCG	REFRIGERATION CASE REPLACEMENT	0	0			
SCG	TANK INSULATION HOT APPLICATION	0	0			
SCG	WATER HEATING BOILER	0	0			
SCG	**Total**	**0**	**0**			
SDGE	FOOD SERVICE	2	2	1.00	100.0%	
SDGE	REFRIGERATION CASE LED LIGHTING	1,981	958	0.48	0.0%	0.48
SDGE	**Total**	**1,983**	**961**	**0.48**	**0.1%**	**0.48**
MCE	REFRIGERATION CASE LED LIGHTING	169	169	1.00	100.0%	
MCE	REFRIGERATION EVAPORATOR EC MOTORS	47	47	1.00	100.0%	
MCE	**Total**	**215**	**215**	**1.00**	**100.0%**	
	Statewide	***41,913***	***36,770***	***0.88***	***77.0%***	***0.47***

Net First Year Savings (MWh)

PA	Standard Report Group	Ex-Ante Net	Ex-Post Net	NRR	% Ex-Ante Net Pass Through	Ex-Ante NTG	Ex-Post NTG	Eval Ex-Ante NTG	Eval Ex-Post NTG
PGE	AG IRRIGATION	1,625	339	0.21	0.0%	0.65	0.32	0.65	0.32
PGE	AG PUMP MOTOR REPLACEMENT	146	146	1.00	100.0%	0.65	0.65		
PGE	AG PUMPING VFD	12,568	12,568	1.00	100.0%	0.67	0.67		
PGE	FOOD SERVICE	1,671	1,257	0.75	50.6%	0.75	0.56	0.87	0.44
PGE	PIPE INSULATION HOT APPLICATION	0	0						
PGE	PROCESS BOILER	0	0						
PGE	PROCESS PUMPING VFD	168	168	1.00	100.0%	0.65	0.65		
PGE	REFRIGERATION CASE LED LIGHTING	3,034	1,355	0.45	0.0%	0.65	0.60	0.65	0.60
PGE	REFRIGERATION CASE REPLACEMENT	2,988	2,988	1.00	100.0%	0.65	0.65		
PGE	REFRIGERATION EVAPORATOR EC MOTORS	2,074	2,074	1.00	100.0%	0.65	0.65		
PGE	WATER HEATING BOILER	-8	-6	0.71	0.0%	0.65	0.46	0.65	0.46
PGE	**Total**	**24,265**	**20,888**	**0.86**	**77.4%**	**0.66**	**0.64**	**0.68**	**0.50**
SCE	AG PUMPING VFD	1,161	1,161	1.00	100.0%	0.65	0.65		
SCE	FOOD SERVICE	718	718	1.00	100.0%	0.77	0.77		
SCE	REFRIGERATION CASE LED LIGHTING	319	150	0.47	0.0%	0.65	0.63	0.65	0.63
SCE	REFRIGERATION CASE REPLACEMENT	0	0						
SCE	**Total**	**2,198**	**2,029**	**0.92**	**85.5%**	**0.68**	**0.69**	**0.65**	**0.63**
SCG	FOOD SERVICE	0	0						
SCG	PIPE INSULATION HOT APPLICATION	0	0						
SCG	PROCESS BOILER	0	0						
SCG	REFRIGERATION CASE REPLACEMENT	0	0						
SCG	TANK INSULATION HOT APPLICATION	0	0						
SCG	WATER HEATING BOILER	0	0						
SCG	**Total**	**0**	**0**						
SDGE	FOOD SERVICE	1	1	1.00	100.0%	0.65	0.65		
SDGE	REFRIGERATION CASE LED LIGHTING	1,288	678	0.53	0.0%	0.65	0.71	0.65	0.71
SDGE	**Total**	**1,289**	**679**	**0.53**	**0.1%**	**0.65**	**0.71**	**0.65**	**0.71**
MCE	REFRIGERATION CASE LED LIGHTING	127	127	1.00	100.0%	0.75	0.75		
MCE	REFRIGERATION EVAPORATOR EC MOTORS	42	42	1.00	100.0%	0.89	0.89		
MCE	**Total**	**169**	**169**	**1.00**	**100.0%**	**0.78**	**0.78**		
	Statewide	***27,921***	***23,766***	***0.85***	***74.6%***	***0.67***	***0.65***	***0.67***	***0.54***

Gross First Year Savings (MW)

PA	Standard Report Group	Ex-Ante Gross	Ex-Post Gross	GRR	% Ex-Ante Gross Pass Through	Eval GRR
PGE	AG IRRIGATION	2.0	0.7	0.35	0.0%	0.35
PGE	AG PUMP MOTOR REPLACEMENT	0.1	0.1	1.00	100.0%	
PGE	AG PUMPING VFD	9.1	9.1	1.00	100.0%	
PGE	FOOD SERVICE	0.4	0.4	1.00	100.0%	
PGE	PIPE INSULATION HOT APPLICATION	0.0	0.0			
PGE	PROCESS BOILER	0.0	0.0			
PGE	PROCESS PUMPING VFD	0.0	0.0			
PGE	REFRIGERATION CASE LED LIGHTING	1.0	0.6	0.62	0.0%	0.62
PGE	REFRIGERATION CASE REPLACEMENT	0.9	0.9	1.00	100.0%	
PGE	REFRIGERATION EVAPORATOR EC MOTORS	0.4	0.4	1.00	100.0%	
PGE	WATER HEATING BOILER	0.0	0.0	1.00	100.0%	
PGE	**Total**	**13.8**	**12.1**	**0.88**	**78.4%**	**0.44**
SCE	AG PUMPING VFD	0.9	0.9	1.00	100.0%	
SCE	FOOD SERVICE	0.2	0.2	1.00	100.0%	
SCE	REFRIGERATION CASE LED LIGHTING	0.1	0.1	0.62	0.0%	0.62
SCE	REFRIGERATION CASE REPLACEMENT	0.0	0.0			
SCE	**Total**	**1.2**	**1.1**	**0.97**	**91.0%**	**0.62**
SCG	FOOD SERVICE	0.0	0.0			
SCG	PIPE INSULATION HOT APPLICATION	0.0	0.0			
SCG	PROCESS BOILER	0.0	0.0			
SCG	REFRIGERATION CASE REPLACEMENT	0.0	0.0			
SCG	TANK INSULATION HOT APPLICATION	0.0	0.0			
SCG	WATER HEATING BOILER	0.0	0.0			
SCG	**Total**	**0.0**	**0.0**			
SDGE	FOOD SERVICE	0.0	0.0	1.00	100.0%	
SDGE	REFRIGERATION CASE LED LIGHTING	0.3	0.2	0.62	0.0%	0.62
SDGE	**Total**	**0.3**	**0.2**	**0.62**	**0.1%**	**0.62**
MCE	REFRIGERATION CASE LED LIGHTING	0.0	0.0	1.00	100.0%	
MCE	REFRIGERATION EVAPORATOR EC MOTORS	0.0	0.0	1.00	100.0%	
MCE	**Total**	**0.0**	**0.0**	**1.00**	**100.0%**	
	Statewide	***15.3***	***13.5***	***0.88***	***77.8%***	***0.46***

Net First Year Savings (MW)

PA	Standard Report Group	Ex-Ante Net	Ex-Post Net	NRR	% Ex-Ante Net Pass Through	Ex-Ante NTG	Ex-Post NTG	Eval Ex-Ante NTG	Eval Ex-Post NTG
PGE	AG IRRIGATION	1.3	0.2	0.17	0.0%	0.65	0.32	0.65	0.32
PGE	AG PUMP MOTOR REPLACEMENT	0.1	0.1	1.00	100.0%	0.65	0.65		
PGE	AG PUMPING VFD	6.0	6.0	1.00	100.0%	0.67	0.67		
PGE	FOOD SERVICE	0.3	0.2	0.78	56.6%	0.74	0.58	0.87	0.44
PGE	PIPE INSULATION HOT APPLICATION	0.0	0.0						
PGE	PROCESS BOILER	0.0	0.0						
PGE	PROCESS PUMPING VFD	0.0	0.0						
PGE	REFRIGERATION CASE LED LIGHTING	0.6	0.4	0.58	0.0%	0.65	0.60	0.65	0.60
PGE	REFRIGERATION CASE REPLACEMENT	0.6	0.6	1.00	100.0%	0.65	0.65		
PGE	REFRIGERATION EVAPORATOR EC MOTORS	0.3	0.3	1.00	100.0%	0.65	0.65		
PGE	WATER HEATING BOILER	0.0	0.0	0.71	0.0%	0.65	0.46	0.65	0.46
PGE	**Total**	**9.2**	**7.8**	**0.85**	**77.5%**	**0.66**	**0.64**	**0.66**	**0.45**
SCE	AG PUMPING VFD	0.6	0.6	1.00	100.0%	0.65	0.65		
SCE	FOOD SERVICE	0.1	0.1	1.00	100.0%	0.77	0.77		
SCE	REFRIGERATION CASE LED LIGHTING	0.1	0.0	0.61	0.0%	0.65	0.63	0.65	0.63
SCE	REFRIGERATION CASE REPLACEMENT	0.0	0.0						
SCE	**Total**	**0.8**	**0.7**	**0.97**	**91.3%**	**0.67**	**0.67**	**0.65**	**0.63**
SCG	FOOD SERVICE	0.0	0.0						
SCG	PIPE INSULATION HOT APPLICATION	0.0	0.0						
SCG	PROCESS BOILER	0.0	0.0						
SCG	REFRIGERATION CASE REPLACEMENT	0.0	0.0						
SCG	TANK INSULATION HOT APPLICATION	0.0	0.0						
SCG	WATER HEATING BOILER	0.0	0.0						
SCG	**Total**	**0.0**	**0.0**						
SDGE	FOOD SERVICE	0.0	0.0	1.00	100.0%	0.65	0.65		
SDGE	REFRIGERATION CASE LED LIGHTING	0.2	0.1	0.68	0.0%	0.65	0.71	0.65	0.71
SDGE	**Total**	**0.2**	**0.1**	**0.68**	**0.1%**	**0.65**	**0.71**	**0.65**	**0.71**
MCE	REFRIGERATION CASE LED LIGHTING	0.0	0.0	1.00	100.0%	0.75	0.75		
MCE	REFRIGERATION EVAPORATOR EC MOTORS	0.0	0.0	1.00	100.0%	0.89	0.89		
MCE	**Total**	**0.0**	**0.0**	**1.00**	**100.0%**	**0.77**	**0.77**		
	Statewide	***10.2***	***8.7***	***0.85***	***77.1%***	***0.66***	***0.64***	***0.66***	***0.49***

Gross First Year Savings (MTherms)

PA	Standard Report Group	Ex-Ante Gross	Ex-Post Gross	GRR	% Ex-Ante Gross Pass Through	Eval GRR
PGE	AG IRRIGATION	0	0			
PGE	AG PUMP MOTOR REPLACEMENT	0	0			
PGE	AG PUMPING VFD	0	0			
PGE	FOOD SERVICE	708	415	0.59	35.9%	0.35
PGE	PIPE INSULATION HOT APPLICATION	406	84	0.21	0.0%	0.21
PGE	PROCESS BOILER	277	229	0.83	0.0%	0.83
PGE	PROCESS PUMPING VFD	0	0			
PGE	REFRIGERATION CASE LED LIGHTING	-64	-31	0.48	0.0%	0.48
PGE	REFRIGERATION CASE REPLACEMENT	160	160	1.00	100.0%	
PGE	REFRIGERATION EVAPORATOR EC MOTORS	0	0	1.00	100.0%	
PGE	WATER HEATING BOILER	144	144	1.00	100.0%	
PGE	**Total**	**1,631**	**1,001**	**0.61**	**34.3%**	**0.41**
SCE	AG PUMPING VFD	0	0			
SCE	FOOD SERVICE	0	0			
SCE	REFRIGERATION CASE LED LIGHTING	0	0			
SCE	REFRIGERATION CASE REPLACEMENT	0	0			
SCE	**Total**	**0**	**0**			
SCG	FOOD SERVICE	1,550	1,007	0.65	44.3%	0.37
SCG	PIPE INSULATION HOT APPLICATION	294	392	1.33	0.0%	1.33
SCG	PROCESS BOILER	202	165	0.82	0.0%	0.82
SCG	REFRIGERATION CASE REPLACEMENT	0	0			
SCG	TANK INSULATION HOT APPLICATION	214	214	1.00	100.0%	
SCG	WATER HEATING BOILER	278	278	1.00	100.0%	
SCG	**Total**	**2,539**	**2,056**	**0.81**	**46.4%**	**0.65**
SDGE	FOOD SERVICE	53	28	0.53	25.2%	0.37
SDGE	REFRIGERATION CASE LED LIGHTING	0	0			
SDGE	**Total**	**53**	**28**	**0.53**	**25.2%**	**0.37**
MCE	REFRIGERATION CASE LED LIGHTING	-2	-2	1.00	100.0%	
MCE	REFRIGERATION EVAPORATOR EC MOTORS	0	0	1.00	100.0%	
MCE	**Total**	**-2**	**-2**	**1.00**	**100.0%**	
	Statewide	***4,220***	***3,083***	***0.73***	***41.4%***	***0.54***

Net First Year Savings (MTherms)

PA	Standard Report Group	Ex-Ante Net	Ex-Post Net	NRR	% Ex-Ante Net Pass Through	Ex-Ante NTG	Ex-Post NTG	Eval Ex-Ante NTG	Eval Ex-Post NTG
PGE	AG IRRIGATION	0	0						
PGE	AG PUMP MOTOR REPLACEMENT	0	0						
PGE	AG PUMPING VFD	0	0						
PGE	FOOD SERVICE	473	182	0.38	0.0%	0.67	0.44	0.67	0.44
PGE	PIPE INSULATION HOT APPLICATION	264	43	0.16	0.0%	0.65	0.50	0.65	0.50
PGE	PROCESS BOILER	180	108	0.60	0.0%	0.65	0.47	0.65	0.47
PGE	PROCESS PUMPING VFD	0	0						
PGE	REFRIGERATION CASE LED LIGHTING	-42	-19	0.45	0.0%	0.65	0.60	0.65	0.60
PGE	REFRIGERATION CASE REPLACEMENT	104	104	1.00	100.0%	0.65	0.65		
PGE	REFRIGERATION EVAPORATOR EC MOTORS	0	0	1.00	100.0%	0.65	0.65		
PGE	WATER HEATING BOILER	93	67	0.72	0.0%	0.64	0.46	0.64	0.46
PGE	**Total**	**1,072**	**485**	**0.45**	**9.7%**	**0.66**	**0.48**	**0.66**	**0.45**
SCE	AG PUMPING VFD	0	0						
SCE	FOOD SERVICE	0	0						
SCE	REFRIGERATION CASE LED LIGHTING	0	0						
SCE	REFRIGERATION CASE REPLACEMENT	0	0						
SCE	**Total**	**0**	**0**						
SCG	FOOD SERVICE	1,024	457	0.45	0.0%	0.66	0.45	0.66	0.45
SCG	PIPE INSULATION HOT APPLICATION	191	198	1.03	0.0%	0.65	0.50	0.65	0.50
SCG	PROCESS BOILER	131	78	0.59	0.0%	0.65	0.47	0.65	0.47
SCG	REFRIGERATION CASE REPLACEMENT	0	0						
SCG	TANK INSULATION HOT APPLICATION	139	139	1.00	100.0%	0.65	0.65		
SCG	WATER HEATING BOILER	187	129	0.69	0.0%	0.67	0.46	0.67	0.46
SCG	**Total**	**1,672**	**1,001**	**0.60**	**8.3%**	**0.66**	**0.49**	**0.66**	**0.47**
SDGE	FOOD SERVICE	35	11	0.30	0.0%	0.67	0.38	0.67	0.38
SDGE	REFRIGERATION CASE LED LIGHTING	0	0						
SDGE	**Total**	**35**	**11**	**0.30**	**0.0%**	**0.67**	**0.38**	**0.67**	**0.38**
MCE	REFRIGERATION CASE LED LIGHTING	-2	-2	1.00	100.0%	0.76	0.76		
MCE	REFRIGERATION EVAPORATOR EC MOTORS	0	0	1.00	100.0%	0.89	0.89		
MCE	**Total**	**-2**	**-2**	**1.00**	**100.0%**	**0.76**	**0.76**		
	Statewide	***2,777***	***1,495***	***0.54***	***8.7%***	***0.66***	***0.48***	***0.66***	***0.46***

APPENDIX AB STANDARDIZED PER UNIT SAVINGS

Per Unit (Quantity) Gross Energy Savings (kWh)

PA	Standard Report Group	Pass Through	% ER Ex-Ante	% ER Ex-Post	Average EUL (yr)	Ex-Post Lifecycle	Ex-Post First Year	Ex-Post Annualized
PGE	AG IRRIGATION	0	0.0%	0.0%	20.0	3,965.9	198.2	198.3
PGE	FOOD SERVICE	0	0.0%	0.0%	12.0	0.0	0.0	0.0
PGE	PIPE INSULATION HOT APPLICATION	0	0.0%	0.0%	3.7	0.0	0.0	0.0
PGE	PROCESS BOILER	0	0.0%	0.0%	20.0	0.0	0.0	0.0
PGE	REFRIGERATION CASE LED LIGHTING	0	0.0%	0.0%	16.0	186.2	34.9	11.6
PGE	AG PUMP MOTOR REPLACEMENT	1	0.0%		15.0	375.3	25.0	25.0
PGE	AG PUMPING VFD	1	0.0%		4.7	1,193.0	251.4	251.4
PGE	FOOD SERVICE	1	0.0%		12.7	28,791.6	2,169.2	2,169.2
PGE	PROCESS PUMPING VFD	1	0.0%		5.0	117,203.5	23,440.7	23,440.7
PGE	REFRIGERATION CASE REPLACEMENT	1	0.0%		7.2	4,198.4	912.2	912.2
PGE	REFRIGERATION EVAPORATOR EC MOTORS	1	28.8%		15.0	8,107.7	540.2	540.2
PGE	WATER HEATING BOILER	1	0.0%		20.0	-3.1	-0.2	-0.2
SCE	REFRIGERATION CASE LED LIGHTING	0	0.0%	0.0%	4.0	946.0	177.4	236.5
SCE	AG PUMPING VFD	1	0.0%		6.7	1,667.9	250.1	250.1
SCE	FOOD SERVICE	1	0.0%		12.0	138,323.0	11,526.9	11,526.9
SCE	REFRIGERATION CASE REPLACEMENT	1	0.0%		12.0	0.0	0.0	0.0
SCG	FOOD SERVICE	0	0.0%	0.0%	12.0	0.0	0.0	0.0
SCG	PIPE INSULATION HOT APPLICATION	0	0.0%	0.0%	11.0	0.0	0.0	0.0
SCG	PROCESS BOILER	0	0.0%	0.0%	20.0	0.0	0.0	0.0
SCG	FOOD SERVICE	1	0.0%		11.6	0.0	0.0	0.0
SCG	REFRIGERATION CASE REPLACEMENT	1	0.0%		4.0	0.0	0.0	0.0
SCG	TANK INSULATION HOT APPLICATION	1	0.0%		7.0	0.0	0.0	0.0
SCG	WATER HEATING BOILER	1	0.0%		20.0	0.0	0.0	0.0
SDGE	FOOD SERVICE	0	0.0%	0.0%	12.0	0.0	0.0	0.0
SDGE	REFRIGERATION CASE LED LIGHTING	0	0.0%	0.0%	16.0	2,003.0	375.6	125.2
SDGE	FOOD SERVICE	1	0.0%		12.0	624.9	52.1	52.1
MCE	REFRIGERATION CASE LED LIGHTING	1	0.0%		6.6	1,100.4	126.8	126.8
MCE	REFRIGERATION EVAPORATOR EC MOTORS	1	0.0%		14.6	7,229.8	491.3	491.3

Per Unit (Quantity) Gross Energy Savings (Therms)

PA	Standard Report Group	Pass Through	% ER Ex-Ante	% ER Ex-Post	Average EUL (yr)	Ex-Post Lifecycle	Ex-Post First Year	Ex-Post Annualized
PGE	AG IRRIGATION	0	0.0%	0.0%	20.0	0.0	0.0	0.0
PGE	FOOD SERVICE	0	0.0%	0.0%	12.0	2,137.4	194.2	178.1
PGE	PIPE INSULATION HOT APPLICATION	0	0.0%	0.0%	3.7	31.0	2.8	8.4
PGE	PROCESS BOILER	0	0.0%	0.0%	20.0	28.0	1.7	1.4
PGE	REFRIGERATION CASE LED LIGHTING	0	0.0%	0.0%	16.0	-2.6	-0.5	-0.2
PGE	AG PUMP MOTOR REPLACEMENT	1	0.0%		15.0	0.0	0.0	0.0
PGE	AG PUMPING VFD	1	0.0%		4.7	0.0	0.0	0.0
PGE	FOOD SERVICE	1	0.0%		12.7	3,043.6	247.9	247.9
PGE	PROCESS PUMPING VFD	1	0.0%		5.0	0.0	0.0	0.0
PGE	REFRIGERATION CASE REPLACEMENT	1	0.0%		7.2	126.3	31.8	31.8
PGE	REFRIGERATION EVAPORATOR EC MOTORS	1	28.8%		15.0	-0.4	0.0	0.0
PGE	WATER HEATING BOILER	1	0.0%		20.0	34.1	1.7	1.7
SCE	REFRIGERATION CASE LED LIGHTING	0	0.0%	0.0%	4.0	0.0	0.0	0.0
SCE	AG PUMPING VFD	1	0.0%		6.7	0.0	0.0	0.0
SCE	FOOD SERVICE	1	0.0%		12.0	0.0	0.0	0.0
SCE	REFRIGERATION CASE REPLACEMENT	1	0.0%		12.0	0.0	0.0	0.0
SCG	FOOD SERVICE	0	0.0%	0.0%	12.0	2,123.3	203.2	176.9
SCG	PIPE INSULATION HOT APPLICATION	0	0.0%	0.0%	11.0	131.9	12.0	12.0
SCG	PROCESS BOILER	0	0.0%	0.0%	20.0	9.0	0.5	0.5
SCG	FOOD SERVICE	1	0.0%		11.6	6,333.3	531.3	531.3
SCG	REFRIGERATION CASE REPLACEMENT	1	0.0%		4.0	0.0	0.0	0.0
SCG	TANK INSULATION HOT APPLICATION	1	0.0%		7.0	74.8	10.7	10.7
SCG	WATER HEATING BOILER	1	0.0%		20.0	28.9	1.4	1.4
SDGE	FOOD SERVICE	0	0.0%	0.0%	12.0	2,128.2	200.1	177.3
SDGE	REFRIGERATION CASE LED LIGHTING	0	0.0%	0.0%	16.0	0.0	0.0	0.0
SDGE	FOOD SERVICE	1	0.0%		12.0	3,997.8	333.2	333.2
MCE	REFRIGERATION CASE LED LIGHTING	1	0.0%		6.6	-13.8	-1.6	-1.6
MCE	REFRIGERATION EVAPORATOR EC MOTORS	1	0.0%		14.6	-0.2	0.0	0.0

Per Unit (Quantity) Net Energy Savings (kWh)

PA	Standard Report Group	Pass Through	% ER Ex-Ante	% ER Ex-Post	Average EUL (yr)	Ex-Post Lifecycle	Ex-Post First Year	Ex-Post Annualized
PGE	AG IRRIGATION	0	0.0%	0.0%	20.0	1,287.8	64.4	64.4
PGE	FOOD SERVICE	0	0.0%	0.0%	12.5	4,128.6	275.2	275.2
PGE	PIPE INSULATION HOT APPLICATION	0	0.0%	0.0%	3.7	0.0	0.0	0.0
PGE	PROCESS BOILER	0	0.0%	0.0%	20.0	0.0	0.0	0.0
PGE	REFRIGERATION CASE LED LIGHTING	0	0.0%	0.0%	16.0	111.7	21.0	7.0
PGE	WATER HEATING BOILER	0	0.0%	0.0%	20.0	-1.4	-0.1	-0.1
PGE	AG PUMP MOTOR REPLACEMENT	1	0.0%		15.0	243.9	16.3	16.3
PGE	AG PUMPING VFD	1	0.0%		4.7	789.2	167.6	167.6
PGE	FOOD SERVICE	1	0.0%		12.0	28,323.7	2,360.3	2,360.3
PGE	PROCESS PUMPING VFD	1	0.0%		5.0	76,182.2	15,236.4	15,236.4
PGE	REFRIGERATION CASE REPLACEMENT	1	0.0%		7.2	2,728.9	593.0	593.0
PGE	REFRIGERATION EVAPORATOR EC MOTORS	1	28.8%		15.0	5,270.0	351.2	351.2
SCE	REFRIGERATION CASE LED LIGHTING	0	0.0%	0.0%	4.0	598.4	112.2	149.6
SCE	AG PUMPING VFD	1	0.0%		6.7	1,084.1	162.5	162.5
SCE	FOOD SERVICE	1	0.0%		12.0	106,328.0	8,860.7	8,860.7
SCE	REFRIGERATION CASE REPLACEMENT	1	0.0%		12.0	0.0	0.0	0.0
SCG	FOOD SERVICE	0	0.0%	0.0%	11.8	0.0	0.0	0.0
SCG	PIPE INSULATION HOT APPLICATION	0	0.0%	0.0%	11.0	0.0	0.0	0.0
SCG	PROCESS BOILER	0	0.0%	0.0%	20.0	0.0	0.0	0.0
SCG	WATER HEATING BOILER	0	0.0%	0.0%	20.0	0.0	0.0	0.0
SCG	FOOD SERVICE	1	0.0%		12.0	0.0	0.0	0.0
SCG	REFRIGERATION CASE REPLACEMENT	1	0.0%		4.0	0.0	0.0	0.0
SCG	TANK INSULATION HOT APPLICATION	1	0.0%		7.0	0.0	0.0	0.0
SDGE	FOOD SERVICE	0	0.0%	0.0%	12.0	0.0	0.0	0.0
SDGE	REFRIGERATION CASE LED LIGHTING	0	0.0%	0.0%	16.0	1,417.2	265.7	88.6
SDGE	FOOD SERVICE	1	0.0%		12.0	16,247.4	1,354.0	1,354.0
MCE	REFRIGERATION CASE LED LIGHTING	1	0.0%		6.6	786.9	95.6	95.6
MCE	REFRIGERATION EVAPORATOR EC MOTORS	1	0.0%		14.6	6,451.8	438.5	438.5

Per Unit (Quantity) Net Energy Savings (Therms)

PA	Standard Report Group	Pass Through	% ER Ex-Ante	% ER Ex-Post	Average EUL (yr)	Ex-Post Lifecycle	Ex-Post First Year	Ex-Post Annualized
PGE	AG IRRIGATION	0	0.0%	0.0%	20.0	0.0	0.0	0.0
PGE	FOOD SERVICE	0	0.0%	0.0%	12.5	1,433.9	121.7	117.8
PGE	PIPE INSULATION HOT APPLICATION	0	0.0%	0.0%	3.7	15.6	1.4	4.2
PGE	PROCESS BOILER	0	0.0%	0.0%	20.0	13.2	0.8	0.7
PGE	REFRIGERATION CASE LED LIGHTING	0	0.0%	0.0%	16.0	-1.5	-0.3	-0.1
PGE	WATER HEATING BOILER	0	0.0%	0.0%	20.0	15.8	0.8	0.8
PGE	AG PUMP MOTOR REPLACEMENT	1	0.0%		15.0	0.0	0.0	0.0
PGE	AG PUMPING VFD	1	0.0%		4.7	0.0	0.0	0.0
PGE	FOOD SERVICE	1	0.0%		12.0	0.0	0.0	0.0
PGE	PROCESS PUMPING VFD	1	0.0%		5.0	0.0	0.0	0.0
PGE	REFRIGERATION CASE REPLACEMENT	1	0.0%		7.2	82.1	20.7	20.7
PGE	REFRIGERATION EVAPORATOR EC MOTORS	1	28.8%		15.0	-0.3	0.0	0.0
SCE	REFRIGERATION CASE LED LIGHTING	0	0.0%	0.0%	4.0	0.0	0.0	0.0
SCE	AG PUMPING VFD	1	0.0%		6.7	0.0	0.0	0.0
SCE	FOOD SERVICE	1	0.0%		12.0	0.0	0.0	0.0
SCE	REFRIGERATION CASE REPLACEMENT	1	0.0%		12.0	0.0	0.0	0.0
SCG	FOOD SERVICE	0	0.0%	0.0%	11.8	1,886.5	165.2	157.8
SCG	PIPE INSULATION HOT APPLICATION	0	0.0%	0.0%	11.0	66.5	6.0	6.0
SCG	PROCESS BOILER	0	0.0%	0.0%	20.0	4.3	0.2	0.2
SCG	WATER HEATING BOILER	0	0.0%	0.0%	20.0	13.4	0.7	0.7
SCG	FOOD SERVICE	1	0.0%		12.0	0.0	0.0	0.0
SCG	REFRIGERATION CASE REPLACEMENT	1	0.0%		4.0	0.0	0.0	0.0
SCG	TANK INSULATION HOT APPLICATION	1	0.0%		7.0	48.6	6.9	6.9
SDGE	FOOD SERVICE	0	0.0%	0.0%	12.0	1,075.3	95.2	89.6
SDGE	REFRIGERATION CASE LED LIGHTING	0	0.0%	0.0%	16.0	0.0	0.0	0.0
SDGE	FOOD SERVICE	1	0.0%		12.0	0.0	0.0	0.0
MCE	REFRIGERATION CASE LED LIGHTING	1	0.0%		6.6	-9.9	-1.2	-1.2
MCE	REFRIGERATION EVAPORATOR EC MOTORS	1	0.0%		14.6	-0.2	0.0	0.0

APPENDIX AC RESPONSE TO RECOMMENDATIONS

EM&V Impact Study Recommendations
Study Title: 2017 Small and Medium Sector ESPI Impact Evaluation
Study Manager: CPUC

ID	PA	Section	Conclusion	Recommendation	Disposition (Accepted, Rejected, or Other)	Disposition Notes (e.g. Description of specific program change or Reason for rejection or Under further review)
Refrigeration Case LED Lighting Measures						
RL1	PG&E	Section 5	The use of a multiple lamp profile for PG&E measure code LC03 results in a very large delta watts value.	PG&E should revisit the use of the LC03 measure code.		
RL2	PG&E, SCE SDG&E	Section 5	T12 lamps are assumed existing condition for all six foot LED lamp measures, yet the self-reported lamp technology was overwhelmingly T8.	Utilities should revisit the assumption of T-12 lamps as the existing condition for all LED measures that are 6 feet in length.		
RL3	SDG&E	Section 5	SDG&E uses the unit refrigerated case door for the measure.	SDG&E should revisit the assumption of 1.2 fixtures per door.		
RL4	SDG&E	Section 5	SDG&E uses the unit refrigerated case door for the measure.	SDG&E should revisit the assumption of 1.2 fixtures per door.		
RL5	SDG&E	Section 5	Ex-post hours of operation generally support the HOU used in the workpapers and deemed savings for the refrigerated case LED measures.	Utilities should continue using the HOU currently being used in the ex-ante calculations.		
RL6	PG&E, SCE SDG&E	Section 5	SDG&E and PG&E applied an EUL of 16 years to the measures.	The IOUs should revise the EUL they use for lifecycle savings.		
RL7	PG&E, SCE SDG&E	Section 6	In general, Refrigerated LED Case Lighting measures exhibited commendable medium-high program influence levels.	If Refrigerated LED Case Lighting measures continue to be incented, free ridership should be monitored on an ongoing basis.		

EM&V Impact Study Recommendations
Study Title: 2017 Small and Medium Sector ESPI Impact Evaluation
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ID	PA	Section	Conclusion	Recommendation	Disposition (Accepted, Rejected, or Other)	Disposition Notes (e.g. Description of specific program change or Reason for rejection or Under further review)
Process Boiler Measures						
PB1a	PG&E, SCG	Section 5	The workpaper stipulations for operating hours, load factors and measure case efficiency values differed from the ex-post findings and contributed to the gross savings gap.	The program's application and review process should be expanded to increase the range of boiler performance information captured in the ex-ante tracking databases.		
PB1b	PG&E, SCG	Section 5	The workpaper stipulations for operating hours, load factors and measure case efficiency values differed from the ex-post findings and contributed to the gross savings gap.	The PAs should consider using an enhanced measure savings algorithm that provides for some reasonable level of customization for relevant input parameters.		
PB2	SCG	Section 5	The baseline efficiency for hot water boilers in the SCG workpaper are not consistent with baseline requirements within the PG&E workpaper.	The workpaper base case efficiency needs to be updated to reflect current Title 24, Part 6 standards.		
PB3	PG&E, SCG	Section 5	Very few of the participants were able to measure, store, and analyze boiler consumption data as it results in increased overall operational costs.	The PAs should encourage customer investment in, and involvement with, performance monitoring of equipment by means of a rebate program or something similar.		
PB4	PG&E, SCG	Section 6	The measure's average ex-post NTG ratio of 0.42 suggests a medium-low level of program influence and corresponding medium-high level of free ridership.	Given the medium-low program influence level, the programs should monitor free ridership on an ongoing basis.		

EM&V Impact Study Recommendations
Study Title: 2017 Small and Medium Sector ESPI Impact Evaluation
Study Manager: CPUC

ID	PA	Section	Conclusion	Recommendation	Disposition (Accepted, Rejected, or Other)	Disposition Notes (e.g. Description of specific program change or Reason for rejection or Under further review)
Food Service Measures						
FS1	PG&E, SCG, SDG&E	Section 5	Realization rates, after discounting zero savers, would be 10 or more percentage points greater than the ex-post realization rate results.	The program's application and review process should be enhanced to screen projects against the eligible equipment listing, and verification should be performed to ensure that installations claimed are valid.		
FS2	PG&E, SCG, SDG&E	Section 5	Across both the PG&E and SCG samples, 6 of 43 projects received EUL adjustments to account for loss of long-term savings associated with equipment that were removed from operation.	The PAs should consider reducing ex-ante EUL of 12 years.		
FS3	PG&E, SCG, SDG&E	Section 5	Evaluation results provide validation for the robustness of both the ex-post and ex-ante models, as both approaches yield very similar results when modeling parameters are uniform across both models.	With the ex-ante model validated in this way, the focus of updates to ex-ante methods -- to better align ex-ante and ex-post results -- can focus on parameter updates.		
FS4	PG&E, SCG, SDG&E	Section 5	Differences between ex-post and ex-ante model-based parameters resulted in a relatively large reduction in ex-post savings relative to claims.	Future workpaper revisions should incorporate all PY2013-17 evaluation data to revise parameter-level assumptions.		

EM&V Impact Study Recommendations
Study Title: 2017 Small and Medium Sector ESPI Impact Evaluation
Study Manager: CPUC

ID	PA	Section	Conclusion	Recommendation	Disposition (Accepted, Rejected, or Other)	Disposition Notes (e.g. Description of specific program change or Reason for rejection or Under further review)
FS5	PG&E, SCG, SDG&E	Section 6	Food service measures associated with the Midstream and Downstream delivery channels experienced high levels of free ridership.	Review the set of technologies that are currently eligible for incentives and research new technologies that are less commonly installed and adjust the set of technologies that are eligible for incentives. In addition, for account managed chain customers in particular, program implementers should change their promotional practices to actively highlight and promote these new, less commonly adopted technologies.		

EM&V Impact Study Recommendations
Study Title: 2017 Small and Medium Sector ESPI Impact Evaluation
Study Manager: CPUC

ID	PA	Section	Conclusion	Recommendation	Disposition (Accepted, Rejected, or Other)	Disposition Notes (e.g. Description of specific program change or Reason for rejection or Under further review)
Agricultural Irrigation Measures						
AI1	PG&E	Section 5	The agricultural irrigation workpaper revisions made over the last several years have resulted in more accurate savings estimation.	The programs should maintain eligibility requirements for pre-existing irrigation method and crop type.		
AI2	PG&E	Section 5	Five of the 19 sampled projects were determined to be ineligible for program participation.	The program's application and review process should be enhanced to collect additional relevant data and more carefully screen applicants to avoid ineligible projects.		
AI3	PG&E	Section 5	Agricultural irrigation projects are difficult to accurately characterize with a single deemed savings value.	The program should consider adding more granularity to the sprinkler-to-drip workpaper's unit energy savings based on key variables determined from project applications.		
AI4	PG&E	Section 5	Evaluators were unable to assess EUL in this evaluation cycle; however, the current workpaper's EUL recommendation of 20 years is overstated.	Future evaluation cycles and PA research should emphasize measure EUL, which is likely too high in the current workpaper.		
AI5	PG&E	Section 6	Agricultural Irrigation measures experienced high levels of free ridership.	Adjust the set of technologies that are eligible for incentives. In addition, program implementers should actively highlight and promote technologies that are less well-adopted, cutting edge, or emerging technologies.		

EM&V Impact Study Recommendations
Study Title: 2017 Small and Medium Sector ESPI Impact Evaluation
Study Manager: CPUC

ID	PA	Section	Conclusion	Recommendation	Disposition (Accepted, Rejected, or Other)	Disposition Notes (e.g. Description of specific program change or Reason for rejection or Under further review)
Pipe Insulation Measures						
PI1	PG&E, SCG	Section 5	For PG&E projects in particular, the tracked ex-ante savings did not appear to follow established workpaper recommendations for several of the evaluated sites.	Future pipe insulation savings claims should reflect current workpaper assumptions and parameters.		
PI2	PG&E, SCG	Section 5	Differences in operating hours, installation rate, pipe diameter, and fluid temperature resulted in a lower GRR overall.	Future workpaper revisions should incorporate all PY2013-17 evaluation data to revise parameter-level assumptions. So as not to double-count evaluator findings, we do not recommend incorporating evaluation GRRs as well.		
PI3	PG&E, SCG	Section 5	Evaluators are pleased to observe that the current SCG and PG&E workpapers have added a third, large-diameter tier to the UES recommendations.	Continue incorporating evaluator recommendations in future workpaper updates.		
PI4	PG&E, SCG	Section 6	The measure's average ex-post NTG ratio of 0.45 suggests a medium-low level of program influence and corresponding medium-high level of free ridership.	Given the medium-low program influence level, the programs should monitor free ridership on an ongoing basis.		

EM&V Impact Study Recommendations
Study Title: 2017 Small and Medium Sector ESPI Impact Evaluation
Study Manager: CPUC

ID	PA	Section	Conclusion	Recommendation	Disposition (Accepted, Rejected, or Other)	Disposition Notes (e.g. Description of specific program change or Reason for rejection or Under further review)
Water Heating Boiler Measures						
WH1	PG&E, SCG	Section 6	The measure's average ex-post NTG ratio of 0.45 suggests a medium-low level of program influence and corresponding medium-high level of free ridership.	Given the medium-low program influence level, the programs should monitor free ridership on an ongoing basis.		

APPENDIX A – SMALL COMMERCIAL SECTOR PARTICIPANT TELEPHONE SURVEY INSTRUMENT

	Participant Survey for CPUC	
	PY2017 Downstream Lighting and Small Commercial Evaluation	
	INTRODUCTION AND FINDING CORRECT RESPONDENT	
OUTCOME1	This is %n calling on behalf of the CPUC, from Pacific Market Research. THIS IS NOT A SALES CALL NOR A SERVICE CALL. May I please speak with ...<%CONTACT> ...<%OLDCONTACT> ... <%BUSINESS> ... the person at your organization that is most knowledgeable about your participation in <%UTILITY>'s <%PROGRAM> program. !___[IF NEEDED]...This is a fact-finding survey only, authorized by the California Public Utilities Commission.	
1	Yes (go to next screen)	Continue
2	Make appointment	Make appt and record time
3	Busy/engaged	Record Response and T&T
4	No Answer	Record Response and T&T
5	Refused	Record Response and T&T
6	Disconnected	Record Response and T&T
7	Answering Machine - no message	Record Response and T&T
8	Duplicate	Record Response and T&T
9	DRNA	Record Response and T&T
10	Disability	Record Response and T&T
11-12	Language Barriers	Record Response and T&T
13	Answering Machine - left message	Record Response and T&T

14	NO SCREEN - Participant	Record Response and T&T
15	Hang up	Record Response and T&T
16	Residence	Record Response and T&T
17	Fax	Record Response and T&T
18	Quota full	Record Response and T&T
19	Wrong Address	Record Response and T&T
20	Home office	Record Response and T&T
21	Max attempts	Record Response and T&T
24	General callback	Record Response and T&T
25	Name/Number changed	Record Response and T&T
Thank & Terminate PBLOCK NO_ONE	Thank you for your time. For this study, we need to speak to someone about your organization's installation of energy efficient equipment that your organization installed through <%UTILITY>'s <%PROGRAM> program.	END
Q1B	[IF YOU ARE TRANSFERRED TO ANOTHER PERSON OTHER THAN THE BEST CONTACT] Who would be the person most familiar about your organization's participation in <%UTILITY>'S <%PROGRAM> program? [ENTER NEW CONTACT NAME AND MOVE ON]	
	[IF NEEDED] This is not a sales call.	
	[IF NEEDED] This is a fact-finding survey only, and responses will not be connected with your firm in any way. The California Public Utilities Commission wants to better understand how businesses think about and manage their energy consumption.	
77	There is no one here who can help you	T&T
1	Continue Q1B until you find appropriate contact person, record as &NEW CONTACT NAME	Intro3:s

Intro3:S	[IF BEST CONTACT IS AVAILABLE] Hello, my name is _____%n_____ and I am calling on behalf of the California Public Utilities Commission from Pacific Market Research. THIS IS NOT A SALES CALL. We are interested in speaking with the person most knowledgeable about your organization's participation in ... <%UTILITY>'s <%PROGRAM> program during 2017.....I was told that would be you. ...Your organization participated in <%UTILITY>'s <%PROGRAM> by installing energy saving equipment in 2017 You should have received an email recently that explained the evaluation process and provided a letter from the CPUC validating this study.	
	Through this program, your organization installed.... <%CUSTOM_MEASURE> on <CUST_INSTALL_DATE>...<CUST_PAID_DATE>... <%UNITS_1> ... <%MEASURE_1> on <MEASURE_1_DATE> <%UNITS_2> ... <%MEASURE_2> on <MEASURE_2_DATE> <%UNITS_3> ... <%MEASURE_3> on <MEASURE_3_DATE> Are you the best person to speak to about your organization's participation in this program?	
1	Yes	Person:s
2	No, there is someone else	Intro3:s
3	No and I don't know who to refer you to	Appoint
5	Property management company handles this	PMNAME
99	Don't know/refused	T&T
Ext	Is there a phone extension or phone number you recommend we use when we call back?	
77	Record Extension or Phone Number, &PHONE	Thank&Terminate
88	Refused	Thank&Terminate
99	Don't know	Thank&Terminate
PMNAME	May I have the name and contact information of your property management company?	
1	Yes - RECORD	Record Response and T&T
2	No	Thank&Terminate
88	Refused	Thank&Terminate
99	Don't Know	Thank&Terminate
Appoint	[IF RECOMMENDED CONTACT IS NOT CURRENTLY AVAILABLE] When would be a good day and time for us to call back?	

77	Record day of the week, time of day and date to call back, as &APPOINT	Record Response and T&T
88	Refused	Intro3(99)
99	Don't know	Intro3(99)
	If Person(3)	
Intro3(99)	Thank you for your time. We need to speak with the person at your organization that is most familiar with this facility's energy using equipment. Those are all of the questions I have for you today.	Abandoned User30
PBLOCK Hi	Who would be the person at this location who is most knowledgeable about this facility's energy using equipment? [Enter New Contact Name and move on.]	
77	Record Name, as &CONTACT	May_I
88	Refused	Thank&Terminate
99	Don't know	Intro3(99)
May_I	May I speak with him/her?	
77	Yes	Intro3:s
88	No (not available right now@, set cb)	Abandoned Appointment
PERSON:s	According to our records, your organization participated in <%UTILITY>'s <%PROGRAM> program by installing energy saving equipment around ... <%DEEM_PAID_DATE1> <%CUST_PAID_DATE> Through this program, your organization installed.... <%CUSTOM_MEASURE> on <CUST_INSTALL_DATE>...<CUST_PAID_DATE>... <%UNITS_1> ... <%MEASURE_1> on <MEASURE_1_DATE> <%UNITS_2> ... <%MEASURE_2> on <MEASURE_2_DATE> <%UNITS_3> ... <%MEASURE_3> on <MEASURE_3_DATE> Are you the person most knowledgeable about your organization's participation in ...<%UTILITY>'s <%PROGRAM> Program?	
1	Yes	Continue
2	Yes, need to make appointment	Appoint
4	No, but I will give you a name	Thank&Terminate
99	No one knows about the energy using equipment	Thank&Terminate

	If you need to provide validation for this survey, provide the following contact name and number: Mona Dzvova, California Public Utilities Commission, Energy Division, (415) 703-1231, and the following website: www.cpuc.ca.gov/eevalidation	
DISPLAY	Before we start, I would like to inform you that for quality control purposes, this call may be monitored by my supervisor. Today we're conducting a very important study on the energy needs and perceptions of organizations like yours. We are interested in how organizations like yours think about and manage their energy consumption. Your input will allow the California Public Utilities Commission to build and maintain better energy savings programs for customers like you. And we would like to remind you, your responses will not be connected with your organization in any way.	
	SCREENER	
VERIFY	For verification purposes only, may I please have your name?	
77	Get name	Scrn_Addr
88	Refused	Scrn_Addr
99	Don't know	Scrn_Addr
DISPLAY	For the sake of expediency, I will refer to ....<%UTILITY>'s <%PROGRAM> ...program as the PROGRAM.	
Scrn_Addr	First, I'd like to ask you a few questions about your organization and facility. Our records show your organization is located at %ADDRESS in %CITY. Is that correct?	
	[CONTINUE IF ADDRESS REPORTED BY RESPONDENT IS SIMILAR ENOUGH]	
1	Yes	Bus_Name
2	No	CORRECT
88	Refused	COMMENT
99	Don't Know	COMMENT

COMMENT	We were attempting to reach <%UTILITY>'s customer at <%ADDRESS> and since you cannot confirm this address, those are all the questions that we have for you today, on behalf of the California Public Utilities Commission, thank you for your time.	
CORRECT	May I have your correct address?	
%CORRECT	Corrected Address	COMPARE
COMPARE	Are these addresses similar or totally different? Computer Address - %ADDRESS Corrected Address - &CORRECT	
1	Similar	Bus_Name
2	Totally Different	COMMENT2
COMMENT2	We were attempting to reach the <%UTILITY> customer at <%ADDRESS> in <%CITY> and since that does not match your address, then we must have mis-dialed the telephone number. Those are all the questions that we have for you today, on behalf of the California Public Utilities Commission. Thank you for your time and cooperation.	Thank and Terminate
BUS_NAME	Our records show your organization's name as: <%BUSINESS> <%CONTACT> <%OLDCONTACT>. Is that correct?	
1	Yes	INCENT
2	No	Bus_Correct
88	Refused	COMMENT
99	Don't Know	COMMENT
BUS_CORRECT	What is the correct name for your organization?	
&BUS_CORRECT	Corrected Business	INCENT
INCENT	What percentage of the cost of your rebated equipment was covered by the program?	
77	RECORD RESPONSE	A1gg
101	REFUSED	FM050
102	DON'T KNOW	FM050
	IF INCENT <> 100 then ask; Else skip to FM050	
A1gg	What incentive amount did your organization receive from the program towards your energy efficient equipment installation?	
77	RECORD VERBATIM	FM050

88	Refused	FM050
99999	Don't know	FM050
FM050	What is the main business ACTIVITY at this facility? [DO NOT READ] (SINGLE RESPONSE)	
1	Offices (non-medical)	FM050a
2	Restaurant/Food Service	FM050b
3	Food Store (grocery/liquor/convenience)	FM050c
4	Agricultural (farms, greenhouses)	FM050d
5	Retail Stores	FM050e
6	Warehouse	FM050f
7	Health Care	FM050g
8	Education	FM050h
9	Lodging (hotel/rooms)	FM050i
10	Public Assembly (church, fitness, theatre, library, museum, convention)	FM050j
11	Services (hair, nail, massage, spa, gas, repair)	FM050k
12	Industrial (food processing plant, manufacturing)	FM050l
13	Laundry (Coin Operated, Commercial Laundry Facility, Dry Cleaner)	FM050m
14	Condo Assoc./Apartment Mgr (Garden Style, Mobile Home Park, High-rise, Townhouse)	FM050n
15	Public Service (fire/police/postal/military)	FM050o
77	OPEN\Record Other Service Shop	LANG
88	Refused	LANG
99	Don't know	LANG
FM050a	Which of the following types of offices best describes this facility? Would you say...[READ] (SINGLE RESPONSE)v	
1	Administration and management	LANG
2	Financial/Legal	LANG
3	Insurance/Real Estate	LANG
4	Data Processing/Computer Center	LANG
5	Mixed-Use/Multi-tenant	LANG
6	Lab/R&D Facility	LANG
7	Software Development	LANG
8	Government Services	LANG
9	Office with Warehouse	LANG
10	Contractor's Offices	LANG
11	Telecommunications Center (call center)	LANG
12	Travel Services (Travel Agent)	LANG
77	OPEN\DO NOT USE unless necessary	LANG
88	Refused	LANG

99	Don't know	LANG
FM050b	Which of the following types of restaurants or food service best describes this facility? Would you say… [READ] (SINGLE RESPONSE)	
1	Fast Food or Self Service	LANG
2	Specialty/Novelty Food Service	LANG
3	Table Service	LANG
4	Bar/Tavern/Nightclub/Brew Pub or Microbrewery/Other entertainment	LANG
5	Caterer	LANG
6	Other Food Service	LANG
88	Refused	LANG
99	Don't know	LANG
FM050c	Which of the following types of food stores best describes this facility? Would you say...[READ] (SINGLE RESPONSE)	
1	Supermarkets	LANG
2	Small General Grocery	LANG
3	Specialty/Ethnic Grocery/Deli	LANG
4	Convenience Store	LANG
5	Liquor Store	LANG
6	Retail Bakery	LANG
77	OPEN\DO NOT USE unless necessary	LANG
88	Refused	LANG
99	Don't know	LANG
FM050d	What type of agricultural facility is this? [READ] (SINGLE RESPONSE)	
1	Commercial Greenhouse	LANG
2	Commercial Farm	LANG
3	Dairy/Ranch	LANG
4	Vineyard/Orchard	LANG
5	Agricultural Storage (Grain Elevators, etc.)	LANG
6	Equine Facility (Horse Boarding/Grooming/Racing/Breeding)	LANG
77	OPEN\Describe type of agricultural facility	LANG
88	Refused	LANG
99	Don't know	LANG
FM050e	Which of the following types of retail stores best describes this facility? Would you say… [READ] (SINGLE RESPONSE)	
1	Department/Variety Store	LANG
2	Retail Warehouse/Club	LANG

3	Shop in Enclosed Mall	LANG
4	Shop in Strip Mall	LANG
5	Auto/Truck/Motorcycle Sales	LANG
6	Art Gallery	LANG
7	Auction House	LANG
8	Heavy Equipment Sales	LANG
9	Facility is a Mall/Strip Mall	LANG
77	OPEN\DO NOT USE unless necessary	LANG
88	Refused	LANG
99	Don't know	LANG
FM050f	Which of the following types of warehouses best describes this facility? Would you say… [READ] (SINGLE RESPONSE)	
1	Refrigerated Warehouse	LANG
2	Unconditioned Warehouse, High Bay (lighting higher than 13 ft.)	LANG
3	Unconditioned Warehouse, Low Bay	LANG
4	Conditioned Warehouse, High Bay (lighting higher than 13 ft.)	LANG
5	Conditioned Warehouse, Low Bay	LANG
6	Shipping/Distribution Center	LANG
7	Garage/Parking/Storage for Commercial Fleet	LANG
8	Public Self Storage Facility	LANG
77	OPEN\DO NOT USE unless necessary	LANG
88	Refused	LANG
99	Don't know	LANG
FM050g	Which of the following types of health care centers best describes this facility? Would you say… [READ] (SINGLE RESPONSE)	
1	Hospital	LANG
2	Nursing Home	LANG
3	Medical/Dental Office	LANG
4	Clinic/Outpatient Care	LANG
5	Medical/Dental Lab	LANG
6	Alcohol/Drug Treatment/Rehabilitation	LANG
7	Doctor's Office	LANG
8	Dentist's Office	LANG
9	Veterinary Hospital/Clinic	LANG
77	OPEN\DO NOT USE unless necessary	LANG
88	Refused	LANG
99	Don't know	LANG

FM050h	Which of the following types of educational centers best describes this facility? Would you say… [READ] (SINGLE RESPONSE)	
1	Daycare or Preschool	LANG
2	Elementary School	LANG
3	Middle/Secondary School	LANG
4	College or University	LANG
5	Vocational or Trade School	LANG
6	Instructional Studio (Dance/Music/Martial Arts)	LANG
77	OPEN\DO NOT USE unless necessary	LANG
88	Refused	LANG
99	Don't know	LANG
FM050i	Which of the following types of lodging best describes this facility? Would you say… [READ] (SINGLE RESPONSE)	
1	Hotel	LANG
2	Motel	LANG
3	Resort	LANG
4	Bed and Breakfast	LANG
5	Campground/Trailer Camping/KOA	LANG
6	Residential Hotel/Motel	LANG
7	Dormitory/Sorority/Fraternity	LANG
8	Activity Camp/Summer Camp	LANG
77	OPEN\DO NOT USE unless necessary	LANG
88	Refused	LANG
99	Don't know	LANG
FM050j	Which of the following types of public assembly buildings best describes this facility? Would you say… [READ] (SINGLE RESPONSE)	
1	Religious Assembly (worship only)	LANG
2	Religious Assembly (mixed use)	LANG
3	Health/Fitness Center/Athletic Center/Gym	LANG
4	Movie Theaters	LANG
5	Theater/Performing Arts Venue	LANG
6	Library/Museum	LANG
7	Conference/Convention Center	LANG
8	Community Center/Activity Center	LANG
9	Country Club	LANG
77	OPEN\DO NOT USE unless necessary	LANG
88	Refused	LANG
99	Don't know	LANG

FM050k	Which of the following types of service buildings best describes this facility? Would you say...[READ] (SINGLE RESPONSE)	
1	Hair Salon	LANG
2	Nail Salon	LANG
3	Massage Spa	LANG
4	Day Spa	LANG
5	Gas Station/Auto Repair	LANG
6	Gas Station w/Convenience Store	LANG
7	Repair (Non-Auto)	LANG
8	Copy Center/Printing	LANG
9	Package Delivery (Fed Ex/UPS/DHL)	LANG
10	HVAC Repair Installation	LANG
11	Aircraft Maintenance/Repair	LANG
12	Airport	LANG
13	Parking Lot/Commuter Service	LANG
14	Marina	LANG
15	Amusement (mini-golf/go-carts/skating/bowling)	LANG
16	Pet Care/Grooming	LANG
17	Car Rental	LANG
18	Car Wash	LANG
19	Cemetery/Mortuary/Crematorium	LANG
20	Equipment Rental	LANG
21	Fleet Fueling Services	LANG
22	Pest Control	LANG
23	Photographer	LANG
24	Vehicle Inspections	LANG
25	Transportation	LANG
26	Upholstery	LANG
77	OPEN\DO NOT USE unless necessary	LANG
88	Refused	LANG
99	Don't know	LANG
FM050l	Which of the following types of buildings best describes this facility? Would you say...[READ] (SINGLE RESPONSE)	
1	Assembly/Light Manufacturing	LANG
2	Food Processing Plant	LANG
3	Recycling Center	LANG
4	Commercial/Industrial Bakery	LANG
5	Commercial Brewery/Winery	LANG
6	Chemical/Petrochemical Production	LANG
7	Industrial Process	LANG
8	Radio/Television/Film/Music Production	LANG

9	Energy Generation/Distribution	LANG
10	Machine Shop	LANG
11	Pharmaceutical Production/Manufacturing	LANG
12	Mail Sorting	LANG
13	Mining	LANG
77	OPEN\DO NOT USE unless necessary	LANG
88	Refused	LANG
99	Don't know	LANG
FM050m	What type of laundry facility is this? [READ] (SINGLE RESPONSE)	
1	Coin Operated	LANG
2	Commercial Laundry Facility	LANG
3	Dry Cleaners	LANG
77	OPEN\Record other building type	LANG
88	Refused	LANG
99	Don't know	LANG
FM050n	Which of the following types of buildings best describes this facility? Would you say...[READ] (SINGLE RESPONSE)	
1	Garden Style	LANG
2	Mobile Home	LANG
3	High-rise	LANG
4	Townhouse	LANG
5	Condominium	LANG
6	Apartment	LANG
7	Artists' Studio/Live Work/Loft	LANG
8	Assisted Living	LANG
77	OPEN\Record other building type	LANG
88	Refused	LANG
99	Don't know	LANG
FM050o	Which of the following types of buildings best describes this facility? Would you say...[READ] (SINGLE RESPONSE)	
1	Police station	LANG
2	Fire station	LANG
3	Post office	LANG
4	Military	LANG
5	Ambulance Service	LANG
6	Jail/Correctional facility	LANG
7	Courthouse	LANG
8	Library	LANG
9	Water/Waste Water Treatment	LANG

10	General Government (Municipal/State/Federal Agency Buildings)	LANG
11	Public Park	LANG
77	OPEN\Record other building type	LANG
88	Refused	LANG
99	Don't know	LANG
LANG	Is another language besides English used to conduct business at this facility? (SINGLE RESPONSE)	
1	Yes	OTH_LANG
2	No	CC2a
88	Refused	CC2a
99	Don't Know	CC2a
OTH_LANG	Which languages are used to conduct business at this facility? [ACCEPT MULTIPLES]	
1	Spanish	CC2a
2	Chinese	CC2a
3	Korean	CC2a
4	Vietnamese	CC2a
5	Japanese	CC2a
6	Hindi	CC2a
77	OPEN (Specify)	CC2a
88	Refused	CC2a
99	Don't know	CC2a
	CUSTOMER CHARACTERISTICS	
	Now, I'd like to ask you questions regarding your facility.	
CC2a	What is the total square footage at this facility?	
77	RECORD Square feet	CC2c
888888	Refused	CC3
999999	Don't know	CC3
	IF CC2a IN (88, 99)	
CC3	Would you say that the floor area is ...?	
1	less than 1,500 sq. ft.	CC2c
2	1,500 - 5,000 sq. ft.	CC2c
3	5,000 - 10,000 sq. ft.	CC2c
4	10,000 – 25,000 sq. ft.	CC2c
5	25,000 – 50,000 sq. ft.	CC2c
6	50,000 – 75,000 sq. ft.	CC2c

7	75,000 – 100,000 sq. ft.	CC2c
8	over 100,000 sq. ft. (ag area)	CC2c
88	Refused	CC2c
99	Don't know	CC2c
CC2c	Is the entire floor area of this facility heated or cooled?	
1	Yes	CC3a
2	No	CC2d
88	Refused	C0
99	Don't know	C0
CC2d	What percentage of the floor area is heated or cooled?	
77	Percent	CC3a
101	Refused	C0
102	Don't know	C0
	If CC2d > 0 or CC2c = 1; else skip to C0	
CC3a	Is your space heated using electricity or gas or something else?	
1	Electricity	C0
2	Gas	C0
3	Both electricity and gas	C0
4	Propane	C0
77	OPEN\Other-record	C0
88	Refused	C0
99	Don't know	C0
C0	About what percentage of your operating costs does energy account for?	
1	Less than 1 percent	CC4
2	1-2 percent	CC4
3	3-5 percent	CC4
4	6-10 percent	CC4
5	11-15 percent	CC4
6	16-20 percent	CC4
7	21-50 percent	CC4
8	Over 51 percent	CC4
88	Refused	CC4
99	Don't Know	CC4
CC4	Does your organization own, lease, or manage the facility?	
1	Own	C5
2	Lease/Rent	C5

3	Manage	C5
88	Refused	C5
99	Don't know	C5
C5	How many locations does your organization have. Is it....	
1	This facility only	CC6
2	2 to 4 locations	CC6
3	5 to 10 locations	CC6
4	11 to 25 locations	CC6
5	more than 25 locations	CC6
88	Don't know	CC6
99	Refused	CC6
CC6	How active a role does your organization take in making purchase decisions related to energy using equipment at this facility? Would you say you are…	
1	Very active – involved in all phases and have veto power	CC7
2	Somewhat active – we approve decisions and provide some input and review	CC7
3	Slightly active – we have a voice but it's not the dominant voice	CC7
4	Not active at all – we're part of a larger firm	CC7
5	Not active at all – our firm doesn't get involved in these issues	CC7
88	Refused	CC7
99	Don't know	CC7
CC7	Does your firm have a maintenance company that you use to maintain any of your building systems such as lighting, HVAC, refrigeration, or food service equipment?	
1	Yes	CC8
2	No	CC8
88	Refused	CC8
99	Don't Know	CC8
CC8	In what year was the facility built?	
7777	Year	CC11
8888	Refused	CC10
9999	Don't know	CC10
	If CC8 in (88, 99) then ask; else skip to CC11	
CC10	If don't know, would you say it was…	
1	After 2010	CC11

2	2000s	CC11
3	1990s	CC11
4	1980s	CC11
5	1970s	CC11
6	1960s	CC11
7	1950	CC11
8	Before 1950	CC11
88	Refused	CC11
99	Don't know	CC11
CC11	In what year was this facility last remodeled? [PROBE FOR BEST GUESS]	
7777	Year	CC11ab
6666	Never Remodeled	CC12a
8888	Refused	CC11a
9999	Don't know	CC11a
	Ask if CC11 in (88, 99); else skip to CC11ab If CC11 = Never remodeled, skip to CC12a	
CC11a	Would you say the last remodeling was done …. [READ RESPONSES.]	
1	Between 2010 and present	CC11ab
2	Between 2006 and end of 2009	CC11ab
3	Between 2000 and the end of 2005	CC11ab
4	During the 1990s	CC11ab
5	Before the 1990s	CC11ab
88	Refused	CC11ab
99	Don't know	CC11ab
CC11ab	When you remodeled, did you change out your building systems?	
1	Yes	CC11ac
2	No	CC11ad
88	Refused	CC11ae
99	Don't know	CC11ae
	IF CC11ab = 1, THEN ASK. ELSE SKIP TO CC11ad. IF CC11ab=88,99 THEN SKIP TO CC11ae	
CC11ac	Why did you decide to change out your building systems?	
77	RECORD VERBATIM	CC11ae
88	Refused	CC11ae
99	Don't know	CC11ae

	IF CC11ab = 2, THEN ASK. ELSE SKIP TO CC11ae	
CC11ad	Why did you decide not to change out your building systems?	
77	RECORD VERBATIM	CC11ae
88	Refused	CC11ae
99	Don't know	CC11ae
CC11ae	When you remodeled the facility, what energy systems did you change?	
1	Did not change any of them	CC11ag
77	RECORD VERBATIM	CC11af
88	Refused	CC12a
99	Don't know	CC12a
	IF CC11ae = 77, THEN ASK. ELSE SKIP TO CC11ag	
CC11af	Why did you decide to change out your energy systems?	
77	RECORD VERBATIM	CC12a
88	Refused	CC12a
99	Don't know	CC12a
	IF CC11ae = 1, THEN ASK. ELSE SKIP TO CC12a	
CC11ag	Why did you decide not to change out your energy systems?	
77	RECORD VERBATIM	CC12a
88	Refused	CC12a
99	Don't know	CC12a
CC12a	In what year was this organization established at this location?	
7777	Year	BC090
8888	Refused	CC12b
9999	Don't know	CC12b
	If CC12a in (88, 99) then ask; else skip to BC090	
CC12b	Would you say it was…	
1	After 2010	BC090
2	Between 2006 and 2010	BC090
3	Between 2000 and 2005	BC090
4	In the 1990s	BC090
5	In the 1980s	BC090
6	In the 1970s	BC090
7	In the 1960s or	BC090
8	Before 1960	BC090

88	Don't know	BC090
99	Refused	BC090
	ADDITIONAL FACILITY CHARACTERISTICS	
BC090	Has the square footage of the facility increased, decreased or remained the same since January 2016?	
1	Increase in square footage	BC100
2	Decrease in square footage	BC110
3	Stayed the same	V1
88	Refused	V1
99	Don't know	V1
	If BC090 = 1 then ask; else skip to BC110	
BC100	How many square feet were added?	
77	Square feet	BC120
88	Refused	BC120
99	Don't know	BC120
	If BC090 = 2 then ask; else skip to BC120	
BC110	By how many square feet was the facility reduced?	
77	Square feet	BC120
88	Refused	BC120
99	Don't know	BC120
	If BC090 in (1, 2) then ask; else skip to CA15	
BC120	In what year did this <%BC090> occur?	
1	2016	V1
2	2017	V1
88	Refused	V1
99	Don't know	V1

	ROLE OF CONTRACTORS	
V1	Did you use a contractor/vendor to **[IF POS=1, Did a restaurant supply firm…EXPLAIN: In the following questions, I'm going to refer to the restaurant supply firm as the vendor]** install any of the energy efficient measures that were purchased through the program?	
1	Yes	V2
2	No	AP9
88	Refused	AP9
99	Don't Know	AP9
	If V1 = 1 then ask; else skip to AP9	
V2	How did you come into contact with the contractor/vendor?	
1	They contacted you	V2b
2	You contacted them	V3
3	You had worked with them before	V2a
77	OTHER - Record	V3
88	Refused	V3
99	Don't Know	V3
	Ask if V2 = 3; else skip to V2b	
V2a	In relation to this project, did the vendor/contractor approach you about your energy efficient equipment retrofit/installation?	
1	Yes	V2b
2	No	V3
88	Refused	V3
99	Don't Know	V3
	Ask if V2 = 1 or V2a = 1; else skip to V3	
V2b	On a scale of 0 - 10, with 0 being NOT AT ALL LIKELY and 10 is VERY LIKELY, how likely is it that your organization would have installed this new equipment had the contractor/vendor not contacted you?	
1	0-10 response	V3
88	Refused	V3
99	Don't Know	V3
V3	Did the contractor/vendor tell you about or recommend the program?	
1	Yes	V4
2	No	AP9

88	Refused	AP9
99	Don't Know	AP9
	Ask if V3 = 1; else skip to AP9	
V4	Prior to coming into contact with the contractor/vendor, did your organization have plans to replace/install this equipment?	
1	Yes	V4a
2	No	V4a
88	Refused	V4a
99	Don't Know	V4a
V4a	Using the same scale of 0 - 10 as before, how likely is it that your organization would have installed the new energy efficient equipment had the contractor/vendor not recommended it?	
1	0-10 response	V4b
88	Refused	V4b
99	Don't Know	V4b
V4b	Using the same scale, how likely is it that your organization would have installed the energy efficient equipment with the same level of efficiency if the contractor/vendor had not recommended to do so?	
1	0-10 response	V40
88	Refused	V40
99	Don't Know	V40
V40	On a scale of 0 - 10, with 0 being not at all important and 10 being very important, how important was the input from the contractor you worked with in deciding which specific equipment to install?	
1	0-10 response	AP9
88	Refused	AP9
99	Don't Know	AP9
	PROGRAM AWARENESS	
	Next, I'd like to ask you about various energy efficiency programs and what influenced your program participation.	
AP9	How did you FIRST learn about <%UTILITY>'s program? [DO NOT READ ANSWERS]	

1	Bill insert	AP9a
2	Program literature	AP9a
3	Account representative	AP9a
4	Program approved vendor	AP9a
5	Program representative	AP9a
6	Utility or program website	AP9a
7	Trade publication	AP9a
8	Conference	AP9a
9	Newspaper article	AP9a
10	Word of mouth	AP9a
11	Previous experience with it	AP9a
12	Company used it at other locations	AP9a
13	Contractor	AP9a
14	Result of an audit	AP9a
15	Part of a larger expansion or remodeling effort	AP9a
16	Restaurant supply firm	AP9a
77	Other (RECORD VERBATIM)	AP9a
88	Refused	A1b
99	Don't know	A1b
	If AP9 in (1-77) then ask; else skip to A1b	
AP9a	How ELSE did you learn about <%UTILITY>'s program? [DO NOT READ LIST, ACCEPT MULTIPLES]	
1	Bill insert	N33
2	Program literature	N33
3	Account representative	N33
4	Program approved vendor	N33
5	Program representative	N33
6	Utility or program website	N33
7	Trade publication	N33
8	Conference	N33
9	Newspaper article	N33
10	Word of mouth	N33
11	Previous experience with it	N33
12	Company used it at other locations	N33
13	Contractor	N33
14	Result of an audit	N33
15	Part of a larger expansion or remodeling effort	N33
66	No other sources	N33
77	Other (RECORD VERBATIM)	N33
88	Refused	N33
99	Don't know	N33

	If AP9 = 3 or AP9A = 3 then ask; else skip to A1b	
N33	You mentioned that you have a Utility or Program Administrator Account Rep. Can you give me his or her name? !!___Do you have his/her email address? !___Do you have a phone number for him/her? !___Do you have a cell phone number for him/her?\,	
77	RECORD NAME, Phone, Email, etc.	NEXT SECTION (MEASURE BATTERY)
88	Refused	NEXT SECTION (MEASURE BATTERY)
99	Don't know	NEXT SECTION (MEASURE BATTERY)

	REFRIGERATION CASE LED LIGHTING EQUIPMENT	
	Ask if REFLEDLIGHTING = 1; else skip to B99	
Comment	One way that organizations like yours can reduce their energy use is to install more energy efficient lighting equipment. I would like to ask you about the refrigeration case LED lighting you recently installed as part of your participation in <%UTILITY>'s program.	LED99
	CONTINUE IF REFLEDLIGHTING = 1	
LED99	Our records indicate that your organization installed REFRIGERATION CASE LED LIGHTING EQUIPMENT through the program. It is described as <%REFLEDLIGHTING_MEASURE>. Is this correct?	
1	Yes	LED100
2	No	DISPLAY
88	Refused	DISPLAY
99	Don't know	DISPLAY
	Ask if LED99 = 2, 88, 99; else skip to LED100.	
DISPLAY	We cannot continue this study unless we can speak to someone at your organization that is familiar with the refrigeration case LED lighting equipment that was installed through the program. Is there another person we can speak to?	Go to next person and loop back to LED99

	Ask if LED99 = 1; else T&T	
LED100	What types and sizes [IF NEEDED: bulb lengths] of Refrigeration Case LED lighting were installed as part of this installation?	<$2>
77	Other (PLEASE SPECIFY)	LED101C ($4)
88	Refused	LED101C (_4)
99	Don't know	LED101C (_4)
	ASK IF C5 DOES NOT EQUAL 1; ELSE SKIP TO LED101D <_5>	
LED101C (_4)	Were any of the program provided <REFLEDLIGHTING_MEASURE> placed/installed at another facility? If so, what percentage would you estimate?	
1	Yes, #record percentage	LED101D <_5>
2	No	LED101D <_5>
88	Refused	LED101D <_5>
99	Don't know	LED101D <_5>
LED101D (_5)	What type of lighting equipment was removed and replaced when you installed <REFLEDLIGHTING_MEASURE> through the program?	
1	T12 Linear Fluorescent <= 5 ft Unit	LED101F <_7>
2	T12 Linear Fluorescent > 5 ft Unit	LED101F <_7>
3	T8 Linear Fluorescent <= 5 ft Unit	LED101F <_7>
4	T8 Linear Fluorescent > 5 ft Unit	LED101F <_7>
5	Premium Tier LED Case Lighting <= 5 ft Unit	LED101E <_6>
6	Premium Tier LED Case Lighting > 5 ft Unit	LED101F <_7>
66	Did not replace anything - new equipment	LED90
77	Other (PLEASE SPECIFY)	LED101F <_7>
88	Refused	LED101F <_7>
99	Don't know	LED101F <_7>
	Ask if LED101D <_5> DOES NOT EQUAL 66; else skip to LED90	
LED101F (_7)	Approximately how old was the Refrigerator Case lighting that was removed and replaced with <REFLEDLIGHTING_MEASURE>? Would you say...	
1	Less than 5 years old	LED101G <_8>
2	Between 5 and 10 years old	LED101G <_8>
3	Between 10 and 15 years old	LED101G <_8>
4	More than 15 years old	LED101G <_8>
88	Refused	LED101G <_8>
99	Don't know	LED101G <_8>

LED101G (_8)	How would you describe the condition of the removed Refrigerator Case lighting equipment? Would you say they were in…	
1	Poor condition	LED101H <_9>
2	Fair condition	LED101H <_9>
3	Good condition	LED101H <_9>
88	Refused	LED101H <_9>
99	Don't know	LED101H <_9>
LED101H (_9)	Approximately what percentage of the Refrigerator Case lighting that was removed and replaced was broken or not working prior to installing <REFLEDLIGHTING_MEASURE>?	
%	Percent	LED101I (_10)
88	Refused	LED101I (_10)
99	Don't know	LED101I (_10)
LED101I (_10)	Approximately how old are the Refrigerator Cases with the lighting that was removed and replaced with <_2>? Would you say...	
1	Less than 5 years old	LED101J (_11)
2	Between 5 and 10 years old	LED101J (_11)
3	Between 10 and 15 years old	LED101J (_11)
4	More than 15 years old	LED101J (_11)
88	Refused	LED101J (_11)
99	Don't know	LED101J ($11)
LED101J ($11)	How many years do you anticipate are left in the refrigerated case itself until you will replace the entire case?	
# Yrs	RECORD Number of years left	OP1
88	Refused	OP1
99	Don't know	OP1

Operating Schedule for Refrigeration Case Lighting		
DISPLAY	The next few questions are to help us get a full understanding of the hours of operation for the refrigeration display case lighting.	
OP1	Does the refrigeration display case lighting operate 24 hours a day, 7 days a week?	
1	Yes	OP5
2	No	OP2
88	Refused	OP5
99	Don't know	OP5
OP2	Are there certain days of the week when the refrigeration display case lighting operates less than 24 hours?	
1	Yes	OP3
2	No	OP5
88	Refused	OP5
99	Don't know	OP5
OP3	Which days are they [IF NEEDED: when the refrigeration display case lighting operates less than 24 hours]?	
1	Monday	OP4
2	Tuesday	OP4
3	Wednesday	OP4
4	Thursday	OP4
5	Friday	OP4
6	Saturday	OP4
7	Sunday	OP4
88	Refused	OP5
99	Don't know	OP5
[FOR EACH DAY MENTIONED IN OP3, ASK]		
OP4	What hours does the refrigeration display case lighting operate on those days, in terms of the starting and ending times?	
1	Monday starting/ending hours [RECORD]	OP5
2	Tuesday starting/ending hours [RECORD]	OP5
3	Wednesday starting/ending hours [RECORD]	OP5
4	Thursday starting/ending hours [RECORD]	OP5
5	Friday starting/ending hours [RECORD]	OP5
6	Saturday starting/ending hours [RECORD]	OP5
7	Sunday starting/ending hours [RECORD]	OP5

88	Refused	OP5
99	Don't know	OP5
OP5	Does the refrigeration display case lighting schedule vary by the type of product stored in the refrigerated cases?	
1	Yes	OP5a
2	No	OP6
88	Refused	OP6
OP5a	Please explain [IF NEEDED: how the lighting schedule varies by the type of product stored in the refrigerated cases].	
77	RECORD VERBATIM	OP6
88	Refused	OP6
99	Don't know	OP6
OP6	Do you lower the level of illumination in the refrigeration display cases at certain times?	
1	Yes	OP6a
2	No	SP1
88	Refused	SP1
OP6a	What approach do you use to lower the level of illumination in the refrigeration display cases at certain times? [IF NEEDED: what technology do you use?]	
77	RECORD VERBATIM	SP1
88	Refused	SP1
99	Don't know	SP1
LEDs as Standard Practice		
SP1	Do you consider LED refrigerator case lighting to be standard practice for firms like yours? [IF NEEDED: by this, we mean that the majority of firms like yours install LED refrigerator case lighting on a routine basis either at the time of equipment replacement or on an accelerated schedule.}	
1	Yes	SP1a
2	No	SP1b
88	Refused	NTG BATTERY
SP1a	Why do you consider LED refrigerator case lighting to be standard practice for firms like yours?	
77	RECORD VERBATIM	NTG BATTERY
88	Refused	NTG BATTERY

99	Don't know	NTG BATTERY
SP1b	What do you consider to be standard practice when replacing lighting in refrigerator cases?	
77	RECORD VERBATIM	NTG BATTERY
88	Refused	NTG BATTERY
99	Don't know	NTG BATTERY
NTGCHECK	**GO TO NTG BATTERY**	

	PROCESS BOILERS	
	Ask if PROCESSBOILER=1; else skip to FS99	
DISPLAY	In this next section we will be discussing the GAS BOILERS present in your facility.	
B99	Our records indicate that your organization installed PROCESS BOILER EQUIPMENT through the program. It is described as <%PROCESS_BOILER_MEASURE> . Is this correct?	
1	Yes	B100
2	No	DISPLAY
88	Refused	DISPLAY
99	Don't know	DISPLAY
	Ask if B99 in (2-99); else skip to B100.	
DISPLAY	We cannot continue this study unless we can speak to someone at your organization that is familiar with the PROCESS BOILER equipment that was installed through the program. Is there another person we can speak to?	Go to next person and loop back to B99
	Ask if B99 = 1; else T&T	
B100	Is the <%PROCESS_BOILER_MEASURE> a new installation, or did it replace an existing boiler?	
1	New installation	B100
2	Replaced existing equipment	B101A
88	Refused	B101A
99	Don't know	B101A
	Ask if B100 <> 1; else skip to BOP1	

B101A	Approximately how old was the <%PROCESS_BOILER_MEASURE> that was removed and replaced? Would you say...	
1	Less than 5 years old	B101B
2	Between 5 and 10 years old	B101B
3	Between 10 and 15 years old	B101B
4	More than 15 years old	B101B
88	Refused	B101B
99	Don't know	B101B
B101B	How would you describe the removed equipment's condition? Would you say it was in…	
1	Poor condition	DISPLAY
2	Fair condition	DISPLAY
3	Good condition	DISPLAY
88	Refused	DISPLAY
99	Don't know	DISPLAY
Operating Schedule for Boilers		
DISPLAY	The next few questions are to help us get a full understanding of the schedule of operation for boiler loads	
BOP1	Does the boiler operate 24 hours a day, 7 days a week?	
1	Yes	BOP5
2	No	BOP2
88	Refused	BOP5
99	Don't know	BOP5
BOP2	Are there certain days of the week when the boiler operates less than 24 hours?	
1	Yes	BOP2a
2	No	BOP5
88	Refused	BOP5
99	Don't know	BOP5
BOP2a	Which days are they [IF NEEDED: when the boiler operates less than 24 hours]?	
1	Monday	BOP2b
2	Tuesday	BOP2b
3	Wednesday	BOP2b
4	Thursday	BOP2b
5	Friday	BOP2b

6	Saturday	BOP2b
7	Sunday	BOP2b
88	Refused	BOP3
99	Don't know	BOP3
[FOR EACH DAY MENTIONED IN BOP2a, ASK]		
BOP2b	What hours does the boiler operate on those days, in terms of the starting and ending times?	
1	Monday starting/ending hours [RECORD]	BOP3
2	Tuesday starting/ending hours [RECORD]	BOP3
3	Wednesday starting/ending hours [RECORD]	BOP3
4	Thursday starting/ending hours [RECORD]	BOP3
5	Friday starting/ending hours [RECORD]	BOP3
6	Saturday starting/ending hours [RECORD]	BOP3
7	Sunday starting/ending hours [RECORD]	BOP3
88	Refused	BOP3
99	Don't know	BOP3
BOP3	Does the boiler operation vary by season of the year?	
1	Yes	BOP3a
2	No	BOP4
88	Refused	BOP4
99	Don't know	BOP4
BOP3a	Which seasons does the boiler operate during?	
1	Winter	BOP3b
2	Fall	BOP3b
3	Spring	BOP3b
4	Summer	BOP3b
77	Other [RECORD VERBATIM]	BOP3b
88	Refused	BOP4
99	Don't know	BOP4
[FOR EACH SEASON MENTIONED IN BOP3a, ASK]		
BOP3b	What percentage of the time does the boiler operate during those seasons?	
1	Winter percentage of time [RECORD]	BOP4
2	Fall percentage of time [RECORD]	BOP4
3	Spring percentage of time [RECORD]	BOP4
4	Summer percentage of time [RECORD]	BOP4
88	Refused	BOP4
99	Don't know	BOP4

BOP4	Is the <%PROCESS_BOILER_MEASURE> used rarely, moderately, most of the time, or always during your facility's operating hours?	
1	Rarely	BLOAD1
2	Moderately	BLOAD1
3	Most of the time	BLOAD1
4	All of the time	BLOAD1
77	Other [RECORD VERBATIM]	BLOAD1
88	Refused	BLOAD1
99	Don't know	BLOAD1
Ask if PROCESSBOILER=1; else skip to NTG BATTERY		
BLOAD1	What types of loads is the hot water from the boiler used for?	
77	RECORD VERBATIM	BLOAD1a
88	Refused	NTG BATTERY
99	Don't know	NTG BATTERY
[FOR EACH TYPE OF LOAD MENTIONED IN BLOAD1, ASK]		
BLOAD1a	What is the volume or output of that load? [IF NEEDED: for example, pounds of laundry washed and dried per week]	
1	Mention #1 quantity [RECORD VERBATIM]	NTG BATTERY
2	Mention #2 quantity [RECORD VERBATIM]	NTG BATTERY
3	Mention #3 quantity [RECORD VERBATIM]	NTG BATTERY
4	Mention #4 quantity [RECORD VERBATIM]	NTG BATTERY
88	Refused	NTG BATTERY
99	Don't know	NTG BATTERY
NTGCHECK	**GO TO NTG BATTERY**	

	FOOD SERVICE	
	Ask if GASFRYER=1; else skip to NTG BATTERY	
DISPLAY	In this next section we will be discussing the FOOD SERVICE equipment present in your facility.	
FS99	Our records indicate that your organization installed FOOD SERVICE EQUIPMENT through the program. It is described as <%_FOOD_SERVICE_MEASUREx>. Is this correct? [READ: In future questions, I will be referring to this as your new gas fryer(s).]	

1	Yes	FS100
2	No	DISPLAY
88	Refused	DISPLAY
99	Don't know	DISPLAY
	Ask if FS99 in (2-99); else skip to FS100.	
DISPLAY	We cannot continue this study unless we can speak to someone at your organization that is familiar with the <%_FOOD_SERVICE_MEASURE1> [IF APPLICABLE: <%_FOOD_SERVICE_MEASURE2>, <%_FOOD_SERVICE_MEASURE3>] that was installed through the program. Is there another person we can speak to?	Go to next person and loop back to FS99
	Ask if FS99 = 1; else T&T	
FS100	Did the new gas fryer replace an existing fryer?	
1	New installation	FS100
2	Replaced existing equipment	FS101A
88	Refused	FS101A
99	Don't know	FS101A
	Ask if FS100 = 2, 88, 99; else IF FS100=1, skip to FSOP1	
FS101A	Approximately how old was the gas fryer that was removed and replaced? Would you say...	
1	Less than 5 years old	FS101B
2	Between 5 and 10 years old	FS101B
3	Between 10 and 15 years old	FS101B
4	More than 15 years old	FS101B
88	Refused	FS101B
99	Don't know	FS101B
FS101B	How would you describe the removed equipment's condition? Would you say it was in…	
1	Poor condition	DISPLAY
2	Fair condition	DISPLAY
3	Good condition	DISPLAY
88	Refused	DISPLAY
99	Don't know	DISPLAY

Operating Schedule for Kitchen		
DISPLAY	The next several questions are to help us get a full understanding of the schedule of operation for the kitchen [IF NEEDED: where the food service equipment is used]	
FSOP1	Does the kitchen operate 7 days a week?	
1	Yes	FSOP2
2	No	FSOP1a
88	Refused	FSOP3
99	Don't know	FSOP3
FSOP1a	Which days of the week is the kitchen closed?	
1	Monday	FSOP2
2	Tuesday	FSOP2
3	Wednesday	FSOP2
4	Thursday	FSOP2
5	Friday	FSOP2
6	Saturday	FSOP2
7	Sunday	FSOP2
88	Refused	FSOP2
99	Don't know	FSOP2
[FOR EACH DAY NOT MENTIONED IN FSOP1a, ASK]		
FSOP2	What hours does the kitchen operate on those days when it is open, in terms of the starting and ending times?	
1	Monday starting/ending hours [RECORD]	FSOP3
2	Tuesday starting/ending hours [RECORD]	FSOP3
3	Wednesday starting/ending hours [RECORD]	FSOP3
4	Thursday starting/ending hours [RECORD]	FSOP3
5	Friday starting/ending hours [RECORD]	FSOP3
6	Saturday starting/ending hours [RECORD]	FSOP3
7	Sunday starting/ending hours [RECORD]	FSOP3
8	All days of the week starting/ending hours [RECORD]	FSOP3
88	Refused	FSOP3
99	Don't know	FSOP3
FSOP3	Which meals are prepared in the kitchen on weekdays and separately, on weekends? [IF NEEDED: in terms of breakfast, lunch, dinner, brunch, late night meals]	
1	Weekday meals [RECORD VERBATIM]	FSOP4
2	Weekend meals [RECORD VERBATIM]	FSOP4
88	Refused	FSOP4

99	Don't know	FSOP4
FSOP4	Approximately how many meals per day are prepared in the kitchen on weekdays and separately, on weekends?	
1	Weekday meals [RECORD VERBATIM]	FSOP5
2	Weekend meals [RECORD VERBATIM]	FSOP5
88	Refused	FSOP5
99	Don't know	FSOP5
FSOP5	What are the busiest times of the day for meal preparation in the kitchen on weekdays and separately, on weekends?	
1	Weekday busiest times [RECORD Start/End times]	FSM1
2	Weekend busiest times [RECORD Start/End times]	FSM1
88	Refused	FSM1
99	Don't know	FSM1
Operating Schedule for <%_FOOD_SERVICE_MEASURE>		
DISPLAY	The next several questions are to help us get a full understanding of the schedule of operation for the gas fryer that you installed through the program.	
FSM1	Is the gas fryer used continuously or only turned on as needed?	
1	Used continuously	FSM1a
2	Turned on as needed	FSM1a
77	Other [RECORD VERBATIM]	FSM1a
88	Refused	FSM1a
99	Don't know	FSM1a
IF FSM1=1, 2 or 3, THEN ASK. ELSE SKIP TO NTG BATTERY		
FSM1a	Approximately what percent of the time is food being cooked on the gas fryer?	
%	RECORD PERCENTAGE	FSM1aa
88	Refused	FSM1aa
99	Don't know	FSM1aa
FSM1aa	Does the frequency, that is percentage, of use [IF NEEDED: of the gas fryer] vary significantly by weekdays versus weekends?	
1	Yes	FSM1b
2	No	FSM2

88	Refused	FSM2
99	Don't know	FSM2
FSM1b	Approximately what percentage of the time is the gas fryer used during weekdays and separately, on weekends?	
1	Weekdays [RECORD PERCENTAGE]	FSM2
2	Weekend meals [RECORD VERBATIM]	FSM2
88	Refused	FSM2
99	Don't know	FSM2
FSM2	What specific factors influence the frequency with which the gas fryer is used?	
1	Coincident with core kitchen hours	NTG BATTERY
2	Certain menu items in demand (e.g., fried foods)	NTG BATTERY
3	Pre-cooking in anticipation of meal orders	NTG BATTERY
4	High volume of business in general	NTG BATTERY
77	Other [RECORD VERBATIM]	NTG BATTERY
88	Refused	NTG BATTERY
99	Don't know	NTG BATTERY
NTGCHECK	**GO TO NTG BATTERY**	

	NET TO GROSS	

IF MULTIPLE = 1, THEN ASK. ELSE A1c

A1b. Our records show that your organization installed more than one MEASURE at <%ADDRESS> through the <%UTILITY>'s <%PROGRAM> Program. They are … <%QTY_1> <%MEASURE1>, <%QTY_2> <%MEASURE2>, <%QTY_3> <%MEASURE3>. Was there a single decision making process for the installation of this equipment, or was there a separate decision making process for each type of equipment?

1	Single decision making process	A1c.
2	Separate decision making process for each type of equipment	A1c.
88	Refused	A1c.
99	Don't know	A1c.

IF MULTADD = 1, THEN ASK. ELSE AA3

A1c. Our records also show that your organization installed the same MEASURE at other addresses. Applications were submitted for the following addresses: <%ADDRESS1>, <%ADDRESS2>, <%ADDRESS3> … <%ADDRESS20>. Was the decision making

process the same for all of these addresses or was it different at each address?

1	Same decision making process for all addresses	AA3
2	Different decision making process for all addresses	AA3
88	Refused	AA3
99	Don't know	AA3
DISPLAY	For the sake of expediency, during this next battery we will be referring to the ..... program as THE PROGRAM and we will be referring to the installation of ...<%NTGMEASURE>... as THE MEASURE.	
AA3	There are usually a number of reasons why an organization like yours decides to participate in energy efficiency programs like this one. In your own words, can you tell me why you decided to participate in this program?	
1	To replace old or outdated equipment	AA3a
2	As part of a planned remodeling, build-out, or expansion	N2
3	To gain more control over how the equipment was used	N2
4	Maintenance downtime/associated expenses for old equipment were too high	A3a
5	Had process problems and were seeking a solution	N2
6	To improve equipment performance	N2
7	To improve production as a result of the change in equipment	N2
8	To comply with codes set by regulatory agencies	N2
9	To improve visibility/plant safety	N2
10	To comply with company policies regarding regular equipment retrofits or remodeling	A3a
11	To get a rebate from the program	N2
12	To protect the environment	N2
13	To reduce energy costs	N2
14	To reduce energy use/power outages	N2
15	To update to the latest technology	N2
16	To improve the comfort level of the facility	N2
77	RECORD VERBATIM	N2
88	Don't know	N2
99	Refused	N2
IF A3=1, 4 or 10 and PROCESSBOILER =1 OR FOODSERVICE = 1, THEN ASK. ELSE N2		
AA3a	Had the equipment that you replaced reached the end of its useful life?	
1	Yes	N2

2	No	N2
88	Refused	N2
99	Don't know	N2
N2	Did your organization make the decision to install this new equipment before or, after, or at the same time as you became aware of that rebates [IF NEEDED: to reduce the cost of the measure] were available through the PROGRAM?	
1	Before	N3a
2	After	N3a
3	Same time	N3a
88	Refused	N3a
99	Don't know	N3a
DISPLAY	Next, I'm going to ask you to rate the importance of the program as well as other factors that might have influenced your decision to install this equipment through the program. Using a scale of 0 to 10 where 0 means not at all important and 10 means extremely important, how would you rate the importance of...	
N3a	The age or condition of the old equipment	
#	Record 0 to 10 score (_____)	N3aa
88	Refused	N3b
99	Don't know	N3b
	IF N3a > 5 and NTG_TYPE >= 2 THEN ASK	
N3aa	How, specifically, did this enter into your decision to install/delamp this equipment?	
77	RECORD VERBATIM	N3b
88	Don't know	N3b
99	Refused	N3b
N3b	Availability of the PROGRAM rebate [IF NEEDED: to reduce the cost of the measure]	
#	Record 0 to 10 score (_____)	N3bb
88	Refused	N3c
99	Don't know	N3c
	IF N3b > 7 AND NTG_TYPE >= 2, THEN ASK	
N3bb	Why do you give it this rating?	
77	Record VERBATIM	N3c
88	Refused	N3c
99	Don't know	N3c

	IF A1B(1)|ID0(1) THEN ASK; ELSE SKIP TO N3d	
N3c	Please rate the degree of importance of information provided through...A1B(1)|<ID0(1)/The Facility or System AUDIT/>	
#	Record 0 to 10 score (_____)	N3cc
88	Refused	N3d
99	Don't know	N3d
	IF N3c > 7 and NTG_TYPE >= 2, THEN ASK	
N3cc	Why do you give it this rating?	
77	Record VERBATIM	N3d
88	Refused	N3d
99	Don't know	N3d
	If V1 = 1 THEN ASK; ELSE SKIP TO N3e	
N3d	Recommendation from an equipment vendor that sold you the equipment and/or installed it for you **[VENDOR_1]**	
#	Record 0 to 10 score (_____)	N3e
88	Refused	N3e
99	Don't know	N3e
N3e	Your previous experience with similar types of energy efficient projects?	
#	Record 0 to 10 score (_____)	N3f
88	Refused	N3f
99	Don't know	N3f
N3f	Your previous experience with <%UTILITY>'s program or a similar utility program?	
#	Record 0 to 10 score (_____)	N3g
88	Don't know	N3g
99	Refused	N3g
	NTG_TYPE >= 3 THEN ASK, ELSE N3h	
N3g	Information from the Program, Utility, or Program Administrator training course?	
#	Record 0 to 10 score (_____)	N3gg
88	Refused	N3h
99	Don't know	N3h
	IF N3g > 5, THEN ASK, ELSE N3h	
N3gg	What type of information was provided during the training?	
77	Record VERBATIM	N3ggg

88	Refused	N3h
99	Don't know	N3h
N3ggg	How, specifically, did this enter into your decision to install/delamp this equipment?	
77	RECORD VERBATIM	N3h
88	Don't know	N3h
99	Refused	N3h
N3h	Information from the Program, Utility, or Program Administrator Marketing materials?	
#	Record 0 to 10 score (_____)	N3hh
88	Refused	N3j
99	Don't know	N3j
	IF N3h > 5 and NTG_TYPE >= 2, THEN ASK	
N3hh	What type of information was provided that pertained to the project?	
77	Record VERBATIM	N3hhh
88	Refused	N3j
99	Don't know	N3j
	IF N3hh = 77, THEN ASK	
N3hhh	How, specifically, did this enter into your decision to install/delamp this energy efficient equipment?	
77	RECORD VERBATIM	N3j
88	Don't know	N3j
99	Refused	N3j
	IF NTG_TYPE >= 2	
N3j	Standard practice in your business/industry	
#	Record 0 to 10 score (_____)	N3k
88	Refused	N3k
99	Don't know	N3k
	If AP9 = 3 or AP9a = 3 THEN ASK; ELSE SKIP TO N3m	
N3l	Endorsement or recommendation by your account rep?	
#	Record 0 to 10 score (_____)	N3ll
88	Refused	N3m
99	Don't know	N3m
	IF N3l > 5 & NTG_TYPE >= 2 THEN ASK	
N3ll	What did they recommend?	

77	Record VERBATIM	N3lll
88	Refused	N3m
99	Don't know	N3m
	IF N3LL(77)	
N3lll	How specifically did this enter into your decision to install this project using energy efficient equipment?	
77	RECORD VERBATIM	N3m
88	Don't know	N3m
99	Refused	N3m
	IF NTG_TYPE >= 2, ASK	
N3m	Corporate policy or guidelines	
#	Record 0 to 10 score (_____)	N3mm
88	Refused	N3n
99	Don't know	N3n
	IF N3m > 5, THEN ASK	
N3mm	How, specifically, did this enter into your decision to install/delamp this equipment?	
77	RECORD VERBATIM	N3n
88	Don't know	N3n
99	Refused	N3n
N3n	Payback or return on investment of installing this equipment	
#	Record 0 to 10 score (_____)	N3o
88	Refused	N3o
99	Don't know	N3o
N3o	Improved product quality	
#	Record 0 to 10 score (_____)	N3oo
88	Refused	N3p
99	Don't know	N3p
	IF N3o > 5, THEN ASK	
N3oo	How, specifically, did this enter into your decision to install/delamp this equipment?	
77	RECORD VERBATIM	N3p
88	Don't know	N3p
99	Refused	N3p
	IF FM050 = 12 AND NTG_TYPE = 4, THEN ASK, ELSE SKIP TO N3r	

N3p	Compliance with state or federal regulations such as Title 24, air quality, OSHA, or FDA regulations	
#	Record 0 to 10 score (_____)	N3pp
88	Refused	N3r
99	Don't know	N3r
	IF N3p > 5, THEN ASK	
N3pp	How, specifically, did this enter into your decision to upgrade to energy efficient equipment?	
77	RECORD VERBATIM	N3r
88	Don't know	N3r
99	Refused	N3r
	ASK IF NTG_TYPE >= 3	
N3r	Compliance with your organization's normal remodeling or equipment replacement practices?	
#	Record 0 to 10 score (_____)	N3rrr
88	Refused	N3s
99	Don't know	N3s
	IF AA3(2|10)&N3R(6||10);	
N3RRR	According to your organization's remodeling and equipment replacement policies, how often are you supposed to replace this type of equipment? [IF NEEDED: in terms of the number of years]	
# yrs	Record Number of Years	N3rr
88	Refused	N3rr
99	Don't know	N3rr
	IF N3r > 5, THEN ASK	
N3rr	How, specifically, did this enter into your decision to install/delamp this equipment?	
77	RECORD VERBATIM	N3s.
88	Don't know	N3s.
99	Refused	N3s.
N3s	Were there any other factors we haven't discussed that were influential in your decision to install/delamp this MEASURE?	
1	Nothing else influential	CC1
77	Record verbatim	N3ss
88	Refused	CC1
99	Don't know	CC1
	ASK IF N3s = 77	

N3ss	Using the same zero to 10 scale, how would you rate the influence of this factor?	
#	Record 0 to 10 score (_____)	CC1
88	Refused	CC1
99	Don't know	CC1
	CONSISTENCY CHECKS ON N3p, N3q and N3r	
	If NTG_TYPE = 4	
	IF AA3 = 8, AND N3p < 4, THEN ASK	
CC1	You indicated earlier that compliance with codes or regulatory policies was one of the reasons you did the project. However, just now you scored the importance of compliance with state or federal regulations or standards such as Title 24, air quality, OSHA, or FDA regulations in your decision making fairly low, why is that?	
77	RECORD VERBATIM	CC1a
88	Don't know	CC1a
99	Refused	CC1a
	IF AA3 ^= 8, and N3p > 7, THEN ASK	
CC1a	You indicated earlier that compliance with codes or regulatory policies was not one of the primary reasons you did the project. However, just now you scored the importance of compliance with state or federal regulations or standards such as Title 24,air quality, OSHA, or FDA regulations in your decision making fairly high, why is that?	
77	RECORD VERBATIM	CC3
88	Don't know	CC3
99	Refused	CC3
	IF AA3 = 2 or 10, AND N3r < 4, THEN ASK	
NCC3	You indicated earlier that a regularly scheduled retrofit was one of the reasons you did the project. However, just now you scored the importance of compliance with your company's regularly scheduled retrofit or equipment replacement in your decision making fairly low, why is that?	
77	RECORD VERBATIM	CC3a
88	Don't know	CC3a
99	Refused	CC3a
	IF AA3 ^= 2 and AA3 ^= 9 and AA3^=10 AND N3r > 7 THEN ASK	

NCC3a	You indicated earlier that a regularly scheduled retrofit was NOT one of the reasons you did the project. However, just now you scored the importance of compliance with your company's regularly scheduled retrofit or equipment replacement in your decision making fairly high, why is that?	
77	RECORD VERBATIM	P1
88	Don't know	P1
99	Refused	P1
	PAYBACK BATTERY	
	If INCENT <> 100 AND NTG_TYPE >= 2, THEN ASK; ELSE SKIP TO N41	
P1	What financial calculations does your company typically make before proceeding with the installation of energy efficient equipment like you installed through the program?	
1	Payback	P2A
2	Return on investment	P2B
77	Record VERBATIM	P3
88	Don't know	P3
99	Refused	P3
	If P1 = 1 THEN ASK; ELSE SKIP TO P2B	
P2A	What is your threshold in terms of the payback or return on investment your company uses before deciding to proceed with installing energy efficient equipment like you installed through the program? Is it…	
1	0 to 6 months	P3
2	6 months to 1 year	P3
3	1 to 2 years	P3
4	2 to 3 years	P3
5	3 to 5 years	P3
6	Over 5 years	P3
88	Don't know	P3
99	Refused	P3
	IF P1 = 2 THEN ASK	
P2B	What is your ROI?	
1	Record ROI____;	P3
P3	Did the rebate move your energy efficient equipment project within this acceptable range?	
1	Yes	P4
2	No	P3a

88	Don't know	P3a
99	Refused	P3a
	If P3 = 1 THEN ASK; ELSE SKIP TO P3A	
P4	On a scale of 0 to 10, with a zero meaning NOT AT ALL IMPORTANT and 10 meaning Very Important, how important in your decision was it that the project was in the acceptable range?	
#	Record 0 to 10 score (_____)	P3a
88	Refused	P3a
99	Don't know	P3a
	CONSISTENCY CHECKS ON N3b and P3	
	IF P3 = 1, AND N3b < 5, THEN ASK	
P3a	The rebate seemed to make the difference between meeting your financial criteria and not meeting them, but you are saying that the rebate didn't have much effect on your decision, why is that?	
77	Record VERBATIM	P3e
88	Don't know	P3e
99	Refused	P3e
	IF P3 = 2, AND N3b > 5, THEN ASK	
P3e	The rebate didn't cause the installation of energy efficient equipment to meet your company's financial criteria, but you said that the rebate had an impact on the decision to install this energy efficient equipment. Why did it have an impact?	
77	Record VERBATIM	N41
88	Don't know	N41
99	Refused	N41
	ASK ALL.	
DISPLAY	Next, with regard to your decision to implement this energy efficient MEASURE instead of either less energy efficient or standard efficiency equipment, I would like you to rate the importance of the PROGRAM as opposed to other Non-program factors that may have influenced your decision such as...(SCAN BELOW AND READ TO THEM THOSE FACTORS WITH RATINGS OF 8 OR HIGHER THAT INFLUENCED THEIR DECISION)	
	(READ ITEMS WHERE THEY GAVE A RATING OF 8 or higher)	
	Program-related factors	
	<%N3B> Availability of the PROGRAM rebate	...@[%N3B>@
	<%N3G> Information from the Program, Utility, or Program Administrator training course?	...@[%N3G>@

	<%N3H> Information from the Program, Utility, or Program Administrator Marketing materials?	...@[%N3H>@
	<%N3L> Endorsement or recommendation by your account rep?	...@[%N3L>@
	Non-Program factors	
	<%N3A>The age or condition of the old equipment	...@[%N3A>@
	<%N3C>Information provided through the Facility or System AUDIT/>	...@[%N3C>@
	<%N3D> Equipment Vendor recommendation	...@[%N3D>@
	<%N3E> Previous experience with this measure	...@[%N3E>@
	<%N3F> Previous experience with this program	...@[%N3F>@
	<%N3J> Standard practice in your business/industry	...@[%N3J>@
	<%N3M> Corporate policy or guidelines	...@[%N3M>@
	<%N3N> Payback on investment.	...@[%N3N>@
	<%N3O> To improve production as a result of lighting,	...@[%N3O>@
	<%N3P> Compliance with state or federal regulations or standards such as Title 24, air quality, OSHA, or FDA regulations	...@[%N3P>@
	<%N3R> Compliance with normal maintenance or retrocommissioning policies or your companies regularly scheduled retrofit or lighting replacement	...@[%N3R>@
	IF N3B<8 and N3G<8 AND N3H<8 and N3I<8, THEN READ:	
	Just now, you provided low to medium scores for the importance of several program-related factors in your decision making.	
	IF N3A<8 and N3C<8 and N3D<8 and N3E<8 AND N3F<8 and N3J<8 and N3J<8 and N3M<8 AND N3N<8 AND N3O<8 and N3P<8 and N3R<8 THEN READ:	
	Just now, you provided low to medium scores for the importance of several non-program related factors in your decision making.	
	IF N3B<8 and N3G<8 AND N3H<8 and N3I<8 and N3A<8 and N3C<8 and N3D<8 and N3E<8 AND N3F<8 and N3J<8 and N3J<8 and N3M<8 AND N3N<8 AND N3O<8 and N3P<8 and N3R<8, THEN READ:	
	Just now, you provided low to medium scores for the importance of all of the program and non-program related factors in your decision making.	

DISPLAY	If you were given 10 points to award in total, how many points would you give to the importance of the program and how many points would you give to these other non-program factors?	
N41	How many of the ten points would you give to the importance of the PROGRAM in your decision?	
#	Record 0 to 10 score (_____)	N42
88	Refused	N42
99	Don't know	N42
N42	and how many points would you give to all of these other non-program factors?	
#	Record 0 to 10 score (_____)	N41P
88	Refused	N41P
99	Don't know	N41P
	If N41 NOT EQUAL TO 88 OR 99 and N42 NOT EQUAL TO 88 OR 99 , compute N41 + N42. IF N41+N42 DOES NOT EQUAL 10, display:	
	__We want these two sets of numbers to equal 10.	
	<%N41> for Program influence and	
	<%N42> for Non Program factors	
DISPLAY	Next, I would like for you to consider the importance of the PROGRAM in your decision to install your equipment ***at the time you did*** rather than waiting to install new equipment sometime in the future, regardless of the actual efficiency of the equipment you selected. Please rate the importance of the program on this timing decision as opposed to other non-program factors that may have influenced your decision.	
	If Needed - else skip…	
	If you were given 10 points to award in total, how many points would you give to the importance of the program and how many points would you give to these other non-program factors in your decision to install your equipment **at the time you did** rather than waiting to install new equipment sometime in the future.	
N41P	How many of the ten points would you give to the importance of the PROGRAM in your decision TO INSTALL YOUR EQUIPMENT AT THE TIME YOU DID?	
#	Record 0 to 10 score (_____)	N42P
88	Refused	N42P

99	Don't know	N42P
N42P	and how many points would you give to all of these other non-program factors?	
#	Record 0 to 10 score (_____)	REPLACE
88	Refused	REPLACE
99	Don't know	REPLACE
	If N41 NOT EQUAL TO 88 OR 99 and N42 NOT EQUAL TO 88 OR 99 , compute N41 + N42. IF N41+N42 DOES NOT EQUAL 10, display:	
	__We want these two sets of numbers to equal 10.	
	<%N41P> for Program influence and	
	<%N42P> for Non Program factors	
	ASK ALL.	
REPLACE	Was the installation of this measure....<%NTGMEASURE> ...a replacement of existing equipment or was it additional equipment you installed in your facility?	
1	Replace/Modification/Retrofit	DISPLAY
2	Add-on	DISPLAY
88	Refused	N6
99	Don't know	N6
DISPLAY	Now I would like you to think about the action you would have taken with regard to the installation of this equipment if the program had not been available.	
	IF REPLACE =1 THEN ASK; ELSE SKIP TO N5aa	
N5	Using a likelihood scale from 0 to 10, where 0 is not at all likely and 10 is extremely likely, if THE PROGRAM had NOT BEEN AVAILABLE, what is the likelihood that you would have installed exactly the same program-qualifying energy efficient equipment that you did for this project regardless of when you would have installed it?	
#	Record 0 to 10 score (_____)	N5a
88	Refused	N5B
99	Don't know	N5B
	IF REPLACE =2 THEN ASK; ELSE SKIP TO N6	

N5aa	Using a likelihood scale from 0 to 10, where 0 is Not at all likely and 10 is Extremely likely, if THE PROGRAM had NOT BEEN AVAILABLE, what is the likelihood that you would have installed exactly the same energy efficient equipment at the same time as you did?	
#	Record 0 to 10 score (_____)	N6
88	Don't know	N6
99	Refused	N6
	CONSISTENCY CHECKS	
	IF N3b > 7 and N5 > 7, THEN ASK	
N5a	When you answered ...<%N3B> ... for the question about the influence of the rebate, I would interpret that to mean that the rebate was quite important to your decision to install. Then, when you answered ..<%N5>... for how likely you would be to install the same equipment **without** the rebate, it sounds like the rebate was not very important in your installation decision. I want to check to see if I am misunderstanding your answers or if the questions may have been unclear. Will you explain in your own words, the role the rebate played in your decision to install this efficient equipment?	
77	Record VERBATIM	NN5aa
88	Don't know	NN5aa
99	Refused	NN5aa
NN5aa	Would you like for me to change your score on the importance of the rebate that you gave a rating of <%N3B> and/or change your rating on the likelihood you would install the same equipment without the rebate which you gave a rating of <%N5> and/or we can change both if you wish?	
1	No change	N5b
77	Record how they would rate rebate influence and how they would rate likelihood to install without the rebate	N5b
88	Don't know	N5b
99	Refused	N5b
	ASK IF REPLACE=1	
N5b	Using the same scale as before, if the program had not been available, what is the likelihood that you would have done this project at the same time as you did?	
#	Record 0 to 10 score (_____)	DISPLAY
88	Refused	DISPLAY
99	Don't know	DISPLAY

	If N5b < 9 THEN ASK; ELSE SKIP TO N6	
N5bb	Why do you say that?	
77	Record VERBATIM	N6
88	Don't know	N6
99	Refused	N6
	ADDITIONAL BASELINE INPUT	
N6	Now I would like you to think one last time about what action you would have taken if the program had not been available. Which of the following alternatives would you have been MOST likely to do?	
1	Install/Delamped fewer units	N6aa
2	Install standard efficiency equipment or whatever required by code	N6aa
3	Installed equipment more efficient than code but less efficient than what you installed through the program	N6aa
4	Done nothing (keep existing equipment as is)	N6ba
5	Done the same thing I would have done as I did through the program	N6aa
6	Repair/rewind or overhaul the existing equipment	N7
77	Something else (specify what _____)	N6ca
88	Don't know	N6ca
99	Refused	N6ca
	If N6 = 1,2,3,5 ASK, ELSE N6ba	
N6aa	Would you have [FILL IN RESPONSE TO N6 for N6 = 1,2, 3, 5] at the same time as you did under the program, within a year, or at a later time?	
1	Same time	N7
2	Within one year	N7
3	At a later time	N6ab
88	Don't know	N7
99	Refused	N7
N6ab	How many years later would it have been?	
77	Record VERBATIM	N7
88	Don't know	N6ac
99	Refused	N7
N6ac	Would it have been….	
1	Less than one year	N7
2	About a year	N7
3	A couple of years	N7

4	A few years	N7
5	More than four years	N7
88	Don't know	N7
99	Refused	N7
	If N6 = 4 THEN ASK, ELSE N6ca	
N6ba	How long would you have waited to replace your equipment?	
1	Less than one year	N7
2	About a year	N7
3	A couple of years	N7
4	A few years	N7
5	More than four years	N7
88	Don't know	N7
99	Refused	N7
	IF N6=77, 88, 99 THEN ASK, ELSE N7	
N6ca	Would you still have replaced your equipment at the same time as you did under the program, within a year, or at a later time?	
1	Same time	N7
2	Within one year	N7
3	At a later time	N6cb
88	Don't know	N7
99	Refused	N7
N6cb	How many years later would it have been?	
77	Record VERBATIM	N6
88	Don't know	N6cc
99	Refused	N6
N6cc	Would it have been….	
1	Less than one year	N7
2	About a year	N7
3	A couple of years	N7
4	A few years	N7
5	More than four years	N7
88	Don't know	N7
99	Refused	N7

CONSISTENCY CHECK		
	Ask if N6 = (1, 2, 3, 4) and ((N5 > 8 and N5b > 8) OR N5aa > 8)	
N7	In an earlier response, you said that if the program had not been available, there was a very high likelihood that you would have installed exactly the same equipment as you did through the program. However, just now you have indicated that you would not have installed the same equipment as you did without the benefit of the program. Can you explain to me why there is this difference?	
77	Record VERBATIM	N6a
88	Don't know	N6a
99	Refused	N6a
	Ask if N6(1);	
N6a	How many fewer units would you have installed/Delamped? (It is okay to take an answer such as ...HALF...or 10 percent fewer ... etc.)	
77	RECORD VERBATIM	ER2
88	Refused	ER2
99	Refused	ER2
	Ask if N6(3);	
N6b	Can you tell me what model or efficiency level you were considering as an alternative? (It is okay to take an answer such as … 10 percent more efficient than code or 10 percent less efficient than the program equipment)	
77	RECORD VERBATIM	ER2
88	Don't know	ER2
99	Refused	ER2
	Ask if N6(6);	
N6c	How long do you think the repaired equipment would have lasted before requiring replacement?	
77	RECORD VERBATIM	ER2
88	Don't know	ER2
99	Refused	ER2
	EARLY REPLACEMENT BATTERY	
	[IF N5b < 8 and A3 = 1, 4, 8, or 10 THEN ASK. ELSE SKIP TO PP1]	
DISPLAY	Earlier, when I asked you a question about why you decided to implement the project using high efficiency equipment, you gave	ER2

	reasons related to <A3> Now I would like to ask you some follow up questions regarding these responses you gave me.	
	IF REPLACE = 1 AND N6c IS UNRECORDED;	
ER2	How many more years do you think your equipment would have gone before failing and required replacement?	
77	___ Estimated Remaining Useful Life (in years)	ER6
88	Don't know	ER6
99	Refused	ER6
	IF AA3 = 4, THEN ASK	
ER6	How much downtime did you experience in the past year?	
77	_____Downtime Estimate (in weeks)	ER9
88	Don't know	ER9
99	Refused	ER9
ER9	In your opinion, based on the economics of operating this equipment, for how many more years could you have kept this equipment functioning?	
Yrs	___ Estimated Remaining Useful Life	ER11
88	Don't know	ER11
99	Refused	ER11
	IF AA3 = 8, THEN ASK	
ER15	Can you briefly describe the specific code/regulatory requirements that this project addressed?	
77	RECORD VERBATIM	ER19
88	Don't know	ER19
99	Refused	ER19
	IF AA3 = 10, THEN ASK	
ER19	Can you briefly describe the specific company policies regarding regular/normal maintenance/replacement policy(ies) that were relevant to this project? Or briefly describe the specific company policies regarding regular equipment retrofits and remodeling?	
77	RECORD VERBATIM	PP1
88	Don't know	PP1
99	Refused	PP1
	PROCESS QUESTIONS - ASK ALL	
PP1	What do you believe the PROGRAM'S primary strengths are?	
77	Record VERBATIM	PP2

88	Don't know	PP2
99	Refused	PP2
PP2	What concerns do you have about the PROGRAM, if any? (IF NEEDED: What do you view as the primary features that need to be improved?)	
77	Record VERBATIM	PP4
88	Don't know	PP4
99	Refused	PP4
PP4	On a scale of 0 - 10, where 0 is completely dissatisfied and 10 is completely satisfied, how would you rate your OVERALL satisfaction with the <%PROGRAM>?	
#	Record 0 to 10 score (_____)	PP5
88	Refused	PP5
99	Don't know	PP5
	IF PP4 < 4 THEN ASK; ELSE SKIP TO LT2	
PP5	Why do you say that?	
77	Record VERBATIM	LT2
88	Don't know	LT2
99	Refused	LT2
	LONG TERM INFLUENCE	
	If NTG_TYPE >= 2	
	IF N3f > 4, THEN ASK, ELSE OPERATING HOURS SECTION	
DISPLAY	Now I'd like you to think about your organization's experiences with %UTILITY's energy efficiency programs and efforts over the longer term, for example, over the past 5, 10, or even 20 years. In an earlier question, you indicated that your previous experience with utility energy efficiency programs was a factor that influenced your decision to implement this PROJECT. I would like to ask you a few questions about this experience.	LT2
LT2	For how many years have you been participating in %UTILITY's energy efficiency programs?	
# yrs	Record Number of Years	LT3
88	Refused	LT3
99	Don't know	LT3
LT3	During this time, how many times has your organization participated in these PROGRAM(s)?	

1	7 to 10 times, or more	CA6
2	4 to 7 times	CA6
3	2 to 4 times	CA6
4	less than 2 times	CA6
88	Refused	LT6
99	Don't know	LT6
	IF LT3 = 1, 2, 3 or 4, THEN ASK. ELSE LT8	
CA6	What type of equipment did you install through this (these) program(s)? [READ RESPONSE CATEGORIES]	
1	Indoor lighting	LT6
2	Cooling equipment	LT6
3	Natural gas equipment, such as water heater, furnace or appliances	LT6
4	Insulation or windows	LT6
5	Refrigeration	LT6
6	Industrial process equipment	LT6
7	Greenhouse heat curtains	LT6
8	Food service equipment	LT6
77	OPEN \SOMETHING OTHER (specify)	LT6
88	Refused	LT6
99	Don't Know	LT6
LT6	What factors led you to participate in these program(s)?	
77	Record VERBATIM	LT7
88	Refused	LT7
99	Don't know	LT7
LT7	And exactly how did that experience help to convince you to install this energy efficient equipment?	
77	Record VERBATIM	LT8
88	Refused	LT8
99	Don't know	LT8
	IF LT3 = 1 or 2, THEN ASK. ELSE GO TO OPERATING HOURS SECTION	
LT8	Have these programs had any long-term influence on your organization's energy efficiency related practices and policies that go beyond the immediate effect of incentives on individual projects? [DO NOT READ: Examples are causing them to add energy efficiency procurement policies, internal incentive or reward structures for improving energy efficiency, or adoption of energy management best practices.]	

1	Yes	OPERATING HOURS SECTION
2	No	OPERATING HOURS SECTION
88	Refused	OPERATING HOURS SECTION
99	Don't know	OPERATING HOURS SECTION

	OPERATING HOURS	
DISPLAY	We are almost finished. The next few questions are to help us get a full understanding of your organization's operational hours.	
ALWAYS	Is your organization operation 24 hours a day, 7 days a week?	
1	Yes	HOLIDAYS
2	No	HOLIDAYS
88	Refused	HOLIDAYS
HOLIDAYS	Dose your facility closed for any holidays during the year? If so, which one(s)?	
1	New Year's Day - January 1	DAYS
2	Martin Luther King Jr. Day - January 18, 2010 (3rd Monday in January)	DAYS
3	President's Day - February 15, 2010 (3rd Monday in February)	DAYS
4	Memorial Day - May 31, 2010 (Last Monday in May)	DAYS
5	Independence Day - July 4th (Or Surrounding Monday/Friday if July 4 is a weekend)	DAYS
6	Labor Day - September 6, 2010 (First Monday in September)	DAYS
7	Thanksgiving - November 26, 2010 (4th Thursday in November)	DAYS
8	Day after Thanksgiving	DAYS
9	Christmas Eve - December 24	DAYS
10	Christmas Day - December 25	DAYS
66	NO HOLIDAY CLOSURES	DAYS

77	Other - Specify	DAYS
88	Refused	DAYS
99	Don't Know	DAYS
	Ask if ALWAYS = 2; else skip to OS_REC;	
DAYS	Is your facility closed any of the 7 days of the week? If so, which days are you CLOSED?	
1	Monday	MONDAY_OPEN
2	Tuesday	MONDAY_OPEN
3	Wednesday	MONDAY_OPEN
4	Thursday	MONDAY_OPEN
5	Friday	MONDAY_OPEN
6	Saturday	MONDAY_OPEN
7	Sunday	MONDAY_OPEN
66	Open EVERYDAY	MONDAY_OPEN
88	REFUSED	MONDAY_OPEN
99	DON'T KNOW	MONDAY_OPEN
	Ask if ALWAYS(2)&^DAYS(1); else skip to TUESDAY_OPEN;	
MONDAY_OPEN	What time do you open your facility on MONDAY?	
	Record Time 1AM - 12:30 AM in 12 hour format by half hour as 1-24	MONDAY_CLOSE
88	REFUSED	MONDAY_CLOSE
99	DON'T KNOW	MONDAY_CLOSE
	IF MONDAY_OPEN(1||64)	
MONDAY_CLOSE	What time do you close your facility on MONDAY?	
	Record Time 1AM - 12:30 AM in 12 hour format by half hour as 1-24	TUESDAY_OPEN
88	REFUSED	TUESDAY_OPEN
99	DON'T KNOW	TUESDAY_OPEN
	Ask if ALWAYS(2)&^DAYS(2); else skip to WEDNESDAY_OPEN;	
TUESDAY_OPEN	What time do you open your facility on TUESDAY?	
	Record Time 1AM - 12:30 AM in 12 hour format by half hour as 1-24	TUESDAY_CLOSE
88	REFUSED	TUESDAY_CLOSE
99	DON'T KNOW	TUESDAY_CLOSE
	IF TUESDAY_OPEN(1||65)	
TUESDAY_CLOSE	What time do you close your facility on TUESDAY?	
	Record Time 1AM - 12:30 AM in 12 hour	WEDNESDAY_OPEN

	format by half hour as 1-24	
88	REFUSED	WEDNESDAY_OPEN
99	DON'T KNOW	WEDNESDAY_OPEN
	Ask if ALWAYS(2)&^DAYS(3); else skip to THURSDAY_OPEN;	
WEDNESDAY_OPEN	What time do you open your facility on WEDNESDAY?	
	Record Time 1AM - 12:30 AM in 12 hour format by half hour as 1-24	WEDNESDAY_CLOSE
88	REFUSED	WEDNESDAY_CLOSE
99	DON'T KNOW	WEDNESDAY_CLOSE
	IF WEDNESDAY_OPEN(1||65)	
WEDNESDAY_CLOSE	What time do you close your facility on WEDNESDAY?	
	Record Time 1AM - 12:30 AM in 12 hour format by half hour as 1-24	THURSDAY_OPEN
88	REFUSED	THURSDAY_OPEN
99	DON'T KNOW	THURSDAY_OPEN
	Ask if ALWAYS(2)&^DAYS(4); else skip to FRIDAY_OPEN;	
THURSDAY_OPEN	What time do you open your facility on THURSDAY?	
	Record Time 1AM - 12:30 AM in 12 hour format by half hour as 1-24	THURSDAY_CLOSE
88	REFUSED	THURSDAY_CLOSE
99	DON'T KNOW	THURSDAY_CLOSE
	IF THURSDAY_OPEN(1||65)	
THURSDAY_CLOSE	What time do you close your facility on THURSDAY?	
	Record Time 1AM - 12:30 AM in 12 hour format by half hour as 1-24	FRIDAY_OPEN
88	REFUSED	FRIDAY_OPEN
99	DON'T KNOW	FRIDAY_OPEN
	Ask if ALWAYS(2)&^DAYS(5); else skip to SATURDAY_OPEN;	
FRIDAY_OPEN	What time do you open your facility on FRIDAY?	
	Record Time 1AM - 12:30 AM in 12 hour format by half hour as 1-24	FRIDAY_CLOSE
88	REFUSED	FRIDAY_CLOSE
99	DON'T KNOW	FRIDAY_CLOSE
	IF FRIDAY_OPEN(1||65)	
FRIDAY_CLOSE	What time do you close your facility on	

	FRIDAY?	
	Record Time 1AM - 12:30 AM in 12 hour format by half hour as 1-24	SATURDAY_OPEN
88	REFUSED	SATURDAY_OPEN
99	DON'T KNOW	SATURDAY_OPEN
	Ask if ALWAYS(2)&^DAYS(6); else skip to SUNDAY_OPEN;	
SATURDAY_OPEN	What time do you open your facility on SATURDAY?	
	Record Time 1AM - 12:30 AM in 12 hour format by half hour as 1-24	SATURDAY_CLOSE
88	REFUSED	SATURDAY_CLOSE
99	DON'T KNOW	SATURDAY_CLOSE
	IF SATURDAY_OPEN(1||65)	
SATURDAY_CLOSE	What time do you close your facility on SATURDAY?	
	Record Time 1AM - 12:30 AM in 12 hour format by half hour as 1-24	SUNDAY_OPEN
88	REFUSED	SUNDAY_OPEN
99	DON'T KNOW	SUNDAY_OPEN
	Ask if ALWAYS(2)&^DAYS(7); else skip to DIFF_SCHEDULE;	
SUNDAY_OPEN	What time do you open your facility on SUNDAY?	
	Record Time 1AM - 12:30 AM in 12 hour format by half hour as 1-24	SUNDAY_CLOSE
88	REFUSED	SUNDAY_CLOSE
99	DON'T KNOW	SUNDAY_CLOSE
	IF SUNDAY_OPEN(1||65)	
SUNDAY_CLOSE	What time do you close your facility on SUNDAY?	
	Record Time 1AM - 12:30 AM in 12 hour format by half hour as 1-24	DIFF_SCHEDULE
88	REFUSED	DIFF_SCHEDULE
99	DON'T KNOW	DIFF_SCHEDULE
DIFF_SCHEDULE	Some organizations have different schedules for certain times of the year. Does your organization maintain a different schedule for certain months of the year?	
1	Yes	MONTHS
2	No	OS_REC
88	REFUSED	OS_REC
99	DON'T KNOW	OS_REC

	Ask if DIFF_SCHEDULE = 1; Else skip to OS_REC;	
MONTHS	Which months of the year does the schedule vary from the times I just recorded?	
1	January	ALT_DAYS
2	February	ALT_DAYS
3	March	ALT_DAYS
4	April	ALT_DAYS
5	May	ALT_DAYS
6	June	ALT_DAYS
7	July	ALT_DAYS
8	August	ALT_DAYS
9	September	ALT_DAYS
10	October	ALT_DAYS
11	November	ALT_DAYS
12	December	ALT_DAYS
88	REFUSED	ALT_DAYS
99	DON'T KNOW	ALT_DAYS
ALT_ALWAYS	Is your organization operation 24 hours a day, 7 days a week?	
1	Yes	HOLIDAYS
2	No	HOLIDAYS
88	Refused	HOLIDAYS
	If ^ALT_ALWAYS(1) then ask; Else skip to OS_REC;	
ALT_DAYS	During this alternate schedule, is your facility closed any of the 7 days of the week? If so, which days are you CLOSED?	
1	Monday	ALT_MONDAY_OPEN
2	Tuesday	ALT_MONDAY_OPEN
3	Wednesday	ALT_MONDAY_OPEN
4	Thursday	ALT_MONDAY_OPEN
5	Friday	ALT_MONDAY_OPEN
6	Saturday	ALT_MONDAY_OPEN
7	Sunday	ALT_MONDAY_OPEN
66	Open EVERYDAY	ALT_MONDAY_OPEN
88	REFUSED	ALT_MONDAY_OPEN
99	DON'T KNOW	ALT_MONDAY_OPEN
	Ask if DIFF_SCHEDULE(1)&^ALT_DAYS(1); else skip to ALT_TUESDAY_OPEN;	
ALT_MONDAY_OPEN	For the alternate schedule, what time do you open your facility on MONDAY?	
	Record Time 1AM - 12:30 AM in 12 hour	ALT_MONDAY_CLOSE

	format by half hour as 1-24	
88	REFUSED	ALT_MONDAY_CLOSE
99	DON'T KNOW	ALT_MONDAY_CLOSE
	IF ALT_MONDAY_OPEN(1||64)	
ALT_MONDAY_CLOSE	What time do you close your facility on MONDAY?	
	Record Time 1AM - 12:30 AM in 12 hour format by half hour as 1-24	ALT_TUESDAY_OPEN
88	REFUSED	ALT_TUESDAY_OPEN
99	DON'T KNOW	ALT_TUESDAY_OPEN
	Ask if DIFF_SCHEDULE(1)&^ALT_DAYS(2); else skip to ALT_WEDNESDAY_OPEN;	
ALT_TUESDAY_OPEN	What time do you open your facility on TUESDAY during your alternate schedule?	
	Record Time 1AM - 12:30 AM in 12 hour format by half hour as 1-24	ALT_TUESDAY_CLOSE
88	REFUSED	ALT_TUESDAY_CLOSE
99	DON'T KNOW	ALT_TUESDAY_CLOSE
	IF ALT_TUESDAY_OPEN(1||65)	
ALT_TUESDAY_CLOSE	What time do you close your facility on TUESDAY?	
	Record Time 1AM - 12:30 AM in 12 hour format by half hour as 1-24	ALT_WEDNESDAY_OPEN
88	REFUSED	ALT_WEDNESDAY_OPEN
99	DON'T KNOW	ALT_WEDNESDAY_OPEN
	Ask if DIFF_SCHEDULE(1)&^ALT_DAYS(3); else skip to ALT_THURSDAY_OPEN;	
ALT_WEDNESDAY_OPEN	What time do you open your facility on WEDNESDAY during your alternate schedule?	
	Record Time 1AM - 12:30 AM in 12 hour format by half hour as 1-24	ALT_WEDNESDAY_CLOSE
88	REFUSED	ALT_WEDNESDAY_CLOSE
99	DON'T KNOW	ALT_WEDNESDAY_CLOSE
	IF ALT_WEDNESDAY_OPEN(1||65)	
ALT_WEDNESDAY_CLOSE	What time do you close your facility on WEDNESDAY?	
	Record Time 1AM - 12:30 AM in 12 hour format by half hour as 1-24	ALT_THURSDAY_OPEN
88	REFUSED	ALT_THURSDAY_OPEN
99	DON'T KNOW	ALT_THURSDAY_OPEN
	Ask if DIFF_SCHEDULE(1)&^ALT_DAYS(4); else skip to ALT_FRIDAY_OPEN;	
ALT_THURSDAY_OPEN	What time do you open your facility on	

	THURSDAY during your alternate schedule?	
	Record Time 1AM - 12:30 AM in 12 hour format by half hour as 1-24	ALT_THURSDAY_CLOSE
88	REFUSED	ALT_THURSDAY_CLOSE
99	DON'T KNOW	ALT_THURSDAY_CLOSE
	ALT_THURSDAY_OPEN(1||65)	
ALT_THURSDAY_CLOSE	What time do you close your facility on THURSDAY?	
	Record Time 1AM - 12:30 AM in 12 hour format by half hour as 1-24	ALT_FRIDAY_OPEN
88	REFUSED	ALT_FRIDAY_OPEN
99	DON'T KNOW	ALT_FRIDAY_OPEN
	Ask if DIFF_SCHEDULE(1)&^ALT_DAYS(5); else skip to ALT_SATURDAY_OPEN;	
ALT_FRIDAY_OPEN	What time do you open your facility on FRIDAY during this alternate schedule?	
	Record Time 1AM - 12:30 AM in 12 hour format by half hour as 1-24	ALT_FRIDAY_CLOSE
88	REFUSED	ALT_FRIDAY_CLOSE
99	DON'T KNOW	ALT_FRIDAY_CLOSE
	IF ALT_FRIDAY_OPEN(1||65)	
ALT_FRIDAY_CLOSE	What time do you close your facility on FRIDAY?	
	Record Time 1AM - 12:30 AM in 12 hour format by half hour as 1-24	ALT_SATURDAY_OPEN
88	REFUSED	ALT_SATURDAY_OPEN
99	DON'T KNOW	ALT_SATURDAY_OPEN
	Ask if DIFF_SCHEDULE(1)&^ALT_DAYS(6); else skip to ALT_SUNDAY_OPEN;	
ALT_SATURDAY_OPEN	I recorded that during your alternate schedule you are also open on Saturday. What time do you open your facility on SATURDAY?	
	Record Time 1AM - 12:30 AM in 12 hour format by half hour as 1-24	ALT_SATURDAY_CLOSE
88	REFUSED	ALT_SATURDAY_CLOSE
99	DON'T KNOW	ALT_SATURDAY_CLOSE
	IF ALT_SATURDAY_OPEN(1||65)	
ALT_SATURDAY_CLOSE	What time do you close your facility on SATURDAY?	
	Record Time 1AM - 12:30 AM in 12 hour format by half hour as 1-24	ALT_SUNDAY_OPEN
88	REFUSED	ALT_SUNDAY_OPEN

99	DON'T KNOW	ALT_SUNDAY_OPEN
	Ask if DIFF_SCHEDULE(1)&^ALT_DAYS(7); else skip to OS_REC;	
ALT_SUNDAY_OPEN	I recorded that during your alternate schedule you are also open on Sunday. What time do you open your facility on SUNDAY?	
	Record Time 1AM - 12:30 AM in 12 hour format by half hour as 1-24	ALT_SUNDAY_CLOSE
88	REFUSED	ALT_SUNDAY_CLOSE
99	DON'T KNOW	ALT_SUNDAY_CLOSE
	IF ALT_SUNDAY_OPEN(1||65)	
ALT_SUNDAY_CLOSE	What time do you close your facility on SUNDAY?	
	Record Time 1AM - 12:30 AM in 12 hour format by half hour as 1-24	CLOSING SECTION
88	REFUSED	CLOSING SECTION
99	DON'T KNOW	CLOSING SECTION

	CLOSING	
	Ask if V1(1)	
Vendor_Name	Earlier you stated that you had a vendor/contractor that helped you with the installation of the <%MEASURE> that was installed through the <%UTILITY> Program. Could you provide me with their name and phone number?	
1	Cannot provide	END
77	Record Name, Phone Number, Email Address or any other information they can provide. More is better.	END
88	Refused	END
99	Don't know	END
END	Those are all the questions I have for you today. On behalf of the CPUC, I would like to thank you very much for your kind cooperation. Have a good day.	

APPENDIX B ON-SITE DATA COLLECTION INSTRUMENTS

- Ag Sprinkler On-Site Form
- Pipe Insulation On-Site Form
- Gas Fryer On-Site Form
- Refrigeration On-Site Form
- Process Boiler On-Site Form

AG SPRINKLER ON-SITE FORM

PHONE AND ON-SITE INSTRUMENT

PG&E and the State of California are conducting a research study to assess the energy savings performance of the irrigation conversion like the one that occurred at your farm. My company, ERS, has been contracted to analyze the energy savings associated with irrigation conversion projects in order to improve PG&E's energy efficiency programs. As part of the program assessment, we are reaching out to past participants to collect some information that will be helpful in determining actual energy savings.

1. Introduction:
    - 1.1. According to our records, the project involved the conversion of [X] acres to a micro-nozzle irrigation system. Is this correct?
        - 1.1.1. [If no] Can you estimate the number of acres that underwent the irrigation conversion and were rebated by PG&E?
    - 1.2. Our records also indicate that the farm is located at [ADDRESS], [CITY]. Is this correct?
        - 1.2.1. [If no] Where is the farm located?
    - 1.3. When did the irrigation project occur?
    - 1.4. PG&E classified the project as a [MICRO or DRIP] conversion. Can you elaborate on what was actually installed through this project?
2. Crop Details
    - 2.1. What types of crops are currently grown on this acreage?
        - 2.1.1. [If tree crops] About how old are the trees that are irrigated using the new system?
3. Irrigation Details
    - 3.1. At what month of the year does the crop growing season begin?
    - 3.2. What month of the year does the crop growing season end?
    - 3.3. Does irrigation occur outside the growing season?
        - 3.3.1. [If yes] At what month of the year does irrigation begin?
        - 3.3.2. [If yes] At what month does irrigation end?
    - 3.4. Is the acreage divided into multiple sets for irrigation?
        - 3.4.1. [If yes] How many sets?
    - 3.5. About how many times per month, on average, is each set irrigated over the course of the growing season?
        - 3.5.1. [Alternative] During the hottest/driest month, how many times is each set irrigated?

3.6. For how many hours is each set typically irrigated at a time?

3.7. What is the source of the irrigation water? (e.g. district water main, well, other (please elaborate), unknown)

3.8. How many pumps supply the water for the new irrigation system?

3.9. What is the total pumping horsepower for the new irrigation system?

3.10. How are the irrigation pumps controlled? (e.g. constant speed, two-speed, soft start, VFD, other (please elaborate))

3.11. About what discharge pressure (in psi) do the irrigation pumps currently operate at?

4. Micro System Details

4.1. Can you provide the make and model of the nozzles installed?

4.2. Do you recall the rated gallons-per-minute or gallons-per-hour of the nozzles?

4.2.1. [For tree crops] Can you estimate the number of trees per acre?

4.2.2. [For tree crops] How many nozzles are used per tree?

4.2.3. [Non-tree crops] Can you estimate the number of nozzles per acre?

5. Pre-project details

5.1. Was the farm's acreage divided into similar sets before the project?

5.1.1. [If no] How was the acreage divided before the project?

5.2. Were similar crops grown at the farm before the new irrigation system was installed?

5.2.1. [If no] What crops were grown before the project?

5.3. [If either pre or post is a tree crop] How old were the trees at the time of the project?

5.4. What type of irrigation system was in place before the project? (e.g. flood, furrow, sprinkler, drip)

5.4.1. [If sprinkler] Do you recall the make, model, or nozzle color of the old sprinkler nozzles?

5.4.2. [If flood/furrow] About how many inches deep did you flood the field during each irrigation?

5.5. [If different crop] At what month of the year did the old crop's growing season begin?

5.6. [If different crop] At what month of the year did the old crop's growing season end?

5.7. [If different crop] Did irrigation occur outside of the growing season?

5.7.1. [If yes] In which month did the old crop's irrigation begin?

5.7.2. [If yes] In which month did the old crop's irrigation end?

5.8. About how many times per month, on average, was each set irrigated over the course of the old crop's growing season?

5.8.1. [Alternative] During the hottest/driest month, how many times was each set irrigated?

5.9. For how many hours was each set typically irrigated at a time?

5.10. Did the irrigation water come from a different source before the project?

5.10.1. [If yes] What was the source of the irrigation water?

5.11. Was the irrigation pumping plant any different before the project?

5.11.1. [If yes] How many irrigation pumps supplied the water before the project?

5.11.2. [If yes] What was the total horsepower of the irrigation pumps?

5.11.3. [If yes] How were the irrigation pumps controlled? (e.g. constant speed, two-speed, soft start, VFD, other (please elaborate))

5.11.4. [If yes] Was the old pump powered by a PG&E electric meter?

5.12. About what pressure (in psi) did the irrigation pumps operate at before the project?

6. Program Questions

6.1. Why did you decide to participate in this program (In your own words)?

6.2. Did you decide to install these sprinklers BEFORE or AFTER you became aware of the program?

6.3. Could you please rate the importance of the following factors that might have influenced your decision to install these sprinklers through the program. Using a scale of 0 to 10, where 0 means not at all important and 10 means extremely important.

6.3.1. Age or condition of the old sprinklers

6.3.2. Availability of the incentive

6.3.3. Information provided from an audit of the facility

6.3.4. Recommendation from a vendor

6.3.5. Previous experience with an EE project

6.3.6. Previous experience with a utility program

6.3.7. Program training course

6.3.8. Program marketing materials

6.3.9. Standard practice

6.3.10. Suggestion by your account rep

6.3.11. Payback

6.3.12. Regular maintenance/replacement

6.3.13. Other factors?

6.4. What financial calculations does your organization make before proceeding with a project such as this one? Payback? Return on investment?

6.4.1. What is the required threshold in terms of payback or return on investment?

6.5. Was the rebate critical in moving the project within this range?

6.6. How important was it that payback be within this acceptable range on a scale of 0-10?

6.7. When deciding on this project, how important were program-related factors (e.g. rebate, audit, payback) in comparison to non-program factors (e.g. age/condition of equipment, previous program experience, corporate policy)? Please indicate a percentage of importance for either type of factor (i.e. 60% program-related, 40% non-program related).

6.8. If the program had not been available, what is the likelihood that you would have installed the same equipment as you did?

6.9. If the program had not been available, what is the likelihood that you would have installed the equipment at the same time as you did?

6.10. If the program had not been available what is the probability in percentage likelihood that you would have installed the equipment within one year?

6.11. If the program had not been available what is the probability in percentage likelihood that you would have installed the equipment within three years?

6.12. If the program had not been available what is the probability in percentage likelihood that you would have installed the equipment within five years?

6.13. What would you have done had the program not been available?

PIPE INSULATION ON-SITE FORM

ON-SITE INSTRUMENT

CPUC ESPI Pipe Insulation Prescriptive Measure Study

General Info	
Visit Date & Time	
Field Engineer	
Facility Name	
Address	
Contact	
Phone	

Site Visit Preparation Checklist
□ Identify and check out loggers needed
□ Bring site visit kit, gloves, combustion analyzer, IR gun
□ Confirm site visit date/time/location
□ Ask battery of pre-visit questions with site contact
□ Does facility have additional safety requirements?
□ Will boiler be running for combustion tests?
□ Verify insulated runs of pipe and their accessibility
□ Loggers to be shipped back? Confirm with site contact

Logger Deployment Info					
Logger #	Run #	Time In	Time Out	Location	Notes

Boiler Information	
Make/Model	
Fuel Type	
Input (MBH)	
Output (MBH)	
Nameplate efficiency	

Run #1	Fluid	Pipe Size (in)	Insulation Qty (ft)	Insulation Size (in)	Pipe Material*	Insulation Material**	Insulation Quality†	Insulation Age††	% Required by OSHA	
Tracked				N/A	N/A	N/A	N/A	N/A	Pipe/Fluid Temp (F)	
On-Site									Insul. Temp (F)	
Pre-case									Ambient Temp (F)	

Run #2	Fluid	Pipe Size (in)	Qty (ft)	Insulation Size (in)	Pipe Material*	Insulation Material**	Insulation Quality†	Insulation Age††	% Required by OSHA	
Tracked				N/A	N/A	N/A	N/A	N/A	Pipe/Fluid Temp (F)	
On-Site									Insulation Temp (F)	
Pre-case									Ambient Temp (F)	

Run #3	Fluid	Pipe Size (in)	Qty (ft)	Insulation Size (in)	Pipe Material*	Insulation Material**	Insulation Quality†	Insulation Age††	% Required by OSHA	
Tracked				N/A	N/A	N/A	N/A	N/A	Pipe/Fluid Temp (F)	
On-Site									Insulation Temp (F)	
Pre-case									Ambient Temp (F)	

Run #4	Fluid	Pipe Size (in)	Qty (ft)	Insulation Size (in)	Pipe Material*	Insulation Material**	Insulation Quality†	Insulation Age††	% Required by OSHA	
Tracked				N/A	N/A	N/A	N/A	N/A	Pipe/Fluid Temp (F)	
On-Site									Insulation Temp (F)	
Pre-case									Ambient Temp (F)	

Run #5	Fluid	Pipe Size (in)	Qty (ft)	Insulation Size (in)	Pipe Material*	Insulation Material**	Insulation Quality†	Insulation Age††	% Required by OSHA	
Tracked				N/A	N/A	N/A	N/A	N/A	Pipe/Fluid Temp (F)	
On-Site									Insulation Temp (F)	
Pre-case									Ambient Temp (F)	

Run #6	Fluid	Pipe Size (in)	Qty (ft)	Insulation Size (in)	Pipe Material*	Insulation Material**	Insulation Quality†	Insulation Age††	% Required by OSHA	
Tracked				N/A	N/A	N/A	N/A	N/A	Pipe/Fluid Temp (F)	
On-Site									Insulation Temp (F)	
Pre-case									Ambient Temp (F)	

* Examples include cast iron, various grades of steel, copper, etc.
** Examples include fiberglass, cellular glass, polystyrene
† Good / Fair / Poor
†† Use increments of 5 years for estimation

OSHA Standard 1910.261(k)(11): All exposed steam and hot water pipes within 7 feet of the floor or working platform or within 15 inches measured horizontally from stairways, ramps, or fixed ladders shall be covered with an inulating material, or guarded in such a way as to prevent contact.

Operational Information

- What are the facility's typical hours of operation?
- Is the metering period representative of typical operation?
- Does the facility operate on holidays? Indicate holidays with no operation.
- Does facility operation/production vary throughout the year? Please indicate fluctuation by season or by month.
- Is there enough variation in facility operation to affect energy usage?

System Diagram(s) (Identify different pipe runs, loads, parent boilers, logger locations)

Data Collection
- ❑ Inspect bare pipe and insulation properties including length, diameter, thickness, material, etc.
- ❑ Review invoices (if possible) and tracked pipe runs with facility contact before walkthrough
- ❑ Gather information on facility's boiler plant including nameplate data and end uses

Spot Measurements
- ❑ Request permission to meter bare pipe temperature by puncturing small hole in insulation
- ❑ Spot measurements of bare pipe surface, insulation surface and surrounding air temperatures
- ❑ Spot readings of gauge pressures and temperatures
- ❑ Spot measurement of boiler combustion efficiency

Logger Deployment
- ❑ Deploy temperature probe loggers on bare pipe surface, insulation surface and surrounding area
- ❑ Ensure that loggers are deployed near the midpoint of a representative pipe run

Baseline
- ❑ Survey site staff for information on project baseline and preexisting conditions at facility
- ❑ Was insulation installed on preexisting or new pipes? Use backside to elaborate further
- ❑ Note percentage of pipe previously insulated, if applicable
- ❑ Inspect preexisting pipe insulation material, thickness and condition at facility (where available)
- ❑ Examine piping layout to ensure it does not require insulation per OSHA requirements*

Facility Operating Conditions
- ❑ Survey site staff for information on facility's operating schedule and seasonal variation
- ❑ Request production data if system operation varies with production

Checkout
- ❑ Summarize what loggers were deployed and their locations
- ❑ Ensure that facility staff agrees that boiler is operating as it was before
- ❑ Provide contact information via business card
- ❑ Arrange logger shipment (via prepaid box) on a given date OR schedule retrieval date

Baseline and spillover questions:
- Was the incented insulation installed on new pipes? Indicate % new pipes in overall project.
- Were the preexisting pipes insulated? Indicate % insulated and its details.
- Are pipes required to be insulated per OSHA (see footnote on other side). For each run, estimate % requiring insulation.
- Discuss any OSHA requirement and how the facility would have complied absent the IOU program.
- Was additional pipe insulation installed that was not incented? Gather details on this insulation and the facility decisions behind its install.

GAS FRYER ON-SITE FORM

Gas Fryer On-site Data Collection Form

Project Information			
IOU			
ApplicationCode or ProjectID			
Program ID			
Program Name			
Point of Sale Purchase?			
IOU Claim ID(s)	Measure 1:		
	Measure 2:		
	Measure 3:		
	Measure 4:		
	Measure 5:		
	Measure 6:		
IOU Measure Description	Measure 1:		
	Measure 2:		
	Measure 3:		
	Measure 4:		
	Measure 5:		
	Measure 6:		
Number of Units Installed	Measure 1:		
	Measure 2:		
	Measure 3:		
	Measure 4:		
	Measure 5:		
	Measure 6:		
Project Application date			
Project Installation Date			Engineer update below as needed [ENTER]:
Business Name			
Business Street Address			
Business City			
Customer Contact Name			
Customer Contact Phone Number			
Customer Contact E-mail Address			
Vendor Business Name			
Vendor Contact Name			
Vendor Contact Phone Number			
Vendor Contact E-mail Address			
Site Information			
Assigned Engineer Name			
Assigned Engineer Firm			
Site Visit Consent Granted Y/N			
Date of First On-Site Visit			
Logger(s) Deployed Y/N			
Date of Second On-Site Visit (if applicable)			

Gas Fryer On-site Data Collection Form

Business Activity

[Circle One Below]	What is the main business ACTIVITY at this facility?	
1	Offices (non-medical)	
2	Restaurant/Food Service	
3	Food Store (grocery/liquor/convenience)	
4	Agricultural (farms, greenhouses)	
5	Retail Stores	
6	Warehouse	
7	Health Care	
8	Education	
9	Lodging (hotel/rooms)	
10	Public Assembly (church, fitness, theatre, library, museum, convention)	
11	Services (hair, nail, massage, spa, gas, repair)	
12	Industrial (food processing plant, manufacturing)	
13	Laundry (Coin Operated, Commercial Laundry Facility, Dry Cleaner)	
14	Condo Assoc./Apartment Mgr (Garden Style, Mobile Home Park, High-rise, Townhouse)	
15	Public Service (fire/police/postal/military)	
77	Other / Record Business Activity [ENTER] ====>	

Provide additional comments as needed [ENTER] ===>

Gas Fryer On-site Data Collection Form

Food Service Type

[CIRCLE ONE BELOW]	Which of the following types of restaurants or food service best describes this facility?	
1	Fast Food or Self Service	
2	Specialty/Novelty Food Service	
3	Table Service	
4	Bar/Tavern/Nightclub/Brew Pub or Microbrewery/Other entertainment	
5	Caterer	
6	Cafeteria	
7	Other / Record Food Service [ENTER] ====>	

Provide additional comments as needed [ENTER] ===>

Gas Fryer On-site Data Collection Form

Holiday Schedule

[Check All that Apply] During what holidays is the facility closed?

	New Year's Eve
	New Year's Day
	New Year's Day Celebrated
	Martin Luther King Day
	Presidents' Day
	St. Patrick's Day
	Easter Sunday
	Memorial Day
	Flag Day
	July 4th
	July 4th Celebrated
	Labor Day
	Columbus Day
	Veteran's Day
	Thanksgiving
	Thanksgiving Friday
	Christmas Eve
	Christmas Day
	Christmas Day Celebrated
	Other / Record Additional Holiday Closures [ENTER] ====>	

Provide additional comments as needed [ENTER] ===>

Provide define any additional closures or periods of limited operations [ENTER] ===>

Gas Fryer On-site Data Collection Form

EE Measure Replacement Battery (<u>This data is required/critical for the unit we are monitoring</u>)

Application # _____ <=== Enter Application Code

[Answer for Measure #1]		[Answer for Measure #2]		[Answer for Measure #3]	
[Circle One Entry]	Did the new gas fryer replace an existing fryer?	**[Circle One Entry]**	Did the new gas fryer replace an existing fryer?	**[Circle One Entry]**	Did the new gas fryer replace an existing fryer?
1	Replaced existing fryer	**1**	Replaced existing fryer	**1**	Replaced existing fryer
2	Added the new gas fryer	**2**	Added the new gas fryer	**2**	Added the new gas fryer
3	New construction	**3**	New construction	**3**	New construction
88	Refused	**88**	Refused	**88**	Refused
99	Don't know	**99**	Don't know	**99**	Don't know

Provide additional comments as needed [ENTER] ===>

[Ask remaining questions for any gas fryer that replaced an existing unit]

[Answer for Measure #1]		[Answer for Measure #2]		[Answer for Measure #3]	
[Circle One Entry]	Was the replaced fryer a gas or electric fryer?	**[Circle One Entry]**	Was the replaced fryer a gas or electric fryer?	**[Circle One Entry]**	Was the replaced fryer a gas or electric fryer?
1	Existing gas fryer	**1**	Existing gas fryer	**1**	Existing gas fryer
2	Existing electric fryer	**2**	Existing electric fryer	**2**	Existing electric fryer
88	Refused	**88**	Refused	**88**	Refused
99	Don't know	**99**	Don't know	**99**	Don't know

Provide additional comments as needed [ENTER] ===>

[Answer for Measure #1]		[Answer for Measure #2]		[Answer for Measure #3]	
(Circle One Entry)	Approximately how old was the fryer that was removed and replaced? Would you say...	**(Circle One Entry)**	Approximately how old was the fryer that was removed and replaced? Would you say...	**(Circle One Entry)**	Approximately how old was the fryer that was removed and replaced? Would you say...
1	Less than 5 years old	**1**	Less than 5 years old	**1**	Less than 5 years old
2	Between 5 and 10 years old	**2**	Between 5 and 10 years old	**2**	Between 5 and 10 years old
3	Between 10 and 15 years old	**3**	Between 10 and 15 years old	**3**	Between 10 and 15 years old
4	More than 15 years old	**4**	More than 15 years old	**4**	More than 15 years old
5	Stated age _____ years	**5**	Stated age _____ years	**5**	Stated age _____ years
88	Refused	**88**	Refused	**88**	Refused
99	Don't know	**99**	Don't know	**99**	Don't know

Provide additional comments as needed [ENTER] ===>

Gas Fryer On-site Data Collection Form

EE Measure Replacement Battery (Continued part 2)

Application # _____ <=== Enter Application Code

[Answer for Measure #1]		[Answer for Measure #2]		[Answer for Measure #3]	
[Circle One Entry]	How would you describe the removed fryer's condition? Would you say it was in…	**[Circle One Entry]**	How would you describe the removed fryer's condition? Would you say it was in…	**[Circle One Entry]**	How would you describe the removed fryer's condition? Would you say it was in…
1	Poor condition	**1**	Poor condition	**1**	Poor condition
2	Fair condition	**2**	Fair condition	**2**	Fair condition
3	Good condition	**3**	Good condition	**3**	Good condition
88	Refused	**88**	Refused	**88**	Refused
99	Don't know	**99**	Don't know	**99**	Don't know

Provide additional comments as needed [ENTER] ===>

[Answer for Measure #1]		[Answer for Measure #2]		[Answer for Measure #3]	
[Circle One Entry]	What was the main reason you replaced the existing fryer	**[Circle One Entry]**	What was the main reason you replaced the existing fryer	**[Circle One Entry]**	What was the main reason you replaced the existing fryer
1	Equipment was not functioning adequately	**1**	Equipment was not functioning adequately	**1**	Equipment was not functioning adequately
2	Purchased as part of a general facility renovation	**2**	Purchased as part of a general facility renovation	**2**	Purchased as part of a general facility renovation
3	Wanted improved performance or functionality	**3**	Wanted improved performance or functionality	**3**	Wanted improved performance or functionality
4	Other / Provide Related Commentary Below:	**4**	Other / Provide Related Commentary Below:	**4**	Other / Provide Related Commentary Below:
88	Refused	**88**	Refused	**88**	Refused
99	Don't know	**99**	Don't know	**99**	Don't know

Provide additional comments as needed [ENTER] ===>

Gas Fryer On-site Data Collection Form

EE Measure Replacement Battery (Continued part 3)

Application # _____ <=== Enter Application Code

[Ask IF answer above is 3 or 4]

[Answer for Measure #1]		**[Answer for Measure #2]**		**[Answer for Measure #3]**	
[Circle One Entry]	At the time of replacement, was the program or rebate important or influential in your decision to replace the existing fryer?	**[Circle One Entry]**	At the time of replacement, was the program or rebate important or influential in your decision to replace the existing fryer?	**[Circle One Entry]**	At the time of replacement, was the program or rebate important or influential in your decision to replace the existing fryer?
1	Yes	**1**	Yes	**1**	Yes
2	No	**2**	No	**2**	No
3	Other / Provide Related Commentary Below:	**3**	Other / Provide Related Commentary Below:	**3**	Other / Provide Related Commentary Below:
88	Refused	**88**	Refused	**88**	Refused
99	Don't know	**99**	Don't know	**99**	Don't know

Provide additional comments as needed [ENTER] ===>

[Ask IF answer above is 1 or 3]

[Answer for Measure #1]		**[Answer for Measure #2]**		**[Answer for Measure #3]**	
(Circle One Entry)	If not for the program/rebate, approximately how much longer would you have continued to use the replaced fryer? Would you say...	**(Circle One Entry)**	If not for the program/rebate, approximately how much longer would you have continued to use the replaced fryer? Would you say...	**(Circle One Entry)**	If not for the program/rebate, approximately how much longer would you have continued to use the replaced fryer? Would you say...
1	Within a one-year period	**1**	Within a one-year period	**1**	Within a one-year period
2	Between 2 and 3 years	**2**	Between 2 and 3 years	**2**	Between 2 and 3 years
3	4 or more years	**3**	4 or more years	**3**	4 or more years
4	Stated _____ years	**4**	Stated _____ years	**4**	Stated _____ years
88	Refused	**88**	Refused	**88**	Refused
99	Don't know	**99**	Don't know	**99**	Don't know

Provide additional comments as needed [ENTER] ===>

Gas Fryer On-site Data Collection Form

EE Measure Installation Verification (This data is required/critical for the unit we are monitoring)

Measure # _____
Application # _____
IOU Measure Description _____
Number of units installed # _____

[Circle One Entry] Were the gas fryer units found to be installed and operable at the time of the on-site inspection?

1	Yes	
2	No	
3	Other / Provide Related Commentary [ENTER] ====>	

Provide additional comments as needed [ENTER] ===>

[If 2/No above, then provide additional comments]

Provide additional comments to explain [ENTER] ===>

Gas Fryer On-site Data Collection Form

EE Equipment Specifications (This data is required/critical for the unit we are monitoring)

Measure # _____
Application # _____
IOU Measure Description _____
Number of units installed # _____

[ENTER EQUIPMENT SPECIFICATIONS]

Manufacturer _____
Make _____
Model _____

[Circle One per Line or Write Down Units if Different]

Input Rating _____ Btu/hr kBtu/hr Mbtu/hr
Output Rating _____ Btu/hr kBtu/hr Mbtu/hr
Year of manufacture _____
Number of relevant program units installed and operable _____

Provide additional comments as needed [ENTER] ===>

[ENTER GENERAL EQUIPMENT CHARACTERIZATION]

[Circle One per Line]

Fryer type; counter top or freestanding floor model? Countertop model Freestanding floor model
Number of vats per fryer unit 1 2 3 4 5 6 Other _____
Estimated pounds or gallons of oil per vat _____ Pounds Gallons
Width per vat in inches _____ Inches
Depth per vat in inches _____ Inches
Height per vat in inches _____ Inches

Provide additional comments as needed [ENTER] ===>

Gas Fryer On-site Data Collection Form

EE Fryer Pre-heat (This data is required/critical for the unit we are monitoring)

Measure # _____
Application # _____
IOU Measure Description _____
Number of units installed # _____

[Randomly select 1 unit and 1 vat in a given unit, and record information accordingly]

[Circle One Entry] On average how many times per day is the gas fryer vat pre-heated following a period where it is off?

1	Once	
2	Twice	
3	More than twice / Provide Related Commentary [ENTER] ====>	

Provide additional comments as needed [ENTER] ===>

Approximately how long does it normally take to pre-heat the gas fryer vat?

Minutes _____

[ALTERNATIVELY Circle One Entry] Approximately how long does it normally take to pre-heat the gas fryer vat?

1	Less than 15 minutes
2	15 to 30 minutes
3	30 to 45 minutes
3	More than 45 minutes

Provide additional comments as needed [ENTER] ===>

Gas Fryer On-site Data Collection Form

EE Fryer Operational Settings (This data is required/critical for the unit we are monitoring)

Measure # _____
Application # _____
IOU Measure Description _____
Number of units installed # _____

[Record information for one randomly selected vat in a gas fryer unit]

[ENTER EQUIPMENT OPERATION DETAILS]

	[Circle One per Line]		
Minimum temperature during idle operation _____	Deg. F	Deg. C	N/A if same as cooking setting
Minimum temperature range prior to cooking _____	Deg. F	Deg. C	N/A if same as cooking setting
Cooking temperature setting _____	Deg. F	Deg. C	
How long does it take to reach cooking min from idle temp _____	Minutes	N/A if cooking temp setting is maintained	

Provide additional comments as needed [ENTER] ===>

Gas Fryer On-site Data Collection Form

EE Fryer Schedule of Operation (This data is required/critical for the unit we are monitoring)

Measure # _____
Application # _____
IOU Measure Description _____
Number of units installed # _____

[Record information for one randomly selected vat in a gas fryer unit]

Day vs Night	**[Circle applicable days]**	Below, record hours of operation for the selected gas fryer vat (military)
AM	M T W T F S S H	
PM		
AM	M T W T F S S H	
PM		
AM	M T W T F S S H	
PM		
AM	M T W T F S S H	
PM		
AM	M T W T F S S H	
PM		

Provide additional comments as needed [ENTER] ===>

Gas Fryer On-site Data Collection Form

EE Fryer Food Loads (This data is required/critical for the unit we are monitoring)

Measure # _____
Application # _____
IOU Measure Description _____
Number of units installed # _____

[Record information for across all vats in a given randomly selected gas fryer unit]

[Below, estimate total pounds fried in THIS fryer (all vats) for circled days; up to 4 distinct variations by day of the week; account for all 8 days of the week]

[Check all that apply]	Identify the foods that are fried in this fryer each day	M T W T F S S H	M T W T F S S H	M T W T F S S H	M T W T F S S H
	French fries				
	Chicken tenders				
	Chicken pieces				
	Fish				
	Other seafood				
	Chips				
	Vegetables				
	Egg rolls and other horduevers				
	Donuts				
	Other /[ENTER] _____				

Provide additional comments as needed [ENTER] ===>

[Check all that apply]	Identify the foods that are fried in this fryer each day	Below, estimate cooking time PER BATCH fried in THIS fryer (in minutes)	Below, estimate pounds PER BATCH fried in THIS fryer	
	French fries			Ask
	Chicken tenders			Ask
	Chicken pieces			Ask
	Fish			Ask
	Other seafood			Ask
	Chips			Ask
	Vegetables			Ask
	Egg rolls and other horduevers			Ask
	Donuts			Ask
	Other /[ENTER] _____			Ask

Provide additional comments as needed [ENTER] ===>

[Below, estimate total batches fried in THIS fryer (all vats) for circled days; up to 4 distinct variations by day of the week; account for all 8 days of the week]

[Check all that apply]	Identify the foods that are fried in this fryer each day	M T W T F S S H	M T W T F S S H	M T W T F S S H	M T W T F S S H
	French fries				
	Chicken tenders				
	Chicken pieces				
	Fish				
	Other seafood				
	Chips				
	Vegetables				
	Egg rolls and other horduevers				
	Donuts				
	Other /[ENTER] _____				

Provide additional comments as needed [ENTER] ===>

Gas Fryer On-site Data Collection Form

BASELINE Equipment Specifications

Application # _____

[Record information for one randomly selected vat in a gas fryer unit]

[ENTER EQUIPMENT SPECIFICATIONS FOR **NON-PROGRAM** GAS FRYER]

Manufacturer _____
Make _____
Model _____

[Circle One per Line or Write Down Units if Different]

Input Rating _____ Btu/hr kBtu/hr Mbtu/hr
Output Rating _____ Btu/hr kBtu/hr Mbtu/hr
Year of Manufacture _____
Estimated number of years in service _____

Number of non-program gas fryer units installed and operable _____

Provide additional comments as needed [ENTER] ===>

[ENTER GENERAL EQUIPMENT CHARACTERIZATION FOR **NON-PROGRAM** GAS FRYER]

[Circle One per Line]

Fryer type; counter top or freestanding floor model? Countertop model Freestanding floor model
Number of vats per fryer unit 1 2 3 4 5 6 Other _____
Estimated pounds or gallons of oil per vat _____ Pounds Gallons
Width per vat in inches _____ Inches
Depth per vat in inches _____ Inches
Height per vat in inches _____ Inches

Provide additional comments as needed [ENTER] ===>

Gas Fryer On-site Data Collection Form

BASELINE Fryer Pre-heat

[Randomly select 1 unit and 1 vat in a given unit, for a **NON-PROGRAM** GAS FRYER, and record information accordingly]

[Circle One Entry]

On average how many times per day is the gas fryer vat pre-heated following a period where it is off?

1	Once
2	Twice
3	More than twice / Provide Related Commentary [ENTER] ====>

Provide additional comments as needed [ENTER] ===>

Approximately how long does it normally take to pre-heat the gas fryer vat?

Minutes _____

[ALTERNATIVELY Circle One Entry]

Approximately how long does it normally take to pre-heat the gas fryer vat?

1	Less than 15 minutes
2	15 to 30 minutes
3	30 to 45 minutes
3	More than 45 minutes

Provide additional comments as needed [ENTER] ===>

Gas Fryer On-site Data Collection Form

Baseline Fryer Operational Settings

[Record information for one randomly selected vat in a **NON-PROGRAM** GAS FRYER unit]

[ENTER EQUIPMENT OPERATION DETAILS]

		[Circle One per Line]	
Minimum temperature during idle operation _____	Deg. F	Deg. C	N/A if same as cooking setting
Minimum temperature range prior to cooking _____	Deg. F	Deg. C	N/A if same as cooking setting
Cooking temperature setting _____	Deg. F	Deg. C	
How long does it take to reach cooking min from idle temp _____	Minutes	N/A if cooking temp setting is maintained	

Provide additional comments as needed [ENTER] ===>

Gas Fryer On-site Data Collection Form

Baseline Fryer Schedule of Operation

[Record information for one randomly selected vat in a **NON-PROGRAM** GAS FRYER unit]

Day vs Night	**[Circle applicable days]**	Below, record hours of operation for the selected gas fryer vat (military)
AM	M T W T F S S H	
PM		
AM	M T W T F S S H	
PM		
AM	M T W T F S S H	
PM		
AM	M T W T F S S H	
PM		
AM	M T W T F S S H	
PM		

Provide additional comments as needed [ENTER] ===>	

Gas Fryer On-site Data Collection Form

BASELINE Fryer Food Loads

[Randomly select 1 unit for a **NON-PROGRAM** GAS FRYER, and record information accordingly]

[Below, estimate total pounds fried in THIS fryer (all vats) for circled days; up to 4 distinct variations by day of the week; account for all 8 days of the week]

[Check all that apply]	Identify the foods that are fried in this fryer each day	M T W T F S S H	M T W T F S S H	M T W T F S S H	M T W T F S S H
	French fries				
	Chicken tenders				
	Chicken pieces				
	Fish				
	Other seafood				
	Chips				
	Vegetables				
	Egg rolls and other horduevers				
	Donuts				
	Other /[ENTER] _____				

Provide additional comments as needed [ENTER] ===>

[Check all that apply]	Identify the foods that are fried in this fryer each day	Below, estimate cooking time PER BATCH fried in THIS fryer (in minutes)	Below, estimate pounds PER BATCH fried in THIS fryer	
	French fries			Ask
	Chicken tenders			Ask
	Chicken pieces			Ask
	Fish			Ask
	Other seafood			Ask
	Chips			Ask
	Vegetables			Ask
	Egg rolls and other horduevers			Ask
	Donuts			Ask
	Other /[ENTER] _____			Ask

Provide additional comments as needed [ENTER] ===>

[Below, estimate total batches fried in THIS fryer (all vats) for circled days; up to 4 distinct variations by day of the week; account for all 8 days of the week]

[Check all that apply]	Identify the foods that are fried in this fryer each day	M T W T F S S H	M T W T F S S H	M T W T F S S H	M T W T F S S H
	French fries				
	Chicken tenders				
	Chicken pieces				
	Fish				
	Other seafood				
	Chips				
	Vegetables				
	Egg rolls and other horduevers				
	Donuts				
	Other /[ENTER] _____				

Provide additional comments as needed [ENTER] ===>

Gas Fryer On-site Data Collection Form

EE Metering (for flue gas temperature -- this data is required/critical for the unit we are monitoring)

Measure # _____
Application # _____
IOU Measure Description _____
Number of units installed # _____

[Record information for one randomly selected vat in a gas fryer unit]
[ENTER METERING SPECIFICATIONS AND DATES]

[Circle One per Line]

Manufacturer _____
Make _____
Model _____
Logger ID _____
Logger instalation date _____
Logger installation time (military) _____
Logger removal date _____
Logger extraction date completed _____
Spot reading flue gas temp _____ Deg. F Deg. C N/A if not taken
Simultaneous reading logger, flue gas temp _____ Deg. F Deg. C N/A if not taken

Provide additional comments as needed and **LOGGER LOCATION** to inform retrieval [ENTER] ===>

Gas Fryer On-site Data Collection Form

EE Metered Vat Fryer Food Loads (This data is required/critical for the unit we are monitoring)

Measure # _____
Application # _____
IOU Measure Description _____
Number of units installed # _____

[Check if single vat fryer and SKIP table]	If the unit is a single vat fryer then we don't need redundant information filled in
	Yes, single vat fryer

[Record information for selected metering vat in a given randomly selected gas fryer unit]

[Below, estimate total pounds fried in THIS fryer VAT for circled days; up to 4 distinct variations by day of the week; account for all 8 days of the week]

[Check all that apply]	Identify the foods that are fried in this fryer each day	M T W T F S S H	M T W T F S S H	M T W T F S S H	M T W T F S S H
	French fries				
	Chicken tenders				
	Chicken pieces				
	Fish				
	Other seafood				
	Chips				
	Vegetables				
	Egg rolls and other horduevers				
	Donuts				
	Other /[ENTER] _____				

Provide additional comments as needed [ENTER] ===>

Gas Fryer On-site Data Collection Form

Baseline Metering (for flue gas temperature)

Application # _____

[Record information for one randomly selected metering vat in a gas fryer unit]

[ENTER METERING SPECIFICATIONS AND DATES FOR **NON-PROGRAM** GAS FRYER]

Manufacturer _____
Make _____
Model _____
Logger ID _____
Logger instalation date _____
Logger installation time (military) _____
Logger removal date _____
Logger extraction date completed _____
Spot reading flue gas temp _____ Deg. F Deg. C N/A if not taken
Simultaneous reading logger, flue gas temp _____ Deg. F Deg. C N/A if not taken

Provide additional comments as needed and **LOGGER LOCATION** to inform retrieval [ENTER] ===>

Gas Fryer On-site Data Collection Form

Baseline Metered Vat Fryer Food Loads

[Check if single vat fryer and SKIP table]	If the unit is a single vat fryer then we don't need redundant information filled in
	Yes, single vat fryer

[Record information for one randomly selected vat in a gas fryer unit]

[ENTER METERING SPECIFICATIONS AND DATES FOR **NON-PROGRAM** GAS FRYER]

[Below, estimate total pounds fried in THIS fryer VAT for circled days; up to 4 distinct variations by day of the week; account for all 8 days of the week]

[Check all that apply]	Identify the foods that are fried in this fryer each day	M T W T F S S H	M T W T F S S H	M T W T F S S H	M T W T F S S H
	French fries				
	Chicken tenders				
	Chicken pieces				
	Fish				
	Other seafood				
	Chips				
	Vegetables				
	Egg rolls and other horduevers				
	Donuts				
	Other /[ENTER] _____				

Provide additional comments as needed [ENTER] ===>

REFRIGERATION ON-SITE FORM

Site ID # _____

Nonresidential Deemed Refrigeration Measure Onsite Survey Form Form COVER

Non-Residential Deemed Refrigeration Measure Data Collection On-Site Survey Form

General Site Information (from phone survey & IOU tracking database)

Itron SiteID	«TrackSiteID»

Corporate (Multi-Site) Name	«CONTACT»		
Business Name (Tracking Data)	«Business»		
Actual Business Name	«OS_Business»		
Service Address	«ADDRESS»		
City	«CITY»	Zip Code	«ZipCode»
CORRECTIONS TO SITE INFORMATION			
Revised Corp. (Multi-Site) Name			
Revised Business Name			
Revised Service Address			
Revised City		Revised Zip	

Site Contact Information

PS Completion Date:		Length (min)		Respondent:	«OS_NAME1»	Date of Install:	

	Contacted	Contact Name	Phone Number	Alternate Phone	Email Address
OS Primary	☐	*«LOG_NAME1»*	*«LOG_PHONE»*		
OS Back-up	☐				
OS Other	☐				

Note: Use the "Contacted" check box to indicate the actual contact(s) for the site visit.

Scheduling Notes/Special Instructions for On-site Visit: _____

_____

_____

Survey Tracking Information

Survey Company:		Assigned Surveyor's Initials:	
Survey Travel Mileage:	miles	Total Travel Time	hrs
Survey Duration (24 hr clock)	Start:	Survey Duration (24 hr clock)	End:
Total Onsite Time	hrs	Total Time to Fill Out Survey Form	hrs

	Date:	Initials
Field survey completed:	__ __ / __ __ / __ __	__ __ __
Survey received from surveyor:	__ __ / __ __ / __ __	__ __ __
Initial QC check completed:	__ __ / __ __ / __ __	__ __ __
Survey sent back to surveyor (*if needed*):	__ __ / __ __ / __ __	__ __ __
Received from surveyor (*if needed*):	__ __ / __ __ / __ __	__ __ __
Itron QC completed:	__ __ / __ __ / __ __	__ __ __
Data entry (DE) completed:	__ __ / __ __ / __ __	__ __ __
Logger extraction DE complete:	__ __ / __ __ / __ __	__ __ __
Follow-up Logger Extraction DE complete:	__ __ / __ __ / __ __	__ __ __

IOU Tracking Data Measure Summary Sheet

This is a summary of all of the measures implemented at this site as extracted from the IOU tracking database. All of the measures listed here should also be found on the measure-level verification forms.

Measure Category	Meas ID	Measure Code	IOU MeasureName	Unit Basis	Rebated # of Units	Reference Meas Code
«MeasureCategory»	«MeasureID»	«MeasCode»	«MeasureName»	«NormUnit»	«Quantity»	

Lighting Other Description

Measure Code	Revised MeasureName Description	Rebated # of Units

Phone Survey Self-Reported Measure Counts for Calculated kWh Measures

CATI Measure Category-RebatedUnits-UnitBasis	Self Report # of Units

Site ID # _____

Nonresidential Deemed Refrigeration Measure Onsite Survey Form Form SITEINFO, page ___ of ___

Site & Business Characteristics

Fields in this table will be populated as much as possible with data from the phone survey. However, any fields that are blank should be completed during the on-site verification. Any fields that are incorrect should also be corrected.

Electric Utility	PGE SCE SDGE SMUD LADWP OT _____		
Gas Utility	PGE SCG SDGE AllElec/None Propane LBGO SWG OT _____		
Is this premise owner-occupied (**O**) or leased (**L**)?	*CC4*	Revised	O L
How many full-time equivalent employees work at this premise?	*FM070*	Revised	
What is the total occupied floor area of this premise? (exclude prkg garage)	*CC2a / CC2b* ft^2	Revised	_____ft^2
-- If the premise has an enclosed parking garage, what is the floor area?	_____ft^2		
What percent of the total floor area is heated or cooled?	*CC2c / CC2d* %	Revised	_____%
How many buildings are part of this premise?			
What year was the majority of the facility built?	*CC8*	Revised	
Cooling Type: 1=No A/C 2=Split-System 3=PkgRooftop 4=PTAC/PTHP 5=EvapCool 6=Chiller 7=IndivAC/HP 8=WLHP OT=Other		Revised	
Heating Fuel Type: 1=Electric 2=Gas 3=Both 4=Propane 5=None OT=Other		Revised	
What kind of site is this? **P** = Part of a bldg **B** = Single building **SM** = Small multi-building **CM** = Campus (multi-bldg, subsampled bldgs) **OT** = Other _____			
For single, stand-alone buildings or partial buildings: Number of stories/floors			

Premise-Level Schedule Definitions

Standard Holidays *(check all that apply)* ☐ N/A

Indicate below which, if any, standard holidays that the business is closed or operation deviates drastically from normal/typical operations, and indicate on Form BUS_HRS what the holiday operation hours are. Indicate any additional holidays in the comment block.

New Year's Eve	☐	July 4th Celebrated	☐
New Year's Day	☐	Labor Day	☐
New Year's Day Celebrated	☐	Columbus Day	☐
Martin Luther King Day	☐	Veterans' Day	☐
Presidents' Day	☐	Thanksgiving	☐
St. Patrick's Day	☐	Thanksgiving Friday	☐
Easter Sunday	☐	Christmas Eve	☐
Memorial Day	☐	Christmas Day	☐
Flag Day	☐	Christmas Day Celebrated	☐
July 4th	☐	Caesar Chavez Day	☐
Other (1) _____	☐	Other (2)_____	☐

Business Schedule

Primary Business Hours

Define typical operation for <u>all</u> Day Types listed below and specify hours in military time (00 to 24). For partial (i.e. not full) operation days, also indicate the approximate % of full operation as Partial Op %.

Day Type	From Phone Survey	Corrected Business Hours	Closed All Day?	Open 24 hrs?	PartialOp%
Monday	from _____ to _____	from _____ to_____			
Tuesday	from _____ to _____	from _____ to_____			
Wednesday	from _____ to _____	from _____ to_____			
Thursday	from _____ to _____	from _____ to_____			
Friday	from _____ to _____	from _____ to_____			
Saturday	from _____ to _____	from _____ to_____			
Sunday	from _____ to _____	from _____ to_____			
Holidays	from _____ to _____	from _____ to_____			

Seasonal Operation Business Hours – Time Period 2 ☐ N/A

Day Type	From Phone Survey	Corrected Business Hours	Closed All Day?	Open 24 hrs?	PartialOp%
Monday	from _____ to _____	from _____ to_____			
Tuesday	from _____ to _____	from _____ to_____			
Wednesday	from _____ to _____	from _____ to_____			
Thursday	from _____ to _____	from _____ to_____			
Friday	from _____ to _____	from _____ to_____			
Saturday	from _____ to _____	from _____ to_____			
Sunday	from _____ to _____	from _____ to_____			
Holidays	from _____ to _____	from _____ to_____			

Seasonal Operation Business Hours – Time Period 3 ☐ N/A

Day Type	Business Hours	Closed All Day?	Open 24 hrs?	PartialOp%
Monday	from _____ to_____	Y N	Y N	
Tuesday	from _____ to_____	Y N	Y N	
Wednesday	from _____ to_____	Y N	Y N	
Thursday	from _____ to_____	Y N	Y N	
Friday	from _____ to_____	Y N	Y N	
Saturday	from _____ to_____	Y N	Y N	
Sunday	from _____ to_____	Y N	Y N	
Holidays	from _____ to_____	Y N	Y N	

Site ID # _____

Nonresidential Deemed Refrigeration Measure Onsite Survey Form Form PREM_SKETCH, page __ of __

Premise/Site-Plan Sketch

This sketch should provide a high-level view of the premise and its surroundings as it is actually configured. Attach site plans and floor plans available from other sources. Sketch all buildings and the closest streets/roadways in both directions. Mark the orientation of True North. Use multiple sheets/drawings if necessary. Also indicate the "front" or primary entrance for each building. A site map or site plans can be used in place of this, as long as streets can be shown.

Premise/Site-Plan sketch comments:

_____

_____

_____

Premise/Site-Plan Sketch

Premise/Site-Plan sketch comments:

_____

_____

_____

_____

Site ID # ________________

Nonresidential Deemed Refrigeration Measure Onsite Survey Form Form HRSCHD, page __ of __

Hourly Operation Schedules –Refrigeration Cases

Use this form if equipment operation is independent of Business Hours as indicated on Form BUS_HRS. Use one block for each end use. Indicate the applicable daytypes for each day type schedule, and account for all day types including holidays. Specify the % of max. occupancy or equipment-on for all time periods, and be sure to accurately capture transition periods. Pay attention to lighting control type as a separate schedule is needed for different control types.

Hour		**12-1**	**1-2**	**2-3**	**3-4**	**4-5**	**5-6**	**6-7**	**7-8**	**8-9**	**9-10**	**10-11**	**11-12**

Schedule #___ End Use:_____ LtgCtrlType:_____ Description_________________

Applicable DayTypes		**%** Equipment On Temp Setpoint											
M T W T F S S H	AM												
	PM												
M T W T F S S H	AM												
	PM												
M T W T F S S H	AM												
	PM												
M T W T F S S H	AM												
	PM												

Schedule #___ End Use:_____ LtgCtrlType:_____ Description_________________

Applicable DayTypes		**%** Equipment On Temp Setpoint											
M T W T F S S H	AM												
	PM												
M T W T F S S H	AM												
	PM												
M T W T F S S H	AM												
	PM												
M T W T F S S H	AM												
	PM												

Schedule #___ End Use:_____ LtgCtrlType:_____ Description_________________

Applicable DayTypes		**%** Equipment On Temp Setpoint											
M T W T F S S H	AM												
	PM												
M T W T F S S H	AM												
	PM												
M T W T F S S H	AM												
	PM												
M T W T F S S H	AM												
	PM												

Hour	12-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12

Schedule #___ End Use:_____ LtgCtrlType:_____ Description_________________

Applicable DayTypes		**%** Equipment On Temp Setpoint											
M T W T F S S H	AM												
	PM												
M T W T F S S H	AM												
	PM												
M T W T F S S H	AM												
	PM												
M T W T F S S H	AM												
	PM												

Schedule #___ End Use:_____ LtgCtrlType:_____ Description_________________

Applicable DayTypes		**%** Equipment On Temp Setpoint											
M T W T F S S H	AM												
	PM												
M T W T F S S H	AM												
	PM												
M T W T F S S H	AM												
	PM												
M T W T F S S H	AM												
	PM												

Schedule #___ End Use:_____ LtgCtrlType:_____ Description_________________

Applicable DayTypes		**%** Equipment On Temp Setpoint											
M T W T F S S H	AM												
	PM												
M T W T F S S H	AM												
	PM												
M T W T F S S H	AM												
	PM												
M T W T F S S H	AM												
	PM												

Logger Installation Form

Use this table to record information for installed measurement devices such as lighting loggers.

Installation Date		**Extraction Date**	
Installer's Initials		**Extraction Initials**	
Scheduled Extraction Date			

Installation

Logger Serial Number					
Primary or Backup Logger?	**P B**	**P B**	**P B**	**P B**	**P B**
Case Temperature	**MT HT**	**MT HT**	**MT HT**	**MT HT**	**MT HT**
Case Control Type					
Spot Measured Humidity					
Spot Measured Temperature					
Placement Description Include building, floor, room #, etc. and be descriptive enough that it can be located for extraction.					
Schedule #					

Extraction

Logger Intact? See Legend Belo	**Y N L *P***	**Y N L *P***	**Y N L *P***	**Y N L *P***	**Y N L *P***
Logger Tested "OK" (On/Off)	**Y N** NA	**Y N** NA	**Y N** NA	**Y N** NA	**Y N** NA
% "ON" Time	%	%	%	%	%
Extraction Comments					
Logger Date&Time (HH:MM)					
Computer Date&Time (HH:MM)					
Alternate Extraction Date					

Logger Intact: "Y" – If logger is as originally installed, does <u>not</u> appear to be tampered with, and display indicates the logger is working **Logger Tested "OK"** – <u>If Logger Intact was "Y"</u> then <u>is it</u> properly logging the light ON/OFF, "Y" or "N"? <u>If Logger Intact was "N"</u> use "NA"

Logger Installation Form (continued)

Use this table to record information for installed measurement devices such as lighting loggers.

Installation

Logger Serial Number					
Primary or Backup Logger?	**P B**	**P B**	**P B**	**P B**	**P B**
Case Temperature	**MT HT**	**MT HT**	**MT HT**	**MT HT**	**MT HT**
Lighting Control Type					
Spot Measured Humidity					
Spot Measured Temperature					
Placement Description Include building, floor, room #, etc. and be descriptive enough that it can be located for extraction.					
Schedule #					

Extraction

Logger Intact? (L=Lost/missing)	**Y N L *P***	**Y N L *P***	**Y N L *P***	**Y N L *P***	**Y N L *P***
Logger Tested "OK" (On/Off)	**Y N** NA	**Y N** NA	**Y N** NA	**Y N** NA	**Y N** NA
% "ON" Time	%	%	%	%	%
Extraction Comments					
Logger Date&Time (HH:MM)					
Computer Date&Time (HH:MM)					
Alternate Extraction Date					

Logger Intact: "Y" – If logger is as originally installed, does <u>not</u> appear to be tampered with, and display indicates the logger is working

Logger Tested "OK" – <u>If Logger Intact is "Y"</u> then is it properly logging the light ON/OFF, "Y" or "N"? <u>If Logger Intact is "N"</u> use "NA"

Installation Form (continued)

Use this table to record information for installed measurement devices such as lighting loggers.

Installation

Logger Serial Number					
Primary or Backup Logger?	**P B**	**P B**	**P B**	**P B**	**P B**
Case Temperature	**MT HT**	**MT HT**	**MT HT**	**MT HT**	**MT HT**
Case Control Type					
Spot Measured Humidity					
Spot Measured Temperature					
Placement Description Include building, floor, room #, etc. and be descriptive enough that it can be located for extraction.					
Schedule #					

Extraction

Logger Intact? (L=Lost/missing)	**Y N L *P***	**Y N L *P***	**Y N L *P***	**Y N L *P***	**Y N L *P***
Logger Tested "OK" (On/Off)	**Y N** NA	**Y N** NA	**Y N** NA	**Y N** NA	**Y N** NA
% "ON" Time	%	%	%	%	%
Extraction Comments					
Logger Date&Time (HH:MM)					
Computer Date&Time (HH:MM)					
Alternate Extraction Date					

Logger Intact: "Y" – If logger is as originally installed, does <u>not</u> appear to be tampered with, and display indicates the logger is working

Logger Tested "OK" – <u>If Logger Intact is "Y"</u> then is it properly logging the light ON/OFF, "Y" or "N"? <u>If Logger Intact is "N"</u> use "NA"

LED Case Lighting Measures

IOU Tracking Data	Measure Category		«LEDMeasCat»	
	Measure Code		«LEDMeasCode»	
	Measure Name		«LEDMeasName»	
		Rebated #of Units	«LEDQuant»	
		IOU Unit Basis	*«LEDUnit»*	
		Correct Unit Basis (if incorrect above above)		
		Can Rebated measures be clearly identified?	Y N	
Visual Inspection		Refg LED Type (tube or strip)		
	Glass-door display Dases	# of doors		
		Length of LED/ # of tubes per door		
		Total length of LEDs/ # of LEDS		
	Open Display Cases	# of rows (shelves of lighting)		
		Total length/# of tubes per row		
		Total length/# of tubes per case		

Verification Counts	**(A) Installed & Operational length of LEDs (ex post quantity)**	
	-- Was sub sampling or estimation used?	**Y N**
	-- # of tubes burned out in partial operation fixtures	
	(B) # of Non-Operable (broken/entire fixture burned-out) Units in place	
	(C) # of Rebated Units in Storage/Spares	
Physical Inspection Data	*Check box if Fixtures are NOT accessible (explain in comments)*	☐
	Number of units physically inspected	
	Fixture Wattage:	
	Fixture Make/Manufacturer	
	Fixture Model Number	

Baseline System Summary Data (Observed or Self-Reported)	Is post-installation operation the same as pre-retrofit operation?	**Y N**	**B SC E**
	-- If pre-retrofit operation was different, specify Sched #		
	Control type Code		**B SC E**
	Lamp Type Code		**B SC E**
	(If LF Baseline) - Tube Length and Diameter (e.g. 4ft T12)		**B SC E**
	# Lamps/door		**B SC E**
	Lamp Wattage		**B SC E**
	If **NOT** LF Baseline: Fixture Description		**B SC E**

Observed versus Rebated # of Units is: E=Equal M=More L=Less OT (describe)		**E M L OT**
If Disposition Not Equal: Site Contact/Self-Report Questions	Self-Reported # of units onsite	
	Others purchased since rebated units installed	
	(D) # of units located at Other Affiliated Sites	
Failed (and Replaced) Rebated Units (Indirect/Self-Report)	How long did units typically operate before failure (months)?	
	(E) # of rebated units that Failed, but were replaced w/different tech	
	# of rebated units that Failed but were replaced in-kind (Ref)	
Removed Rebated Units (Indirect/Self-Report)	**(F)** # of rebated units that were Removed and not replaced	
	-- When were the units removed? (month/year if possible)	
	-- Describe why units were removed **in comments**	
(Sum A-F) Total # of units accounted for on-site		**(reqd)**
Total # of units (A-F) MORE	# that were rebated by other programs/projects?	
	# that were obtained from OTHER means (explain in comments)?	
Total # of units (A-F) LESS	# of rebated units, other site contact explanation (note in comments)	
	# of rebated units, unaccounted for	

LED Fixture - Activity Area Assignment Table (AAAT) **Measure Code:** _____

*Use the AAAT below to associate lighting units to Refrigerator case types, equipment oper. Schedules, and lighting loggers. The values in the "Represented # of Units" column must add up to the **total # of Installed and Operational** units in the table above.*

- *If ONLY FIXTURE **DENT LL**: Only fill out **AAAT** below.*
- *If **DENT LL & (DENT CT or HOBO)**: Fill out **AAAT** with logger info **&** the **HIGHBAY** Form for Panel Metering*
- *If ONLY **PANEL METERING**: Check **N/A** box and only fill out **HIGHBAY** Form.*

***Circle all that apply:** (If Verify Only, circle 'NA', and fill out AAAT)*

Metering Type:	DENT LL	DENT CT	HOBO	NA

☐ **N/A**

Refrig. #	Sched #	Item #	Control Type Code	Repres. Length/ # of units	% of Total Inst&Op. Units (Ref)	Primary Logger S/N	Ref. Logger	Back-up Logger S/N	Comments
					%		☐		
					%		☐		
					%		☐		
					%		☐		
					%		☐		
					%		☐		
					%		☐		
					%		☐		
					%		☐		
					%		☐		
					%		☐		
					% <= Total # of Installed & Operational Units check *(no data entry)*				

Refrigeration Equipment	Refrigeration Itron #		1		
	Remote Refrigeration or Self Contained		RR SC	RR SC	RR SC
	Case Temperature	**LT** = Low (Ice Cream /Frozen	LT	LT	LT
		MT = Medium (Fresh Meat /	MT	MT	MT
		HT = High (Produce/Prep Areas)	HT	HT	HT
		OT = Other (describe)	OT	OT	OT
	IF SC	Case Make/Manufacturer			
		Case Model Number			
		Number of Cases			
	IF RR	Compressor Type			
		Number of Compressors			
		Compressor Make			
		Compressor Model Number			
		CondenserType			
		Condenser Make/Manufacturer			
		Mocdel Number			

Baseline Characterization

Please describe why these lights were changed to LEDs instead of any other lighting technology	

Approximate age of existing lighting sy stem prior to retrofit (years)	
Condition of original fixtures prior to retrofit (**G**ood, **F**air, **P**oor)	**G F P**
What % of original fixtures were completely burned out?	
What % of original fixtures were partially burned out?	
On a scale of 1-10, Please rate the following topics on their level of influence for retrofitting the lighting fixtures:	
Burned out fixtures	
Adequate lighting levels	
Major Renovation / Re-Modeling	
Safety of Occupants	
Productivity of Occupants	
Other (*describe in comments*)	
Considering all of the influential factors above, in the absence of an energy efficiency rebate program: How long would you have continued to operate the original fixtures before replacing them? (years)	

Comments: _____
_____
_____
_____

Panel Meter - Circuit Spot Measurement Table: (REFERENCE ONLY – NO DATA ENTRY)

Note 1: Fill this table out, then fill out the ***Consolidated Logging Circuit Table*** below.

Circuit Label #	Case Temp	Phase	# of Cases Controlled *(DD)*	# Doors per Case *(EE)*	Amps per Door (FF)	Amps per Frame (GG)	*(DD*EE*FF) +(GG*DD)* Calc. Circuit Amps (*HH*)	Measured Circuit Amps *(II)*	PF (*JJ*)	Measured Volts *(KK)*	Measured Amps *(LL)*	Measured Parasistic Amps *(MM)*	Comments

Panel Meter – Consolidated Logging Circuit Table: (REFERENCE ONLY – NO DATA ENTRY)

Note 1: After each circuit measurement is recorded in the table above, fill out the table below; here you can roll up >1 circuit into a single CT channel (if on the same phase).
Note 2: You will copy **ALL** values from the table below into their fields on the ***Panel Meter – Final Spot Measurement and Logging*** form.
Note 3: The "**Item #**" below should correlate to the "**Item #**" on the ***Panel Meter – Final Spot Measurement and Logging*** form.
Note 4: Confirm ASH controls are forced on before metering checks

	From table above			*DCT or HOBO*		*(HOBO)*	*From applicalbe fields in table above*					*From applicalbe fields in table above*				
Item # *(A)*	Circuit Label #*(s)* *(B)*		Phase *(C)*	Logger Type *(X)*	Logger ID *(Y)*	CT Channel # *(Z)*	Total Cases Controlled *(D)*	# Doors per Case *(E)*	Amps per Door *(F)*	# Amps Not Working *(G)*	Sum Circuit Amps *(H)*	Sum Meas. Amps *(I)*	Avg. *PF* (J)	Avg. Meas. Volts *(K)*	Sum *Meas. Amp* *(L)*	Sum Parasitic Amps *(M)*

Panel Meter – Final Spot Measurement and Logging – (DATA ENTRY

Breaker Circuit and Point of Control (POC) Assessment									
Panel Meter Item #:	***(A)***								
Associated Measure Code(s)									
IOU Unit Basis									
Panel number/identifier (if applicable)									
Circuit Label Number(s):	***(B)***								
Phase of Circuit(s):	***(C)***	A	B	C	A	B	C	A	B	C
Fixture Verification and Nominal Watt Calculation									
Circuit(s) tested (On/Off)?		Y	N		Y	N		Y	N	
# of Rebated **Units** on Circuit(s)									
# of Cases controlled by Circuit(s):	***(D)***								
# of Doors per Case:	***(E)***								
Rated Door Amps:	***(F)***								
Rated frame Amps:	***(G)***								
# of Innoperable doors:	***(H)***								
Total Nominal Rebated Circuit(s) Amps: ***((D*E*F)+(G*D))-(F*H)***	***(I)***								
Spot Measurements									
Max Measured Wattage: (with all doors on Circuit ON):	***(J)***		G	N		G	N		G	N
Power Factor: *(if 2 circuits on 1 CT, average the PF)*:	***(K)***								
Measured Circuit(s) Voltage: (to Ground or Neutral):	***(L)***								
Max Measured Amperage: (with all doors 'ON'):	***(M)***								
% Meas. vs. Calc. Watts: ***(K/H*100)***; Is this between 90-110%?		%	Y	N	%	Y	N	%	Y	N
Non-Rebated or Parsitic Loads									
Do Non-Rebated or Parasitic Loads exist on this Circuit?		Y	N	DK	Y	N	DK	Y	N	DK
Is the parasitic load Constant or Variable?		C	V	NA	C	V	NA	C	V	NA
Parasitic Wattage: (only if a contant parasitic load):	***(N)***								
Logger Information									
Logger Type: ***(DCT** = DENT CT, **H**=HOBO)*	***(X)***	DCT	H		DCT	H		DCT	H	
Primary Logger S/N:	***(Y)***								
Logger Channel #	***(Z)***								
Reference Logger:		☐			☐			☐		
Reference Channel:		☐			☐			☐		
CT Amp size									
Logger Installation Comments									

Panel Meter – Final Spot Measurement and Logging – (DATA ENTRY)

Breaker Circuit and Point of Control (POC) Assessment								
Panel Meter Item #:	***(A)***							
Associated Measure Code(s)								
IOU Unit Basis								
Panel number/identifier (if applicable)								
Circuit Label Number(s):	***(B)***							
Phase of Circuit(s):	***(C)***	A B C			A B C			A B C
Fixture Verification and Nominal Watt Calculation								
Circuit(s) tested (On/Off)?		Y N			Y N			Y N
# of Rebated **Units** on Circuit(s)								
# of Cases controlled by Circuit(s):	***(D)***							
# of Doors per Case:	***(E)***							
Rated Door Wattage:	***(F)***							
Rated frame wattage:	***(G)***							
# of Innoperable doors:	***(H)***							
Total Nominal Rebated Circuit(s) Watts: ***((D*E*F)+(G*D))-(F*G)***	***(H)***							
Spot Measurements								
Max Measured Wattage: (with all doors on Circuit ON):	***(I)***		G N			G N		G N
Power Factor: *(if 2 circuits on 1 CT, average the PF)*:	***(J)***							
Measured Circuit(s) Voltage: (to Ground or Neutral):	***(K)***							
Max Measured Amperage: (with all doors 'ON'):	***(L)***							
% Meas. vs. Calc. Watts: ***(I/H*100)***; Is this between 90-110%?		%	Y N		%	Y N		% Y N
Non-Rebated or Parsitic Loads								
Do Non-Rebated or Parasitic Loads exist on this Circuit?		Y N DK			Y N DK			Y N DK
Is the parasitic load Constant or Variable?		C V NA			C V NA			C V NA
Parasitic Wattage: (only if a contant parasitic load):	***(M)***							
Logger Information								
Logger Type: ***(DCT** = DENT CT, **H**=HOBO)*	***(X)***	DCT H			DCT H			DCT H
Primary Logger S/N:	***(Y)***							
Logger Channel #	***(Z)***							
Reference Logger:		☐			☐			☐
Reference Channel:		☐			☐			☐
CT Amp size								
Logger Installation Comments								

Anti- Sweat Heater Controls Measures

IOU Tracking Data	Measure	«ASHMeasCat»	
	Measure Code	«ASHMeasCode»	
	Measure Name	«ASHMeasName»	
	Rebated #of Units	«ASHQuant»	
	IOU Unit Basis	«ASHUnit»	
	Correct Unit Basis (if incorrect above above)		
	Can Rebated measures be clearly identified?	Y N	
Visual Verification Data	HVAC Typical Schedule # (cooling | heating)		
	Indoor Humidity Setpoint		
	# of doors per case		
	Length of case		
	Number of cases		
	Number of ASH controls		
Physical Inspection	Door heater sticker present	**Y N**	
	Sticker Amps (per door)		
	Sticker Volts		
	Frame heater sticker present	**Y N**	
	Frame Sticker Amps		
	Frame Sticker Volts		
	Controller Make/ Manufacturer		
	Controller Model Number		
	Refrigeration Type	**SC RR**	
HVAC Inspection Data	HVAC Make/Manufacturer		
	HVAC Model		
	HVAC Type (*psz, ssz etc.*)		
	Dehumidification strategy (dessicant cooling/dx)		
Verification Counts	**Installed & Operational length of cases (ex post quantity)**		
	-- Was sub sampling or estimation used?	**Y N**	
Baseline System Summary Data (Observed or Self-Reported)	Did the doors have existing ASH prior to the retrofit?	**Y N**	**B SC E**
	Were there existing ASH controls?	**Y N**	**B SC E**
	If existing controls, approximately how old were they? (years)		**B SC E**
	Approximate age of existing cases (years)		**B SC E**
Observed versus Rebated # of Units is: E=Equal M=More L=Less OT (describe)		**E M L OT**	

Baseline Sources:

- **B** – Baseline equipment (includes physical inspection, documentation, or building/energy management system)
- **SC** – Site Contact
- **E** – Engineering estimate

Total # of units (A-F) MORE than Rebated # of Units	# that were rebated by other programs/projects?	
	# that were obtained from OTHER means (explain in comments)?	
Total # of units (A-F) LESS than Rebated # of Units	# of rebated units, other site contact explanation (note in comments)	
	# of rebated units, unaccounted for	

ASH Controls - Case Assignment Table (CAT) Measure Code: _____

*Use the CAT below to associate loggers to Refrigerator case types, equipment oper. Schedules and case temperatures. The values in the "Represented # of Units" column must add up to the **total # of Installed and Operational** units in the table above.*

Refrig. case temp	Item #	Length of Units	% of Total Inst&Op. Units (Ref)	Primary Logger S/N	Ref. Logger	Back-up Logger S/N	Comments
			%		☐		
			%		☐		
			%		☐		
			%		☐		
			%		☐		
			%		☐		
			%		☐		
			%		☐		
			%		☐		
			%		☐		
			%		☐		
			%	<= Total # of Installed & Operational Units check *(no data entry)*			

General Comments

Item #	Form Name	Comments

Site Photo Log

Record site photo information here including the PhotoID (i.e. digital file name) and a brief description of the photo where needed. Site Photos should include the site entrance and entire building, rebated measures, and close-up photos of nameplates, lamp codes, and other make/model identification. Refer to the training manual for more on what photos to take. Photo/file naming conventions is SiteID_Item# or SiteID 00# (e.g. PGE_056789_1.jpg, PGE_056789 001.jpg).

Item #	Description/Comments/Measure Code *(no data entry)*
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	

Incentive Payment

My signature acknowledges that I received a participation incentive in the form of a $____ gift card for the survey effort.

Print Name		**Date Received**	
Gift Card Company		**Gift Card Serial #**	
Signature			

PROCESS BOILER ON-SITE FORM

Process Boiler On-Site Data Collection Form

Project Information			
IOU			
ApplicationCode or ProjectID			
Program ID			
Program Name			
Point of Sale Purchase?			
IOU Claim ID(s)	Measure 1:		
	Measure 2:		
	Measure 3:		
	Measure 4:		
	Measure 5:		
	Measure 6:		
IOU Measure Description	Measure 1:		
	Measure 2:		
	Measure 3:		
	Measure 4:		
	Measure 5:		Put units from tracking system below
	Measure 6:		<NormUnit>
Number of Units Installed	Measure 1:		
	Measure 2:		
	Measure 3:		
	Measure 4:		
	Measure 5:		
	Measure 6:		
Project Application date			
Project Installation Date			Engineer update below as needed [ENTER]:
Business Name			
Business Street Address			
Business City			
Customer Contact Name			
Customer Contact Phone Number			
Customer Contact E-mail Address			
Vendor Business Name			
Vendor Contact Name			
Vendor Contact Phone Number			
Vendor Contact E-mail Address			
Site Information			
Assigned Engineer Name			
Assigned Engineer Firm			
Site Visit Consent Granted Y/N			
Date of First On-Site Visit			
Flue Gas Measured Y/N			
Date of Flue Gas Measurement (if applicable)			

Process Boiler On-Site Data Collection Form

Business Activity

[Circle One Below]	What is the main business ACTIVITY at this facility?	
1	Offices (non-medical)	
2	Restaurant/Food Service	
3	Food Store (grocery/liquor/convenience)	
4	Agricultural (farms, greenhouses)	
5	Retail Stores	
6	Warehouse	
7	Health Care	
8	Education	
9	Lodging (hotel/rooms)	
10	Public Assembly (church, fitness, theatre, library, museum, convention)	
11	Services (hair, nail, massage, spa, gas, repair)	
12	Industrial (food processing plant, manufacturing)	
13	Laundry (Coin Operated, Commercial Laundry Facility, Dry Cleaner)	
14	Condo Assoc./Apartment Mgr (Garden Style, Mobile Home Park, High-rise, Townhouse)	
15	Public Service (fire/police/postal/military)	
77	Other / Record Business Activity [ENTER] ====>	

Provide additional comments as needed [ENTER] ===>	
Provide specifics on activity [ENTER] ===>	
(i.e., industrial bakery or commercial greenhouse)	

Process Boiler On-Site Data Collection Form

Holiday Schedule

[Check All that Apply] During what holidays is the facility closed?

	New Year's Eve
	New Year's Day
	New Year's Day Celebrated
	Martin Luther King Day
	Presidents' Day
	St. Patrick's Day
	Easter Sunday
	Memorial Day
	Flag Day
	July 4th
	July 4th Celebrated
	Labor Day
	Columbus Day
	Veteran's Day
	Thanksgiving
	Thanksgiving Friday
	Christmas Eve
	Christmas Day
	Christmas Day Celebrated
	Other / Record Additional Holiday Closures [ENTER] ====>	

Provide additional comments as needed [ENTER] ===>

Provide define any additional closures or periods of limited operations [ENTER] ===>

Process Boiler On-Site Data Collection Form

EE Measure Replacement Battery

Application # _____ <=== Enter Application Code

[Answer for Measure #1]		[Answer for Measure #2]		[Answer for Measure #3]	
[Circle One Entry]	Did the new gas boiler replace an existing boiler?	**[Circle One Entry]**	Did the new gas boiler replace an existing boiler?	**[Circle One Entry]**	Did the new gas boiler replace an existing boiler?
1	Replaced existing boiler	**1**	Replaced existing boiler	**1**	Replaced existing boiler
2	Added the new gas boiler	**2**	Added the new gas boiler	**2**	Added the new gas boiler
3	New construction	**3**	New construction	**3**	New construction
88	Refused	**88**	Refused	**88**	Refused
99	Don't know	**99**	Don't know	**99**	Don't know

Provide additional comments as needed [ENTER] ===>

[Ask remaining questions for any gas boiler that replaced an existing unit]

[Answer for Measure #1]		[Answer for Measure #2]		[Answer for Measure #3]	
[Circle One Entry]	Was the replaced boiler a gas or electric boiler?	**[Circle One Entry]**	Was the replaced boiler a gas or electric boiler?	**[Circle One Entry]**	Was the replaced boiler a gas or electric boiler?
1	Existing gas boiler	**1**	Existing gas boiler	**1**	Existing gas boiler
2	Existing electric boiler	**2**	Existing electric boiler	**2**	Existing electric boiler
88	Refused	**88**	Refused	**88**	Refused
99	Don't know	**99**	Don't know	**99**	Don't know

Provide additional comments as needed [ENTER] ===>

[Answer for Measure #1]		[Answer for Measure #2]		[Answer for Measure #3]	
(Circle One Entry)	Approximately how old was the boiler that was removed and replaced? Would you say...	**(Circle One Entry)**	Approximately how old was the boiler that was removed and replaced? Would you say...	**(Circle One Entry)**	Approximately how old was the boiler that was removed and replaced? Would you say...
1	Less than 5 years old	**1**	Less than 5 years old	**1**	Less than 5 years old
2	Between 5 and 10 years old	**2**	Between 5 and 10 years old	**2**	Between 5 and 10 years old
3	Between 10 and 15 years old	**3**	Between 10 and 15 years old	**3**	Between 10 and 15 years old
4	More than 15 years old	**4**	More than 15 years old	**4**	More than 15 years old
5	Stated age _____ years	**5**	Stated age _____ years	**5**	Stated age _____ years
88	Refused	**88**	Refused	**88**	Refused
99	Don't know	**99**	Don't know	**99**	Don't know

Provide additional comments as needed [ENTER] ===>

Process Boiler On-Site Data Collection Form

EE Measure Replacement Battery

Application # _____ <=== Enter Application Code

[Answer for Measure #1] [Circle One Entry]	How would you describe the removed boilers condition? Would you say it was in…	[Answer for Measure #2] [Circle One Entry]	How would you describe the removed boilers condition? Would you say it was in…	[Answer for Measure #3] [Circle One Entry]	How would you describe the removed boilers condition? Would you say it was in…
1	Poor condition	**1**	Poor condition	**1**	Poor condition
2	Fair condition	**2**	Fair condition	**2**	Fair condition
3	Good condition	**3**	Good condition	**3**	Good condition
88	Refused	**88**	Refused	**88**	Refused
99	Don't know	**99**	Don't know	**99**	Don't know

Provide additional comments as needed [ENTER] ===>

[Answer for Measure #1] [Circle One Entry]	What was the main reason you replaced the existing boiler?	[Answer for Measure #2] [Circle One Entry]	What was the main reason you replaced the existing boiler?	[Answer for Measure #3] [Circle One Entry]	What was the main reason you replaced the existing boiler?
1	Equipment was not functioning adequately	**1**	Equipment was not functioning adequately	**1**	Equipment was not functioning adequately
2	Purchased as part of a general facility renovation	**2**	Purchased as part of a general facility renovation	**2**	Purchased as part of a general facility renovation
3	Wanted improved performance or functionality	**3**	Wanted improved performance or functionality	**3**	Wanted improved performance or functionality
4	Other / Provide Related Commentary Below:	**4**	Other / Provide Related Commentary Below:	**4**	Other / Provide Related Commentary Below:
88	Refused	**88**	Refused	**88**	Refused
99	Don't know	**99**	Don't know	**99**	Don't know

Provide additional comments as needed [ENTER] ===>

Existing equipt meeting needs
Functionality of existing equipment
Maintenance requirements/records
Performance of boilers/controls

Process Boiler On-Site Data Collection Form

EE Measure Replacement Battery

Application # _____ <=== Enter Application Code

[Ask IF answer above is 3 or 4]

[Answer for Measure #1]		**[Answer for Measure #2]**		**[Answer for Measure #3]**	
[Circle One Entry]	At the time of replacement, was the program or rebate important or influential in your decision to replace the existing boiler?	**[Circle One Entry]**	At the time of replacement, was the program or rebate important or influential in your decision to replace the existing boiler?	**[Circle One Entry]**	At the time of replacement, was the program or rebate important or influential in your decision to replace the existing boiler?
1	Yes	**1**	Yes	**1**	Yes
2	No	**2**	No	**2**	No
3	Other / Provide Related Commentary Below:	**3**	Other / Provide Related Commentary Below:	**3**	Other / Provide Related Commentary Below:
88	Refused	**88**	Refused	**88**	Refused
99	Don't know	**99**	Don't know	**99**	Don't know

Provide additional comments as needed [ENTER] ===>

[Ask IF answer above is 1 or 3]

[Answer for Measure #1]		**[Answer for Measure #2]**		**[Answer for Measure #3]**	
(Circle One Entry)	If not for the program/rebate, approximately how much longer would you have continued to use the replaced boiler? Would you say...	**(Circle One Entry)**	If not for the program/rebate, approximately how much longer would you have continued to use the replaced boiler? Would you say...	**(Circle One Entry)**	If not for the program/rebate, approximately how much longer would you have continued to use the replaced boiler? Would you say...
1	Within a one-year period	**1**	Within a one-year period	**1**	Within a one-year period
2	Between 2 and 3 years	**2**	Between 2 and 3 years	**2**	Between 2 and 3 years
3	4 or more years	**3**	4 or more years	**3**	4 or more years
4	Stated _____ years	**4**	Stated _____ years	**4**	Stated _____ years
88	Refused	**88**	Refused	**88**	Refused
99	Don't know	**99**	Don't know	**99**	Don't know

Provide additional comments as needed [ENTER] ===>

Process Boiler On-Site Data Collection Form

EE Measure Installation Verification

Measure # _____
Application # _____
IOU Measure Description _____
Number of units installed # _____

[Circle One Entry] Was the gas boiler found to be installed and operable at the time of the on-site inspection?

1	Yes
2	No
3	Other / Provide Related Commentary [ENTER] ====>

Provide additional comments as needed [ENTER] ===>

[If 2/No above, then provide additional comments]

Provide additional comments to explain [ENTER] ===>

Process Boiler On-Site Data Collection Form

EE Boiler Specifications

Measure # _____	**Circle units from the project info tab below <NormUnit>**
Application # _____	
IOU Measure Description _____	
Number of units installed # _____	kBtuh Mbtuh

[ENTER EQUIPMENT SPECIFICATIONS]

Manufacturer _____	
Make _____	
Model _____	**[Circle One per Line or Write Down Units if Different]**
Input Rating _____	Btu/hr kBtu/hr Mbtu/hr hp/unit
Output Rating _____	Btu/hr kBtu/hr Mbtu/hr hp/unit
Output Pressure _____	PSIG
Boiler Efficiency _____	%
Efficiency Source	CR AQ FG NP OT
Related parameters _____	% excess air % 02 %CO2
High-efficiency condensing boiler?	Y N
Does boiler use superheat?	Y N
Percent utility gas _____	%
Year of manufacture _____	

Provide additional comments as needed [ENTER] ===>

[ENTER EQUIPMENT LOAD CHARACTERIZATION]

	[Circle One per Line]
Boiler type; water heating or steam?	Water heating Steam
Supply temperature _____	Deg. F
Return temperature _____	Deg. F
Outside air temperature _____	Deg. F
Cumulative runtime _____	Hours of runtime since installation

Provide additional comments as needed [ENTER] ===>

Process Boiler On-Site Data Collection Form

EE Boiler Schedule of Operation

Measure # _____
Application # _____
IOU Measure Description _____
Number of units installed # _____

[Record information for the boiler measure # entered above]

Day vs Night	[Circle applicable days]	Below, record boiler schedule of operation (military)	Daily boiler runtime in hours	Write-in source for runtime	Daily boiler hot water/steam output in pounds	Write-in source for output
AM	M T W T F S S H					
PM						
AM	M T W T F S S H					
PM						
AM	M T W T F S S H					
PM						
AM	M T W T F S S H					
PM						
AM	M T W T F S S H					
PM						

Provide additional comments as needed [ENTER] ===>

Process Boiler On-Site Data Collection Form

EE Boiler Loads

Measure # _____
Application # _____
IOU Measure Description _____
Number of units installed # _____

	[Record information for the boiler measure # entered above]	**[Below, estimate total boiler load for circled days; up to 4 distinct variations by day of the week; account for all 8 days of the week]**				**[Below, provide relevant units]**	**[Below, provide relevant size]**	**[Below, provide additional info]**
[Check all that apply]	Identify the daily boiler loads using any of the following possible options	M T W T F S S H	M T W T F S S H	M T W T F S S H	M T W T F S S H	For example, loads, pallets, tons, sqft	For example, 10 cubic ft, 800 pounds	For example, whey, dried, setpoint temp/humidity
	Laundry processed							
	Processed vegetable oil							
	Ice cream produced							
	Cooking ingredients produced							
	Other product produced _____							
	Poultry processed							
	Meat processed							
	Nuts processed							
	Other product processed _____							
	Packaging produced							
	Figs produced							
	Personal care products produced							
	Cheese produced							
	Greenhouse heated/humidified							
	Building heated							
	Building water heating loads							
	Dishes cleaned							
	Other /[ENTER] _____							

Provide additional comments as needed [ENTER] ===>

Process Boiler On-Site Data Collection Form

[Explain in detail how the boiler is used to process or produce the products noted in previous page/ above.]

APPENDIX C ESPI MEASURE MAPPING

PA	Measure Group/ ESPI Measure	Measure Description
PGE	Ag Irrigation	Sprinkler to Drip irrigation - Field/Vegs (well and non well)
PGE	Food Service	Insulated Holding Cabinet, Full-Size
PGE	Food Service	Commercial Rack Oven - Gas
PGE	Food Service	Commercial Steam Cooker-Electric
PGE	Food Service	Commercial Steam Cooker-Gas
PGE	Food Service	Commercial Kitchen Demand Ventilation Controls
PGE	Food Service	Commercial Full-Size Convection Oven (Gas)
PGE	Food Service	Commercial Full-Size Convection Oven (Electric)
PGE	Food Service	Commercial Fryer (Gas)
PGE	Food Service	Commercial Fryer (Electric)
PGE	Food Service	Commercial Combination Oven/Steamer < 15 pan capacity (Electric)
PGE	Food Service	Commercial Combination Oven/Steamer < 15 pan capacity (Gas)
PGE	Food Service	Commercial Conveyor Oven - Gas
PGE	Food Service	Commercial Combination Oven/Steamer 15 to 28 pan capacity (Gas)
PGE	Food Service	Commercial Combination Oven/Steamer > 28 pan capacity (Gas)
PGE	Food Service	ENERGY STAR GRIDDLE - GAS Per Len. Ft
PGE	Food Service	ENERGY STAR GRIDDLE - ELECTRIC Per Len. Ft
PGE	Food Service	Insulated Holding Cabinet, Half-Size
PGE	Pipe Insulation Hot Application	Pipe Insulation High-Pressure Steam 15 psig, pipe diameter 1
PGE	Pipe Insulation Hot Application	Pipe Insulation High-Pressure Steam 15 psig , pipe diameter <1
PGE	Pipe Insulation Hot Application	Pipe Insulation Hot Water 120-200 F, pipe diameter 1
PGE	Pipe Insulation Hot Application	Pipe Insulation Low-Pressure Steam <15psig, pipe diameter <1
PGE	Pipe Insulation Hot Application	Pipe Insulation Low-Pressure Steam <15 psig, pipe diameter 1
PGE	Process Boiler	Steam Process Boiler
PGE	Process Boiler	Steam Boiler (> 2500 kBtuh, 80.0 Et, OA Reset from 140 to 165 F)
PGE	Process Boiler	Water Process Boiler
PGE	Refrigeration Case LED Lighting	Lin Ft T3 LED Ltbar > 5ft Unit No Occ Sens Ctrl Replace Mult Lamp Profile
PGE	Refrigeration Case LED Lighting	Lin Ft T3 LED Ltbar <= 5ft Unit No Occ Sens Ctrl Replace Mult Lamp Profile
PGE	Refrigeration Case LED Lighting	Refrig Case Ltg-Tier 2 LED Lightbar <= 5-Foot Unit No Occ Sensor Control

PA	Measure Group/ ESPI Measure	Measure Description
PGE	Refrigeration Case LED Lighting	Refrig Case Ltg-Tier 2 LED Lightbar > 5-Foot Unit No Occ Sensor Control
PGE	Refrigeration Case LED Lighting	Lin Ft T1 LED Ltbar > 5ft Unit No Occ Sens Ctrl Replace Mult Lamp Profile
PGE	Refrigeration Case LED Lighting	Lin Ft T2 LED Ltbar > 5ft Unit No Occ Sens Ctrl Replace Mult Lamp Profile
PGE	Refrigeration Case LED Lighting	Refrig Case Ltg-Tier 1 LED Lightbar > 5-Foot Unit No Occ Sensor Control
PGE	Refrigeration Case LED Lighting	Refrig Case Ltg-Tier 1 LED Lightbar <= 5-Foot Unit No Occ Sensor Control
PGE	Refrigeration Case LED Lighting	Refrig Case Ltg-Tier 3 LED Lightbar > 5-Foot Unit No Occ Sensor Control
PGE	Refrigeration Case LED Lighting	Lin Ft T1 LED Ltbar <= 5ft Unit No Occ Sens Ctrl Replace Mult Lamp Profile
PGE	Refrigeration Case LED Lighting	Lin Ft T2 LED Ltbar <= 5ft Unit No Occ Sens Ctrl Replace Mult Lamp Profile
PGE	Refrigeration Case LED Lighting	Refrig Case Ltg-Tier 3 LED Lightbar <= 5-Foot Unit No Occ Sensor Control
PGE	Refrigeration Case Replacement	Low Temperature High Efficiency Display Case with Special Door
PGE	Refrigeration Case Replacement	New Medium Temperature Display Case with Doors
PGE	Refrigeration Case Replacement	Low temp Narrow Coffin to Reach-in
PGE	Refrigeration Case Replacement	Medium Temperature Open Case, Standard Efficiency to High Efficiency
PGE	Refrigeration Case Replacement	New Low Temperature Display Case with Doors
PGE	Refrigeration Evaporator EC Motors	Walk-in Freezer Evaporator Fan ECM Motor replacing Shaded Pole Motor
PGE	Refrigeration Evaporator EC Motors	Display Case Cooler Evaporator Fan ECM Motor replacing Shaded Pole Motor
PGE	Refrigeration Evaporator EC Motors	Refrig: Evaporator Fan Controller
PGE	Refrigeration Evaporator EC Motors	Walk-in Cooler Evaporator Fan ECM Motor replacing Shaded Pole Motor
PGE	Refrigeration Evaporator EC Motors	Motor: ECM Evaporator Display Case
PGE	Refrigeration Evaporator EC Motors	Display Case Freezer Evaporator Fan ECM Motor replacing Shaded Pole Motor
PGE	Water Heating Boiler	Hot water Boiler (> 2500 kBtuh, 94.0 Et, condensing, OA reset from 140 to 165 F)
PGE	Water Heating Boiler	Hot water Boiler (300-2500 kBTUh, 85.0% thermal efficiency, forced draft)
PGE	Water Heating Boiler	Hot water Boiler (300-2500 kBTUh, 94.0% thermal efficiency, condensing)
PGE	Water Heating Boiler	High efficiency DHW Boiler (>75 MBTU/hr)
PGE	Water Heating Boiler	Large Domestic Hot Water Boiler

PA	Measure Group/ ESPI Measure	Measure Description
PGE	Water Heating Boiler	Large Condensing Domestic Hot Water Boiler
SCE	Food Service	1/2 Size <= 0.2 KW Insulated Holding Cabinet replacing ENERGY STAR Holding Cabinet
SCE	Food Service	Boilerless and Connectionless Steamer
SCE	Food Service	Cooking Efficiency > 80% Electric Fryer
SCE	Food Service	Cooking Efficiency =60% Commercial Electric Combination <15 Pans Oven
SCE	Food Service	Cooking Efficiency =60% Commercial Electric Combination 15 to 28 Pans Oven
SCE	Food Service	Electric Griddle
SCE	Food Service	Full Size <= 0.4 KW Insulated Holding Cabinet replacing ENERGY STAR Holding Cabinet
SCE	Refrigeration Case LED Lighting	(1) 48in Medium Temp Reach-in Display Cases Shelf LED replacing (1) 48in T8 Linear Fluorescent
SCE	Refrigeration Case LED Lighting	(1) 72in Retrofits in Medium Temp Reach-in Display Cases LED replacing (1) 72in T12 Linear Fluorescent
SCE	Refrigeration Case LED Lighting	(1) 72in Retrofits in Medium Temp Reach-in Display Cases LED
SCE	Refrigeration Case LED Lighting	(1) 60in Retrofits in Medium Temp Reach-in Display Cases LED replacing (1) 60in T8 Linear Fluorescent
SCE	Refrigeration Case LED Lighting	(1) 60in Retrofits in Low Temp Reach-in Display Cases LED replacing (1) 60in T8 Linear Fluorescent
SCE	Refrigeration Case LED Lighting	(1) 60in Retrofits in Medium Temp Reach-in Display Cases LED replacing (1) 60in T12 Linear Fluorescent
SCE	Refrigeration Case LED Lighting	(1) 48in Medium Temp Reach-in Display Cases Canopy LED replacing (2) 48in T8 Linear Fluorescent
SCE	Refrigeration Case Replacement	Low Temperature High Efficiency Display Case with Special Door
SCG	Food Service	Commercial Kitchen Exhaust Demand Control Ventilation
SCG	Food Service	EER Commercial Combination Oven-Gas <15 pan capacity
SCG	Food Service	EER Commercial Combination Oven-Gas 15-28 pan capacity
SCG	Food Service	EER Commercial Combination Oven-Gas >28 pan capacity
SCG	Food Service	EER Commercial Fryer-Gas
SCG	Food Service	EER Commercial Rack Oven-Gas
SCG	Food Service	EER Commercial Steamer-Gas
SCG	Food Service	EER Commercial Griddle-Gas per foot
SCG	Food Service	EER Commercial Gas Conveyor Oven Large
SCG	Food Service	EER Commercial Full-Size Convection Oven-Gas
SCG	Food Service	Commercial Griddle-Gas per foot
SCG	Food Service	Commercial Full-Size Convection Oven-Gas
SCG	Food Service	Commercial Fryer-Gas
SCG	Food Service	Commercial Rack Oven-Gas

PA	Measure Group/ ESPI Measure	Measure Description
SCG	Food Service	Commercial Steamer-Gas
SCG	Food Service	Commercial Combination Oven-Gas >28pan capacity
SCG	Food Service	Commercial Combination Oven-Gas 15-28 pan capacity
SCG	Food Service	Commercial Combination Oven-Gas <15 pan capacity
SCG	Pipe Insulation Hot Application	Pipe Insulation - Sm Com <12 hr - Medium Pressure steam >=15 psi < 1"" pipe, Indoor
SCG	Pipe Insulation Hot Application	Pipe Insulation - Sm Com <12 hr - Low pressure steam <15 psi >= 1"" pipe, Indoor
SCG	Pipe Insulation Hot Application	Pipe Insulation - Sm Com <12 hr - Low pressure steam <15 psi < 1"" pipe, Indoor
SCG	Pipe Insulation Hot Application	Pipe Insulation - Industrial - Hot Water >= 1"" pipe, Outdoor
SCG	Pipe Insulation Hot Application	Pipe Insulation - Lg Com >=12 hr - Hot Water < 1"" pipe, Indoor
SCG	Pipe Insulation Hot Application	Pipe Insulation - Sm Com <12 hr - Medium pressure steam >=15 psi >= 1"" pipe, Indoor
SCG	Pipe Insulation Hot Application	Pipe Insulation - Sm Com <12 hr - Hot Water < 1"" pipe, Indoor
SCG	Pipe Insulation Hot Application	Pipe Insulation - Lg Com >=12 hr - Hot Water >= 1"" pipe, Indoor
SCG	Pipe Insulation Hot Application	Pipe Insulation - Lg Com >=12 hr - Medium pressure steam >=15 psi >= 1"" pipe, Indoor
SCG	Pipe Insulation Hot Application	Pipe Insulation - Lg Com >=12 hr - Medium Pressure steam >=15 psi < 1"" pipe, Indoor
SCG	Pipe Insulation Hot Application	Pipe Insulation - Lg Com >=12 hr - Low pressure steam <15 psi >= 1"" pipe, Indoor
SCG	Pipe Insulation Hot Application	Pipe Insulation - Lg Com >=12 hr - Low pressure steam <15 psi < 1"" pipe, Indoor
SCG	Pipe Insulation Hot Application	Pipe Insulation - Lg Com >=12 hr - Hot Water >= 1"" pipe, Outdoor
SCG	Pipe Insulation Hot Application	Pipe Insulation - Sm Com <12 hr - Medium Pressure steam >=15 psi < 1"" pipe, Outdoor
SCG	Pipe Insulation Hot Application	Pipe Insulation - Industrial - Low pressure steam <15 psi >= 1"" pipe, Outdoor
SCG	Pipe Insulation Hot Application	Pipe Insulation - Industrial - Low pressure steam <15 psi >= 1"" pipe, Indoor
SCG	Pipe Insulation Hot Application	Pipe Insulation - Industrial - Hot Water < 1"" pipe, Indoor
SCG	Pipe Insulation Hot Application	Pipe Insulation - Industrial - Medium pressure steam >=15 psi >= 1"" pipe, Outdoor
SCG	Pipe Insulation Hot Application	Pipe Insulation - Industrial - Medium pressure steam >=15 psi >= 1"" pipe, Indoor
SCG	Pipe Insulation Hot Application	Pipe Insulation - Industrial - Hot Water >= 1"" pipe, Indoor
SCG	Pipe Insulation Hot Application	Pipe Insulation - Industrial - Medium Pressure steam >=15 psi < 1"" pipe, Outdoor
SCG	Pipe Insulation Hot Application	Pipe Insulation - Industrial - Low pressure steam <15 psi < 1"" pipe, Outdoor

PA	Measure Group/ ESPI Measure	Measure Description
SCG	Pipe Insulation Hot Application	Pipe Insulation - Sm Com <12 hr - Hot Water >= 1"" pipe, Outdoor
SCG	Pipe Insulation Hot Application	Pipe Insulation - Lg Com >=12 hr - Hot Water < 1"" pipe, Outdoor
SCG	Process Boiler	ProcessBoiler-Steam-(>=83%CE)
SCG	Process Boiler	ProcessBoiler-Water-Tier1(>=85%CE)
SCG	Refrigeration Case Replacement	Medium Temperature Reach-In Display Case
SCG	Tank Insulation Hot Application	Tank Insulation - High Temperature Applic. (LF) 2 in, Indoor
SCG	Tank Insulation Hot Application	Tank Insulation - High Temperature Applic. (LF) 2 in, Outdoor
SCG	Water Heating Boiler	CommercialBlr-DWH-Large(>200MBtuh)-Tier1(>=84%TE)
SCG	Water Heating Boiler	CommercialBlr-DWH-Large(>200MBtuh)-Tier2(>=90%TE)
SCG	Water Heating Boiler	CommercialBlr-DWH-Small(<=200MBtuh)-Tier1(>=84%EF)
SDGE	Food Service	Food Service - Gas Combination Oven < 15 Pans Oven (Eff>=30)
SDGE	Food Service	Food Service - Gas Combination Oven 15 to 28 Pans Oven (Eff>=30)
SDGE	Food Service	Food Service - Convection Oven-Gas
SDGE	Food Service	Food Service-Commercial Gas Rack Oven- Double, Cooking Efficiency >= 50%
SDGE	Food Service	Food Service-Commercial Gas Large Vat Fryer, Cooking Efficiency >= 50%
SDGE	Food Service	Food Service - Commercial Gas Fryer
SDGE	Food Service	Food Service - Griddle-Gas
SDGE	Food Service	Food Service - Commercial Electric Fryer
SDGE	Refrigeration Case LED Lighting	Lighting - Premium Tier 6 foot Case Door
SDGE	Refrigeration Case LED Lighting	Lighting - Premium Tier 5 foot Case Door

APPENDIX D NET-TO-GROSS SUPPORTING MATERIAL

This appendix includes the following documents:

- Net-to-Gross Algorithm
- The Methodological Framework for Using the Self-Report Approach to Estimating Net-to-Gross Ratios for Nonresidential Customers, developed by the Nonresidential Net-to-Gross Working Group in October 2012, which describes the algorithm used to estimate the NTGRs. This method has been used for the 2013-15 ESPI nonresidential impact evaluations.
- The verbatim responses to the three survey questions used to develop PAI-3, as requested by PG&E in their comments to the draft report on 3/21/19.
- The verbatim responses to two questions regarding the life of refrigeration cases, LED101i and LED101j, as requested by PG&E in their comments to the draft report on 3/21/19.

NET-TO-GROSS ALGORITHM

The NTGR algorithm is based on five survey questions, as shown below.

N2	Did your organization make the decision to install this new equipment before or, after, or at the same time as you became aware of that rebates [IF NEEDED: to reduce the cost of the measure] were available through the PROGRAM?
1	Before
2	After
3	Same time

	If you were given 10 points to award in total, how many points would you give to the importance of the program and how many points would you give to these other non-program factors?
N41	How many of the ten points would you give to the importance of the PROGRAM in your decision?
#	Record 0 to 10 score (_____)

REPLACE	Was the installation of this measure....<%NTGMEASURE> ...a replacement of existing equipment or was it additional equipment you installed in your facility?
1	Replace/Modification/Retrofit
2	Add-on

N5	Using a likelihood scale from 0 to 10, where 0 is not at all likely and 10 is extremely likely, if THE PROGRAM had NOT BEEN AVAILABLE, what is the likelihood that you would have installed exactly the same program-qualifying energy efficient equipment that you did for this project regardless of when you would have installed it?
#	Record 0 to 10 score (_____)

N5aa	Using a likelihood scale from 0 to 10, where 0 is Not at all likely and 10 is Extremely likely, if THE PROGRAM had NOT BEEN AVAILABLE, what is the likelihood that you would have installed exactly the same energy efficient equipment at the same time as you did?
#	Record 0 to 10 score (_____)

The PAI-2 score utilizes the N2 and N41 questions, and is calculated as:

If N2 = after, then PAI-2 = N41/2

Else PAI-2 = N41

The PAI-3 score utilizes the REPLACE, N5 and N5aaquestions, and is calculated as:

If REPLACE = 1, then PAI-3 = 10 – N5

Else PAI-3 = 10 – N5aa

Finally, the NTGR is calculated as the average of these two scores, divided by 10:

NTGR = ((PAI-2 + PAI-3)/2)/10

Note that is only one PAI score is available, then the NTGR equals that PAI score divided by 10.

Methodological Framework for Using the Self-Report Approach to Estimating Net-to-Gross Ratios for Nonresidential Customers

Prepared for the Energy Division, California Public Utilities Commission

By

The Nonresidential Net-To-Gross Ratio Working Group

October 16, 2012

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Acknowledgments

As part of the evaluation of the 2010-12 energy efficiency programs designed and implemented by the four investor-owned utilities (Pacific Gas & Electric Company, Southern California Edison Company, Southern California Gas Company, and San Diego Gas and Electric Company) and third parties, the Energy Division of the California Public Utilities Commission (CPUC) re-formed the nonresidential net-to-gross ratio working group that was originally formed during the PY2006-2008 evaluation. The main purpose of this group was to furtherrefine and improve the standard net-to-gross methodological framework that was developed during the PY2006-2008 evaluation cycle. This framework includes decision rules, for integrating in a systematic and consistent manner the findings from both quantitative and qualitative information in estimating net-to-gross ratios. The working group, listed alphabetically, is composed of the following evaluation professionals:

- Jennifer Fagan, Itron, Inc.
- Nikhil Gandhi, Strategic Energy Technologies, Inc.
- Kay Hardy, Energy Division, CPUC
- Jeff Hirsch, James J. Hirsch & Associates
- Richard Ridge, Ridge & Associates
- Mike Rufo, Itron, Inc.
- Claire Palmgren, KEMA
- Valerie Richardson, KEMA
- Philippus Willems, PWP, Inc.

A public webinar was conducted to obtain feedback from the four investor-owned utilities and other interested stakeholders. The questionnaire was then pre-tested and, based on the pre-test results, finalized in December 2011.

1. OVERVIEW OF THE LARGE NONRESIDENTIAL FREE RIDERSHIP APPROACH

The methodology described in this section was developed to address the unique needs of Large Nonresidential customer projects developed through energy efficiency programs offered by the four California investor-owned utilities and third-parties. This method relies exclusively on the Self-Report Approach (SRA) to estimate project and program-level Net-to-Gross Ratios (NTGRs), since other available methods and research designs are generally not feasible for large nonresidential customer programs. This methodology provides a standard framework, including decision rules, for integrating findings from both quantitative and qualitative information in the calculation of the net-to-gross ratio in a systematic and consistent manner. This approach is designed to fully comply with the *California Energy Efficiency Evaluation: Protocols: Technical, Methodological, and Reporting Requirements for Evaluation Professionals* (Protocols) and the *Guidelines for Estimating Net-To-Gross Ratios Using the Self-Report Approaches* (Guidelines)**.**

This approach preserves the most important elements of the approaches previously used to estimate the NTGRs in large nonresidential customer programs. However, it also incorporates several enhancements that are designed to improve upon that approach, for example:

- The method incorporates a 0 to 10 scoring system for key questions used to estimate the NTGR, rather than using fixed categories that are assigned weights.

- The method asks respondents to jointly consider and rate the importance of the many likely events or factors that may have influenced their energy efficiency decision making, rather than focusing narrowly on only their rating of the program's importance. This question structure more accurately reflects the complex nature of the real-world decision making and should help to ensure that all non-program influences are reflected in the NTGR assessment in addition to program influences.

It is important to note that the NTGR approach described in this document is a general framework, designed to address all large nonresidential programs. In order to implement this approach on a program-specific basis, it also needs to be customized to reflect the unique nature of the individual programs.

2. BASIS FOR SRA IN SOCIAL SCIENCE LITERATURE

The social sciences literature provides strong support for use of the methods used in the SRA to assess program influence. As the *Guidelines* notes,

> More specifically, the SRA is a mixed method approach that involves asking one or more key participant decision-makers a series of structured and open-ended questions about whether they would have installed the same EE equipment in the

absence of the program as well as questions that attempt to rule out rival explanations for the installation (Weiss, 1972; Scriven, 1976; Shadish, 1991; Wholey et al., 1994; Yin, 1994; Mohr, 1995). In the simplest case (e.g., residential customers), the SRA is based primarily on quantitative data while in more complex cases the SRA is strengthened by the inclusion of additional quantitative and qualitative data which can include, among others, in-depth, open-ended interviews, direct observation, and review of program records. Many evaluators believe that additional qualitative data regarding the economics of the customer's decision and the decision process itself can be very useful in supporting or modifying quantitatively-based results (Britan, 1978; Weiss and Rein, 1972; Patton, 1987; Tashakkori and Teddlie, 1998).[1]

More details regarding the philosophical and methodological underpinnings of this approach are in Ridge, Willems and Fagan (2009), Ridge, Willems, Fagan and Randazzo (2009) and Megdal, Patil, Gregoire, Meissner, and Parlin (2009). In addition to these two articles, Appendix A provides an extensive listing of references in the social sciences literature regarding the methods employed in the SRA.

3. FREE RIDERSHIP ANALYSIS BY PROJECT TYPE

There are three levels of free-ridership analysis. The most detailed level of analysis, the **Standard – Very Large Project** NTGR, is applied to the largest and most complex projects (representing 10 to 20% of the total) with the greatest expected levels of gross savings[2] The **Standard** NTGR, involving a somewhat less detailed level of analysis, is applied to projects with moderately high levels of gross savings. The least detailed analysis, the **Basic** NTGR, is applied to all remaining projects. Evaluators must exercise their own discretion as to what the appropriate thresholds should be for each of these three levels.

4. SOURCES OF INFORMATION ON FREE RIDERSHIP

There are five sources of free-ridership information in this study. Each level of analysis relies on information from one or more of these sources. These sources are described below.

1. **Program Files**. As described in previous sections of this report, programs often maintain a paper file for each paid application. These can contain various pieces of information which are relevant to the analysis of free-ridership, such as letters written by the utility's customer representatives that document what the customer had planned to do in the absence of the rebate and explain the customer's motivation for implementing the efficiency measure. Information on the measure payback with and without the rebate may also be available.

[1] *Guidelines for Estimating Net-To-Gross Ratios Using the Self-Report Approaches*, October 15, 2007, pg. 3.

[2] Note that we do not refer to an Enhanced level of analysis, since this is defined by the Protocols to involve the application of two separate analysis approaches, such as billing analysis or discrete choice modeling.

2. **Decision-Maker Surveys**. When a site is recruited, one must also determine who was involved in the decision-making process which led to the implementation of measures under the program. They are asked to complete a Decision Maker survey. This survey obtains highly structured responses concerning the probability that the customer would have implemented the same measure in the absence of the program. First, participants are asked about the timing of their program awareness relative to their decision to purchase or implement the energy efficiency measure. Next, they are asked to rate the importance of the program versus non-program influences in their decision making. Third, they are asked to rate the significance of various factors and events that may have led to their decision to implement the energy efficiency measure at the time that they did. These include:

    - the age or condition of the equipment,
    - information from a feasibility study or facility audit
    - the availability of an incentive or endorsement through the program
    - a recommendation from an equipment supplier, auditor or consulting engineer
    - their previous experience with the program or measure,
    - information from a program-sponsored training course or marketing materials provided by the program
    - the measure being included as part of a major remodeling project
    - a suggestion from program staff, a program vendor, or a utility representative
    - a standard business practice
    - an internal business procedure or policy
    - stated concerns about global warming or the environment
    - a stated desire to achieve energy independence.

    In addition, the survey obtains a description of what the customer would have done in the absence of the program, beginning with whether the implementation was an early replacement action. If it was not, the decision maker is asked to provide a description of what equipment would have been implemented in the absence of the program, including both the efficiency level and quantities of these alternative measures. This is used to adjust the gross engineering savings estimate for partial free ridership, as discussed in Section 5.2.

    This survey contains a core set of questions for **Basic** NTGR sites, and several supplemental questions for both **Standard and Standard – Very Large** NTGR sites For example, if a Standard or Standard-Very Large respondent indicates that a financial calculation entered highly into their decision, they are asked additional questions about their *financial criteria* for investments and their rationale for the current project in light of them. Similarly, if they respond that a *corporate policy* was a primary consideration in their decision, they are asked a series of questions about the specific policy that led to their adoption of the installed measure. If they indicate the installation was a *standard practice*, there are supplemental questions to understand the origin and evolution of that standard practice within their

organization. These questions are intended to provide a deeper understanding of the decision making process and the likely level of program influence versus these internal policies and procedures. Responses to these questions also serve as a basis for consistency checks to investigate conflicting answers regarding the relative importance of the program and other elements in influencing the decision. In addition, **Standard – Very Large** sites may receive additional detailed probing on various aspects of their installation decision based on industry- or technology-specific issues, as determined by review of other information sources. For Standard-Very Large sites all these data are used to construct an internally consistent "story" that supports the NTGR calculated based on the overall information given.

3. **Vendor Surveys**. A Vendor Survey is completed for all **Standard** and **Standard-Very Large** NTGR sites that utilized vendors, and for **Basic** NTGR sites that indicate a high level of vendor influence in the decision to implement the energy efficient measure. For those sites that indicate the vendor was very influential in decision making, the vendor survey results enter directly into the NTGR scoring. The vendor survey findings are also be used to corroborate Decision Maker findings, particularly with respect to the vendor's specific role and degree of influence on the decision to implement the energy efficient measure. Vendors are queried on the program's significance in their decision to recommend the energy efficient measures, and on their likelihood to have recommended the same measure in the absence of the program. Generally, the vendors contacted as part of this study are contractors, design engineers, distributors, and installers.

4. **Utility and Program Staff Interviews**. For the Standard and Standard-Very Large NTGR analyses, interviews with utility staff and program staff are also conducted. These interviews are designed to gather information on the historical background of the customer's decision to install the efficient equipment, the role of the utility and program staff in this decision, and the name and contact information of vendors who were involved in the specification and installation of the equipment.

5. **Other information**. For **Standard – Very Large Project** NTGR sites, secondary research of other pertinent data sources is performed. For example, this could include a review of standard and best practices through industry associations, industry experts, and information from secondary sources (such as the U.S. Department of Energy's Industrial Technologies Program, Best Practices website URL, http://www1.eere.energy.gov/industry/bestpractices/). In addition, the Standard- Very Large NTGR analysis calls for interviews with other employees at the participant's firm, sometimes in other states, and equipment vendor experts from other states where the rebated equipment is being installed (some without rebates), to provide further input on standard practice within each company.

Table 1 below shows the data sources used in each of the three levels of free-ridership analysis. Although more than one level of analysis may share the same source, the amount of information that is utilized in the analysis may vary. For example, all three levels of analysis obtain core question data from the Decision Maker survey.

Table 1: Information Sources for Three Levels of NTGR Analysis

	Program File	Decision Maker Survey Core Question	Vendor Surveys	Decision Maker Survey Supplemental Questions	Utility & Program Staff Interviews	Other Research Findings
Basic NTGR	√	√	√[1]		√[2]	
Standard NTGR	√	√	√[1]	√	√	
Standard NTGR - Very Large Projects	√	√	√[3]	√	√	√

[1]Only performed for sites that indicate a vendor influence score (N3d) greater than maximum of the other program element scores (N3b, N3c, N3g, N3h, N3l).

[2]Only performed for sites that have a utility account representative

[3]Only performed if significant vendor influence reported or if secondary research indicates the installed measure may be becoming standard practice.

A copy of the complete survey forms (with lead-in text and skip patterns) are available upon request.

5. NTGR FRAMEWORK

The Self-Report-based Net-to-Gross analysis relies on responses to a series of survey questions that are designed to measure the influence of the program on the participant's decision to implement program-eligible energy efficiency measure(s). Based on these responses, a NTGR is derived based on responses to a set of "core" NTGR questions.

5.1. NTGR Questions and Scoring Algorithm

A self-report NTGR is computed for all NTGR levels using the following approach. Adjustments may be made for **Standard – Very Large** NTGR sites, if the additional information that is collected is inconsistent with information provided through the Decision Maker survey.

The NTGR is calculated as an average of three scores. Each of these scores represents the highest response or the average of several responses given to one or more questions about the decision to install a program measure.

- **Program attribution index 1 (PAI–1) score** that reflects the influence of the **most important** of various program and program-related elements in the

customer's decision to select the specific program measure at this time. Program influence through vendor recommendations is also incorporated in this score.

- **Program attribution index 2 (PAI–2) score** that captures the perceived importance of the program (whether rebate, recommendation, training, or other program intervention) relative to non-program factors in the decision to implement the specific measure that was eventually adopted or installed. This score is determined by asking respondents to assign importance values to both the program and most important non-program influences so that the two total 10. The program influence score is adjusted (i.e., divided by 2) if respondents say they had already made their decision to install the specific program qualifying measure before they learned about the program.

- **Program attribution index 2 (PAI–3) score** that captures the likelihood of various actions the customer might have taken at this time and in the future if the program had not been available (the counterfactual).

When there are multiple questions that feed into the scoring algorithm, as is the case for both the **PAI-1** and **PAI-3** scores, the maximum score is always used. The rationale for using the maximum value is to capture the most important element in the participant's decision making. Thus, each score is always based on the strongest influence indicated by the respondent. However, high scores that are inconsistent with other previous responses trigger consistency checks and can lead to follow-up questions to clarify and resolve the discrepancy.

The calculation of each of the above scores is discussed below. For each score, the associated questions are presented and the computation of each score is described.

5.1.1. PAI–1 score

For the Decision Maker, the questions asked are:
I'm going to ask you to rate the importance of the program as well as other factors that might influence your decision to implement [MEASURE.] Think of the degree of importance as being shown on a scale with equally spaced units from 0 to 10, where 0 means not at all important and 10 means very important, so that an importance rating of 8 shows twice as much influence as a rating of 4.

Now, using this 0 to 10 rating scale, where 0 means "Not at all important" and 10 means "Very important," please rate the importance of each of the following in your decision to implement this specific [MEASURE] at this time.

- Availability of the PROGRAM rebate

- Information provided through a recent feasibility study, energy audit or other types of technical assistance provided through PROGRAM

- Information from PROGRAM training course

- Information from other PROGRAM marketing materials
- Suggestion from program staff
- Suggestion from your account rep
- Recommendation from a vendor/supplier (If a score of greater than 5 is given, a vendor interview is triggered)

For the Vendor, the questions asked (if the interview is triggered) are:
I'm going to ask you to rate the importance of the [PROGRAM] in influencing your decision to recommend [MEASURE] to [CUSTOMER] and other customers. Think of the degree of importance as being shown on a scale with equally spaced units from 0 to 10, where 0 means not at all important and 10 means very important, so that an importance rating of 8 shows twice as much influence as a rating of 4.

1. Using this 0 to 10 scale where 0 is 'Not at all important" and 10 is "Very Important," how important was the PROGRAM, including incentives as well as program services and information, in influencing your decision to recommend that CUSTOMER install the energy efficiency MEASURE at this time?

2. And using a 0 to 10 likelihood scale, where 0 denotes "not at all likely" and 10 denotes "very likely," if the PROGRAM, including incentives as well as program services and information, had not been available, what is the likelihood that you would have recommended this specific energy efficiency MEASURE to CUSTOMER?
3. Now, using a 0 to 100 percent scale, in what percent of sales situations did you recommend MEASURE before you learned about the [PROGRAM]?
4. And using the same 0 to 100 percent scale, in what percent of sales situations do you recommend MEASURE now that you have worked with the [PROGRAM]?
5. And, using the same 0 to 10 scale where 0 is "Not at all important" and 10 is "Very important", how important in your recommendation were:
    a. Training seminars provided by UTILITY?
    b. Information provided by the UTILITY website?
    c. Your firm's past participation in a rebate or audit program sponsored by UTILITY?

If the Vendor interview is triggered, a score is calculated that captures the highest degree of program influence on the vendor's recommendation. This score (VMAX) is calculated as the MAXIMUM value of the following:

1. The response to question 1
2. 10 minus the response to question 2
3. The response to question 4 minus the response to question 3, divided by 10
4. The response to question 5a.
5. The response to question 5b.
6. The response to question 5c.

Note that vendors are asked an additional question regarding other ways that their recommendations regarding the measure might have been influenced. Their responses are not used in the direct calculation of the NTGR but are potentially useful in making adjustments to the core NTGR.

The PAI–1 score is calculated as:
The highest program influence score divided by the sum of the highest program influences (i.e., the responses to the first six decision maker questions) plus the highest non-program influence score, multiplied by 10. and, if the vendor interview has been triggered, the VMAX score multiplied by the score the decision makers assigned to the vendor recommendation.

5.1.2. PAI–2 score

The questions asked are:

1. Did you learn about PROGRAM BEFORE or AFTER you decided to implement the specific MEASURE that was eventually adopted or installed?

2. Now I'd like to ask you a last question about the importance of the program to your decision as opposed to other factors that may have influenced your decision. Again using the 0 to 10 rating scale we used earlier, where 0 means "Not at all important" and 10 means "Very important," please rate the overall importance of PROGRAM versus the most important of the other factors we just discussed in your decision to implement the specific MEASURE that was adopted or installed. This time I would like to ask you to have the two importance ratings -- the program importance and the non-program importance -- total 10.

The PAI–2 score is calculated as:
The importance of the program, on the 0 to 10 scale, to question 2. This score is reduced by half if the respondent learned about the program after the decision had been made.

5.1.3. PAI–3 Score

The questions asked are:

1. Now I would like you to think about the action you would have taken with regard to the installation of this equipment if the &PROGRAM had not been available.

Using a likelihood scale from 0 to 10, where 0 is "Not at all likely" and 10 is "Extremely likely", if PROGRAM had not been available, what is the likelihood that you would have installed exactly the same program-qualifying efficiency equipment that you did in this project?

The PAI-3 score is calculated as:

10 minus the likelihood of installing the same equipment

5.1.4. The Core NTGR

The self-reported core NTGR in most cases is simply the average of the PAI-1, PAI-2, and PAI-3 scores, divided by 10. The one exception to this is when the respondent indicates a 10 in 10 probability of installing the same equipment at the same time in the absence of the program, in which case the NTGR is based on the average of the PAI-2 and PAI-3 scores only.

5.2. Data Analysis and Integration

The calculation of the Core NTGR is fairly mechanical and is based on the answers to the closed-ended questions. However, the reliance of the Standard NTGR – Very Large on more information from so many different sources requires more of a case study level of effort. The SRA Guidelines point out that a case study is one method of assessing both quantitative and qualitative data in estimating a NTGR. A case study is an organized presentation of all these data available about a particular customer site with respect to all relevant aspects of the decision to install the efficient equipment. In such cases where multiple interviews are conducted eliciting both quantitative and qualitative data and a variety of program documentation has been collected, one will need to integrate all of this information into an internally consistent and coherent story that supports a specific NTGR.

The following data sources should be investigated and reviewed as appropriate to supplement the information collected through the decision maker interviews.

- Account Representative Interview
- Utility Program Manager/Staff Interview
- Utility Technical Contractor Interview
- Third party Program Manager Interview
- Evaluation Engineer Interview
- Gross Impact Site Plan/Analysis Review
- Corporate Green/Environmental Policy Review (if mentioned as important)
- Corporate Standard Practice Review (if mentioned as important)
- Industry Standard Practice Review (if mentioned as important)
- Corporate payback review (if mentioned as important)
- Review relevant codes and standards, including regulatory requirements
- Review industry publications, websites, reports such as the Commercial Energy Use Survey, historical purchase data of specific measures etc.

As detailed in the Self-Report NTGR Guidelines, when complementing the quantitative analysis of free-ridership with additional quantitative and qualitative data from multiple respondents and other sources, there are some basic concerns that one must keep in mind. Some of the other data – including interviews with third parties who were involved in the decision to install the energy efficient equipment – may reveal important influences on the customer's decision to install the qualifying program measure. When one chooses to

incorporate other data, one should keep the following principles in mind: 1) the method chosen should be balanced. That is, the method should allow for the possibility that the other influence can either increase or decrease the NTGR calculated from the decision maker survey responses, 2) the rules for deciding which customers will be examined for potential other influences should be balanced. In the case of Standard –Very Large interviews, all customers are subject to such a review, so that the pool of customers selected for such examination will not be biased towards ones for whom the evaluator believes the external influence will have the effect of influencing the NTGR in only one direction, 3) the plan for capturing other influences should be based on a well-conceived causal framework. The onus is on the evaluator to build a compelling case using a variety of quantitative and/or qualitative data for estimating a customer's NTGR.

Establishing Rules for Data Integration

Before the analysis begins, the evaluation team should establish, to the extent feasible, rules for the integration of the quantitative and qualitative data. These rules should be as specific as possible and be strictly adhered to throughout the analysis. Such rules might include instructions regarding when the NTGR based on the quantitative data should be overridden based on qualitative data, how much qualitative data are needed to override the NTGR based on quantitative data, how to handle contradictory information provided by more than one person at a given site, how to handle situations when there is no decision-maker interview, when there is no appropriate decision-maker interview, or when there is critical missing data on the questionnaire, and how to incorporate qualitative information on deferred free-ridership.

One must recognize that it is difficult to anticipate all the situations that one may encounter during the analysis. As a result, one may refine existing rules or even develop new ones during the initial phase of the analysis. One must also recognize that it is difficult to develop algorithms that effectively integrate the quantitative and qualitative data. It is therefore necessary to use judgment in deciding how much weight to give to the quantitative versus qualitative data and how to integrate the two. The methodology and estimates, however, must contain methods to support the validity of the integration methods through preponderance of evidence or other rules/procedures as discussed above.

For the **Standard-Very Large** cases in the large Nonresidential programs, the quantitative data used in the NTGR Calculator (which calculates the "core" NTGR), together with other information collected from the decision maker regarding the installation decision, form the initial basis for the NTG "story" for each site. Note that in most cases, supplemental data such as tracking data, program application files and results of interviews with program/IOU staff and vendors, will have been completed before the decision maker is contacted and will help guide the non-quantitative questioning in the interview. In practice, this means that most potential inconsistencies between decision maker responses and other sources of information should have been resolved before the interview is complete and data are entered into the NTGR Calculator. For example, if a company has an aggressive "green" policy widely promoted on its website that is not mentioned by the decision makers, the interviewer will ask the respondent to clarify the role of that policy in the decision. Conversely, if the decision maker attributes the

decision to install the equipment to a new company wide initiative rather than the program, yet there is no evidence of such an initiative reported by program staff, vendors, or the company's website, the decision maker will be asked to explain the discrepancy so that his or her responses can be changed if needed.

In some cases, however, it may be necessary to modify or override one of the scores contributing to the overall NTGR or the NTGR itself. Before this is done all quantitative and qualitative data will be systematically (and independently) analyzed by two experienced researchers who are familiar with the program, the individual site and the social science theory that underlies the decision maker survey instrument. Each will determine whether the additional information justifies modifying the previously calculated NTGR score, and will present any recommended modifications and their rationale in a well-organized manner, along with specific references to the supporting data. Again, it is important to note that the other influences can have the effect of either increasing or decreasing the NTGR calculated from the decision maker survey responses, and one should be skeptical about a consistent pattern of "corrections" in one direction or another.

Sometimes, *all* the quantitative and qualitative data will clearly point in the same direction while, in others, the *preponderance* of the data will point in the same direction. Other cases will be more ambiguous. In all cases, in order to maximize reliability, it is essential that more than one person be involved in analyzing the data. Each person must analyze the data separately and then compare and discuss the results. Important insights can emerge from the different ways in which two analysts look at the same set of data. Ultimately, differences must be resolved and a case made for a particular NTGR. Careful training of analysts in the systematic use of rules is essential to insure inter-rater reliability[3].

Once the individual analysts have completed their review, they meet to discuss their respective findings and present to the other the rationale for their recommended changes to the Calculator-derived NTGR. Key points of these arguments will be written down in summary form (e.g., Analyst 1 reviewed recent AQMD ruling and concluded that customer would have had to install the same measure within 2 years, not 3, thereby reducing NP score from 7.8 to 5.5) and also presented in greater detail in a workpaper so that an independent reviewer can understand and judge the data and the logic underlying each NTGR estimate. Equally important, the CPUC will have all the essential data to enable them to replicate the results, and if necessary, to derive their own estimates.

The outcome of the reconciliation by two analysts determines the final NTGR for a specific project. Again, the reasoning behind the "negotiated" final value must be thoroughly documented in a workpaper, while a more concise summary description of the rationale can be included in the NTGR Calculator workbook (e.g., Analyst 1 and Analyst 2 agreed that the NTGR score should have been higher than the calculated value of 0.45

[3] Inter-rater reliability is the extent to which two or more individuals (coders or raters) agree. Inter-rater reliability addresses the consistency of the implementation of a rating system.

because of extensive interaction between program technical staff and the customer, but they disagreed on whether this meant the NTGR should be .6 or .7. After discussion, they agreed on a NTGR of .65 as reflecting the extent of program influence on the decision).

In summary, it has been decided that supplemental data from non-core NTG questions collected through these surveys should be used in the following ways in the California Large Nonresidential evaluations:

- Vendor interview data will be used at times in the direct calculation of the NTGR. It will also be used to provide context and confirming/contradictory information for Standard-Very Large decision maker interviews.

- Qualitative and quantitative information from other sources (e.g., industry data, vendor estimates of sales in no-program areas, and other data as described above) may be used to alter core inputs only if contradictions are found with the core survey responses. Since judgments will have to be made in deciding which information is more compelling when there are contradictions, supplemental data are reviewed independently by two senior analysts, who then summarize their findings and recommendations and together reach a final NTGR value.

- Responses will also be used to construct a NTGR "story" around the project; that is they will help to provide the context and rationale for the project. This is particularly valuable in helping to provide guidance to program design for future years. It may be, for example, that responses to the core questions yield a high NTGR for a project, but additional information sources strongly suggest that the program qualifying technology has since become standard practice for the firm or industry, so that free ridership rates in future years are likely to be higher if program rules are not changed.

- Findings from other non-core NTGR questions (e.g., Payback Battery, Corporate Policy Battery) are also be used to **cross-check the consistency** of responses to core NTGR questions. When an inconsistency is found, it is presented to the Decision Maker respondent who is then be asked to explain and resolve it if they can. If they are not able to do so, their responses to the core NTGR question with the inconsistency may be overridden by the findings from these supplemental probes. These situations are handled on a case-by-case basis; however consistency checks are programmed into the CATI survey instrument used for the Basic and Standard cases.

Finally, some analysis of additional information beyond the close-ended questions that are used to calculate the Core NTGR could be done for the **Standard NTGR**. For example information regarding the financial criteria used to make capital investments, corporate policy regarding the purchase of energy efficiency equipment or the influence of standard practice in the same industry as the participant could be taken into account and used to make adjustments to the Core NTGR in a manner similar what is done for the Standard – Very Large NTGR.

5.3. Accounting for Partial Free Ridership

Partial free-ridership can occur when, in the absence of the program, the participant would have installed something more efficient than the program-assumed baseline efficiency but not as efficient as the item actually installed as a result of the program.

In situations where there is partial free ridership, the assumed baseline condition is affected. Absent partial free ridership, the assumed baseline would normally be based on existing equipment (in early replacement cases), on code requirements (in normal replace on burnout cases), or on a level above current code (e.g., this could be a market average or value purposefully set above code minimum but below market average; in this case, the definition and requirement would typically be defined by a specific program's baseline rules). In some cases, there may be a "dual" baseline (more specifically, a baseline that changes over the measure's EUL) if the project involves early replacement plus partial free ridership. In such cases, the baseline basis for estimating savings is the existing equipment over the remaining useful life (RUL) of the equipment, and then a baseline of likely intermediate efficiency equipment (e.g., code or above) for the remainder of the analysis period (i.e., the period equal to the EUL-RUL). When there is partial free ridership, the baseline equipment that would have been installed absent the program is of an intermediate efficiency level (resulting in lower energy savings than that assumed by the program if the program took in situ equipment efficiency as the basis for savings over the entire EUL). A related issue with respect to determination of the appropriate baseline is whether the adjustment made, if any, from the in situ or otherwise claimed baseline in the ex ante calculation, is whether the adjustment applies to the gross or net savings calculation.

Assignment of Partial Free Ridership Effects to Gross versus Net. In past evaluations, partial free ridership impacts have principally been incorporated into the net-to-gross ratio. This is because most partial free ridership is induced by market conditions, rather than by non-market factors. Market conditions refer primarily to standard adoption of a technology by a particular market segment or end user as a result of competitive market forces or other end user-specific factors. The key determining principle with respect to application of the adjustment to the net-to-gross ratio is whether there is a level of efficiency, below the efficiency of the measure for which savings are paid and claimed, but above what is required by code or minimum program baseline requirements that the end user would have implemented anyway without the program. Conditions that cause this adjustment to be made to gross savings rather than the net-to-gross ratio may include factors such as

- changing baseline equipment to meet changed business circumstances (such as increased production/throughput, changes in occupancy, etc.);
- compliance with environmental regulations, indoor air quality requirements, safety requirements; or
- the need to address an operational problem.

Each project should be examined separately for partial free ridership and a determination should be made based on the unique circumstances of each installation of whether an adjustment to gross savings or the net-to-gross ratio is warranted.

Data Collection Procedures. Information is gathered on partial free ridership using the following questions asked as part of the decision maker NTGR survey.

1. Now I would like you to think one last time about what action you would have taken if the program had not been available. Supposing that you had not installed the program qualifying equipment, which of the following alternatives would you have been MOST likely to do?
    a. Install fewer units
    b. Install standard efficiency equipment or whatever required by code
    c. Install equipment more efficient than code but less efficient than what you installed through the program
    d. repair/rewind or overhaul the existing equipment
    e. do nothing (keep the existing equipment as is)
    f. something else (specify what _____)

2. (IF FEWER UNITS) How many fewer units would you have installed? (It is okay to take an answer such as ...HALF...or 10 percent fewer ... etc.)

3. (IF MORE EFFICIENT THAN CODE) Can you tell me what model or efficiency level you were considering as an alternative? (It is okay to take an answer such as … 10 percent more efficient than code or 10 percent less efficient than the program equipment)

4. (IF REPAIR/REWIND/OVERHAUL) How long do you think the repaired/rewound/refurbished equipment would have lasted before requiring replacement?

In addition, these same partial free ridership questions should be asked during the on-site audit for a given project. This latter interview will be conducted by the project engineers. The collected information helps the gross impact and NTG analysis teams gain a more complete understanding of the true project baseline and equipment selection decision. These decision maker questions are included in the Excel version of the CATI-based Standard and Basic decision maker survey instrument as well as in the Standard-Very Large instrument.

Data Analysis and Integration Procedures. In cases where partial free ridership is found and it is determined that the adjustment should be made to the net-to-gross ratio, the following procedure should be used:

On the net side, the adjustment is based on the intermediate baseline indicated by the decision maker for the time period in which the intermediate equipment would have been installed. The calculation of energy saved under this intermediate baseline is done, and then divided by the savings calculated under the in situ baseline. The resulting ratio is then multiplied by the initial NTGR which was previously calculated using only the

'core' scoring inputs. The effect of this adjustment is to reduce the NTGR further to reflect the effects of the revealed partial free ridership.

In all cases, the Gross Impacts and NTG analysis teams will need to carefully coordinate their calculations to ensure that they are not inadvertently adjusting the savings twice for the same partial free ridership, i.e., through adjustments both to the gross savings calculation and to the NTG ratio.

6. NTGR INTERVIEW PROCESS

The NTGR surveys are conducted via telephone interviews. Highly-trained professionals with experience levels that are commensurate with the interview requirements should perform these interviews. Basic and Standard level interviews should be conducted by senior interviewers, who are highly experienced conducting telephone interviews of this type. Standard - Very Large interviews should be completed by professional consulting staff due to the complex nature of these projects and related decision making processes. More than likely, these will involve interviews of several entities involved in the project including the primary decision maker, vendor representatives, utility account executives, program staff and other decision influencers, as well as a review of market data to help establish an appropriate baseline.

All but the Standard -Very Large interviews should be conducted using computer-aided telephone interview (CATI) software. Use of a CATI approach has several advantages: (1) the surveys can be customized to reflect the unique characteristics of each program, and associated program descriptions, response categories, and skip patterns; (2) it drastically reduces inaccuracies associated with the more traditional paper and pencil method; and (3) the process of checking for inconsistent answers can be automated, with follow up prompts triggered when inconsistencies are found.

7. COMPLIANCE WITH SELF-REPORT GUIDELINES

The proposed NTGR framework fully complies with all of the CPUC/ED and the MECT's Guidelines for Estimating Net-to-Gross Ratios Using the Self-Report Approach.

Appendix A

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Verbatim Responses to the Three Survey Questions Used to Develop PAI-3

case_id	utility	strata_desc	ntgmeasure	PAI3	replace	n5	n5aa
180200237	PGE	BOIL_PGE	PROCESS BOILER	6	Replace/Modification/Retrofit	4	.
180200442	PGE	BOIL_PGE	PROCESS BOILER	0	Add-on	.	10 Extremely likely
180200481	PGE	BOIL_PGE	PROCESS BOILER	0	Add-on	.	10 Extremely likely
180200005	PGE	FOOD_PGE_DOWNSTREAM	FOOD SERVICE EQUIPMENT	3	Replace/Modification/Retrofit	7	.
180200021	PGE	FOOD_PGE_DOWNSTREAM	FOOD SERVICE EQUIPMENT	5	Replace/Modification/Retrofit	5	.
180200024	PGE	FOOD_PGE_DOWNSTREAM	FOOD SERVICE EQUIPMENT	0	Replace/Modification/Retrofit	10 Extremely likely	.
180200027	PGE	FOOD_PGE_DOWNSTREAM	FOOD SERVICE EQUIPMENT	8	Add-on	.	2
180200031	PGE	FOOD_PGE_DOWNSTREAM	FOOD SERVICE EQUIPMENT	6	Replace/Modification/Retrofit	4	.
180200039	PGE	FOOD_PGE_DOWNSTREAM	FOOD SERVICE EQUIPMENT	0	Replace/Modification/Retrofit	10 Extremely likely	.
180200055	PGE	FOOD_PGE_DOWNSTREAM	FOOD SERVICE EQUIPMENT	8	Replace/Modification/Retrofit	2	.
180200062	PGE	FOOD_PGE_DOWNSTREAM	FOOD SERVICE EQUIPMENT	0	Replace/Modification/Retrofit	10 Extremely likely	.
180200070	PGE	FOOD_PGE_DOWNSTREAM	FOOD SERVICE EQUIPMENT	8	Add-on	.	2
180200084	PGE	FOOD_PGE_DOWNSTREAM	FOOD SERVICE EQUIPMENT	0	Replace/Modification/Retrofit	10 Extremely likely	.
180200195	PGE	FOOD_PGE_DOWNSTREAM	FOOD SERVICE EQUIPMENT	0	Add-on	.	10 Extremely likely
180200221	PGE	FOOD_PGE_DOWNSTREAM	FOOD SERVICE EQUIPMENT	0	Add-on	.	10 Extremely likely
180200244	PGE	FOOD_PGE_DOWNSTREAM	FOOD SERVICE EQUIPMENT	10	Replace/Modification/Retrofit	0 Not at all likely	.
180200535	PGE	FOOD_PGE_DOWNSTREAM	FOOD SERVICE EQUIPMENT	5	Add-on	.	5
SaveMart	PGE	FOOD_PGE_DOWNSTREAM	FOOD SERVICE EQUIPMENT	10	Add-on	3	0 Not at all likely
180200023	PGE	FOOD_PGE_MIDSTREAM	FOOD SERVICE EQUIPMENT	5	Replace/Modification/Retrofit	5	.
180200068	PGE	FOOD_PGE_MIDSTREAM	FOOD SERVICE EQUIPMENT	.	DON'T KNOW	.	.
180200149	PGE	FOOD_PGE_MIDSTREAM	FOOD SERVICE EQUIPMENT	0	Replace/Modification/Retrofit	10 Extremely likely	.
180200345	PGE	FOOD_PGE_MIDSTREAM	FOOD SERVICE EQUIPMENT	0	Replace/Modification/Retrofit	10 Extremely likely	.
180200346	PGE	FOOD_PGE_MIDSTREAM	FOOD SERVICE EQUIPMENT	1	Replace/Modification/Retrofit	9	.
180200361	PGE	FOOD_PGE_MIDSTREAM	FOOD SERVICE EQUIPMENT	7	Replace/Modification/Retrofit	3	.
180200365	PGE	FOOD_PGE_MIDSTREAM	FOOD SERVICE EQUIPMENT	3	Replace/Modification/Retrofit	7	.
180200421	PGE	FOOD_PGE_MIDSTREAM	FOOD SERVICE EQUIPMENT	0	Replace/Modification/Retrofit	10 Extremely likely	.
180200429	PGE	FOOD_PGE_MIDSTREAM	FOOD SERVICE EQUIPMENT	4	Replace/Modification/Retrofit	6	.
180200447	PGE	FOOD_PGE_MIDSTREAM	FOOD SERVICE EQUIPMENT	3	Add-on	.	7
180200455	PGE	FOOD_PGE_MIDSTREAM	FOOD SERVICE EQUIPMENT	0	Add-on	.	10 Extremely likely
180200456	PGE	FOOD_PGE_MIDSTREAM	FOOD SERVICE EQUIPMENT	0	Replace/Modification/Retrofit	10 Extremely likely	.
180200463	PGE	FOOD_PGE_MIDSTREAM	FOOD SERVICE EQUIPMENT	0	Add-on	.	10 Extremely likely
180200467	PGE	FOOD_PGE_MIDSTREAM	FOOD SERVICE EQUIPMENT	3	Replace/Modification/Retrofit	7	.
180200522	PGE	FOOD_PGE_MIDSTREAM	FOOD SERVICE EQUIPMENT	0	Add-on	.	10 Extremely likely
180200531	PGE	FOOD_PGE_MIDSTREAM	FOOD SERVICE EQUIPMENT	5	Replace/Modification/Retrofit	5	.
180200534	PGE	FOOD_PGE_MIDSTREAM	FOOD SERVICE EQUIPMENT	1	Replace/Modification/Retrofit	9	.
180200536	PGE	FOOD_PGE_MIDSTREAM	FOOD SERVICE EQUIPMENT	0	Add-on	.	10 Extremely likely
180200549	PGE	FOOD_PGE_MIDSTREAM	FOOD SERVICE EQUIPMENT	.	Add-on	.	.
180200550	PGE	FOOD_PGE_MIDSTREAM	FOOD SERVICE EQUIPMENT	2	Replace/Modification/Retrofit	8	.
180200004	PGE	RLED_PGE_DI	REFRIGERATION CASE LED LIGHTING	3	Replace/Modification/Retrofit	7	.
180200038	PGE	RLED_PGE_DI	REFRIGERATION CASE LED LIGHTING	7	Replace/Modification/Retrofit	3	.
180200063	PGE	RLED_PGE_DI	REFRIGERATION CASE LED LIGHTING	8	Replace/Modification/Retrofit	2	.
180200135	PGE	RLED_PGE_DI	REFRIGERATION CASE LED LIGHTING	5	Replace/Modification/Retrofit	5	.
180200157	PGE	RLED_PGE_DI	REFRIGERATION CASE LED LIGHTING	5	Replace/Modification/Retrofit	5	.
180200187	PGE	RLED_PGE_DI	REFRIGERATION CASE LED LIGHTING	8	Replace/Modification/Retrofit	2	.
180200224	PGE	RLED_PGE_DI	REFRIGERATION CASE LED LIGHTING	0	Replace/Modification/Retrofit	10 Extremely likely	.
180200291	PGE	RLED_PGE_DI	REFRIGERATION CASE LED LIGHTING	6	Replace/Modification/Retrofit	4	.
180200350	PGE	RLED_PGE_DI	REFRIGERATION CASE LED LIGHTING	2	Replace/Modification/Retrofit	8	.
180200363	PGE	RLED_PGE_DI	REFRIGERATION CASE LED LIGHTING	5	Replace/Modification/Retrofit	5	.
180200415	PGE	RLED_PGE_DI	REFRIGERATION CASE LED LIGHTING	5	Replace/Modification/Retrofit	5	.
180200432	PGE	RLED_PGE_DI	REFRIGERATION CASE LED LIGHTING	0	Replace/Modification/Retrofit	10 Extremely likely	.
180200445	PGE	RLED_PGE_DI	REFRIGERATION CASE LED LIGHTING	10	Replace/Modification/Retrofit	0 Not at all likely	.
180200453	PGE	RLED_PGE_DI	REFRIGERATION CASE LED LIGHTING	10	Add-on	.	0 Not at all likely
180200457	PGE	RLED_PGE_DI	REFRIGERATION CASE LED LIGHTING	10	Replace/Modification/Retrofit	0 Not at all likely	.
180200525	PGE	RLED_PGE_DI	REFRIGERATION CASE LED LIGHTING	3	Replace/Modification/Retrofit	7	.

Verbatim Responses to the Three Survey Questions Used to Develop PAI-3

case_id	utility	strata_desc	ntgmeasure	PAI3	replace	n5	n5aa
180200527	PGE	RLED_PGE_DI	REFRIGERATION CASE LED LIGHTING	0	Replace/Modification/Retrofit	10 Extremely likely	.
180200546	PGE	RLED_PGE_DI	REFRIGERATION CASE LED LIGHTING	5	Replace/Modification/Retrofit	5	.
180200555	PGE	RLED_PGE_DI	REFRIGERATION CASE LED LIGHTING	5	Replace/Modification/Retrofit	5	.
180200556	PGE	RLED_PGE_DI	REFRIGERATION CASE LED LIGHTING	5	Replace/Modification/Retrofit	5	.
180200567	PGE	RLED_PGE_DI	REFRIGERATION CASE LED LIGHTING	4	Replace/Modification/Retrofit	6	.
180200572	PGE	RLED_PGE_DI	REFRIGERATION CASE LED LIGHTING	5	Replace/Modification/Retrofit	5	.
180200054	PGE	RLED_PGE_DOWNSTREAM	REFRIGERATION CASE LED LIGHTING	4	Replace/Modification/Retrofit	6	.
180200056	PGE	RLED_PGE_DOWNSTREAM	REFRIGERATION CASE LED LIGHTING	0	Replace/Modification/Retrofit	10 Extremely likely	.
180200089	PGE	RLED_PGE_DOWNSTREAM	REFRIGERATION CASE LED LIGHTING	3	Replace/Modification/Retrofit	7	.
180200174	PGE	RLED_PGE_DOWNSTREAM	REFRIGERATION CASE LED LIGHTING	0	Replace/Modification/Retrofit	10 Extremely likely	.
180200270	PGE	RLED_PGE_DOWNSTREAM	REFRIGERATION CASE LED LIGHTING	10	Replace/Modification/Retrofit	0 Not at all likely	.
180200434	PGE	RLED_PGE_DOWNSTREAM	REFRIGERATION CASE LED LIGHTING	0	Replace/Modification/Retrofit	10 Extremely likely	.
180200452	PGE	RLED_PGE_DOWNSTREAM	REFRIGERATION CASE LED LIGHTING	2	Replace/Modification/Retrofit	8	.
180200498	PGE	RLED_PGE_DOWNSTREAM	REFRIGERATION CASE LED LIGHTING	5	Add-on	.	5
180200537	PGE	RLED_PGE_DOWNSTREAM	REFRIGERATION CASE LED LIGHTING	2	Replace/Modification/Retrofit	8	.
180200541	PGE	RLED_PGE_DOWNSTREAM	REFRIGERATION CASE LED LIGHTING	.	Replace/Modification/Retrofit	.	.
180200569	PGE	RLED_PGE_DOWNSTREAM	REFRIGERATION CASE LED LIGHTING	5	Replace/Modification/Retrofit	5	.
SaveMart	PGE	RLED_PGE_DOWNSTREAM	REFRIGERATION CASE LED LIGHTING	7	Replace/Modification/Retrofit	3	0 Not at all likely
180200134	SCG	BOIL_SCG	PROCESS BOILER	3	Add-on	.	7
180200194	SCG	BOIL_SCG	PROCESS BOILER	10	Add-on	.	0 Not at all likely
180200465	SCG	BOIL_SCG	PROCESS BOILER	0	Replace/Modification/Retrofit	10 Extremely likely	.
180200547	SCG	BOIL_SCG	PROCESS BOILER	0	Add-on	.	10 Extremely likely
180200562	SCG	BOIL_SCG	PROCESS BOILER	4	Replace/Modification/Retrofit	6	.
180200124	SCG	FOOD_SCG_DOWNSTREAM	FOOD SERVICE EQUIPMENT	10	Replace/Modification/Retrofit	0 Not at all likely	.
180200220	SCG	FOOD_SCG_DOWNSTREAM	FOOD SERVICE EQUIPMENT	0	Replace/Modification/Retrofit	10 Extremely likely	.
180200241	SCG	FOOD_SCG_DOWNSTREAM	FOOD SERVICE EQUIPMENT	4	Replace/Modification/Retrofit	6	.
180200259	SCG	FOOD_SCG_DOWNSTREAM	FOOD SERVICE EQUIPMENT	0	Replace/Modification/Retrofit	10 Extremely likely	.
180200282	SCG	FOOD_SCG_DOWNSTREAM	FOOD SERVICE EQUIPMENT	2	Replace/Modification/Retrofit	8	.
180200299	SCG	FOOD_SCG_DOWNSTREAM	FOOD SERVICE EQUIPMENT	.	DON'T KNOW	.	.
180200319	SCG	FOOD_SCG_DOWNSTREAM	FOOD SERVICE EQUIPMENT	0	Replace/Modification/Retrofit	10 Extremely likely	.
180200320	SCG	FOOD_SCG_DOWNSTREAM	FOOD SERVICE EQUIPMENT	2	Replace/Modification/Retrofit	8	.
180200321	SCG	FOOD_SCG_DOWNSTREAM	FOOD SERVICE EQUIPMENT	5	Replace/Modification/Retrofit	5	.
180200339	SCG	FOOD_SCG_DOWNSTREAM	FOOD SERVICE EQUIPMENT	0	Add-on	.	10 Extremely likely
180200344	SCG	FOOD_SCG_DOWNSTREAM	FOOD SERVICE EQUIPMENT	0	Add-on	.	10 Extremely likely
180200349	SCG	FOOD_SCG_DOWNSTREAM	FOOD SERVICE EQUIPMENT	0	Replace/Modification/Retrofit	10 Extremely likely	.
180200354	SCG	FOOD_SCG_DOWNSTREAM	FOOD SERVICE EQUIPMENT	0	Replace/Modification/Retrofit	10 Extremely likely	.
180200376	SCG	FOOD_SCG_DOWNSTREAM	FOOD SERVICE EQUIPMENT	10	Add-on	.	0 Not at all likely
180200431	SCG	FOOD_SCG_DOWNSTREAM	FOOD SERVICE EQUIPMENT	8	Replace/Modification/Retrofit	2	.
180200436	SCG	FOOD_SCG_DOWNSTREAM	FOOD SERVICE EQUIPMENT	8	Replace/Modification/Retrofit	2	.
180200464	SCG	FOOD_SCG_DOWNSTREAM	FOOD SERVICE EQUIPMENT	2	Replace/Modification/Retrofit	8	.
180200466	SCG	FOOD_SCG_DOWNSTREAM	FOOD SERVICE EQUIPMENT	7	Replace/Modification/Retrofit	3	.
180200483	SCG	FOOD_SCG_DOWNSTREAM	FOOD SERVICE EQUIPMENT	0	Add-on	.	10 Extremely likely
180200492	SCG	FOOD_SCG_DOWNSTREAM	FOOD SERVICE EQUIPMENT	0	Replace/Modification/Retrofit	10 Extremely likely	.
180200495	SCG	FOOD_SCG_DOWNSTREAM	FOOD SERVICE EQUIPMENT	0	Replace/Modification/Retrofit	10 Extremely likely	.
180200519	SCG	FOOD_SCG_DOWNSTREAM	FOOD SERVICE EQUIPMENT	0	Replace/Modification/Retrofit	10 Extremely likely	.
180200526	SCG	FOOD_SCG_DOWNSTREAM	FOOD SERVICE EQUIPMENT	0	Add-on	.	10 Extremely likely
180200529	SCG	FOOD_SCG_DOWNSTREAM	FOOD SERVICE EQUIPMENT	0	Replace/Modification/Retrofit	10 Extremely likely	.
180200538	SCG	FOOD_SCG_DOWNSTREAM	FOOD SERVICE EQUIPMENT	8	Replace/Modification/Retrofit	2	.
180200543	SCG	FOOD_SCG_DOWNSTREAM	FOOD SERVICE EQUIPMENT	9	Replace/Modification/Retrofit	1	.
Albertson	SCG	FOOD_SCG_DOWNSTREAM	FOOD SERVICE EQUIPMENT	0	Replace/Modification/Retrofit	10 Extremely likely	5
In-N-Out	SCG	FOOD_SCG_DOWNSTREAM	FOOD SERVICE EQUIPMENT	0	Add-on	10 Extremely likely	10 Extremely likely
SOUTHERN	SCG	FOOD_SCG_DOWNSTREAM	FOOD SERVICE EQUIPMENT	2	Replace/Modification/Retrofit	8	6
SaveMart	SCG	FOOD_SCG_DOWNSTREAM	FOOD SERVICE EQUIPMENT	10	Add-on	3	0 Not at all likely
180200098	SCG	FOOD_SCG_UPSTREAM	FOOD SERVICE EQUIPMENT	3	Replace/Modification/Retrofit	7	.

Verbatim Responses to the Three Survey Questions Used to Develop PAI-3

case_id	utility	strata_desc	ntgmeasure	PAI3	replace	n5	n5aa
180200116	SCG	FOOD_SCG_UPSTREAM	FOOD SERVICE EQUIPMENT	0	Replace/Modification/Retrofit	10 Extremely likely	.
180200125	SCG	FOOD_SCG_UPSTREAM	FOOD SERVICE EQUIPMENT	0	Replace/Modification/Retrofit	10 Extremely likely	.
180200126	SCG	FOOD_SCG_UPSTREAM	FOOD SERVICE EQUIPMENT	10	Replace/Modification/Retrofit	0 Not at all likely	.
180200127	SCG	FOOD_SCG_UPSTREAM	FOOD SERVICE EQUIPMENT	2	Replace/Modification/Retrofit	8	.
180200142	SCG	FOOD_SCG_UPSTREAM	FOOD SERVICE EQUIPMENT	10	Replace/Modification/Retrofit	0 Not at all likely	.
180200150	SCG	FOOD_SCG_UPSTREAM	FOOD SERVICE EQUIPMENT	.	Replace/Modification/Retrofit	.	.
180200171	SCG	FOOD_SCG_UPSTREAM	FOOD SERVICE EQUIPMENT	5	Add-on	.	5
180200219	SCG	FOOD_SCG_UPSTREAM	FOOD SERVICE EQUIPMENT	6	Replace/Modification/Retrofit	4	.
180200230	SCG	FOOD_SCG_UPSTREAM	FOOD SERVICE EQUIPMENT	0	Replace/Modification/Retrofit	10 Extremely likely	.
180200232	SCG	FOOD_SCG_UPSTREAM	FOOD SERVICE EQUIPMENT	8	Replace/Modification/Retrofit	2	.
180200247	SCG	FOOD_SCG_UPSTREAM	FOOD SERVICE EQUIPMENT	4	Replace/Modification/Retrofit	6	.
180200264	SCG	FOOD_SCG_UPSTREAM	FOOD SERVICE EQUIPMENT	.	Replace/Modification/Retrofit	.	.
180200286	SCG	FOOD_SCG_UPSTREAM	FOOD SERVICE EQUIPMENT	5	Replace/Modification/Retrofit	5	.
180200297	SCG	FOOD_SCG_UPSTREAM	FOOD SERVICE EQUIPMENT	2	Replace/Modification/Retrofit	8	.
180200303	SCG	FOOD_SCG_UPSTREAM	FOOD SERVICE EQUIPMENT	7	Replace/Modification/Retrofit	3	.
180200312	SCG	FOOD_SCG_UPSTREAM	FOOD SERVICE EQUIPMENT	0	Replace/Modification/Retrofit	10 Extremely likely	.
180200331	SCG	FOOD_SCG_UPSTREAM	FOOD SERVICE EQUIPMENT	0	Add-on	.	10 Extremely likely
180200338	SCG	FOOD_SCG_UPSTREAM	FOOD SERVICE EQUIPMENT	0	Replace/Modification/Retrofit	10 Extremely likely	.
180200343	SCG	FOOD_SCG_UPSTREAM	FOOD SERVICE EQUIPMENT	10	Replace/Modification/Retrofit	0 Not at all likely	.
180200348	SCG	FOOD_SCG_UPSTREAM	FOOD SERVICE EQUIPMENT	2	Replace/Modification/Retrofit	8	.
180200360	SCG	FOOD_SCG_UPSTREAM	FOOD SERVICE EQUIPMENT	7	Replace/Modification/Retrofit	3	.
180200367	SCG	FOOD_SCG_UPSTREAM	FOOD SERVICE EQUIPMENT	0	Replace/Modification/Retrofit	10 Extremely likely	.
180200368	SCG	FOOD_SCG_UPSTREAM	FOOD SERVICE EQUIPMENT	3	Replace/Modification/Retrofit	7	.
180200369	SCG	FOOD_SCG_UPSTREAM	FOOD SERVICE EQUIPMENT	5	Add-on	.	5
180200385	SCG	FOOD_SCG_UPSTREAM	FOOD SERVICE EQUIPMENT	6	Add-on	.	4
180200393	SCG	FOOD_SCG_UPSTREAM	FOOD SERVICE EQUIPMENT	0	Replace/Modification/Retrofit	10 Extremely likely	.
180200400	SCG	FOOD_SCG_UPSTREAM	FOOD SERVICE EQUIPMENT	10	Replace/Modification/Retrofit	0 Not at all likely	.
180200402	SCG	FOOD_SCG_UPSTREAM	FOOD SERVICE EQUIPMENT	0	Replace/Modification/Retrofit	10 Extremely likely	.
180200406	SCG	FOOD_SCG_UPSTREAM	FOOD SERVICE EQUIPMENT	7	Replace/Modification/Retrofit	3	.
180200407	SCG	FOOD_SCG_UPSTREAM	FOOD SERVICE EQUIPMENT	0	Replace/Modification/Retrofit	10 Extremely likely	.
180200000	SDGE	RLED_SDGE	REFRIGERATION CASE LED LIGHTING	2	Replace/Modification/Retrofit	8	.
180200013	SDGE	RLED_SDGE	REFRIGERATION CASE LED LIGHTING	10	Replace/Modification/Retrofit	0 Not at all likely	.
180200017	SDGE	RLED_SDGE	REFRIGERATION CASE LED LIGHTING	10	Replace/Modification/Retrofit	0 Not at all likely	.
180200057	SDGE	RLED_SDGE	REFRIGERATION CASE LED LIGHTING	7	Replace/Modification/Retrofit	3	.
180200071	SDGE	RLED_SDGE	REFRIGERATION CASE LED LIGHTING	10	Replace/Modification/Retrofit	0 Not at all likely	.
180200073	SDGE	RLED_SDGE	REFRIGERATION CASE LED LIGHTING	10	Replace/Modification/Retrofit	0 Not at all likely	.
180200179	SDGE	RLED_SDGE	REFRIGERATION CASE LED LIGHTING	0	Replace/Modification/Retrofit	10 Extremely likely	.
180200183	SDGE	RLED_SDGE	REFRIGERATION CASE LED LIGHTING	.	DON'T KNOW	.	.
180200185	SDGE	RLED_SDGE	REFRIGERATION CASE LED LIGHTING	0	Replace/Modification/Retrofit	10 Extremely likely	.
180200283	SDGE	RLED_SDGE	REFRIGERATION CASE LED LIGHTING	3	Replace/Modification/Retrofit	7	.
180200296	SDGE	RLED_SDGE	REFRIGERATION CASE LED LIGHTING	0	Replace/Modification/Retrofit	10 Extremely likely	.
180200340	SDGE	RLED_SDGE	REFRIGERATION CASE LED LIGHTING	2	Replace/Modification/Retrofit	8	.
180200374	SDGE	RLED_SDGE	REFRIGERATION CASE LED LIGHTING	8	Replace/Modification/Retrofit	2	.
180200532	SDGE	RLED_SDGE	REFRIGERATION CASE LED LIGHTING	6	Replace/Modification/Retrofit	4	.

Verbatim Responses to the Two Survey Questions: Life of Refrigeration Cases, LED101i and LED101j

case_id	led101i	led101j
	Approximately how old are the Refrigerator Cases with the lighting that was removed and replaced with <REFLEDLIGHTING_MEASURE>?	How many years do you anticipate are left in the refrigerated case itself until you will replace the entire case?
180200000	1	2
180200004	2	99
180200013	1	99
180200017	2	20
180200038	1	99
180200054	2	8
180200056	1	10
180200057	4	20
180200063	2	5
180200071	3	20
180200073	99	3
180200089	4	7
180200135	1	10
180200157	4	2
180200174	4	99
180200179	2	15
180200183	2	99
180200185	3	99
180200187	2	20
180200224	3	99
180200270	2	20
180200283	1	5
180200291	2	10
180200296	4	20
180200340	3	99
180200350	4	99
180200363	1	5
180200374	4	99
180200415	2	5
180200432	4	99
180200434	2	99
180200445	2	15
180200452	1	8
180200453	4	99
180200457	99	99
180200498	2	99
180200525	99	99
180200527	4	99
180200532	1	20
180200537	4	15
180200541	99	99
180200546	99	99
180200555	4	15
180200556	2	5
180200567	3	99
180200569	2	2
180200572	3	99

APPENDIX E RESPONSE TO COMMENTS

Appendix E
2017 Small/Medium Sector Commercial ESPI Impact Evaluation Report
Response to Comments

Submitted by	Section	Topic	Page	Comment	Evaluator Response
Energy Solutions	3.2	Foodservice Measure Group	p.3-7	Southern California Gas Company (SoCalGas) offers foodservice measures via two program delivery channels, deemed and midstream/point-of-sale, not upstream as the report indicates. Energy Solutions is the third-party implementer for SoCalGas' midstream channel. The midstream program is called the "SoCalGas Foodservice Point-of Sale (POS) Instant Rebates Program" (Program). The Program is similar in design to the midstream POS program that PG&E delivers.	Acknowledged. However, upstream is the label used in the tracking system for this subset of claims.
Energy Solutions	3.1	Program Manager Interviews	p.3-2	The draft report indicates that no midstream foodservice program managers were interviewed. We believe that this oversight may have contributed to some of the misrepresentations and inaccuracies in the evaluation. Energy Solutions would be happy to make our program managers available for future interviews.	Thank you for this input.
Energy Solutions	4	Gross Impact Evaluation	Various	Can the evaluator please provide the specific detailed data collected for each of the SoCalGas midstream sites sampled, including address, business name, business type, phone numbers, names of individuals who they worked with onsite? We understand this data cannot be shared publicly, however without it we are unable to provide a thorough review of the evaluation and the conclusions reached.	A map of evaluation ID to SCG claim ID has been provided to SCG. Please coordinate with SCG on related customer details. However, we do have some concerns that willing participants in our evaluation study, might now be subject to additional scrutiny from Energy Solutions, based in part on information they shared with us, or that we otherwise obtained during our evaluation efforts. We hope that you will be sensitive to this potential additional burden on this subset of participants. We inquired with SCG about the intended use of the ID map provided. SCG stated that "simply get more context behind the Impact Evaluation and the overall sample that was used." The evaluation team therefore believes that SCG might object to Energy Solutions conducting follow-up activities with participants from our sample.
Energy Solutions	Appendix A	Telephone Survey	Various	Can the evaluator please provide the specific verbatim responses collected for each of the SoCalGas midstream customers surveyed, as well as information from the customers' program applications, such as business name, equipment make and model, invoice date, and number of units? Can the evaluator please also provide a question map for the telephone survey instrument that maps each question to the NTG scoring algorithm, as well as any other mapping mechanism that indicated the purpose or use of each individual question? As above, this detailed data will allow us to provide a more thorough review of the evaluation and the conclusions reached to determine if they are appropriate for the market and the program design.	The evaluation team will not provide participant-sourced responses to the telephone survey, as these data were collected with an understanding of anonymity. Regarding participant data, please coordinate with SCG to obtain any such data. Please refer to Appendix D to obtain an understanding of the NTGR scoring algorithm and framework. Given limited time available for evaluators to comment on responses and update the report as needed for final posting on 4/1/2019, it is unlikely that the evaulation team can facilitate rapid data delivery to Energy Solutions. Note that the evaluation team will be delivering all evaluation data to the CPUC in the coming months. It would likely be most feasible to direct requested portions of the data to Energy Solutions at that time; but likely in an anonymized fashion. It is also possible that the CPUC and SCG would have some say in how any such data is used/transferred to a given third-party implemneter like Energy Solutions.
Energy Solutions	5.3	Zero Savers	p.5-31 to 5-34	Energy Solutions does not believe that it is appropriate to assign a very low or 0.0 realization rate for the SoCalGas sites identified as partial or zero savers. These zero assignments do not take into account a variety of market factors what we are very familiar with as implementers. Those factors include the common practice of moving fryers to different locations and the resale market. Moving Fryers: In the population of customers that participated in the 2017 Instant Rebates Program we have come to understand that it is common for customers who own more than one restaurant to move an operational fryer to one of their other locations when needed. Restaurant operators do this because it is relatively easy to move and install a fryer and it allows for minimal disruption to their operations, as fryers are commonly a critical part of many quick serve and full-service restaurants. Inspection results conducted by SoCalGas for the 2017 Instant Rebates program indicate that approximately 40% of equipment that was initially not found by inspectors was moved by the operators to another eligible SoCalGas site (note, this excludes inspections where the equipment was not found because it had not yet been installed – which in 2017 was the other most common reason equipment wasn't found). Additionally, the following information may be useful: - Due to the midstream program design in 2017, the program participants were predominantly independently owned restaurants and small regional chain restaurants who purchased their equipment from cash and carry equipment dealers. Due to the characteristics of this population group, moving equipment among locations is likely more common among small independent operators than medium or large chains. - In our experience implementing the Program, and other very similar midstream POS fryer programs in other states in the US, there is a small percentage (1-3%) of units as determined by third party inspections that are true "failed" inspections. This is usually comprised of the following situations: businesses shut down, the equipment is not at the address indicated on the application and we simply cannot track it down, error made when application was submitted, the equipment was somehow damaged, or the equipment is onsite but not installed (customer stocking it in case of burnout). Resale Market: There is a sizable foodservice equipment resale market in Southern California. When foodservice enterprises fail, which is quite common, equipment is often re-used by another foodservice business that moves into the same location or it ends up with a re-seller. In either case, the equipment circulates back into use and continues to save energy for its owner. It is our understanding the impact of the resale market will be studied as part of the fryer ISP report that the IOUs have been tasked with completing in 2019. In conclusion, it is common for equipment both to be moved to new locations and to be resold. In both cases the equipment continues to provide energy saving benefits. We request that the zero saver projects be revisited and the discounts be reduced to account for these common industry practices.	The evaluation team was lenient on this point by providing partial credit to the program for zero savers, in an effort to be as fair as possible to the program, given existing CPUC policy surrounding evaluation treatment for conditions such as those we observed in the field during verification. CPUC policy dictates that evaluators evaluate the as-found condition, and strictly prohibits any forecasting to predict future savings and conditions. This includes fryers that may have been moved and fryers that may have been sold into a secondary market. However, we do agree with Energy Solutions that the cooking equipment market may represent a special case and that perhaps the above mentioned policy guidance could be revisited for this and other special circumstances. There is precedence in the industry for special verification accounting of equipment that are moved/installed at more than one facility and perhaps other factors -- such as mid-stream lighting programs. The evaluation team is not aware of any such precedence for California programs. Furthermore, the fact that within-program inspections are only successful at finding 40% of equipment at the site of record for a sample of installations suggests that greater accuracy in tracking of this information is needed.

Submitted by	Section	Topic	Page	Comment	Evaluator Response
Energy Solutions	5.3	Baseline Models	various	Can the evaluator please provide make, model number, and performance ratings (idle rate, pre-heat energy, and heavy load cooking efficiency) for the 11 baseline models used to derive the average baseline efficiency? Used, refurbished fryers make up a significant portion of the market; were any used refurbished fryers part of the 11 baseline models tested? Also, the method of determining baseline fryer efficiency is inconsistent with the method of determining the measure case efficiency for fryers in the evaluation. The evaluation stated that the ex-ante method of calculating fryer efficiency based on average QPL efficiency metrics does not take market adoption into account. This reasoning should also apply to the calculation of ex-post baseline fryer efficiency metrics to properly account for the market weighting of popular baseline models. We request that the evaluator account for the market weighting of baseline models and account for used refurbished equipment in determining average baseline fryer efficiency metrics.	The conditions of data sharing preclude us from providing the requested information. The condition of data transfer stipulated that we "use the attached database for workpaper review purposes only and do not distribute it for any other purposes." We believe that all units tested for performance are new. The evaluation team does not have data surrounding market share of baseline equipment, but we do support obtaining market data for the purpose of workpaper updates and using the resulting data for weighting, as described in this comment from Energy Solutions. However, whether or not used equipment should be included in the resulting average is yet to be determined. The markets served by the program likely differ to some extent from those served by secondary used equipment markets.
Energy Solutions	5.3	Operating Assumptions	various	Can the evaluator please provide information on the sample sites used to develop operating assumptions? Some of the sites have low run hours, and it appears that these may be seasonal operations or businesses that own a fryer but do not regularly operate it. Each sample is being evenly weighted to determine average operating assumptions, but this does not account for the business type distribution across the state. With such a low sample population, utilizing even weighting across each sample (12 samples in Table 5-51), operational assumptions derived from this evaluation are not statistically accurate. In the SoCalGas Instant Rebates Program in 2017, the most common building types were restaurant fast food (33%), restaurant sit down (49%), education primary and secondary (6%). The draft evaluation highlighted two specific building types sampled, catering and assisted living. In 2017 catering was included in our assembly category (along with religious buildings), which were 5% of the program and assisted living represented 0.33% of the program. We request that the evaluator update operational assumptions to more accurately reflect business type distribution.	As discussed above, we request that Energy Solutions coordinate with SCG surrounding provision and use of any sample-level data. The evaluation team pulled a random sample of applications from the available population of PY2017 gas fryer projects, forming a sample frame of 50 projects from which the evaluation team recruited and evaluated 20 projects. The conditions in the sample frame represent the population and the resulting sample represents both the frame and population. Roughly seven of these SCG projects were partial- or full-zero savers, and so did not contribute to the development of operational parameters discussed in report Section 5.3.7. Given that the pull was random and that operating parameters represent a single fryer vat from each of 12 sample points, no weighting is necssary, and we conclude that the results were developed using a statistically valid approach.
Energy Solutions	5.3	Fryer Efficiency	various	The evaluation utilizes only two models of high efficiency fryer for determining measure case fryer efficiency, both with the same oil capacity. Although these fryer models are popular, they do not provide a full representation of the fryers on the market. SoCalGas lists 191 qualifying fryer models on their QPL, and manufacturers would not make that many distinct models if only two models were being purchased. Chain restaurants often utilize larger fryers with higher efficiency. These are not represented in the evaluation.	As discussed above, the evaluation team concludes that the randomly selected sample represents the population and sample frame. Had the resulting sample included other make and model equipment, those equipment also would have been represented in the evaluation sample-level results.
Energy Solutions	5.3	Zero Savers	p.5-31 to 5-34	For the two most common economy fryers rebated through the Program, the manufacturers offer a 1-year (or longer) manufacturer parts and labor warranty. There were two zero saver sites that could possibly have fallen within those manufacturer warranty periods.	The evaluation team is not aware of any precedence in California policy for accounting for warranty for the purposes of establishing equipment useful life. For the two projects noted by Energy Solutions the evaluation team truncated the EUL, to best represent that the failed equipment were removed and no longer operational. The evaluation team believes this is the most appropriate treatment.
Energy Solutions	6	NTG Battery	various	As mentioned previously, the bulk of customers that participate in the SoCalGas Instant Rebates Program are smaller independent operators with restaurant fast food and restaurant sit down building types. The NTG scoring algorithm does not appear to weigh the survey responses from various customer types according to their representation in the Program. We highly recommend that scoring be weighted to more accurately reflect the customers participating in the Program.	The sample frame was divided into large chains and other participants. A census was attempted on the large chains. A stratified random sample was attempted on the remaining population as shown in Table 3-10 of the report. We have clarified this in the report. Furthermore, the completed surveys were weighted accordingly, so that the large chains only represented their portion of the population.
Energy Solutions	6	NTG Battery	various	Energy Solutions believes that the NTG survey and analysis is not accurate nor does it represent the full program sphere of influence of the Instant Rebates Program on the fryer market. The Program's logic model focuses on overcoming two key market barriers – knowledge of cost savings (ROI)and low stocking of program-eligible high efficiency equipment. To overcome both barriers, the Program invests in developing strong relationships with foodservice equipment dealers and providing training to dealers and their sales staff. In this Program, dealers provide point-of-sale rebates directly to the customers when they make their purchase. By 2017, the Program had made significant inroads with its top 4 participating dealers (representing 80 percent of program participation for fryers). Each of these dealers had made changes to their stocking practices to achieve the following: program-qualified models were almost always in stock, displayed on the sales floor, and identified prominently with Program marketing materials highlighting rebate amount and often total purchase price (after rebate), which was typically within $0-200 of the baseline efficient models. In some cases, dealers moved baseline (nonprogram eligible models) to the rear or sides of display area and reduced stock of some baseline models. Each of the top dealers reported significant growth in the program-eligible models that they sold after making these changes. Two dealers in particular were able to transition over 95% of their economy fryer sales to program-eligible models in 2017 due to program influence. Over the past five years, Energy Solutions has collected evidence of dealers significantly changing their stocking and sales practices as a direct result of the program. No dealers were contacted as part of this impact evaluation. The customer telephone interviews also do not ask customers about the influence of the dealers on their purchase choices. There is a section in the survey about contractor influence; however, contractors do not play a significant role in the fryer sales through the Program channel. Most customers purchase directly from the equipment dealers. They may choose to engage a contractor to install their equipment, but that would be a separate interaction. We request that the evaluator take into account the influence of foodservice equipment dealers stocking and upselling in their analysis on program attribution.	Thank you for your comment. Due to the relatively limited timeline under which this study was performed, incorporating market actor interviews into the NTGR approach was not feasible. Therefore, the evaluation team used the existing NTGR survey battery that was used and approved by the CPUC for the 2013, 2014 and 2015 Program Year ESPI impact Evaluations,and went through rigourous public review. As part of that framework, questions were asked about the influence of the vendor that sold the equipment, and if the rebate brought the equipment into their acceptable range of ROI, and an open ended question was provided for any other influential factors. In general, respondents did not find the vendor to be highly influential relative to other decision factors. For PY2018, the NTGR approach is expected to be revised and we will take this into consideration.

Submitted by	Section	Topic	Page	Comment	Evaluator Response
Energy Solutions	Appendix A	Telephone Survey	various	We believe that the telephone survey instrument has a number of flaws that resulted in inaccurate or unrepresentative responses from customers. Below is a summary of those concerns. - The use of specific foodservice terms, such as “restaurant supply firm,” “contractor,” and “vendor.” It appears that the survey uses these 3 terms interchangeably, which is not standard practice in the food service industry and likely created confusion. - Various questions use the terms "used," "food being cooked," and "on" to describe the state of operation of the fryer. These terms are not defined, and they make the questions unclear as they can easily be interchanged. - Another term usage that introduces concern is the use of the phrase “install this new equipment.” (Page A-36, questions N2 and N3). These are critical questions because they are asking when the customer decided to participate in the program. The question does not distinguish between deciding to “install this new equipment” and deciding to purchase and install a program-eligible fryer model. Customers very commonly decide to purchase a new fryer in advance of going to the store to buy one. Only then, after being influenced at the store location by Program information, the sales person, price, availability of rebate, etc, do they make the decision on what specific model to purchase. The ambiguity of the words used likely resulted in inaccurate responses. - The order of questions presented does not prioritize obtaining thoughtful responses to the critical NTG questions. There is a whole series of questions not necessary for foodservice customers that may cause significant survey fatigue. Critical questions should be asked as early as possible. - The questions that ask customers about the influence of the program on their purchase “at the time you did” are very confusing. Particularly for customers who have already indicated that they made their purchase as ROB, the responses to these questions should be eliminated. For a foodservice customer purchasing a new fryer to replace one that is no longer working, these questions will likely be misunderstood and provide unrepresentative responses. - It is unclear how some open ended question responses are documented, since both response options are given but the prompt indicates the question is open ended. We believe that it is likely that survey fatigue and overly complex and confusion questions resulted in attribution scoring that is not representative of customers true experiences with the Programs.	Thank you for your comment. Due to the relatively limited timeline under which this study was performed, the evaluation team used the existing NTGR survey battery that was used and approved by the CPUC for the 2013, 2014 and 2015 Program Year ESPI impact Evaluations,and went through rigourous public review. For PY2018, the NTGR approach is expected to be revised and evaluators will solicit input from the IOUs as part of this process.
Energy Solutions	Appendix B	On-site Form	various	The Gas Fryer Onsite Form does not appear to collect information from site managers or ask questions about the relevancy of the testing period compared to their full annual operation. Foodservice establishments can have seasonal fluctuations in both menu and throughput. In program participation data, we commonly rebate submittals dip in the first quarter of the year. In conversations with dealers we have learned that the first quarter is historically lower for sales for restaurants. Thus, equating the up to three week testing period that was used to represent the full annual operation may underestimate equipment operation.	The evaluation data collection effort collected information on the following: weekly operating schedule (including hours of fryer operation per day, by day of the week), and data surrounding facility closures, such as holidays). The evaluation, however, relied most extensively on the schedule data supported by the flue gas temperature metering data, as described in Section 4 of the report. However, it is also true that the evaluation applied evaluator discretion in throwing out outlier days from the analysis, where operations on a given day were different than usual. Typically this was done for instances where schedules were shorted due to holidays or other special circumstances that were thought to be atypical of normal operations.
SCG	p.4-16			The NAIMA 3E Plus insulation software uses process temperature and not bare surface temperature to calculate savings. Measured bare pipe surface temperatures can be lower due to corrosion on pipe surfaces and other factors. Please consider revising the report to explain why an adjustment factor is, or is not, appropriate at this phase of the project or in future efforts.	We acknowledge this uncertainty but believe it to be minimal. The affected pipes were typically composed of cast iron or stainless steel, which both feature very high conductivity values. We estimate the difference between process temperature and pipe surface temperature to be within 1%.
SCG	p. 6-5			NTG values for Pipe Insulation Hot Application, Process Boilers, Water Heating Boilers, can the evaluation team comment if it is appropriate to use the estimated values in the report or the default value of 0.6 until more reliable results can be obtained? (Page 6-5).	We would defer to the DEER/Ex Ante Update team to make this decision, but would recommend using PY2013-15 data along with these results for Pipe Insulation.
SCG	Overall			SoCalGas appreciates the effort that went into this report, however, SoCalGas would like to point out that the results from this evaluation should not be solely relied upon to inform any final determinations and policy decisions for fryers, such as removal of this measure from the uncertain measures list or updating DEER values. This evaluation report should be used in conjunction with research that is being conducted for fryers to inform DEER and workpaper updates and default savings values (as mandated by the CPUC in recent dispositions to the IOUs/PAs). Some of the research that is being conducted by SoCalGas to estimate the savings from fryers includes: [1] updating of the Statewide Food Service Workpapers, [2] Updating the efficiency baseline based on the ISP study, [3] defining market share and customer preferences, and [4] persistence and EUL studies.	Thank you for your comment. We agree that is important to rely on multiple sources to make better informed measure-based determinations and policy decisions.
SCG	p.3-7			In general, SoCalGas feels that the current study results are not representative of the entire population of fryers and, from Table 5-53, seems to focus exclusively on small users. We note that the small gross impact sample size of 20 (selected randomly from a population of over 2,000 fryers spread over several NAICS codes) does not include a representative share of higher usage chain restaurants that use larger more efficient fryers. SoCalGas recommends that the CPUC to keep the gas fryer measures on the ESPI/uncertain measures list with current workpaper defaults as modified by ex ante dispositions until the research being conducted by SoCalGas and other PAs is finalized in 2019, and additional research on larger volume users can be conducted that yields reliable results	For the gross impact sample, the evaluation pulled randomly from the gas fryer population, without accomodation for any strata, including NAICS or chain versus independent restaurants. In theory this should yield a representative sample of participants, but SCG raises concerns surrounding nonresponse bias surrounding chain restaurants. As noted above, to address potential nonresponse bias the evaluation team first pulled a sample frame of 50 points and then recruited participants from that frame, yielding a response rate of 20 out of 50 points. Furthermore, to address this comment the evaluation team examined whether or not this approach to sampling successfuly captured chain restaurants in the sample. We examined the disposition of 20 points and found that it does indeed include several chain accounts.

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SCG	Table 5-53			SoCalGas believes that the sample size is biased toward small customers with low usage causing much lower gross savings estimates and lower installation rates/persistence because of the ease in reaching these customers as compared to customers in larger, busier operations with more complex organizational structures. Please provide more information as to the methodology used to select the samples for the fryers used in this Impact Evaluation. That is, does this Impact Evaluation target a certain type of restaurants (i.e., size of operation, type of operation, chain-restaurants, etc.), is it completely random, is it stratified in any way, does it consider weighted averages across NAICS codes or fryer size, etc.?	As noted above, the gross impact sample was selected randomly, without any special consideration of strata or weighting. In theory this should yield a representative sample, but here again SCG raised concerns surrounding the potential for nonresponse bias in the resulting sample. Please refer to the response above for a discussion of both the sampling approach and the resulting sample disposition.
SCG	p.5-57			The food throughput in SoCalGas' work papers are based on an average across a diverse population of end uses, and is 33% higher than what is used in the report. A lower food throughput results in a lower fuel flow to the burner and introduces variability into the savings calculations. Depending on how the sample was developed, it is possible that the data in the "reliable information [that]was obtained," could have been the result of a population of smaller customers? Please provide more information behind the decision to use a throughput of 100 lbs. as opposed to 150 lbs.	The modeling exercise in Section 5.3.8 of the report has no bearing on the ex-post gross impact evaluation results, but was used to illustrate the robustness of the ex-ante model, and to explore the explanatory power of evaluation-derived modeling parameters in explaining the lower than desired gross impact realization rate of 0.37 for SCG. This includes the reference to a 100 pound per day food load versus 150 pounds. While the evaluation did collect data on food load, an independent estimate of that parameter was neither derived nor used as a factor contributing to the ex-post gross impact result for SCG. However, the evaluation did generally find that the ex-ante-based 150 pound per day food load was directionally high relative to reported food loads by participants. However, the evaluation did not seek to quantify this difference.
SCG	p.8-8			SoCalGas' account executives, field technicians and staff at the Food Service Center have been working with the all customers to evaluate their needs and encourages them to purchase the higher efficiency models. To better understand the NTG values and recommendations noted, SoCalGas would like for the final report to have a detailed write up related to the methodology used to select the samples for the report.	As discussed above, the food service measure group population was divided into two populations - large chain accounts and other. A census was attempted on large chain accounts. For the remaining population, participants were segmented as shown in Table 3-10. A random sample was selected within each of those 9 populations. No other process was implemented to select specific customer types/segments. The report was revised to reflect this.
SCG	Table 3-2			The installation rates and zero savers seem very high for this measure. Please provide the field notes for the food service, pipe insulation and process boiler inspections conducted as part of this Impact Evaluation so that SoCalGas can verify the serial/model numbers and other installation details from the field visits with our files. Were measures that are listed as ineligible in fact eligible in prior cycles and at the date of the project application?	For the food service (gas fryer) measure please refrer to Table 5-35 and the imbedded explanation. For the process boiler measure please refer to Table 5-18 (although this is for a relevant PG&E point). For SCG points in the gross impact sample, neither installation rate nor zero savers were found to be an issue. For pipe insulation the installation rate was found to be 95.3 percent in the gross impact evaluation sample. Given limited time available for evaluators to comment on responses and update the report as needed for final posting on 4/1/2019, it is unlikely that the evaulation team can facilitate rapid data delivery to SCG. Note that the evaluation team will be delivering all evaluation data to the CPUC in the coming months. It would likely be most feasible to direct requested portions of the data to SCG at that time; but possibly in an anonymized fashion. It is also possible that the CPUC would have some say in how any such data is used/transferred to SCG.
PG&E	Executive summary	Review	1	The draft report does not include an Executive Summary, which is a critical part of the report. When will stakeholders be provided a complete draft for review, including executive summary, before the final report is published?	The final report includes an executive summary. Unfortunately, the executive summary was not ready for stakeholder review prior to the posting of the final report for this cycle.
PG&E	3.2.1	Process Boilers	5-19	In 2017, program delivery was deemed downstream. In 2018, the program delivery was changed to midstream. We expect that the distributors will provide a more accurate assessment of eligible products.	Acknowledged.
PG&E	3.2.1	Agricultural Irrigation	5-15	Report stated: "Prior cycles had allowed low-pressure nozzles or “micronozzles” as high-efficiency replacements but have since been sunset, as reflected in the current PG&E workpaper." This is incorrect. The low-pressure nozzles was a different energy efficiency measure offered by PG&E, but it has been sunset.	We agree that the two measures are distinct. Since the ESPI evaluations involve assessment of measure *groups* , we thought it relevant to provide context on similar measures from the agricultural irrigation measure group evaluated in prior cycles.

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PG&E	5.1.3	Refrigerator Case LED Lighting	5-14	In the NTG battery there are questions that concern RUL of refrigeration cases for participants. Do the answers to these questions support the DEER assumption of 1/3 of EUL being used to calculate lifetime savings? If not, would the evaluator suggest that this assumption should be revisited?	The study was not designed to estimate the RUL of refrigeration cases. We also would not recommend using these values to develop an RUL as it is difficult to predict how much longer equipment would last, which is supported by the fact that nearly half the respondents were not able to answer this question. Furthermore, the EUL is based both on failures, as well as removals. Removals may be common for this type of equipment, and retrofits may also be done in batch such that when one or two cases fail, all may be replaced. Regardless, the response to the question regarding the current age (which we think is more accurate than looking at expected remaining life) indicates the retrofitted units were about 10 years old. With an EUL of 16 years, this implies an RUL of close to 1/3rd the EUL. Please note that there are plans to conduct an EUL study, but that has not been planned out yet so we do not know what measures will be covered.
PG&E	5.4	Agricultural Irrigation	5-64	Evaluator used average coincidence factor of 0.37 from the 2015 Nonresidential Downstream ESPI Sprinkler Impact Study. PG&E conducted an internal study in 2016 of agricultural pumping and found an average coincidence factor of 0.55. The sample size of this study was from 6,280 pump locations in PG&E service territory. We would be happy to share further information and data from this study.	We look forward to obtaining more information from PG&E's study, as it may support future PY2018-19 measure evaluations (e.g., agricultural pumping).
PG&E	Appendix A	Refrigerator Case LED Lighting NTG Survey	A-24	Can the evaluator please provide the verbatim answers and number of nonresponses to the following questions: "How many years do you anticipate are left in the refrigerated case itself until you will replace the entire case?" and "Approximately how old are the refrigerator cases with the lighting that was removed and replaced with <_2>? Would you say..."	We have provided in Appendix D, a list of the responses to these 2 questions (LED101I and LED101J).
PG&E	Appendix A	NTG Battery	All	What are the evaluator's thoughts concerning survey fatigue and how it may affect the accuracy of responses to NTG surveys? Does the evaluator believe that improvements and/or simplifications to the NTG battery are possible and, if so, would they support a reconvening of the NTG Working Group?	Survey fatigue could be possible, however we do allow respondents to partially complete surveys and to reschedule the remaining questions for another time to help lessen perceived participant burden. In general, every effort is made to complete the survey as efficiently as possible. Although we are uncertain about a reconvening of the NTG Working Group, we do plan to make additional revisions to the NTG approach and plan to solicit input from the PAs.
PG&E	5.3.8	Gas Fryers	5-55	We would like to thank the evaluator for going into such detailed analysis on the discrepancy factors between modeled and observed energy consumption.	Thank you for this input.
PG&E	Various	Relative Precision	Various	Relative Precision is included with evaluated values throughout the report, but not in every case is an associated confidence interval included. Is relative precision always calculated at the 90% confidence interval?	Relative Precision is calculated at the 90% confidence interval in the report. We will clarify in the report.
PG&E	Various	Relative Precision	Various	Relative precision values range widely throughout the report. For clarity, can the evaluator please clearly define relative precision in the executive summary and also include an explanation of how it was calculated, why it was chosen over confidence interval, and how readers should interpret the results at different values of relative precision?	The relative precision is calculated as the confidence interval divided by the mean. Confidence intervals can easily be backed out by multiplying the relative precision by the mean value. Relative precison is an industry standard measurement, and the smaller the relative percentage value the more precise the mean result. We will make some edits to the report to address this comment.
PG&E	Various	All	Various	Waterfall graphics are presented in different formats and decimals/percentages are not consistent. Can the evaluator please update these so that they all follow the same format?	The pipe insulation and agricultural irrigation graphics are presented differently for two reasons: 1) these measures featured a few more categories that were illustrated horizontally to avoid a cluttered vertical waterfall graph; and 2) in the case of the pipe insulation measure, the graphic shows the positive and negative contributions within each category, which cancelled each other out in some cases.
PG&E	Appendix A	NTG Battery	Various	Can the evaluator please provide the verbatim results of the PAI-3 questionnaires as well as their accompanying scores?	We have provided in Appendix D a table of three survey questions that comprise PAI-3 (REPACE, N5 and N5aa)
PG&E	Appendix A	NTG Battery	Various	Can the evaluator please provide a breakout summary of how many participants they surveyed for midstream attribution and how many participants they surveyed for downstream attribution segmented by program category?	These values are provided in Table 6-2, along with the NTGRs.
PG&E	Appendix A	NTG Battery	Various	Can the evaluator please provide the verbatim responses to any question that explored how corporate energy efficiency or sustainability policy incentivized participant action? This information would be valuable as PAs continue to improve screening methods.	Only three customers responded to Question N3M, which asks the customer to rate the influence of a corporate policy or guidelines on their decision to install their equipment. They rate the influence on a 0 to 10 scale, where 10 is extremely influential. Of the three that responded to this question two rated the influence a 10 and one a 9. This question was only asked of customers whose rebate exceeded a certain threshold, which is why so few were asked the question. This was done to help shorten the survey length.

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PG&E	Gas Fryers	Zero Savers	Various	Failed enterprises are an all too often occurrence in the food service industry. However, the claimed program equipment does circulate back into use by way of the used equipment market, so PG&E believes that assigning a few months' worth of savings for these installations likely understates their true savings. Undercapitalized hard to reach entities likely do not purchase new EE equipment, so the secondary market provides them an opportunity to acquire EE equipment. Also, PG&E would like to mention that when we receive these studies for review that refer to projects with generalized names, it does not allow us to follow up and offer evidence to refute what is claimed. We appreciate that these details can't be included in public reports, but we need to get this supplemental information to conduct a thorough review. This is also important to us as we need to follow up with the dealers that sold these zero savings projects to customers that claim they never purchased the equipment and to take corrective action if needed. This is a critical issue and by providing more specific information the evaluator can help us understand why this happened and take steps to prevent it from happening in the future. PG&E's hypothesis is that some of the not-in-use fryers may be due to aggressive annual sales events at some our larger distributors. Some offered pricing under $600/vat which may have led to a few participants not wanting to pass up a great deal rather than buying a fryer they absolutely needed at the time. We may require moderate incentive adjustments to prevent this from occurring in the future. In conclusion, PG&E requests additional consideration to reduce the discount of the zero saver projects as this equipment will find its way back into use through the used equipment market. PG&E also requests that supplementary details on these zero savers be provided that will allow us to conduct follow up inquiries and improve our programs.	The evaluation team was lenient on this point by providing partial credit to the program for zero savers, in an effort to be as fair as possible to the program, given existing CPUC policy surrounding evaluation treatment for conditions such as those we observed in the field during verification. CPUC policy dictates that evaluators evaluate the as-found condition, and strictly prohibits any forecasting to predict future savings and conditions. This includes fryers that may have been sold into a secondary market. However, we do agree with PG&E that the cooking equipment market may represent a special case and that perhaps the above mentioned policy guidance could be revisited for this and other special circumstances. There is precedence in the industry for special verification accounting of equipment that are moved/installed at more than one facility and perhaps other factors -- such as mid-stream lighting programs. The evaluation team is not aware of any such precedence for California programs.
PG&E	Gas Fryers	Operating Assumptions	4-8	PG&E's Chain QSR restaurants have much different operating inputs (hours of operation, pounds of food cooked, equipment efficiencies, etc.) than its independent restaurants. PG&E agrees that our instant rebate program introduced a much higher proportion of independent food service operators to our programs than our workpaper assumptions used, which should lead to lower operating hours and pounds of food per day cooked. When our program began the customer mix was weighted much more heavily towards national chain QSR operations. PG&E would like to request the information that informed operation parameters so we can better understand both the evaluation and how to improve program delivery.	Given limited time available for evaluators to comment on responses and update the report as needed for final posting on 4/1/2019, it is unlikely that the evaulation team can facilitate rapid data delivery to PG&E. Note that the evaluation team will be delivering all evaluation data to the CPUC in the coming months. It would likely be most feasible to direct requested portions of the data to PG&E at that time; but possibly in an anonymized fashion. It is also possible that the CPUC would have some say in how any such data is used/transferred to PG&E.
PG&E	Gas Fryers	NTG Battery	Various	PG&E believes the results of the current attribution survey inaccurately discounts program savings claims. For context, there were no ENERGYSTAR fryers stocked by local dealers in northern California and less than five units sold during the first seven years of this program to small independent restaurant operators. The nature of this NTG survey does not seem to recognize the attribution that this program should be receiving. PG&E absolutely agrees that there is the potential for a higher incidence of free ridership occurring with chain account customers that can calculate the value of efficiency and have the buying power to reduce the incremental costs. For PG&E these customers represented less than 20% of program volume in 2017 and should not have weighed significantly in NTG outcomes. However, independent operators are heavily driven by cost, and we find in many cases our program must compete with the used equipment market and the cheapest, most inefficient fryers available on the market. The instant rebate program brought a better fryer into to the price range of the cheap economy fryers that were being sold. A conversation with any of PG&E's participating food service dealers should give a clearer picture of program attribution. These Independent restaurants simply would not have paid $1,500-$2,000 for these fryers when there was a $700 inefficient fryer right next to it on the salesfloor. PG&E's dealers in many cases are forced to buy ten EE fryers at a time to get the best cost so they can price them competitively. They would not do that without the program because a high percentage of these customers would opt for the $700 fryer, so the high volume achieved by the program would not occur and the EE product volume would collapse as dealers stop stocking EE fryers. NTG surveys as they are currently designed do not properly account for the entire market dynamics surrounding these programs. Also, without knowing who answered each survey and what their specific answers were that led to these results we cannot assess if NTG attribution between independent and chain operators is properly weighted. PG&E believes there is a real need to develop a better way to determine program attribution, especially for midstream programs. No program can withstand an improperly assessed attribution method. It is extremely easy for a participant to claim they would have purchased the EE option when not faced by the decision of paying twice the price at the time they were making their purchasing decision. IOU Instant rebate programs serve a very high percentage of very small hard to reach customers and perhaps should be receiving special NTG consideration for being one of the few programs that addresses the needs of California's small underrepresented businesses. Unfortunately, these results could force PG&E to close this program. As we have asked in other comments, we request that the evaluation team revisit its attribution results, update scores where necessary, and clearly state any limitations on the certainty of findings.	Thank you for your comments. The current NTG framework relies primarily on responses from project decisionmakers. They are asked about the importance of the equipment vendor in their decision and if they score that highly, a vendor interview is conducted and the scoring is adjusted based on what the vendor says. We believe this approach addresses many of the concerns you raise, but are also open to revisiting it during the 2018 evaluation. For this 2017 evaluation, we have revisited the attribution results and do not feel any changes are warranted. As with any self-report approach, there is always some level of uncertainty in the findings.

Submitted by	Section	Topic	Page	Comment	Evaluator Response
PG&E	5.5	Pipe Insulation	5-66	Table 5-57 calculates lifecycle savings using an EUL of 11 years. Since pipe insulation is an add-on measure, the life used in CET calculations is the lesser of the EUL of the add-on component (insulation) and the RUL of the host equipment (pipe). PG&E's 2017 ex ante workpaper data uses a life of 3.7 years, or 1/3 of the 11-year pipe insulation EUL from DEER due to a lack of an appropriate DEER EUL ID for the host equipment. That may likely have resulted in an underestimation of lifecycle savings. The DEER Resolution E-4952 released in 2018 now clarifies that the appropriate host RUL value for commercial pipe insulation measures to be 5 years.	Evaluators applied the pipe insulation EUL per workpaper SCGWP110812A Revision 3, which applied to PY2017 measures. In addition to the DEER source mentioned by PG&E, EUL varies widely across sources. This DEER EUL of 5 years for the pipe insulation implies an EUL for the host equipment of 15 years (where the RUL of the host equipment is set equal to the default 1/3 of the host equipment EUL). The evaluation team believes that this implied host equipment EUL of 15 years for pipes is low, as the piping itself is typically only changed or removed in major renovations or facility changes. The current SCG workpaper (Revision 4) acknowledges such: "Various studies and source show that piping life expectancy is of over 20 years." The evaluation team conclusion is that the host equipment implied is likely the water heater; and given that this measure addresses long pipe runs, and not just insulation near the water heater, we believe that the water heater is not a reasonable host equipment choice. That is, the vast majority of the pipe insulation would not be disturbed by water heater replacement, and would therefore likely remain in place following water heater replacement. The evaluation team believes that an 11 year EUL for pipe insulation is therefore a more accurate estimate, as it implies an EUL for the piping itself of 33 years. Furthermore, DEER Resolution E-4952 was not adopted until 2018, and since this is a PY2017 evaluation, the evaluation chooses to not accept the associated 5 year EUL guidance for commercial pipe insulation.
PG&E	Gas Fryers	Program Recommendations	Various	Recommendations suggest verification be performed to ensure the installation of qualifying equipment. PG&E regularly conducts random verifications to ensure installation as well as nameplate verification to ensure that products are installed and meet program qualifications. What additional controls does evaluator suggest?	The evaluation team is suggesting that a more rigorous verification process be established in order to correct what appears to be a problem. This might include a higher verification sampling rate in order to get a better handle on how extensive the problem is and where it is occuring. Depending on what you find, you might also focus efforts on known problem areas, or perhaps learn about where the problems are (through verification) and then focus efforts, until the issue is resolved/corrected.
PG&E	Process Boilers	Recommendation PB1	8-3	Every process boiler application requires that the application include the combustion efficiency test that is created upon commissioning. This would not be included in submitted savings claims as this is a deemed program and these values are set in the workpaper. MBTUH input * Ex-ante savings estimate = savings claim. If the suggestion is that other factors be included it would most likely not be possible in the deemed program environment. Please clarify what additional data you would like PAs to consider collecting.	Based on our observations during this evaluation, we believe that process boilers are better suited as a quasi-prescriptive (partially-deemed) measure rather than a fully deemed measure. Each process (end-use) the boilers were observed to be serving was different across the IOUs' sample and across both PAs; to that effect, using process-specific capacity/ load factor values is helpful to accurately characterize the measure savings. Therefore, we believe that the PAs need to reconsider this measure's savings estimation and provide room for some customization. Additionally, if the PAs are already collecting combustion efficiency test results, those should be used to calculate the measure savings. Using the deemed values, which are in turn based on averages from previous studies, etc., will likely be misrepresenting the true savings acheived by the program.
PG&E	Process Boilers	Recommendation PB3	8-4	Adding monitoring/EMS to these boiler projects can be considered. EMS systems could help with program evaluation efforts, but PAs have historically encountered persistence issues that result in measures that fail to reach their theoretical savings potential.	Acknowledged; if persistence issues are purely related to the EMS measures, the PAs should, at a minimum, consider implementing a separate EMS upgrades program that is sold to process boilers participants as an add-on measure component.
PG&E	Process Boilers	NTG Battery	Various	The current attribution process seems not to recognize that it is unlikely that someone would pay an incremental cost to achieve energy savings and then claim that an entire project was driven by this incremental improvement. This oversight creates considerable discounts against all PA savings claims. We agree that free riders exist and need to be considered in savings calculations. PG&E would like to ask if the evaluation team knows different methods of determining attribution in use today that may weigh these factors more accurately, and if so, whether they can they be considered?	Thank you for the comment. We are not aware of any such method. However, we would like to note that we will be re-examining the NTG approach for PY2018.
PG&E	Gas Fryers	Zero Savers	5-33	PA would like to comment on conclusions made regarding one of the Zero Saver sites that was a supermarket chain location where the customer claimed the program fryer was defective and removed. Please note that this chain does not normally procure their equipment from local sources. The large inefficient kettle/pressure fryer that was found onsite during this evaluation is this supermarket's standard fryer. PG&E does not believe that the claimed program fryer was installed and removed because it did not work. Is it possible the reason given why the fryer was not there was misunderstood. It would seem more likely that their original kettle/pressure fryer broke and they purchased the economy grade EE fryer as an emergency replacement at a local distributor until the replacement for their standard spec fryer arrived. PG&E agrees that this is still a zero saver but believes the evaluation team may be incorrectly extrapolating quality issues for program EE fryers that are higher performing and higher quality than what would have been purchased otherwise. In this case, the non-program pressure fryer that was found in place costs over $10,000 while the Program Fryer the customer claimed defective and was therefore removed costs $750. It is uncharacteristic of large supermarket chains where capital is not an issue to divert from their normal procurement process and convert from spec grade equipment that could be characterized as a Mercedes to the equivalent of a Yugo. The results uncovered at this site evaluation are an anomaly and PG&E believes they should be treated as such in the evaluation.	After learning that the fryer at this site was not a program qualifying model, the evaluation team followed up with the store manager to find out more about the program unit -- and learned that is was installed, but did not operate properly, and following multiple attempts to repair the program fryer, the store replaced it roughly 2.5 months following installation. The evaluation team has no reason to believe we misinterpreted this self-report from the customer. However, we do appreciate the input and acknowledge that it is possible we may have misunderstood what the customer was trying to tell us.