FINAL IMPACT EVALUATION

Non-Residential Deemed Pump and Food Service

Program Year 2020

Appendices

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Submitted to:
California Public Utilities Commission

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In coordination with:

DNV

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Gross Lifecycle Savings (MWh)

PA	Standard Report Group	Ex-Ante Gross	Ex-Post Gross	GRR	% Ex-Ante Gross Pass Through	Eval GRR
PGE	PGE - AGRICULTURAL PUMPING VFD	70,501	43,775	0.62	0.0%	0.62
PGE	PGE - AGRICULTURAL PUMPING VFD - PASSTHROUGH	0	0			
PGE	PGE - CLEAN WATER PUMP UPGRADES	34,220	6,335	0.19	0.0%	0.19
PGE	PGE - CLEAN WATER PUMP UPGRADES - PASSTHROUGH	0	0			
PGE	PGE - FOOD SERVICE - PASSTHROUGH	4,601	4,601	1.00	100.0%	
PGE	PGE - GAS FRYERS - DOWNSTREAM	0	0			
PGE	PGE - GLYCOL PUMP VFD - PASSTHROUGH	323	323	1.00	100.0%	
PGE	**Total**	**109,646**	**55,034**	**0.50**	**4.5%**	**0.48**
SCE	SCE - AGRICULTURAL PUMPING VFD	13,991	14,966	1.07	0.0%	1.07
SCE	SCE - CLEAN WATER PUMP UPGRADES - PASSTHROUGH	190	190	1.00	100.0%	
SCE	SCE - FOOD SERVICE - PASSTHROUGH	5,897	5,897	1.00	100.0%	
SCE	**Total**	**20,079**	**21,053**	**1.05**	**30.3%**	**1.07**
SCG	SCG - FOOD SERVICE - PASSTHROUGH	488	488	1.00	100.0%	
SCG	SCG - GAS FRYERS - DOWNSTREAM	0	0			
SCG	SCG - GAS FRYERS - MIDSTREAM	0	0			
SCG	**Total**	**488**	**488**	**1.00**	**100.0%**	
SDGE	SDGE - AGRICULTURAL PUMPING VFD - PASSTHROUGH	19	19	1.00	100.0%	
SDGE	SDGE - FOOD SERVICE - PASSTHROUGH	523	523	1.00	100.0%	
SDGE	SDGE - GAS FRYERS - DOWNSTREAM	0	0			
SDGE	**Total**	**542**	**542**	**1.00**	**100.0%**	
MCE	MCE - GLYCOL PUMP VFD - PASSTHROUGH	328	328	1.00	100.0%	
MCE	**Total**	**328**	**328**	**1.00**	**100.0%**	
	Statewide	***131,083***	***77,446***	***0.59***	***9.4%***	***0.55***

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	PGE - AGRICULTURAL PUMPING VFD	45,826	18,209	0.40	0.0%	0.65	0.42	0.65	0.42
PGE	PGE - AGRICULTURAL PUMPING VFD - PASSTHROUGH	0	0						
PGE	PGE - CLEAN WATER PUMP UPGRADES	30,798	3,763	0.12	0.0%	0.90	0.59	0.90	0.59
PGE	PGE - CLEAN WATER PUMP UPGRADES - PASSTHROUGH	0	0						
PGE	PGE - FOOD SERVICE - PASSTHROUGH	2,999	2,999	1.00	100.0%	0.65	0.65		
PGE	PGE - GAS FRYERS - DOWNSTREAM	0	0						
PGE	PGE - GLYCOL PUMP VFD - PASSTHROUGH	210	210	1.00	100.0%	0.65	0.65		
PGE	**Total**	**79,833**	**25,181**	**0.32**	**4.0%**	**0.73**	**0.46**	**0.73**	**0.44**
SCE	SCE - AGRICULTURAL PUMPING VFD	9,094	8,537	0.94	0.0%	0.65	0.57	0.65	0.57
SCE	SCE - CLEAN WATER PUMP UPGRADES - PASSTHROUGH	171	171	1.00	100.0%	0.90	0.90		
SCE	SCE - FOOD SERVICE - PASSTHROUGH	3,833	3,833	1.00	100.0%	0.65	0.65		
SCE	**Total**	**13,099**	**12,541**	**0.96**	**30.6%**	**0.65**	**0.60**	**0.65**	**0.57**
SCG	SCG - FOOD SERVICE - PASSTHROUGH	348	348	1.00	100.0%	0.71	0.71		
SCG	SCG - GAS FRYERS - DOWNSTREAM	0	0						
SCG	SCG - GAS FRYERS - MIDSTREAM	0	0						
SCG	**Total**	**348**	**348**	**1.00**	**100.0%**	**0.71**	**0.71**		
SDGE	SDGE - AGRICULTURAL PUMPING VFD - PASSTHROUGH	13	13	1.00	100.0%	0.65	0.65		
SDGE	SDGE - FOOD SERVICE - PASSTHROUGH	340	340	1.00	100.0%	0.65	0.65		
SDGE	SDGE - GAS FRYERS - DOWNSTREAM	0	0						
SDGE	**Total**	**352**	**352**	**1.00**	**100.0%**	**0.65**	**0.65**		
MCE	MCE - GLYCOL PUMP VFD - PASSTHROUGH	345	345	1.00	100.0%	1.05	1.05		
MCE	**Total**	**345**	**345**	**1.00**	**100.0%**	**1.05**	**1.05**		
	Statewide	***93,977***	***38,768***	***0.41***	***8.8%***	***0.72***	***0.50***	***0.72***	***0.47***

Gross Lifecycle Savings (MW)

PA	Standard Report Group	Ex-Ante Gross	Ex-Post Gross	GRR	% Ex-Ante Gross Pass Through	Eval GRR
PGE	PGE - AGRICULTURAL PUMPING VFD	33.6	7.3	0.22	0.0%	0.22
PGE	PGE - AGRICULTURAL PUMPING VFD - PASSTHROUGH	0.0	0.0			
PGE	PGE - CLEAN WATER PUMP UPGRADES	0.0	0.0			
PGE	PGE - CLEAN WATER PUMP UPGRADES - PASSTHROUGH	0.0	0.0			
PGE	PGE - FOOD SERVICE - PASSTHROUGH	0.9	0.9	1.00	100.0%	
PGE	PGE - GAS FRYERS - DOWNSTREAM	0.0	0.0			
PGE	PGE - GLYCOL PUMP VFD - PASSTHROUGH	0.0	0.0			
PGE	**Total**	**34.5**	**8.1**	**0.24**	**2.5%**	**0.22**
SCE	SCE - AGRICULTURAL PUMPING VFD	6.8	1.7	0.24	0.0%	0.24
SCE	SCE - CLEAN WATER PUMP UPGRADES - PASSTHROUGH	0.0	0.0			
SCE	SCE - FOOD SERVICE - PASSTHROUGH	1.3	1.3	1.00	100.0%	
SCE	**Total**	**8.1**	**2.9**	**0.37**	**16.1%**	**0.24**
SCG	SCG - FOOD SERVICE - PASSTHROUGH	0.1	0.1	1.00	100.0%	
SCG	SCG - GAS FRYERS - DOWNSTREAM	0.0	0.0			
SCG	SCG - GAS FRYERS - MIDSTREAM	0.0	0.0			
SCG	**Total**	**0.1**	**0.1**	**1.00**	**100.0%**	
SDGE	SDGE - AGRICULTURAL PUMPING VFD - PASSTHROUGH	0.0	0.0	1.00	100.0%	
SDGE	SDGE - FOOD SERVICE - PASSTHROUGH	0.1	0.1	1.00	100.0%	
SDGE	SDGE - GAS FRYERS - DOWNSTREAM	0.0	0.0			
SDGE	**Total**	**0.1**	**0.1**	**1.00**	**100.0%**	
MCE	MCE - GLYCOL PUMP VFD - PASSTHROUGH	0.0	0.0			
MCE	**Total**	**0.0**	**0.0**			
	Statewide	***42.7***	***11.3***	***0.26***	***5.5%***	***0.22***

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	PGE - AGRICULTURAL PUMPING VFD	21.9	3.0	0.14	0.0%	0.65	0.42	0.65	0.42
PGE	PGE - AGRICULTURAL PUMPING VFD - PASSTHROUGH	0.0	0.0						
PGE	PGE - CLEAN WATER PUMP UPGRADES	0.0	0.0						
PGE	PGE - CLEAN WATER PUMP UPGRADES - PASSTHROUGH	0.0	0.0						
PGE	PGE - FOOD SERVICE - PASSTHROUGH	0.6	0.6	1.00	100.0%	0.65	0.65		
PGE	PGE - GAS FRYERS - DOWNSTREAM	0.0	0.0						
PGE	PGE - GLYCOL PUMP VFD - PASSTHROUGH	0.0	0.0						
PGE	**Total**	**22.4**	**3.6**	**0.16**	**2.5%**	**0.65**	**0.44**	**0.65**	**0.42**
SCE	SCE - AGRICULTURAL PUMPING VFD	4.4	0.9	0.21	0.0%	0.65	0.57	0.65	0.57
SCE	SCE - CLEAN WATER PUMP UPGRADES - PASSTHROUGH	0.0	0.0						
SCE	SCE - FOOD SERVICE - PASSTHROUGH	0.8	0.8	1.00	100.0%	0.65	0.65		
SCE	**Total**	**5.2**	**1.8**	**0.34**	**16.1%**	**0.65**	**0.61**	**0.65**	**0.57**
SCG	SCG - FOOD SERVICE - PASSTHROUGH	0.1	0.1	1.00	100.0%	0.70	0.70		
SCG	SCG - GAS FRYERS - DOWNSTREAM	0.0	0.0						
SCG	SCG - GAS FRYERS - MIDSTREAM	0.0	0.0						
SCG	**Total**	**0.1**	**0.1**	**1.00**	**100.0%**	**0.70**	**0.70**		
SDGE	SDGE - AGRICULTURAL PUMPING VFD - PASSTHROUGH	0.0	0.0	1.00	100.0%	0.65	0.65		
SDGE	SDGE - FOOD SERVICE - PASSTHROUGH	0.1	0.1	1.00	100.0%	0.65	0.65		
SDGE	SDGE - GAS FRYERS - DOWNSTREAM	0.0	0.0						
SDGE	**Total**	**0.1**	**0.1**	**1.00**	**100.0%**	**0.65**	**0.65**		
MCE	MCE - GLYCOL PUMP VFD - PASSTHROUGH	0.0	0.0						
MCE	**Total**	**0.0**	**0.0**						
	Statewide	***27.8***	***5.5***	***0.20***	***5.5%***	***0.65***	***0.49***	***0.65***	***0.44***

Gross Lifecycle Savings (MTherms)

PA	Standard Report Group	Ex-Ante Gross	Ex-Post Gross	GRR	% Ex-Ante Gross Pass Through	Eval GRR
PGE	PGE - AGRICULTURAL PUMPING VFD	0	0			
PGE	PGE - AGRICULTURAL PUMPING VFD - PASSTHROUGH	0	0			
PGE	PGE - CLEAN WATER PUMP UPGRADES	0	0			
PGE	PGE - CLEAN WATER PUMP UPGRADES - PASSTHROUGH	0	0			
PGE	PGE - FOOD SERVICE - PASSTHROUGH	1,434	1,434	1.00	100.0%	
PGE	PGE - GAS FRYERS - DOWNSTREAM	3,169	3,169	1.00	0.0%	1.00
PGE	PGE - GLYCOL PUMP VFD - PASSTHROUGH	0	0			
PGE	**Total**	**4,604**	**4,604**	**1.00**	**31.2%**	**1.00**
SCE	SCE - AGRICULTURAL PUMPING VFD	0	0			
SCE	SCE - CLEAN WATER PUMP UPGRADES - PASSTHROUGH	0	0			
SCE	SCE - FOOD SERVICE - PASSTHROUGH	0	0			
SCE	**Total**	**0**	**0**			
SCG	SCG - FOOD SERVICE - PASSTHROUGH	4,488	4,488	1.00	100.0%	
SCG	SCG - GAS FRYERS - DOWNSTREAM	2,116	2,116	1.00	0.0%	1.00
SCG	SCG - GAS FRYERS - MIDSTREAM	11,705	11,705	1.00	0.0%	1.00
SCG	**Total**	**18,309**	**18,309**	**1.00**	**24.5%**	**1.00**
SDGE	SDGE - AGRICULTURAL PUMPING VFD - PASSTHROUGH	0	0			
SDGE	SDGE - FOOD SERVICE - PASSTHROUGH	50	50	1.00	100.0%	
SDGE	SDGE - GAS FRYERS - DOWNSTREAM	111	111	1.00	100.0%	
SDGE	**Total**	**161**	**161**	**1.00**	**100.0%**	
MCE	MCE - GLYCOL PUMP VFD - PASSTHROUGH	0	0			
MCE	**Total**	**0**	**0**			
	Statewide	***23,074***	***23,074***	***1.00***	***26.4%***	***1.00***

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	PGE - AGRICULTURAL PUMPING VFD	0	0						
PGE	PGE - AGRICULTURAL PUMPING VFD - PASSTHROUGH	0	0						
PGE	PGE - CLEAN WATER PUMP UPGRADES	0	0						
PGE	PGE - CLEAN WATER PUMP UPGRADES - PASSTHROUGH	0	0						
PGE	PGE - FOOD SERVICE - PASSTHROUGH	972	972	1.00	100.0%	0.68	0.68		
PGE	PGE - GAS FRYERS - DOWNSTREAM	2,060	1,228	0.60	0.0%	0.65	0.39	0.65	0.39
PGE	PGE - GLYCOL PUMP VFD - PASSTHROUGH	0	0						
PGE	**Total**	**3,032**	**2,200**	**0.73**	**32.1%**	**0.66**	**0.48**	**0.65**	**0.39**
SCE	SCE - AGRICULTURAL PUMPING VFD	0	0						
SCE	SCE - CLEAN WATER PUMP UPGRADES - PASSTHROUGH	0	0						
SCE	SCE - FOOD SERVICE - PASSTHROUGH	0	0						
SCE	**Total**	**0**	**0**						
SCG	SCG - FOOD SERVICE - PASSTHROUGH	3,020	3,020	1.00	100.0%	0.67	0.67		
SCG	SCG - GAS FRYERS - DOWNSTREAM	1,378	820	0.59	0.0%	0.65	0.39	0.65	0.39
SCG	SCG - GAS FRYERS - MIDSTREAM	7,612	8,328	1.09	0.0%	0.65	0.71	0.65	0.71
SCG	**Total**	**12,010**	**12,168**	**1.01**	**25.1%**	**0.66**	**0.66**	**0.65**	**0.66**
SDGE	SDGE - AGRICULTURAL PUMPING VFD - PASSTHROUGH	0	0						
SDGE	SDGE - FOOD SERVICE - PASSTHROUGH	32	32	1.00	100.0%	0.65	0.65		
SDGE	SDGE - GAS FRYERS - DOWNSTREAM	72	72	1.00	100.0%	0.65	0.65		
SDGE	**Total**	**105**	**105**	**1.00**	**100.0%**	**0.65**	**0.65**		
MCE	MCE - GLYCOL PUMP VFD - PASSTHROUGH	0	0						
MCE	**Total**	**0**	**0**						
	Statewide	***15,147***	***14,472***	***0.96***	***27.0%***	***0.66***	***0.63***	***0.65***	***0.61***

Gross First Year Savings (MWh)

PA	Standard Report Group	Ex-Ante Gross	Ex-Post Gross	GRR	% Ex-Ante Gross Pass Through	Eval GRR
PGE	PGE - AGRICULTURAL PUMPING VFD	7,568	3,994	0.53	0.0%	0.53
PGE	PGE - AGRICULTURAL PUMPING VFD - PASSTHROUGH	0	0			
PGE	PGE - CLEAN WATER PUMP UPGRADES	2,281	422	0.19	0.0%	0.19
PGE	PGE - CLEAN WATER PUMP UPGRADES - PASSTHROUGH	0	0			
PGE	PGE - FOOD SERVICE - PASSTHROUGH	387	387	1.00	100.0%	
PGE	PGE - GAS FRYERS - DOWNSTREAM	0	0			
PGE	PGE - GLYCOL PUMP VFD - PASSTHROUGH	65	65	1.00	100.0%	
PGE	**Total**	**10,301**	**4,868**	**0.47**	**4.4%**	**0.45**
SCE	SCE - AGRICULTURAL PUMPING VFD	2,020	1,460	0.72	0.0%	0.72
SCE	SCE - CLEAN WATER PUMP UPGRADES - PASSTHROUGH	13	13	1.00	100.0%	
SCE	SCE - FOOD SERVICE - PASSTHROUGH	495	495	1.00	100.0%	
SCE	**Total**	**2,528**	**1,968**	**0.78**	**20.1%**	**0.72**
SCG	SCG - FOOD SERVICE - PASSTHROUGH	38	38	1.00	100.0%	
SCG	SCG - GAS FRYERS - DOWNSTREAM	0	0			
SCG	SCG - GAS FRYERS - MIDSTREAM	0	0			
SCG	**Total**	**38**	**38**	**1.00**	**100.0%**	
SDGE	SDGE - AGRICULTURAL PUMPING VFD - PASSTHROUGH	2	2	1.00	100.0%	
SDGE	SDGE - FOOD SERVICE - PASSTHROUGH	40	40	1.00	100.0%	
SDGE	SDGE - GAS FRYERS - DOWNSTREAM	0	0			
SDGE	**Total**	**42**	**42**	**1.00**	**100.0%**	
MCE	MCE - GLYCOL PUMP VFD - PASSTHROUGH	22	22	1.00	100.0%	
MCE	**Total**	**22**	**22**	**1.00**	**100.0%**	
	Statewide	***12,931***	***6,938***	***0.54***	***8.2%***	***0.50***

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	PGE - AGRICULTURAL PUMPING VFD	4,919	1,661	0.34	0.0%	0.65	0.42	0.65	0.42
PGE	PGE - AGRICULTURAL PUMPING VFD - PASSTHROUGH	0	0						
PGE	PGE - CLEAN WATER PUMP UPGRADES	2,053	251	0.12	0.0%	0.90	0.59	0.90	0.59
PGE	PGE - CLEAN WATER PUMP UPGRADES - PASSTHROUGH	0	0						
PGE	PGE - FOOD SERVICE - PASSTHROUGH	252	252	1.00	100.0%	0.65	0.65		
PGE	PGE - GAS FRYERS - DOWNSTREAM	0	0						
PGE	PGE - GLYCOL PUMP VFD - PASSTHROUGH	42	42	1.00	100.0%	0.65	0.65		
PGE	**Total**	**7,267**	**2,206**	**0.30**	**4.0%**	**0.71**	**0.45**	**0.71**	**0.43**
SCE	SCE - AGRICULTURAL PUMPING VFD	1,313	833	0.63	0.0%	0.65	0.57	0.65	0.57
SCE	SCE - CLEAN WATER PUMP UPGRADES - PASSTHROUGH	11	11	1.00	100.0%	0.90	0.90		
SCE	SCE - FOOD SERVICE - PASSTHROUGH	322	322	1.00	100.0%	0.65	0.65		
SCE	**Total**	**1,646**	**1,166**	**0.71**	**20.2%**	**0.65**	**0.59**	**0.65**	**0.57**
SCG	SCG - FOOD SERVICE - PASSTHROUGH	27	27	1.00	100.0%	0.72	0.72		
SCG	SCG - GAS FRYERS - DOWNSTREAM	0	0						
SCG	SCG - GAS FRYERS - MIDSTREAM	0	0						
SCG	**Total**	**27**	**27**	**1.00**	**100.0%**	**0.72**	**0.72**		
SDGE	SDGE - AGRICULTURAL PUMPING VFD - PASSTHROUGH	1	1	1.00	100.0%	0.65	0.65		
SDGE	SDGE - FOOD SERVICE - PASSTHROUGH	26	26	1.00	100.0%	0.65	0.65		
SDGE	SDGE - GAS FRYERS - DOWNSTREAM	0	0						
SDGE	**Total**	**27**	**27**	**1.00**	**100.0%**	**0.65**	**0.65**		
MCE	MCE - GLYCOL PUMP VFD - PASSTHROUGH	23	23	1.00	100.0%	1.05	1.05		
MCE	**Total**	**23**	**23**	**1.00**	**100.0%**	**1.05**	**1.05**		
	Statewide	***8,991***	***3,450***	***0.38***	***7.8%***	***0.70***	***0.50***	***0.70***	***0.47***

Gross First Year Savings (MW)

PA	Standard Report Group	Ex-Ante Gross	Ex-Post Gross	GRR	% Ex-Ante Gross Pass Through	Eval GRR
PGE	PGE - AGRICULTURAL PUMPING VFD	3.6	0.6	0.18	0.0%	0.18
PGE	PGE - AGRICULTURAL PUMPING VFD - PASSTHROUGH	0.0	0.0			
PGE	PGE - CLEAN WATER PUMP UPGRADES	0.0	0.0			
PGE	PGE - CLEAN WATER PUMP UPGRADES - PASSTHROUGH	0.0	0.0			
PGE	PGE - FOOD SERVICE - PASSTHROUGH	0.1	0.1	1.00	100.0%	
PGE	PGE - GAS FRYERS - DOWNSTREAM	0.0	0.0			
PGE	PGE - GLYCOL PUMP VFD - PASSTHROUGH	0.0	0.0			
PGE	**Total**	**3.7**	**0.7**	**0.19**	**2.0%**	**0.18**
SCE	SCE - AGRICULTURAL PUMPING VFD	1.0	0.2	0.17	0.0%	0.17
SCE	SCE - CLEAN WATER PUMP UPGRADES - PASSTHROUGH	0.0	0.0			
SCE	SCE - FOOD SERVICE - PASSTHROUGH	0.1	0.1	1.00	100.0%	
SCE	**Total**	**1.1**	**0.3**	**0.25**	**10.0%**	**0.17**
SCG	SCG - FOOD SERVICE - PASSTHROUGH	0.0	0.0	1.00	100.0%	
SCG	SCG - GAS FRYERS - DOWNSTREAM	0.0	0.0			
SCG	SCG - GAS FRYERS - MIDSTREAM	0.0	0.0			
SCG	**Total**	**0.0**	**0.0**	**1.00**	**100.0%**	
SDGE	SDGE - AGRICULTURAL PUMPING VFD - PASSTHROUGH	0.0	0.0	1.00	100.0%	
SDGE	SDGE - FOOD SERVICE - PASSTHROUGH	0.0	0.0	1.00	100.0%	
SDGE	SDGE - GAS FRYERS - DOWNSTREAM	0.0	0.0			
SDGE	**Total**	**0.0**	**0.0**	**1.00**	**100.0%**	
MCE	MCE - GLYCOL PUMP VFD - PASSTHROUGH	0.0	0.0			
MCE	**Total**	**0.0**	**0.0**			
	Statewide	***4.8***	***1.0***	***0.21***	***4.1%***	***0.17***

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	PGE - AGRICULTURAL PUMPING VFD	2.3	0.3	0.11	0.0%	0.65	0.42	0.65	0.42
PGE	PGE - AGRICULTURAL PUMPING VFD - PASSTHROUGH	0.0	0.0						
PGE	PGE - CLEAN WATER PUMP UPGRADES	0.0	0.0						
PGE	PGE - CLEAN WATER PUMP UPGRADES - PASSTHROUGH	0.0	0.0						
PGE	PGE - FOOD SERVICE - PASSTHROUGH	0.0	0.0	1.00	100.0%	0.65	0.65		
PGE	PGE - GAS FRYERS - DOWNSTREAM	0.0	0.0						
PGE	PGE - GLYCOL PUMP VFD - PASSTHROUGH	0.0	0.0						
PGE	**Total**	**2.4**	**0.3**	**0.13**	**2.0%**	**0.65**	**0.44**	**0.65**	**0.42**
SCE	SCE - AGRICULTURAL PUMPING VFD	0.6	0.1	0.15	0.0%	0.65	0.57	0.65	0.57
SCE	SCE - CLEAN WATER PUMP UPGRADES - PASSTHROUGH	0.0	0.0						
SCE	SCE - FOOD SERVICE - PASSTHROUGH	0.1	0.1	1.00	100.0%	0.65	0.65		
SCE	**Total**	**0.7**	**0.2**	**0.23**	**10.0%**	**0.65**	**0.60**	**0.65**	**0.57**
SCG	SCG - FOOD SERVICE - PASSTHROUGH	0.0	0.0	1.00	100.0%	0.71	0.71		
SCG	SCG - GAS FRYERS - DOWNSTREAM	0.0	0.0						
SCG	SCG - GAS FRYERS - MIDSTREAM	0.0	0.0						
SCG	**Total**	**0.0**	**0.0**	**1.00**	**100.0%**	**0.71**	**0.71**		
SDGE	SDGE - AGRICULTURAL PUMPING VFD - PASSTHROUGH	0.0	0.0	1.00	100.0%	0.65	0.65		
SDGE	SDGE - FOOD SERVICE - PASSTHROUGH	0.0	0.0	1.00	100.0%	0.65	0.65		
SDGE	SDGE - GAS FRYERS - DOWNSTREAM	0.0	0.0						
SDGE	**Total**	**0.0**	**0.0**	**1.00**	**100.0%**	**0.65**	**0.65**		
MCE	MCE - GLYCOL PUMP VFD - PASSTHROUGH	0.0	0.0						
MCE	**Total**	**0.0**	**0.0**						
	Statewide	***3.1***	***0.5***	***0.16***	***4.1%***	***0.65***	***0.49***	***0.65***	***0.45***

Gross First Year Savings (MTherms)

PA	Standard Report Group	Ex-Ante Gross	Ex-Post Gross	GRR	% Ex-Ante Gross Pass Through	Eval GRR
PGE	PGE - AGRICULTURAL PUMPING VFD	0	0			
PGE	PGE - AGRICULTURAL PUMPING VFD - PASSTHROUGH	0	0			
PGE	PGE - CLEAN WATER PUMP UPGRADES	0	0			
PGE	PGE - CLEAN WATER PUMP UPGRADES - PASSTHROUGH	0	0			
PGE	PGE - FOOD SERVICE - PASSTHROUGH	120	120	1.00	100.0%	
PGE	PGE - GAS FRYERS - DOWNSTREAM	264	264	1.00	0.0%	1.00
PGE	PGE - GLYCOL PUMP VFD - PASSTHROUGH	0	0			
PGE	**Total**	**384**	**384**	**1.00**	**31.2%**	**1.00**
SCE	SCE - AGRICULTURAL PUMPING VFD	0	0			
SCE	SCE - CLEAN WATER PUMP UPGRADES - PASSTHROUGH	0	0			
SCE	SCE - FOOD SERVICE - PASSTHROUGH	0	0			
SCE	**Total**	**0**	**0**			
SCG	SCG - FOOD SERVICE - PASSTHROUGH	374	374	1.00	100.0%	
SCG	SCG - GAS FRYERS - DOWNSTREAM	176	176	1.00	0.0%	1.00
SCG	SCG - GAS FRYERS - MIDSTREAM	975	975	1.00	0.0%	1.00
SCG	**Total**	**1,526**	**1,526**	**1.00**	**24.5%**	**1.00**
SDGE	SDGE - AGRICULTURAL PUMPING VFD - PASSTHROUGH	0	0			
SDGE	SDGE - FOOD SERVICE - PASSTHROUGH	4	4	1.00	100.0%	
SDGE	SDGE - GAS FRYERS - DOWNSTREAM	9	9	1.00	100.0%	
SDGE	**Total**	**13**	**13**	**1.00**	**100.0%**	
MCE	MCE - GLYCOL PUMP VFD - PASSTHROUGH	0	0			
MCE	**Total**	**0**	**0**			
	Statewide	***1,922***	***1,922***	***1.00***	***26.4%***	***1.00***

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	PGE - AGRICULTURAL PUMPING VFD	0	0						
PGE	PGE - AGRICULTURAL PUMPING VFD - PASSTHROUGH	0	0						
PGE	PGE - CLEAN WATER PUMP UPGRADES	0	0						
PGE	PGE - CLEAN WATER PUMP UPGRADES - PASSTHROUGH	0	0						
PGE	PGE - FOOD SERVICE - PASSTHROUGH	81	81	1.00	100.0%	0.68	0.68		
PGE	PGE - GAS FRYERS - DOWNSTREAM	172	102	0.60	0.0%	0.65	0.39	0.65	0.39
PGE	PGE - GLYCOL PUMP VFD - PASSTHROUGH	0	0						
PGE	**Total**	**253**	**183**	**0.73**	**32.1%**	**0.66**	**0.48**	**0.65**	**0.39**
SCE	SCE - AGRICULTURAL PUMPING VFD	0	0						
SCE	SCE - CLEAN WATER PUMP UPGRADES - PASSTHROUGH	0	0						
SCE	SCE - FOOD SERVICE - PASSTHROUGH	0	0						
SCE	**Total**	**0**	**0**						
SCG	SCG - FOOD SERVICE - PASSTHROUGH	252	252	1.00	100.0%	0.67	0.67		
SCG	SCG - GAS FRYERS - DOWNSTREAM	115	68	0.59	0.0%	0.65	0.39	0.65	0.39
SCG	SCG - GAS FRYERS - MIDSTREAM	634	694	1.09	0.0%	0.65	0.71	0.65	0.71
SCG	**Total**	**1,001**	**1,014**	**1.01**	**25.1%**	**0.66**	**0.66**	**0.65**	**0.66**
SDGE	SDGE - AGRICULTURAL PUMPING VFD - PASSTHROUGH	0	0						
SDGE	SDGE - FOOD SERVICE - PASSTHROUGH	3	3	1.00	100.0%	0.65	0.65		
SDGE	SDGE - GAS FRYERS - DOWNSTREAM	6	6	1.00	100.0%	0.65	0.65		
SDGE	**Total**	**9**	**9**	**1.00**	**100.0%**	**0.65**	**0.65**		
MCE	MCE - GLYCOL PUMP VFD - PASSTHROUGH	0	0						
MCE	**Total**	**0**	**0**						
	Statewide	***1,262***	***1,206***	***0.96***	***27.0%***	***0.66***	***0.63***	***0.65***	***0.61***

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	PGE - AGRICULTURAL PUMPING VFD	0	0.0%	0.0%	9.3	1,487.6	135.7	159.7
PGE	PGE - CLEAN WATER PUMP UPGRADES	0	0.0%	0.0%	15.0	539.6	36.0	36.0
PGE	PGE - GAS FRYERS - DOWNSTREAM	0	0.0%	0.0%	12.0	0.0	0.0	0.0
PGE	PGE - AGRICULTURAL PUMPING VFD - PASSTHROUGH	1						
PGE	PGE - CLEAN WATER PUMP UPGRADES - PASSTHROUGH	1						
PGE	PGE - FOOD SERVICE - PASSTHROUGH	1	0.0%		12.0	10,826.7	909.6	909.6
PGE	PGE - GLYCOL PUMP VFD - PASSTHROUGH	1	0.0%		5.0	161,453.4	32,290.7	32,290.7
SCE	SCE - AGRICULTURAL PUMPING VFD	0	0.0%	0.0%	7.0	1,851.0	180.6	267.3
SCE	SCE - CLEAN WATER PUMP UPGRADES - PASSTHROUGH	1	0.0%		15.0	2,715.6	181.0	181.0
SCE	SCE - FOOD SERVICE - PASSTHROUGH	1	0.0%		11.5	53,609.9	4,502.6	4,502.6
SCG	SCG - GAS FRYERS - DOWNSTREAM	0	0.0%	0.0%	12.0	0.0	0.0	0.0
SCG	SCG - GAS FRYERS - MIDSTREAM	0	0.0%	0.0%	12.0	0.0	0.0	0.0
SCG	SCG - FOOD SERVICE - PASSTHROUGH	1	0.0%		12.0	474.7	36.6	36.6
SDGE	SDGE - AGRICULTURAL PUMPING VFD - PASSTHROUGH	1	0.0%		10.0	2,580.0	258.0	258.0
SDGE	SDGE - FOOD SERVICE - PASSTHROUGH	1	0.0%		12.5	30,751.9	2,367.5	2,367.5
SDGE	SDGE - GAS FRYERS - DOWNSTREAM	1	0.0%		12.0	0.0	0.0	0.0
MCE	MCE - GLYCOL PUMP VFD - PASSTHROUGH	1	0.0%		15.0	328,318.5	21,887.9	21,887.9

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	PGE - AGRICULTURAL PUMPING VFD	0	0.0%	0.0%	9.3	0.0	0.0	0.0
PGE	PGE - CLEAN WATER PUMP UPGRADES	0	0.0%	0.0%	15.0	0.0	0.0	0.0
PGE	PGE - GAS FRYERS - DOWNSTREAM	0	0.0%	0.0%	12.0	4,975.6	414.6	414.6
PGE	PGE - AGRICULTURAL PUMPING VFD - PASSTHROUGH	1						
PGE	PGE - CLEAN WATER PUMP UPGRADES - PASSTHROUGH	1						
PGE	PGE - FOOD SERVICE - PASSTHROUGH	1	0.0%		12.0	3,375.0	281.2	281.2
PGE	PGE - GLYCOL PUMP VFD - PASSTHROUGH	1	0.0%		5.0	0.0	0.0	0.0
SCE	SCE - AGRICULTURAL PUMPING VFD	0	0.0%	0.0%	7.0	0.0	0.0	0.0
SCE	SCE - CLEAN WATER PUMP UPGRADES - PASSTHROUGH	1	0.0%		15.0	0.0	0.0	0.0
SCE	SCE - FOOD SERVICE - PASSTHROUGH	1	0.0%		11.5	0.0	0.0	0.0
SCG	SCG - GAS FRYERS - DOWNSTREAM	0	0.0%	0.0%	12.0	4,968.0	414.0	414.0
SCG	SCG - GAS FRYERS - MIDSTREAM	0	0.0%	0.0%	12.0	4,968.0	414.0	414.0
SCG	SCG - FOOD SERVICE - PASSTHROUGH	1	0.0%		12.0	4,361.7	363.2	363.2
SDGE	SDGE - AGRICULTURAL PUMPING VFD - PASSTHROUGH	1	0.0%		10.0	0.0	0.0	0.0
SDGE	SDGE - FOOD SERVICE - PASSTHROUGH	1	0.0%		12.5	2,936.3	240.2	240.2
SDGE	SDGE - GAS FRYERS - DOWNSTREAM	1	0.0%		12.0	5,041.1	420.1	420.1
MCE	MCE - GLYCOL PUMP VFD - PASSTHROUGH	1	0.0%		15.0	0.0	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	PGE - AGRICULTURAL PUMPING VFD	0	0.0%	0.0%	9.3	618.8	56.5	66.4
PGE	PGE - CLEAN WATER PUMP UPGRADES	0	0.0%	0.0%	15.0	320.6	21.4	21.4
PGE	PGE - GAS FRYERS - DOWNSTREAM	0	0.0%	0.0%	12.0	0.0	0.0	0.0
PGE	PGE - AGRICULTURAL PUMPING VFD - PASSTHROUGH	1						
PGE	PGE - CLEAN WATER PUMP UPGRADES - PASSTHROUGH	1						
PGE	PGE - FOOD SERVICE - PASSTHROUGH	1	0.0%		12.0	7,056.7	592.8	592.8
PGE	PGE - GLYCOL PUMP VFD - PASSTHROUGH	1	0.0%		5.0	104,944.7	20,988.9	20,988.9
SCE	SCE - AGRICULTURAL PUMPING VFD	0	0.0%	0.0%	7.0	1,055.9	103.0	152.5
SCE	SCE - CLEAN WATER PUMP UPGRADES - PASSTHROUGH	1	0.0%		15.0	2,444.0	162.9	162.9
SCE	SCE - FOOD SERVICE - PASSTHROUGH	1	0.0%		11.5	34,846.5	2,926.7	2,926.7
SCG	SCG - GAS FRYERS - DOWNSTREAM	0	0.0%	0.0%	12.0	0.0	0.0	0.0
SCG	SCG - GAS FRYERS - MIDSTREAM	0	0.0%	0.0%	12.0	0.0	0.0	0.0
SCG	SCG - FOOD SERVICE - PASSTHROUGH	1	0.0%		12.0	338.4	26.3	26.3
SDGE	SDGE - AGRICULTURAL PUMPING VFD - PASSTHROUGH	1	0.0%		10.0	1,677.0	167.7	167.7
SDGE	SDGE - FOOD SERVICE - PASSTHROUGH	1	0.0%		12.5	19,988.8	1,538.9	1,538.9
SDGE	SDGE - GAS FRYERS - DOWNSTREAM	1	0.0%		12.0	0.0	0.0	0.0
MCE	MCE - GLYCOL PUMP VFD - PASSTHROUGH	1	0.0%		15.0	344,734.4	22,982.3	22,982.3

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	PGE - AGRICULTURAL PUMPING VFD	0	0.0%	0.0%	9.3	0.0	0.0	0.0
PGE	PGE - CLEAN WATER PUMP UPGRADES	0	0.0%	0.0%	15.0	0.0	0.0	0.0
PGE	PGE - GAS FRYERS - DOWNSTREAM	0	0.0%	0.0%	12.0	1,927.8	160.6	160.6
PGE	PGE - AGRICULTURAL PUMPING VFD - PASSTHROUGH	1						
PGE	PGE - CLEAN WATER PUMP UPGRADES - PASSTHROUGH	1						
PGE	PGE - FOOD SERVICE - PASSTHROUGH	1	0.0%		12.0	2,287.1	190.6	190.6
PGE	PGE - GLYCOL PUMP VFD - PASSTHROUGH	1	0.0%		5.0	0.0	0.0	0.0
SCE	SCE - AGRICULTURAL PUMPING VFD	0	0.0%	0.0%	7.0	0.0	0.0	0.0
SCE	SCE - CLEAN WATER PUMP UPGRADES - PASSTHROUGH	1	0.0%		15.0	0.0	0.0	0.0
SCE	SCE - FOOD SERVICE - PASSTHROUGH	1	0.0%		11.5	0.0	0.0	0.0
SCG	SCG - GAS FRYERS - DOWNSTREAM	0	0.0%	0.0%	12.0	1,924.8	160.4	160.4
SCG	SCG - GAS FRYERS - MIDSTREAM	0	0.0%	0.0%	12.0	3,534.7	294.6	294.6
SCG	SCG - FOOD SERVICE - PASSTHROUGH	1	0.0%		12.0	2,934.9	244.4	244.4
SDGE	SDGE - AGRICULTURAL PUMPING VFD - PASSTHROUGH	1	0.0%		10.0	0.0	0.0	0.0
SDGE	SDGE - FOOD SERVICE - PASSTHROUGH	1	0.0%		12.5	1,908.6	156.2	156.2
SDGE	SDGE - GAS FRYERS - DOWNSTREAM	1	0.0%		12.0	3,276.7	273.1	273.1
MCE	MCE - GLYCOL PUMP VFD - PASSTHROUGH	1	0.0%		15.0	0.0	0.0	0.0

APPENDIX AC:

RESPONSE TO RECOMMENDATIONS

EM&V Impact Study Recommendations

Study Title: PY20 Pump & Food Service Impact Evaluation

Study Manager: CPUC

ID		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)
APVFD1	PG&E, SCE	5	We found that VFD controls installed through the programs are not being properly screened in many cases for eligibility criteria. Out of a total sample size of 57 pumps, commonly observed reasons for failing eligibility requirements includes the installation of speed controls in the following cases: 14 pumps run fewer than 1,000 hours per year; 9 pumps pump well water into water storage reservoirs; 13 pumps have settings that are at or near full-load. Many of the VFDs are installed on new pumps that irrigate trees that have been planted in the last couple of years; this results in low run hours, many below 500 hours per year.	The program's application and review process should be enhanced to better screen projects against eligibility requirements and exclusions.		
APVFD2a	PG&E, SCE	5	In most cases, pump operations can be readily characterized using interval billing data, such as hourly demand measurements for a given pump. In fact, our evaluation	We recommend that the programs make use of interval billing data for characterizing pump operations, including use of		

ID		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)
			applied interval billing data as a key model input used to determine VFD savings.	those data to derive updated estimates of deemed savings for the pump VFD measure, and as screening criteria for pump run hours.		
APVFD2b	PG&E, SCE	5		The PAs should continue to track and report Service Account IDs (SAID) of meters that are affected by VFD installation. Overall, the PAs did a good job of identifying the affected customers' meters and accounts where loads were affected by VFD installations, but there were a few instances where this was not the case. Best practice would be to ensure that each record in the tracking system has an SAID that corresponds with the installed VFD/pump.		
APVFD3	PG&E, SCE	5	Beside the potential to save energy, there are other common reasons that farmers will decide to install VFD	For these reasons, we recommend that the appropriate baseline be		

ID		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)
			controls on crop irrigation pumps. In fact, some pumps cannot continue to be operated without the VFD due to operational requirements, such as the use of VFD controls to automatically adjust pump speed in response to pressure settings, or due to sand contamination in the well water column that can be controlled using VFD pump speed settings. Another common reason is that the VFD pump gives the farmer the ability to monitor and control the pump remotely, from a desk in their office. Furthermore, the VFD pumps can save on equipment maintenance and extend the life of the pump. This results in a high free-ridership rate for VFD controls because a considerable number of farmers indicate that they would have installed VFD controls independent of the program / incentive.	determined as a function of pump type and size. Current deemed savings estimates assume a throttle valve flow control baseline, in which partially closed valves are used to control pump flow. However, this assumed baseline ignores the fact that VFD flow controls are commonly installed, even without the influences of program intervention.		

ID		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)
APVFD4a	PG&E, SCE	5	The workpaper-based estimates of savings currently draw results from a database of legacy custom and new construction projects involving pump VFDs. Our evaluation has assembled stipulated parameter values and results, including the following: operating hours, pump load distribution, motor efficiency, VFD efficiency, and the assumed affinity law exponent. Our evaluation also reported metric-based per-unit results that should prove useful to workpaper updates, in addition to updating the parameters noted above.	We recommend that the results of this evaluation, and any trends observed, should be considered for any workpaper updates for the agricultural pump VFD measures, in order to improve the accuracy of future workpaper estimates.		
APVFD4b	PG&E, SCE	5		The program's application and review process should be expanded to increase the range of irrigation pump performance information captured in the ex ante tracking databases. We recommend that the PAs consider including fields within the project application forms for estimated pump runtime, the acreage of the field to be served by the pump, the crop being served, irrigation end-point type (drip, sprinkler, flood), OPE,		

ID		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)
				etc. The PAs should make use of those data to fine tune ex ante savings values to better represent pumping conditions/water requirements. It might be possible, for example, to support crop-specific savings estimates and to better customize expected pump loads based on water requirement by crop, pump capacity and acreage.		
APVFD4c	PG&E, SCE	5		We recommend that the PAs consider using an enhanced deemed measure savings algorithm that provides for some reasonable level of customization for relevant input parameters. Based on observations during this evaluation, we believe that irrigation pumps are better suited as a quasi-prescriptive (partially-deemed) measure		

ID		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)
				rather than a fully deemed measure. The diversity of sample points and results suggests that irrigated fields, and the VFDs that serve them, are unique to each farm, but nonetheless trends may be leveraged that can lead to more accurate savings claims. To that effect, crop-specific irrigation requirements, for example, could be used to better characterize and differentiate the measure savings algorithms. Continuing to use a database of legacy ex ante pump VFD results will likely continue to misrepresent realized program savings.		
APVFD5	PG&E, SCE	5	Tracking system improvements are needed to properly characterize the pumps on which the VFD controls are installed. Pumps are mis-	The program's verification process should ensure that pump VFD installations are both valid and accurately		

ID		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)
			labeled, including proper classification by motor size (horsepower) and type of pumping being performed by each pump (well pump versus booster pump).	represent the associated irrigation system.		
CWP1	PG&E	5	For the majority of water pump upgrades evaluated, program tracking data did not provide sufficient information. For approximately 70% of projects sponsored by PG&E in 2020, we did not have sufficient participant contact data to verify pump installations or evaluate savings. As a result, we expanded our evaluation recruitment pool to include all participants in 2020 but ultimately fell short of the target sample count.	The PAs should require participating distributors and partnering contractors to collaboratively collect and submit basic information for each customer ultimately receiving the equipment. This appears to be most challenging to accomplish for installed equipment that are delivered by the programs through retail or other equipment supplier sources, in contrast with equipment that are installed directly by contractors, and should therefore be an area of focus for implementing this recommendation. This basic information is critical for the		

ID		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)
				PAs, the CPUC, and its contractors to verify installations and maintain the integrity of ratepayer incentive dollars.		
CWP2	PG&E	5	The reported savings were overestimated primarily due to differences in pump efficiency indices (PEIs). For all pumps rebated in 2020, we compared the installed pump efficiency indices (PEIs) with corresponding baseline PEIs as a function of pump size, application, and controls system. Overall, we found that the achieved efficiency increase was 69% lower than that reflected in program savings claims. This difference was the primary contributor to the measure's 19% GRR.	The Water Pump Upgrade workpaper should be revised to reflect the most accurate and up-to-date PEI values available. Our evaluation team has been working with PG&E and the CPUC to refine this measure's workpaper, and this recommendation aligns with those ongoing efforts. Should PG&E prefer that the workpaper incorporates blended PEI values for installed and/or baseline pumps, we recommend that the revised workpaper reflects the characteristics of pumps (sizes, applications, and		

ID		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)
				controls types) rebated in 2020.		
CWP3	PG&E	5	We determined that 6 of the 20 evaluated projects have not saved energy. 2 projects occurred at newly constructed facilities that have not yet opened, 2 projects occurred at facilities that have not yet installed the rebated pumps, and 2 projects involved pumps with rated PEIs identical to baseline. These projects resulted in zero savings and reduced the realized program savings by 12%.	PAs should require participating distributors and partnering contractors to submit more comprehensive installation documentation (e.g., invoices, commissioning reports, photographs) to prove measure installation, quantity, size, and efficiency. As noted above, this appears to be most challenging to accomplish for installed equipment that are delivered by the programs through retail or other equipment supplier sources, in contrast with equipment that are installed directly by contractors, and should therefore be an area of focus for implementing this recommendation.		

ID		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)
CWP4	PG&E	5	9 of the 20 evaluated projects involved incorrect per-unit savings values or mischaracterizations of the rebated pumps. Correcting these errors resulted in a 1% decrease in realized savings.	PAs should redouble efforts to ensure that reported savings estimates are based on the correct application of per-unit savings values. We primarily attribute these observed errors to mischaracterizations of pump horsepower, pump application, or pump controls. This recommendation coincides with recommendations to collect more comprehensive installation data from contractors for all claimed installations.		
FRY1	PG&E, SCG and SDG&E	5	For many of the gas fryer projects evaluated, program tracking data did not provide sufficient information. For approximately 83% of projects rebated in 2020, we did not have sufficient participant contact data to verify fryer installations or evaluate savings. In	We recommend that PAs require participating distributors and partnering contractors to collaboratively collect and submit basic information for each customer ultimately receiving the equipment or other		

ID		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)
			addition, the ongoing COVID-19 pandemic further limited our ability to access food preparation areas for verification and measurement of the rebated fryers. As a result, we expanded our evaluation recruitment pool to include all 2020 participants but ultimately fell short of the target sample count.	program support. This appears to be most challenging to accomplish for installed equipment that are delivered by the programs through retail or other equipment supplier sources, in contrast with equipment that are installed directly by contractors, and should therefore be an area of focus for implementing this recommendation. This basic information is critical for the PAs, the CPUC, and its contractors to verify installations and maintain the integrity of ratepayer incentive dollars.		
FRY2	PG&E, SCG and SDG&E	5	We verified the installation of all rebated fryers in the evaluation sample. However, we determined one fryer to be ineligible for program rebates, as it was not	PAs should continually update eligible products lists to reflect the most up-to-date ENERGY STAR qualified product list. PAs should continually disseminate		

ID		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)
			ENERGY STAR-qualified. Similar to the clean water pump measure, fryers are primarily delivered through retail or equipment supplier channels. But in contrast to the clean water pump measure, we determined an installation rate of 100% after confirming fryer claims at 12 sampled participating facilities. We did not consider the lone ineligible fryer in the installation rate calculation.	eligible product lists to participating distributors to ensure that rebates exclusively support high-efficiency equipment.		
FRY3	PG&E, SCG and SDG&E	5	Measured operation differed from workpaper assumptions and led to slightly reduced savings. We deployed temperature measurement devices on rebated fryers installed at sampled facilities. The operational data showed that fryers operate more frequently than predicted by the reported savings calculations. Increased operation led to a corresponding increase in realized savings. On the other hand,	The measure workpaper should be revised to incorporate operational data from this evaluation study as well as the PY2017 evaluation cycle. The metered dataset now represents a combined sample of 55 projects. This real-world data can inform workpaper assumptions on operating hours per year among idle, preheat, and frying modes.		

ID		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)
			we determined higher energy usage rates than predicted, counterbalancing the operation increase. We confirmed through phone surveys and in-person interviews that our evaluation data collection, which occurred between November 2021 and February 2022, reflected typical operation and was not affected by COVID-19 precautions.			
FRY4	SCG	6	The programs exhibit influence in making high-efficiency fryers cost-competitive. Participating distributors indicated that the program has caused them to stock and sell more high-efficiency models than they would have absent the program. Distributors generally use the program rebates to discount the high-efficiency fryers. These point-of-sale discounts help convince end-users to choose a more efficient model than they otherwise would have. Overall, we	NA		

ID		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)
			observed net-to-gross ratios from distributors to be slightly above that predicted in the measure workpaper.			

APPENDIX A:

UPDATES TO NTG FRAMEWORK

This Appendix describes updates that the evaluation team made to the Nonresidential Net-to-Gross (NTG) framework for downstream programs during for the 2018 evaluation cycle. Evaluators have used this framework with minor modifications since the 2006-2008 evaluation cycle. Team members from both the Group A and Group D evaluation teams coordinated to develop changes that the evaluation team incorporated into the Small Commercial and Lighting evaluations that resulted in an alternative to the PAI-1 score. The evaluation team used these changes for the PY20 evaluations for the Pump and Food Service and Nonresidential Lighting evaluations.

Over the last several evaluation cycles, Net-to-Gross (NTG) analysis for Nonresidential programs has used a Self-Report Approach (SRA) that is based on the results of self-report telephone surveys with program participants. The Nonresidential Working Group originally developed the existing Nonresidential Net-to-Gross (NTG) framework during the 2006-2008 evaluation cycle and updated it modestly during the 2010-2012 cycle. They designed the approach to fully comply with the California Energy Efficiency Evaluation: Protocols: Technical, Methodological, and Reporting Requirements for Evaluation Professionals[1] (Protocols) and the Guidelines for Estimating Net-To-Gross Ratios Using the Self-Report Approaches (Guidelines), as demonstrated in the Nonresidential NTGR Methods (Appendix D-1 to the full WO033 Custom Final Report).

[1] The TecMarket Works Team. California Energy Efficiency Evaluation Protocols: Technical, Methodological, and Reporting Requirements for Evaluation Professionals. Directed by the CPUC's Energy Division, and with guidance from Joint Staff, April 2006.

A-1 STANDARDIZED NONRESIDENTIAL NTG ALGORITHM IMPROVEMENTS

A-1-1 Previous Algorithm and Rationale

The standardized Nonresidential NTG framework incorporates a 0 to 10 scoring system for key questions used to estimate the NTGR. It consists of a 3-score structure, with each score representing a different way of characterizing program influence:

- **Program attribution index 1 (PAI–1)** score that reflects the influence of the most important of various program and non-program-related elements in the customer's decision to select the specific program measure at the time they did. 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 reduced in half 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 3 (PAI–3)** score that captures the likelihood of various actions the customer might have taken at the time they did, and in the future, if the program had not been available (the counterfactual).

The resulting self-reported NTGR in most cases is simply the average of the PAI-1, PAI-2, and PAI-3 values, 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 values only. The reasoning is that the customer has responded with absolute certainty that the program did not influence their decision making through their responses to PAI-3, whereas responses to the PAI-1 score typically indicate some level of program influence despite efforts to check and resolve the consistency of their responses.

The rationale for using three separate scores (triangulation [2]), rather than relying on a single metric, is as follows. The objective of the NTGR analysis is to determine the fraction of the gross savings that occurred because of the program. One minus this score is interpreted as freeridership. Some questions are designed to measure the counterfactual by asking the participant several questions about what they would have done in the absence of the program. Other questions attempt to get at the direct influence of the rebate and other forms of assistance on the decision to install efficient equipment. As part of this set of questions, the respondent is prompted to consider other possible non-program influences that might have played a role in the decision. Still other questions attempt to establish the chronology of when the participant first heard about the program and their decision to install the efficient equipment. These three different types of questions are trying to measure three slightly different things with some being more difficult than others for the respondent to assess. For example, it is easier for the respondent to recall whether they found out about the availability of the rebate before or after they decided to buy the efficient equipment than it is to imagine what they would have done in the absence of the program or assess the influence of the rebate. Nevertheless, all three types of questions provide information about the influence of the program that decision makers should find both meaningful and useful.

One of the problems inherent in asking program participants if they would have installed the same equipment or adopted the same energy-saving practices without the program is that we are asking them to recall what has happened in the past. Worse than that is the fact that what we are really asking them, among other things, is report on a hypothetical situation, what they would have done in the absence of the program. In many cases, the respondent may simply not know and/or cannot know what would have happened in the absence of the program. Even if the customer has some idea of what would have happened, there is, of necessity, uncertainty about it. The situation just described is a circumstance ripe for invalid answers (low construct validity) and answers with low reliability, where reliability is defined as the likelihood that a respondent will give the same answer to the same question whenever or wherever it is asked. It is well known in the interview literature that the more factual and concrete the information

[2] Triangulation, using a variety of research methods and data sources, is a strategy adopted ideally before the data are collected and reduces the risk of systematic biases. In some cases, the decision to use triangulation is adopted after the data are collected and found robust enough to support this approach.

the survey requests, the more accurate responses are likely to be. Where we are asking for motivations and processes in hypothetical situations that occurred in the past, there is room for bias. Using a framework that combines scores based on three different concepts mutes the impact of such bias and increases the accuracy of the resulting NTGR for each project evaluated.

A-1-2 Changes Since the 2006-2008 Evaluation Cycle and Next Steps

The **PAI- 1** score has evolved since the original specification in 2008. The 2008 version called for the score to be based on the highest rating for a program element. Since most decisionmakers would choose to rate at least one program element highly, this often resulted in a PAI-1 score that was significantly higher than either the PAI-2 or PAI-3 scores, and in some cases, led to the elimination of PAI-1 due to it being an outlier. The score was revised in the 2010-2012 cycle to be based on the highest rating for a program influence divided by the sum of the highest-rating for a program influences plus the highest rating for a non-program influence, multiplied by 10. This revised normalized structure solved the problem with outlier results but led to a different issue due to the normalization process yielding mid-range values approximating 5 in nearly all cases, since most decisionmakers give a high score to at least one program element and one non-program element. This issue was flagged in the 2013-2015 Program Performance Assessment of the Nonresidential Downstream Programs, with a recommendation that PAI-1 be eliminated from the NTGR calculation until an alternative formulation could be developed.

The 2017 evaluation of Deemed measures continued use of this standard SRA framework with relatively minor modifications to NTG survey question batteries. Based on the 2013-2015 Program Performance Assessment recommendation, the PAI-1 score was eliminated from the NTG ratio computation. *The Nonresidential NTG Working Group was re-established, in part, to identify an alternative to the current PAI-1 scoring structure.*

A-2 ALTERNATIVE TO CURRENT PAI-1 SCORING STRUCTURE

A-2-1 Issues with Current PAI-1 Score

As discussed previously, a number of issues with the PAI-1 score have emerged in previous evaluations. The observations below are specific to the 2017 Deemed evaluations where these problems resulted in a decision to exclude the PAI-1 score from the NTGR calculation.

The inclusion of the PAI-1 score biased the NTGR towards a value of 0.5. The PAI-1 score tended to converge to a value of around 5. Overall, the PAI-1 score averaged 4.9, with over 80% of the individual scores within 0.5 of that mean (i.e., between 4.4 and 5.4). This was likely due to respondents rating at least one program and one non-program factor very high. Respondents gave a 9 or 10 rating to at least one program factor 72% of the time, and at least one non-program factor 80% of the time. Furthermore, 66% of the time, the respondent's highest rated program and non-program factors were rated equally. Averaging in the PAI-1 score with PAI-2 and PAI-3 will therefore reduce the NTGR.

PAI-1 scores did not appear to be correlated with "no program" responses indicating free ridership. When PAI-1 scores were compared to other survey questions that would indicate a high likelihood for free ridership, they did not correlate well to these metrics. Specifically, we examined the relationship between PAI-1 and two survey questions that we felt were strong indications of free ridership:

N2: Did your organization make the decision to install this new equipment before, after, or at the same time as you became aware of the program rebate?

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

2 Install standard efficiency equipment or whatever required by code

3 Installed equipment more efficient than code but less efficient than what you installed through the program

4 Done nothing (keep existing equipment as is)

5 Done the same thing I would have done as I did through the program

6 Repair/rewind or overhaul the existing equipment

77 Something else (specify what _____)

The first question (N2) concerns the timing of the decision to install the measure relative to when they became aware of program rebates. For this question, higher levels of free ridership would be expected for those that already made the decision to install their new equipment before they became aware of the program rebate, and PAI-1 scores would be substantially lower for this response than the other two responses. Our expectation was to see significant increases in the PAI scores for the Same Time and After responses, compared to the Before response. This was the case for PAI-2 and PAI-3 scores, however, the PAI-1 scores changed by only 0.08 points.

Another telling indication of program influence is the self-reported action that participants say they would have taken had the program not existed in question N6. Respondents were asked what they would have been most likely to do if the program had not been available. Two common responses were "done nothing and keep existing equipment as is", and "done the same thing I would have done as I did through the program". One would expect relatively high PAI scores for the "done nothing" and relatively low PAI scores for the "done the same thing" responses. The PAI-2 and PAI-3 scores did meet this expectation, but the PAI-1 score differed by only 0.10 points.

Non-program factors may actually be program factors. What we may think is a non-program factor, may actually be a marketing message of the program. For example, better lighting quality may be considered a non-program factor. However, this may be something the program promotes. Therefore, it may be that the influence of better lighting quality on their decision may have been due to the program.

Similarity in concept between PAI-1 and PAI-2 scores. The PAI-1 and PAI-2 scores are based on a similar concept of program influence and are based on self-reported influence scores for individual program and non-program elements. While both scores are intended to represent different ways of characterizing program influence, there is a high degree of similarity between them. Including both

scores in the NTGR calculation amounts to assigning a two-thirds weight to similar program influence metrics and reduces the importance of the PAI-3 "no program" score in the overall calculation. It is possible that PAI-1 may represent another aspect of program influence that PAI-2 may not be capturing, but quantifying this is difficult to do, and it could be equally likely that instead they are capturing the same influence, accounting for double attribution of program influence. Additionally, removing PAI-1 will give a more consistent representation of program influence across respondents.

A-2-2 Alternatives to the PAI-1 Score

We examined a few different alternatives to the PAI_1 score and then calculated the resulting NTGR using each alternative by averaging it with the PAI_2 and PAI_3 scores. The alternatives we considered were as follows:

NTGR_2a – PAI-1 alternative 1 = ratio of average program element score to sum of average program plus non-program element scores. Average all the program element scores and divide by the average of all the program element scores plus the average of the non-program element scores. For example:

- **Program scores = 10, 8, 7, 6, 6 = average of 7.4**
- **Nonprogram = 9, 9, 4, 4, 4 = average of 6.0**
- **PAI_1 = 7.4/ (7.4+6.0) = 0.55**

NTGR_2b – PAI-1 alternative 2 = Ratio of number of highly rated program factors to highly rated non-program factors

Identify the number of scores that rate an 8 or higher and set the PAI score equal to the ratio of the number of high program scores to high program and non-program scores. For example:

- **Program scores = 10, 8, 7, 6, 6 = 3 high scores**
- **Nonprogram = 9, 9, 4, 4, 4 = 2 high scores**
- **PAI_1 = 3/ (3+2) = 0.6**
- **If you get no high scores, then NTG =0.5**

NTGR_2c – PAI-1 alternative 3 = Assign value based on No Program actions (N6). This Approach uses the N6 value and assigns a PAI score as follows.

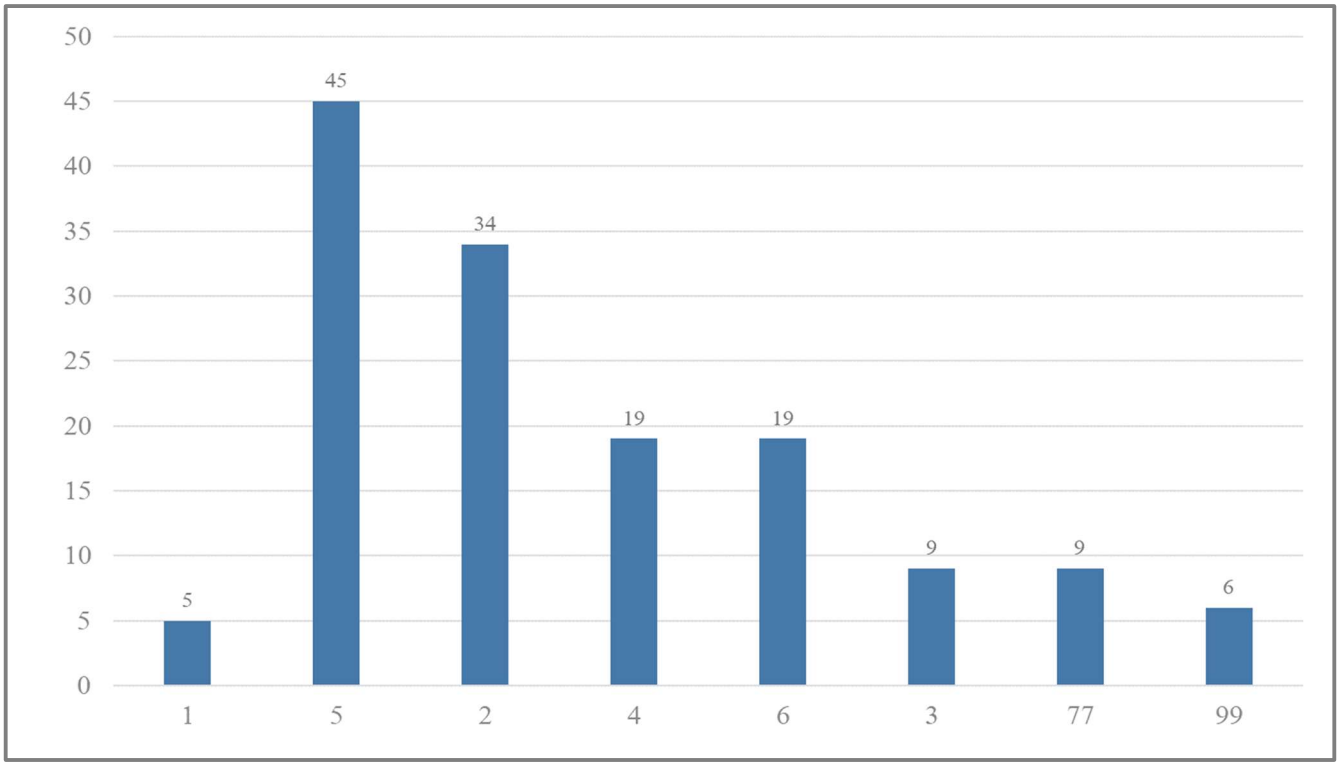
- If N6 = 2,4 then NTGR = 1
  - 2 Install standard efficiency equipment or whatever required by code
  - 4 Done nothing (keep existing equipment as is)
- If N6=5 then NTGR = 0
  - 5 Done the same thing I would have done as I did through the program
- If N6=1, then NTGR = 1.00 minus the % share they would have installed
  - 1 Install/Delamped fewer units
- If N6=3, then NTGR =0.75
  - 3 Installed equipment more efficient than code but less efficient than what you installed through the program
- IF N6=6, NTGR=missing – this is an Accelerated Replacement and the efficiency of the action is unknown, therefore this response is excluded from the analysis
  - 6 Repair/rewind or overhaul the existing equipment
- If N6=77, the response is reviewed and a judgment made regarding the likely NTGR level, usually a 0, 0.5 or 1
  - 77 Something else (specify what _____)

The overall NTGR_2c is the average of PAI-2, PAI-3, and PAI-N6.

Figure A-1 below shares results from the 2017 Deemed evaluations for question N6. The response category with the largest share is category 5 (Done the same thing I would have done as I did through the program, 45%). Other categories that were commonly selected were 2 (Install standard efficiency

equipment or whatever required by code, 34%), 4 (Done nothing, 19% and 6 (Repair/rewind or overhaul the existing equipment, 19%).

Figure A-1: Distribution of Responses to Question N6 in Small Commercial Evaluation



NTGR_2d – PAI-1 alternative 4 = Preponderance of Evidence approach. If there is significant evidence of free ridership, the value is set to 0, if there is significant evidence of program influence, the value is set to 1, or else the PAI-1 alternative algorithm of choice is used to determine the NTGR. Here is the algorithm.

First calculate PAI_2 and PAI_3 and use question N6 shown earlier:

- If PAI_2 >= 7 then NTG_2 = 1
- Else if PAI_2<= 3 then NTG_2 = -1
- Else NTG_2 = 0

- If PAI_3 >= 7 then NTG_3 = 1
- Else if PAI_3<= 3 then NTG_3 = -1
- Else NTG_3 = 0

- IF N6 = 2, 4 (and possibly more options) then NTG_6 = 1
- Else if N6 = 5 (and possibly more options) then NTG_6 = -1
- Else NTG_6 = 0

THEN:

- If sum of NTG2,3,6 >=2, then NTGR = 1 (so in other words you have at least 2 indicators of being net, and no contradictions)
- Else, if sum of NTG2,3,6 <= -2, then NTGR = 0, (so in other words you have at least 2 indicators of being a free rider, and no contradictions)
- ELSE = NTGR = the standard calculation (the average of PAI2, PAI3 and the PAI-1 alternative algorithm of choice)

A-2-3 Comparison of Results Across Methods

The following two figures graphically illustrate the NTGR results across methods, based on the data collected in the 2017 Deemed evaluations.

Figure A-2 illustrates the distribution of NTGR values for each of the methods tested. Note that NTGR is based on the approach used in the 2017 Deemed evaluation and represents the average of the PAI-2 and PAI-3 scores. NTGR_wPAI1 is the historic 3 score framework, and NTGR_2a through NTGR_2d are the variants described above.

Figure A-2: Distribution of NTGRs Across Alternative Methods

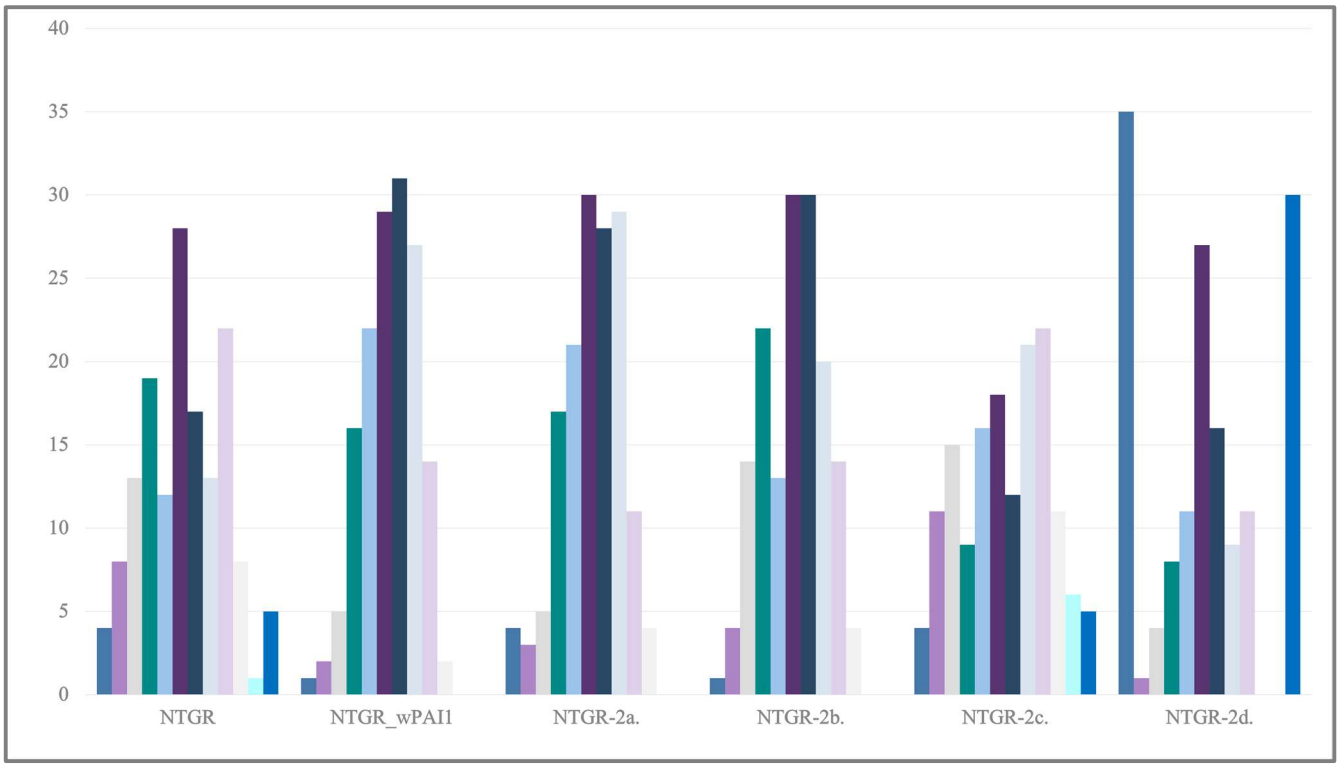
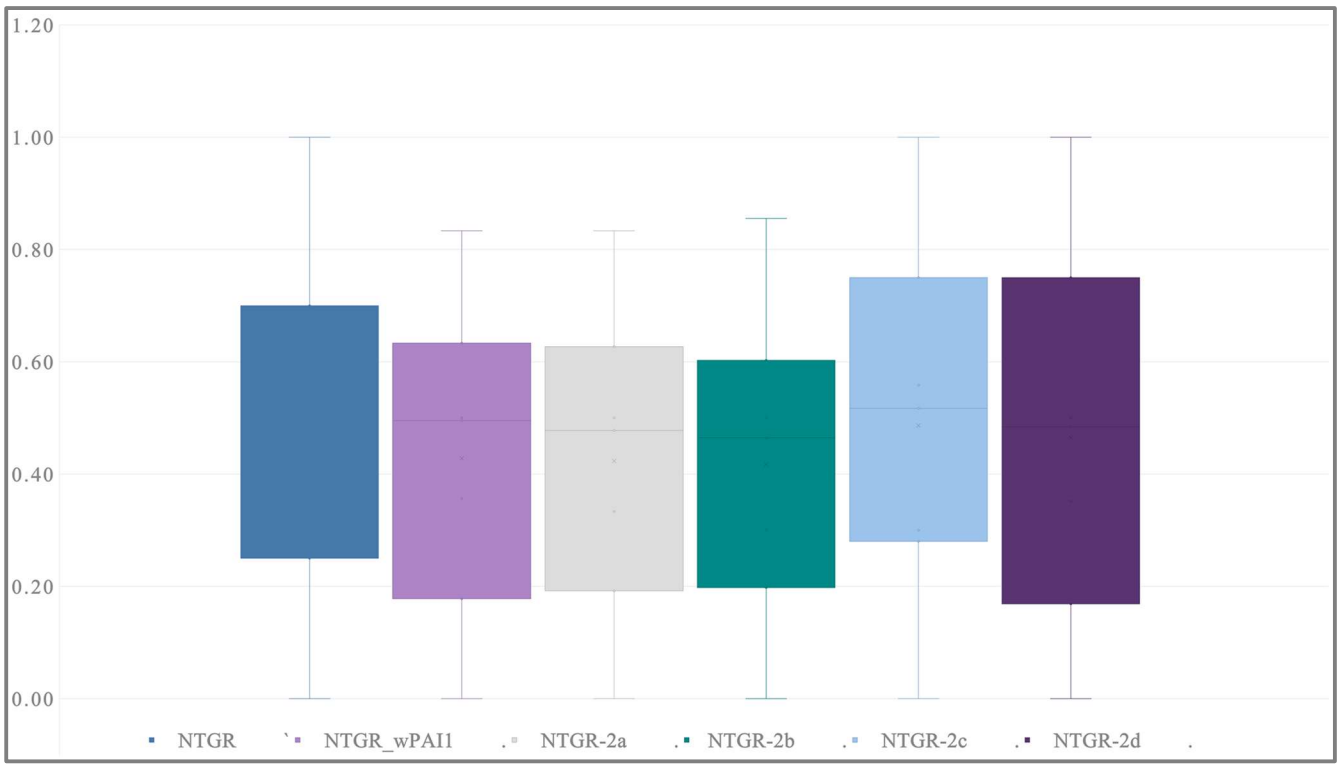


Figure A-3 below provides mean NTGR values and 90% confidence intervals across all six cases. The whiskers indicate the range of values analyzed.

Figure A-3: NTGR Mean Values and Confidence Intervals Across Alternative Methods



The following observations can be made from these two figures:

- **From Figure A-2:**
  - NTGR_wPAI1 – note the clustering of NTGRs around the mid-range values of 0.4 to 0.7. This illustrates the issue with the PAI_1. In contrast, the NTGR case, which is based on PAI-2 and PAI-3 only, has a wider distribution of values.
  - NTGR_2a and NTGR_2b are still relatively narrowly distributed around the 0.5 value, while NTGR_2c and NTGR_2d show much wider variance. Similarly, NTGR_2a and NTGR_2b have relatively narrow standard deviations, while those for NTGR_2c and NTGR_2d are significantly wider.
  - NTGR_2c values are well-distributed and more homogeneous while NTGR_2d values tend toward the extreme 0 and 1 values in many instances.
- **In Figure A-3, it is striking how relatively similar the mean NTGR values are, and likely reflects the contribution of the PAI-2 and PAI-3 scores (2/3 weight) in all cases.**

A-2-4 Method Change

The core NTGR algorithm has been revised and the current PAI-1 score has been replaced with the N6-based score in NTGR_2c – PAI-1 alternative 3. This option leverages the counterfactual information from the survey more fully, with 2 of three scores derived from it. Further, as noted above, the NTGR_2c values have desirable qualities in that they are more normally distributed across each of the scoring intervals and have higher inter-item correlations.

The three PAI scores using the NTGR_2c approach all represent very different approaches and uses of survey information, whereas the other approaches still have the issue of the revised PAI-1 and PAI-2 scores utilizing similar information. We also feel there are some issues with the other alternate PAI_1 scores such as:

NTGR_2a – PAI-1 alternative 1 = ratio of average program element score to sum of average program plus non-program element scores. Consider the following example where an individual was highly influenced by a couple program factors, not at all influenced by the other program factors, and only moderately influenced by the non-program factors

- **Program scores = 10, 10, 0, 0, 0 = average of 4**
- **Non-program scores = 4, 4, 4, 4, 4 = average of 4**
- **PAI_1 = 4/(4+4) = 0.5**

One could argue that the NTGR in this case should be very high because there was clear influence of the program by more than one factor, and no other factor seemed to be very influential. Yet the NTGR is 0.5, inconsistent with this observation. We do not like this alternative because of this issue, where low factor scores can offset high influential factors. A customer does not need all factors to be influential for the program to have influenced their decision.

NTGR_2b – PAI-1 alternative 2 = Ratio of number of highly rated program factors to highly rated non-program factors. This alternative tells us if there were multiple factors that influenced their decision, and how many influential program versus non program factors there are. But it does not tell us which of the influential factors were the most influential, and what may have really driven their decision. Even

though a customer may rate two factors a 10 does not mean they were equally influential. The PAI-2 score does address this, however. So, the PAI-2 score on its own is a more accurate representation of attribution than this approach.

NTGR_2d – PAI-1 alternative 4 = Preponderance of Evidence approach. If there is significant evidence of free ridership, the value is set to 0, if there is significant evidence of program influence, the value is set to 1, or else the PAI-1 alternative algorithm of choice is used to determine the NTGR. The issue with this approach is that is uses PAI-2 and PAI-3 in its construction, so it's obviously highly correlated with those values and does not provide as independent a result as, say, using the N6 questions in NTGR_2c.

Given the replacement of PAI-1, for projects that report a high level of vendor influence, it is necessary to incorporate vendor influence into one of the other scores. One option is to include it in PAI-3, and another alternative is to develop a fourth score that reflects vendor influence only.

APPENDIX B:

PARTICIPANT NTG SURVEY

The following data was passed to the surveyor by decision maker ID (MDID, where each DMID may be just a single VFD record/application, or might represent several VFD records spread across one or more applications/farm locations:

<%CONTACT> – This variable should contain the decision makers name; probably the farmer

<%Business> – This variable should contain the business name

<%Utility> -- This variable should contain the relevant utility; either PG&E or SCE

<%Program> -- This variable should contain the name of the relevant program; for example, Commercial Deemed Incentives

<%Measure_x> -- This variable contains a readable measure description that includes the pump type and pump horsepower; for example, variable frequency drive flow controls for a 125 horsepower booster pump.

<%Measure_x_Date> -- This variable contains a readable installation date description; for example, December 6, 2020.

<%City> -- This variable contains the city name.

VFD1 should be the record and application randomly selected for evaluation

VFD2 should be the second randomly selected record for evaluation, when populated (as some DMIDs will only be associated with a single record)

Participant NTG Survey for CPUC
PY20 Pump and Food Service Evaluation

INTRODUCTION AND FINDING CORRECT RESPONDENT

OUTCOME 1

This is %n calling on behalf of the CPUC, from Quantum Energy Analytics. 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.

READ IF NEEDED: This call concerns variable frequency drive flow controls that your business purchased in 2020.

XX	BEGIN THE INTERVIEW	Continue
101	NO ANSWER	Record response and attempt again at a later time
102	BUSY	Record response and attempt again at a later time
111	CHANGED NUMBER	Record new number and attempt again
107	ANSWERING MACHINE / VOICE MAIL	Record response and attempt again at a later time
104	CALLBACK-Specific	Record response and schedule time to callback
105	CALLBACK-General	Record response and get best time to callback
5	NON-WORKING NUMBER	Record response and resolve record
6	NON-BUSINESS NUMBER	Record response and T&T
14	OTHER PHONE PROBLEM / FAX / MODEM	Record response and resolve record
12	REFUSAL	Record response and T&T

19	ASKED TO BE PLACED ON DNC LIST	Record response and T&T
15	LANGUAGE/HEARING PROBLEM	Record response and T&T
10	CLAIMS TO HAVE BEEN PREVIOUSLY INTERVIEWED	Record response and T&T
94	MAXIMUM CALL ATTEMPTS	Record response and resolve record
900	DUPLICATE PHONE NUMBER	DO NOT LOAD - RESOLVE RECORD
999	INVALID PHONE NUMBER	DO NOT LOAD - RESOLVE RECORD
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.

READ IF NEEDED: This call concerns variable frequency drive flow controls that your business purchased in 2020.

77	There is no one here who can help you	T&T
02	CALL BACK TO REACH PR0PER PARTY	Record response and get best time to callback
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 Quantum Energy Analytics. 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 2020...I was told that would be you.

...Your organization participated in <%UTILITY>'s <%PROGRAM> by installing variable frequency drive flow controls in 2020.

Through this program, your organization installed a....

<%MEASURE_1> on <MEASURE_1_DATE>

AND IF NEEDED: and a……
<%MEASURE_2> on <MEASURE_2_DATE>
Are you the best person to speak to about your organization's participation in this program?

[If you need to provide validation for this survey, provide the following contact name and number: Yeshi Lemma, California Public Utilities Commission 415-703-1794/ Yeshi.Lemma@cpuc.ca.gov and the following website: www.cpuc.ca.gov/eevalidation]

1	Yes	DISPLAY
2	No, there is someone else	PBLOCK Hi
3	No and I don't know who to refer you to	Thank&Terminate
5	A contractor handles this	CNAME
99	Don’t know/refused	Thank&Terminate

CNAME May I please have the name and contact information of your contractor?

1	Yes – RECORD	Record Response and T&T
88	Refused	Thank&Terminate
99	Don't Know	Thank&Terminate

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 phone number and move on.]

77	Record Name, as &CONTACT, and Phone as &PHONE	May_I
88	Refused	Thank&Terminate
99	Don’t know	Thank&Terminate

May_I May I speak with him/her?

77	Yes	Intro3:s
88	No (not available right now@, set cb)	Get best time to callback

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 businesses like yours. We are interested in how businesses like yours think about and manage their energy consumption.

Your input will allow the California Public Utilities Commission to build and maintain better energy saving programs for customers like you. And we would like to remind you, your responses will not be connected with your business in any way.

SCREENER

VERIFY For verification purposes only, may I please have your name?

77	Get name	Bus_Name
88	Refused	Bus_Name
99	Don't know	Bus_Name

DISPLAY

For the sake of expediency, I will refer to ....<%UTILITY>'s <%PROGRAM> ...program as the PROGRAM, and to variable speed flow controls as the VFD(s).

BUS_NAME First, I'd like to ask you a question about your business. Our records show your business name as: <%BUSINESS>. Is that correct?

1	Yes	V1
2	No	Bus_Correct
88	Refused	V1
99	Don't Know	V1

BUS_CORRECT What is the correct name for your business?

&BUS_CORRECT	Corrected Business	V1

ROLE OF CONTRACTORS

V1 Did you use a contractor/vendor to install the VFD(s) that were purchased through the program?

1	Yes	V2
2	No	AA3
88	Refused	AA3
99	Don't Know	AA3

If V1 = 1 then ask; else skip to AA3

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 contractor/vendor approach you about your energy efficient equipment retrofit/installation?

1	Yes	V2ab
2	No	V3
88	Refused	V3
99	Don't Know	V3

V2ab Did the contractor/vendor recommend purchasing VFD flow controls instead of standard flow controls, such as throttling valve controls?

1	Yes	V2b
2	No	V2b
88	Refused	V2b
99	Don't Know	V2b

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	V3a
2	No	AA3
88	Refused	AA3
99	Don't Know	AA3

V3a Did you install what your contractor/vendor recommended?

1	Yes	V4
2	No	V4
88	Refused	V4
99	Don't Know	V4

Ask if V3 = 1; else skip to AA3

V4	Prior to coming into contact with the contractor/vendor, did your organization have plans to install the VFD(s)?	
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 VFD(s) had the contractor/vendor not recommended it?	
1	0-10 response	V40
88	Refused	V40
99	Don't Know	V40

NOTE: We are skipping this question for VFDs:

V4b	Using the same scale, how likely is it that your organization would have installed the VFD(s) 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	AA3
88	Refused	AA3
99	Don't Know	AA3

NET TO GROSS BATTERY

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 the variable frequency drive flow controls we discussed earlier as THE VFD(s).

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?

AA3		
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	AA3a
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	AA3a
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 AA3=1, 4 or 10 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/these new VFD(s) before after, or at the same time as you became aware 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 the VFD(s). There are many equipment features that you may consider in your purchase decisions other than energy efficiency. These might include such features as the performance of the equipment or how necessary it is for current operations. However, in the following questions, we are interested specifically in how the program might or might not have affected your decisions about the energy efficiency of the equipment. That is, we are interested in what influenced you to choose the VFD(s) you did rather than another flow control option. 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 (_____)	N3b
66	Equipment is new, no old equipment	N3b
88	Refused	N3b
99	Don't know	N3b

N3b	Availability of the PROGRAM rebate [IF NEEDED: to reduce the cost of the measure]	
#	Record 0 to 10 score (_____)	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	
#	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 (_____)	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 (_____)	N3j
88	Refused	N3j
99	Don't know	N3j

N3j Standard practice in your business/industry

#	Record 0 to 10 score (_____)	N3l
88	Refused	N3l
99	Don't know	N3l

N3l Endorsement or recommendation by your account rep?

#	Record 0 to 10 score (_____)	N3m
88	Refused	N3m
99	Don't know	N3m

N3m Corporate policy or guidelines

#	Record 0 to 10 score (_____)	N3n
88	Refused	N3n
99	Don't know	N3n

N3n Payback or return on investment of installing the VFD(s)

#	Record 0 to 10 score (_____)	N3o
88	Refused	N3o
99	Don't know	N3o

N3o Improved product quality

#	Record 0 to 10 score (_____)	N3r
88	Refused	N3r
99	Don't know	N3r

N3r Compliance with your business's normal irrigation or equipment replacement practices?

#	Record 0 to 10 score (_____)	N3s
88	Refused	N3s
99	Don't know	N3s

N3s	Were there any other factors we haven't discussed that were influential in your decision to install VFD(s)?	
1	Nothing else influential	P1
77	Record verbatim	N3ss
88	Refused	P1
99	Don't know	P1

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 (_____)	P1
88	Refused	P1
99	Don't know	P1

PAYBACK BATTERY

ASK P1 if N3n >=7; else SKIP to N41 (including the DISPLAY before N41)

P1	What financial calculations does your business typically make before proceeding with the installation of energy efficient equipment like the VFD(s) 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

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 the VFD(s) 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

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	N41
88	Don't know	N41
99	Refused	N41

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 (_____)	N41
88	Refused	N41
99	Don't know	N41

DISPLAY

Next, with regard to your decision to install the VFD(s) *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.

BELOW List the following items if they received a rating of 7 or higher

IF there are at least 1 program and 1 nonprogram factor, then say:

"Program-related factors include:"

<%N3B> Availability of the PROGRAM rebate	List if N3b>=7
<%N3H> Information from the Program, Utility, or Program Administrator Marketing materials	List if N3h>=7
<%N3L> Endorsement or recommendation by your account rep?	List if N3L>=7

"And Non-Program factors include:"

<%N3E> Previous experience with this measure	List if N3e>=7
<%N3F> Previous experience with this program	List if N3f>=7
<%N3J> Standard practice in your business/industry	List if N3j>=7
<%N3M> Corporate policy or guidelines	List if N3m>=7
<%N3O> To improve product quality	List if N3o>=7
<%N3R> Compliance with your business's normal irrigation or equipment replacement practices	List if N3r>=7

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 in choosing to install VFD(s) rather than alternative flow controls?

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 <> 88 and N41 <> 99 and N42 <> 88 and N42 <> 99, compute N41 + N42. While N41+N42 <> 10, display:

__We want these two sets of numbers to add up to 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 the VFD(s) *at the time you did* rather than waiting to install new equipment sometime in the future, regardless of the type of flow controls 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 the VFD(s) at the time you did rather than waiting to install new flow controls 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 THE VFD(s) 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 N41P <> 88 and N41P <> 99 and N42P <> 88 and N42P <> 99, compute N41P + N42P. While N41P+N42P <> 10, display:

__We want these two sets of numbers to add up to 10.

<%N41P> for Program influence and

<%N42P> for Non Program factors

NOTE: We are skipping this question for VFDs:

REPLACE Was the installation of this the VFD(s) an add-on to an existing pump or does the VFD/do the VFDs serve a new irrigation pump/new irrigation pumps?

1	Add-on to an existing pump	DISPLAY
2	Add-on to a new pump	DISPLAY
88	Refused	DISPLAY
99	Don't know	DISPLAY

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.

ASK ALL

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 VFD(s) that you did for this project regardless of when you would have installed it?

#	Record 0 to 10 score (_____)	N5B
88	Refused	N5B
99	Don't know	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?

N5b		
#	Record 0 to 10 score (_____)	N6
88	Refused	N6
99	Don't know	N6

NOTE: We are skipping this question for VFDs:

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 VFD(s) at the same time as you did?

N5aa		
#	Record 0 to 10 score (_____)	N6
88	Don't know	N6
99	Refused	N6

ADDITIONAL BASELINE INPUT

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?

N6		
1	Install fewer VFDs	N6aa
2	Install standard efficiency equipment or whatever is 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	N6a
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	N6a
2	Within one year	N6a
3	At a later time	N6ab
88	Don't know	N6a
99	Refused	N6a

N6ab How many years later would it have been?

77	Record VERBATIM	N6a
88	Don't know	N6ac
99	Refused	N6a

N6ac Would it have been….

1	Less than one year	N6a
2	About a year	N6a
3	A couple of years	N6a
4	A few years	N6a
5	More than four years	N6a
88	Don't know	N6a
99	Refused	N6a

If N6 = 4 THEN ASK, ELSE N6ca

N6ba How long would you have waited to replace your equipment?

1	Less than one year	N6a
2	About a year	N6a
3	A couple of years	N6a
4	A few years	N6a
5	More than four years	N6a
88	Don't know	N6a
99	Refused	N6a

IF N6=77, 88, 99 THEN ASK, ELSE N6a

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	N6a
2	Within one year	N6a
3	At a later time	N6cb
88	Don't know	N6a
99	Refused	N6a

N6cb How many years later would it have been?

77	Record VERBATIM	N6a
88	Don't know	N6cc
99	Refused	N6a

N6cc Would it have been….

1	Less than one year	N6a
2	About a year	N6a
3	A couple of years	N6a
4	A few years	N6a
5	More than four years	N6a
88	Don't know	N6a
99	Refused	N6a

Ask if N6(1) else skip to N6b;

N6a How many fewer VFDs would you have installed? (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) else skip to N6C

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) else skip to ER2

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 REPLACE(1) AND N6c IS UNRECORDED;

ER2 How many more years do you think the VFD(s) would have gone before failing and requiring 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	ER15
88	Don't know	ER15
99	Refused	ER15

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	Vendor_name
88	Don't know	Vendor_name
99	Refused	Vendor_name

Ask if V1(1)

Vendor_Name	Earlier you stated that you had a vendor/contractor that helped you with the installation of the VFD(s) that was/were installed through the <%UTILITY> Program. Could you provide me with their name and phone number?	
1	Cannot provide	MoreVFDs
77	Record Name, Phone Number, Email Address or any other information they can provide. More is better.	MoreVFDs
88	Refused	MoreVFDs
99	Don't know	MoreVFDs

ASK IF MORE THAN 2 PUMPS PER DMID, ELSE GO TO END

MoreVFDs

In addition to the VFD installation(s) we described earlier, according to our records your business installed additional VFDs in 2020 through <%Utility>'s energy efficiency programs.

This includes....

<%MEASURE_3> on <MEASURE_3_DATE>

AND IF NEEDED: and a……
<%MEASURE_4> on <MEASURE_4_DATE>

AND IF NEEDED: and a……
<%MEASURE_x> on <MEASURE_x_DATE>

And thinking about the decision making to install the VFD measures that you just shared with us, do you think the answers you provided generally apply to the additional VFD installation(s)?

1	Yes	END
2	No	END
3	Other, record verbatim _____	END
99	Don't know/refused	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 C:

VENDOR NTG PHONE SURVEY

This appendix includes the vendor NTG survey instruments used for the following measures in this evaluation:

- Clean Water Pump Upgrades
- Gas Fryers

C-1 CLEAN WATER PUMP UPGRADES

Vendor NTG Survey Instrument – Clean Water Pump Upgrades

Introduction

AA1 This is **[Interviewer]** calling on behalf of the CPUC (California Public Utilities Commission) from DNV regarding your firm's involvement with the sales and/or installations of high-efficiency water pumps through PG&E's **Commercial Deemed Incentive PROGRAM** between January 1, 2020 and December 31, 2020. Our records indicate that [**CONTACT**] would be the person most knowledgeable about this. Are they available?

1 Yes A2
2 No AA2

AA2 Who would be the person most knowledgeable about your firm's involvement with **PG&E's Commercial Deemed Incentive PROGRAM** during 2020?

1

A1 PG&E has indicated that your firm is an approved distributor supporting the **Commercial Deemed Incentives PROGRAM** and was involved in selling and/or installing energy-efficient water pumps throughout their service territory during 2020. Is this correct?

1 Yes A1.1
2 No Thank and Terminate

[DO NOT READ: The following question will determine if we ask about influences on their recommendations. Please be sure to be thorough with this question. If they truly only installed this equipment, then a "No" is fine]

A1.2

Great, we are trying to understand the pump market in general. This includes standard and energy efficient models. Can you please give us a quick overview of the types of pumps that you stock for Commercial customers?

RECORD ANSWER HERE:

A2 According to **PG&E,** your firm promotes and sells program-qualifying water pumps through the PG&E's Commercial Deemed Incentives Program. Is that correct??

1 Yes A3
2 No A11

[READ: Throughout the remainder of this survey, for the sake of brevity, I'm going to refer to the program qualifying equipment that you sell as "pumps".]

The focus of this survey is on your business' sales and promotional practices of pumps **after** the COVID-19 shutdown. Please answer the following questions based on your business' approach **after** the COVID-19 shutdown.

A3 Now, I'm going to ask you about the various strategies you might have used to sell program-qualified pumps. Please indicate which ones you have used. [READ]

Upsell contractors to purchase program-qualified units

Upsell customers to purchase program-qualified units

Conduct training workshops for contractors

Increase marketing of program-qualified units

Reduce the prices of program-qualified units

Increase the stocking or assortment of program-qualified units

Increase signage on sales floor
Discuss the benefits of program-qualified units with contractors

Discuss the benefits of program-qualified units with customers

Other (Please describe: _____)

Next, I am going to ask you to rate the importance of the various PG&E's PROGRAM and NON-PROGRAM factors in influencing your decision to recommend high-efficiency pumps to contractors and your 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.

A4 Using this 0-to-10 scale, please rate the following in terms of their importance in your **decision to recommend** program-qualifying pumps to contractors and your other customers
(Do not read – note that these are the program factors)

a. Program incentive — Record 0 to 10 score
b. Program promotional materials — Record 0 to 10 score
c. Program-provided training of sales staff — Record 0 to 10 score
d. Information from <%UTILITY> website — Record 0 to 10 score

(Do not read – note that these are the non-program factors)

e. Increased awareness of high-efficiency pump benefits among contractors and customers — Record 0 to 10 score
f. Reduced pump prices from Manufacturers — Record 0 to 10 score
g. Availability of manufacturers' promotional rebates/spiffs — Record 0 to 10 score
h. Information about the cost-effectiveness of more efficient units — Record 0 to 10 score
i. Increased stocking of high-efficiency pumps — Record 0 to 10 score
j. Past participation in <%UTILITY> rebate or audit program — Record 0 to 10 score

A4a. Was there another way the <**Commercial Deemed Incentive Program**> influenced your recommendations regarding your promotion of program-qualified pumps?
RECORD ANSWER HERE:

A4aa. Using a 0 to 10 scale, how important was this factor's influence on your pump recommendations?
Record 0 to 10 score A5

Next, I am going to ask you to rate the importance of the **Commercial Deemed Incentive Program** in general in influencing your decision to recommend program-qualifying pumps to PG&E's contractors and customers.

A5 Using this 0 to 10 scale where 0 is NOT AT ALL IMPORTANT and 10 is EXTREMELY IMPORTANT, how important was the **Commercial Deemed Incentive Program**, including incentives as well as program services and information, in influencing your decision to recommend that PG&E's contractors and customers purchase program-qualifying pumps at this time?

Record 0 to 10 value A5a

Next, I would like you to rate the importance of the PROGRAM FACTORS as a group in your decision to implement these sales strategies as opposed to other NON-PROGRAM FACTORS as a group that might have influenced your decision.

Program factors include: [READ IN A MINIMUM OF TWO PROGRAM FACTORS, SELECTED BY CHOOSING THOSE THAT RECEIVED THE HIGHEST TWO SCORES AMONG ALL PROGRAM COMPONENTS IN THE PROGRAM COMPONENTS SECTION]

Non-program factors include: [READ IN A MINIMUM OF TWO NON-PROGRAM FACTORS, SELECTED BY CHOOSING THOSE THAT RECEIVED THE HIGHEST TWO SCORES AMONG ALL NON-PROGRAM COMPONENTS IN THE PROGRAM COMPONENTS SECTION.]

A5a. Now, if you were given 10 points to award in total, how many points would give to the importance of the program factors as a group and how many points would you give to the non-program factors as a group?

#	Program Factors	Record 0 to 10 score	A6
#	Non-Program Factors	Record 0 to 10 score	A6

A6 And using a 0-to-10 likelihood scale where 0 is NOT AT ALL LIKELY and 10 is EXTREMELY LIKELY, if the **Commercial Deemed Incentive 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 **pump** make/model to PG&E's contractors and customers?

Record 0 to 10 score A7

A7 Approximately, in what percent of sales situations did you recommend this high-efficiency **pump** MEASURE before you learned about the **Commercial Deemed Incentive Program**?

- Record share in %

A8 And approximately in what percent of sales situations do you recommend this **high-efficiency pump** MEASURE now that you have worked with the **Commercial Deemed Incentive Program**?

- Record share in %

A9 And what role, if any, has the PG&E's **Commercial Deemed Incentive Program** played in increasing your recommendations of **high-efficiency pumps** since you began working with the **Commercial Deemed Incentive Program**?

RECORD ANSWER HERE:

A10 Approximately, what percentage of your pump sales over the last 12 months in **PG&E's** service territory are energy efficient models that qualify for incentives from the program?

- Record share in %

A11 On a 0 to 100 percent scale, in what percent of sales situations do you encourage your contractors and customers in **PG&E's** territory to purchase program-qualifying **water pumps**?

- Record share in %

IF A11 < 100,

A11a In what situations do you NOT encourage your contractors and customers to purchase energy efficient **pumps** if they qualify for a rebate? Why is that?

RECORD ANSWER HERE:

A12 Of those installations of **pumps** in **PG&E's** service territory that qualify for incentives, approximately what percentage do not receive the incentive?

RECORD ANSWER HERE:

IF A12 > 0,

A13 Why do you think they do not receive the incentive?

RECORD ANSWER HERE:

A14 Do you also sell **pumps** in areas where contractors and other customers do not have access to incentives for energy efficient models?

1	Yes	A14A
2	No	A16

A14a. And what role, if any, have the California utilities' rebate programs played in your decision to promote and sell high-efficiency pumps in areas where contractors/customers do not have access to incentives for energy efficient models?

RECORD ANSWER HERE:

A15 About what percent of your sales of **high-efficiency pumps** are represented by these areas where incentives are not offered?

- Record share in %

IF A15 > 10% & A15 < 100%,

A15a And approximately what percentage of your sales of **pumps** in these areas are the energy efficient models that would qualify for incentives in **PG&E's** service territory?

RECORD ANSWER HERE:

A16 Have you changed your stocking practices as a result of **PG&E's** Program?

1	Yes	A16a
2	No	A17

A16a How so?

RECORD ANSWER HERE:

IF A14=1 (or Yes)

A17 Do you promote energy efficient **pumps** equally in areas with and without incentives?

1	Yes	A18
2	No	A18

A18 For the commercial program, we are trying to better understand the flow of benefits to distributors, contractors and customers. We understand that the Utility provides the incentives to you the distributor. How do your contractors and/or customers receive these benefits?

RECORD ANSWER HERE:

END Those are all the questions I have for you today. Thank you very much for your time. END OF SURVEY

C-2 GAS FRYERS

Vendor NTG Survey Instrument – Gas Fryers

IMPORTANT: The focus of this survey is on your business' sales and promotional practices of gas fryers during 2020 and thereafter. We acknowledge that the COVID-19 pandemic has substantially hit the food service industry. This survey is designed to collect perspectives on typical business practices absent extenuating circumstances from the pandemic. With that, we ask that your responses represent typical businesses practices that ignore anomalous sales trends due to COVID-19 effects.

Number	Questions	Responses	Additional Notes
1 -	DNV is conducting this interview on behalf of the CPUC (California Public Utilities Commission) regarding your firm's involvement with the sales and/or installations of high-efficiency gas fryers through SCG's Food Service Point-of-Sale Instant Rebate Program between January 1, 2020 and December 31, 2020. Our records indicate that you are the person most knowledgeable about this. Is this correct?		

If Yes, please move to Q3
If No, please move to Q2

2 -	Who would be the person most knowledgeable about your firm's involvement with SCG's Food Service Point-of-Sale Instant Rebate Program during 2020? Please either forward this sheet to them or include their name and contact information in the answer cell.		

3 -	SCG has indicated that your firm is an approved distributor supporting the Food Service Point-of-Sale Instant Rebate Program and was involved in selling and/or installing energy-efficient gas fryers throughout their service territory during 2020. Is this correct?		

If Yes, please move to Q4
If No, please respond to the email sent to you indicating you are not an approved distributor supporting the Food Service Point-of-Sale Rebate Program, thank you!

4 -	Great, we are trying to understand the gas fryer market in general. This includes standard and energy efficient models. Can you please give us a quick overview of the types of fryers that you stock for Commercial customers?		

5 -	According to SCG, your firm promotes and sells program-qualifying gas fryers through SCG's Food Service Point-of-Sale Instant Rebate Program. Is that correct?		

If Yes, please move to Q6
If No, please move to Q17

6 -	Please indicate which one of the following strategies you might have used to sell program-qualified fryers (you may select more than one):

Upsell contractors to purchase program-qualified units		
Upsell customers to purchase program-qualified units		
Conduct training workshops for contractors		
Increase marketing of program-qualified units		
Reduce the prices of program-qualified units		
Increase the stocking or assortment of program-qualified units		
Increase signage on sales floor		
Discuss the benefits of program-qualified units with contractors		
Discuss the benefits of program-qualified units with customers		
Other; Please describe:		

Program vs. Non-Program Factors

The next section is going to ask you to rate the importance of the various SCG's PROGRAM and NON-PROGRAM factors in influencing your decision to recommend high-efficiency fryers to contractors and your 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.

7 -	Using this 0-to-10 scale, please rate the following in terms of their importance in your **decision to recommend** program-qualifying fryers to contractors and your other customers

Program rebate		
Program promotional materials		
Program-provided training of sales staff		
Information from the program implementer or utility website		
Increased awareness of high-efficiency fryer benefits among contractors and customers		
Reduced fryer prices from Manufacturers		
Availability of manufacturers' promotional rebates/spiffs		
Information about the cost-effectiveness of more efficient units		
Increased stocking of high-efficiency fryers		
Past participation in SCG rebate or audit program		

8 -	Was there another way the Food Service Point-of-Sale Instant Rebate Program influenced your recommendations regarding your promotion of program-qualified fryers?		
	Please describe the other program influences >>>		

If Yes, please move to Q9
If No, please move to next section

9 -	Using a 0 to 10 scale, how important was this factor's influence on your fryer recommendations?		

Program Influence The next section is going to ask you to rate the importance of the Food Service Point-of-Sale Instant Rebate Program in general in influencing your decision to recommend program-qualifying fryers to SCG's contractors and customers.

10 -	Using this 0 to 10 scale where 0 is NOT AT ALL IMPORTANT and 10 is EXTREMELY IMPORTANT, how important was the Food Service Point-of-Sale Instant Rebate Program, including rebates as well as program services and information, in influencing your decision to recommend that SCG's contractors and customers purchase program-qualifying fryers in 2020?		

The next question would like you to rate the importance of the PROGRAM FACTORS as a group in your decision to implement these sales strategies as opposed to other NON-PROGRAM FACTORS as a group that might have influenced your decision.
PROGRAM factors include:
a. Program rebate
b. Program promotional materials
c. Program-provided training of sales staff
d. Information from **utility** website

NON-PROGRAM factors include:
e. Increased awareness of high-efficiency fryer benefits among contractors and customers
f. Reduced fryer prices from Manufacturers
g. Availability of manufacturers' promotional rebates/spiffs
h. Past participation in SCG rebate or audit program

11 -	If you were given 10 points to award in total, how many points would you assign to the importance of the PROGRAM FACTORS as a group and how many points would you give to the NON-PROGRAM FACTORS as a group? **The sum must equal 10.**

Program Factors		
Non-Program Factors		

12 -	And using a 0-to-10 likelihood scale where 0 is NOT AT ALL LIKELY and 10 is EXTREMELY LIKELY, if the Food Service Point-of-Sale Instant Rebate Program, including rebates as well as program services and information, had not been available, what is the likelihood that you would have recommended **the specific rebated fryer** makes/models to SCG's contractors and customers?		

13 -	Approximately, in what percent of sales situations did you recommend **high-efficiency fryers** before you learned about the Food Service Point-of-Sale Instant Rebate Program?		

14 -	And approximately in what percent of sales situations do you recommend **high-efficiency fryers** now that you have worked with the Food Service Point-of-Sale Instant Rebate Program?		

15 -	And what role, if any, has the SCG's Food Service Point-of-Sale Instant Rebate Program played in increasing your recommendations of **high-efficiency fryers** since you began working with the program?		

16 -	Approximately, what percentage of your fryer sales over the last 12 months in SCG's service territory are energy efficient models that qualify for rebates from the program?		

17 -	On a 0 to 100 percent scale, in what percent of sales situations do you encourage your contractors and customers in SCG's territory to purchase program-qualifying fryers?		

If less than 100%, please move to Q18
If equal to 100%, please move to Q19

18 -	In what situations do you NOT encourage your contractors and customers to purchase energy efficient fryers if they qualify for a rebate? Why is that?		

19 -	Of those installations of fryers in SCG's service territory that qualify for incentives, approximately what percentage **do not** receive the rebate?		

If greater than 0%, please move to Q20
If equal to 0%, please move to Q21

20 -	Why do you think they do not receive the rebate?		

21 -	Do you also sell fryers in areas where contractors and other customers do not have access to rebates for energy efficient models?		

If Yes, please move to Q22
If No, please move to Q25

22 -	What role, if any, have the California utilities' rebate programs played in your decision to promote and sell high-efficiency fryers in areas where contractors/customers **do not have access** to incentives for energy efficient models?		

23 -	About what percent of your sales of high-efficiency fryers are represented by these areas where incentives are not offered?		

If greater than 10% and less than 100%, please move to Q24
If less than or equal to 10% or equal to 100%, please move to Q25

24 -	And approximately what percentage of your sales of fryers in these areas are the energy efficient models that would qualify for incentives in SCG's service territory?		

25 -	Have you changed your stocking practices as a result of the SCG's Program?		

If yes, please move to Q26
If no, please move to Q27

26 -	How so?		

27 -	Do you promote energy efficient fryers equally in areas with and without incentives?		

28 -	For the Food Service Point-of-Sale Instant Rebate program, we are trying to better understand the flow of benefits to distributors, contractors and customers. We understand that the Utility provides the incentives to you the distributor. How do your contractors and/or customers receive these benefits?		

_____END OF SURVEY_____

APPENDIX D:

GROSS IMPACT DATA COLLECTION FORMS

This appendix includes the data collection forms used for each of the measures included in this evaluation:

- Agricultural Pumping Variable Speed Drives (VFDs)
- Clean Water Pump Upgrades
- Gas Fryers

D-1 AGRICULTURAL PUMPING VARIABLE SPEED DRIVES (VFDS)

Project Information		
IOU		
DMID		
FarmID		
ApplicationCode or ProjectID		
Program ID		
Program Name		
Point of Sale Purchase?		NA
IOU Claim ID(s)	Measure 1:	
	Measure 2:	
IOU Measure Description	Measure 1:	
	Measure 2:	
Number of Units Installed	Measure 1:	
	Measure 2:	
Project Application Date		
Project Installation Date		
Business Name		
Business Street Address		
Business City		
Facility Contact Name		
Facility Contact Phone Number		
Faciity Contact E-mail Address		
Decision Maker Contact Name		
Decision Maker Contact Phone Number		
Decision Maker 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		
Customer Rep. Agrees to Take Pictures Y/N		
Engineer E-Mail Address to Send Pictures		
Date of First On-Site Visit		
All Participating Sites for Same Decision Maker		
Sum of Tracking System Records		
Sum of FarmIDs		
Appended List of Cities		
Appended List of Addresses		
Utility Meter Information		
Account Number from Tracking Data	Measure 1:	
Dedicated Electric Meter for Pump Measure 1 Y/N		
Associated Electric Meter Number for Measure 1		
Account Number from Tracking Data	Measure 2:	
Dedicated Electric Meter for Pump Measure 2 Y/N		
Associated Electric Meter Number for Measure 2		

On-Site Recruitment Checklist

Application # _____

Meeting	
Location of Meeting or Phone Number	
Directions to Meeting Spot or Teams Meeting Join Information	
Date of Meeting	
Time of Meeting	
Site Contact Name	
Site Contact Phone Number	
Site Contact E-mail	
VFD Measure #1	
Is the pump/VFD served by a dedicated electric meter, or are there other loads such as pumps on the same electric meter?	
If shared load -- what other loads are on the electric meter including horsepower associated with additional pumps?	
VFD Measure #2	
Is the pump/VFD served by a dedicated electric meter, or are there other loads such as pumps on the same electric meter?	
If shared load -- what other loads are on the electric meter including horsepower associated with additional pumps?	
VFD Information	
Does VFD Have Trending Capability?	
If yes, do you trend data, such as kWh every hour, VFD Hz, etc?	
Can you share that with us?	
If yes, can you trend data for us, including kWh every hour, VFD Hz, etc?	
Decision Maker Contact Information	
Explain that we are also interested in a separate conversation with the project decision maker that ultimately made the farmers choice to purchase VFD pump controls (likely the farmer him/herself)	
Decision maker name	
Decision maker telephone number(s)	
Decision maker e-mail	
Best time to reach or schedule an appointment	
Project Information Requested from Participants	
Describe how farm operations and irrigation in particular has been affected by the drought	
Describe how farm operations and irrigation in particular has been affected by COVID	
Are farm operations and irrigation in particular during the year leading up to today representative of expected ongoing operations?	
If different then describe why irrigation is not representative, how irrigation is different in terms of pump operations and use of the pumps for measure #1 and 2, and availability of district versus well water or other factors	
Monthly pumped water data for last three years	

Business Activity

Application # _____

[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)	

EE Measure Replacement Battery (page 1 of 4)

Application # _____ <=== Enter Application Code

[Circle One Entry]	[Answer for Measure #1] Along with the new VFD, was a new pump also installed at the same time? [PROBE TO FIND CORRECT RESPONSE BELOW]	[Circle One Entry]	[Answer for Measure #2] Along with the new VFD, was a new pump also installed at the same time? [PROBE TO FIND CORRECT RESPONSE BELOW]
1	Replaced existing pump	1	Replaced existing pump
2	Added a new pump	2	Added a new pump
3	Added VFD to existing pump	3	Added VFD to existing pump
88	Refused	88	Refused
99	Don't know	99	Don't know

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

[Ask for any new VFD added to an existing pump; ANSWER #3 ABOVE]

(Circle One Entry)	[Answer for Measure #1] Approximately how old is the pump being controlled by the VFD? Would you say...	(Circle One Entry)	[Answer for Measure #2] Approximately how old is the pump being controlled by the VFD? Would you say...
4	Less than 5 years old	4	Less than 5 years old
5	Between 5 and 10 years old	5	Between 5 and 10 years old
6	Between 10 and 15 years old	6	Between 10 and 15 years old
7	More than 15 years old	7	More than 15 years old
8	Stated age _____ years	8	Stated age _____ years
88	Refused	88	Refused
99	Don't know	99	Don't know

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

EE Measure Replacement Battery (page 2 of 4)

Application # _____ <=== Enter Application Code

[Ask for any new VFD added to an existing pump; ANSWER #3 ABOVE]

[Answer for Measure #1]		**[Answer for Measure #2]**	
[Circle One Entry]	How would you describe the condition of the pump being controlled by the VFD? Would you say it is in…	**[Circle One Entry]**	How would you describe the condition of the pump being controlled by the VFD? Would you say it is in…
9	Poor condition	**9**	Poor condition
10	Fair condition	**10**	Fair condition
11	Good condition	**11**	Good condition
88	Refused	**88**	Refused
99	Don't know	**99**	Don't know

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

[Ask for any new VFD added to an existing pump; ANSWER #3 ABOVE]

[Answer for Measure #1]		**[Answer for Measure #2]**	
[Circle One Entry]	How many years are left in the pump itself until you will replace it?	**[Circle One Entry]**	How many years are left in the pump itself until you will replace it?
12	Remaining pump life _____ years	**12**	Remaining pump life _____ years
88	Refused	**88**	Refused
99	Don't know	**99**	Don't know

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

EE Measure Replacement Battery (page 3 of 4)

Application # _____ <=== Enter Application Code

[Ask for any new VFD added to an existing pump; ANSWER #3 ABOVE]

[Answer for Measure #1]		**[Answer for Measure #2]**	
[Circle One Entry]	What type of pump flow controls were in place BEFORE the VFD was installed?	**[Circle One Entry]**	What type of pump flow controls were in place BEFORE the VFD was installed?
13	None; pump was uncontrolled	**13**	None; pump was uncontrolled
14	Throttle valve controls	**14**	Throttle valve controls
15	VFD controls	**15**	VFD controls
16	Other / Provide Related Commentary Below:	**16**	Other / Provide Related Commentary Below:
88	Refused	**88**	Refused
99	Don't know	**99**	Don't know

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

[Ask for any new VFD added to an existing pump; ANSWER #3 ABOVE]

[Answer for Measure #1]		**[Answer for Measure #2]**	
(Circle One Entry)	Approximately how old were the replaced pump flow controls? Would you say...	**(Circle One Entry)**	Approximately how old were the replaced pump flow controls? Would you say...
17	Less than 5 years old	**17**	Less than 5 years old
18	Between 5 and 10 years old	**18**	Between 5 and 10 years old
19	Between 10 and 15 years old	**19**	Between 10 and 15 years old
20	More than 15 years old	**20**	More than 15 years old
21	Stated age _____ years	**21**	Stated age _____ years
88	Refused	**88**	Refused
99	Don't know	**99**	Don't know

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

EE Measure Replacement Battery (page 4 of 4)

Application # _____ <=== Enter Application Code

[Ask for any new VFD added to an existing pump; ANSWER #3 ABOVE]

[Answer for Measure #1]		**[Answer for Measure #2]**	
[Circle One Entry]	How would you describe the condition of the replaced pump flow controls? Would you say the controls were …	**[Circle One Entry]**	How would you describe the condition of the replaced pump flow controls? Would you say the controls were …
22	Not working	**22**	Not working
23	In poor condition	**23**	In poor condition
24	In fair condition	**24**	In fair condition
25	In good condition	**25**	In good condition
88	Refused	**88**	Refused
99	Don't know	**99**	Don't know

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

EE VFD Battery (page 1 of 4)

Application # _____ <=== Enter Application Code

[Circle One Entry]	[Answer for Measure #1] What was the main reason you decided to control your pump flow using a VFD?	[Circle One Entry]	[Answer for Measure #2] What was the main reason you decided to control your pump flow using a VFD?
		[Ask ALL]	
26	Existing controls were not functioning adequately	26	Existing controls were not functioning adequately
27	Using alternative controls was not a feasible solution (such as throttling or running an uncontrolled pump)	27	Using alternative controls such as throttling or running an uncontrolled pump was not a feasible solution
28	The pump and VFD were sold as an integrated unit	28	The pump and VFD were sold as an integrated unit
29	Wanted improved pump performance or functionality	29	Wanted improved pump performance or functionality
30	Wanted remote monitoring and control capability	29	Wanted improved pump performance or functionality
31	Wanted automatic speed controls	31	Wanted improved pump performance or functionality
32	Other / Provide Related Commentary Below:	32	Other / Provide Related Commentary Below:
88	Refused	88	Refused
99	Don't know	99	Don't know

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

EE VFD Battery (page 2 of 4)

Application # _____ <=== Enter Application Code

[Ask ALL]

[Circle One Entry]	[Answer for Measure #1] At the time of VFD installation, was the program or rebate important or influential in your decision to purchase a VFD?	[Circle One Entry]	[Answer for Measure #2] At the time of VFD installation, was the program or rebate important or influential in your decision to purchase a VFD?
33	Yes	**33**	Yes
34	No	**34**	No
35	Other / Provide Related Commentary Below:	**35**	Other / Provide Related Commentary Below:
88	Refused	**88**	Refused
99	Don't know	**99**	Don't know

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

EE VFD Battery (page 3 of 4)

Application # _____ <=== Enter Application Code

[Ask ALL]

	[Answer for Measure #1]		**[Answer for Measure #2]**
(Circle One Entry)	If not for the program/rebate, approximately how much longer would you have waited to install VFD flow controls? Would you say...	**(Circle One Entry)**	If not for the program/rebate, approximately how much longer would you have waited to install VFD flow controls? Would you say...
36	Within a one-year period	**36**	Within a one-year period
37	Between 1 and 2 years	**37**	Between 1 and 2 years
38	Between 2 and 4 years	**38**	Between 2 and 4 years
39	4 or more years	**39**	4 or more years
40	Would never have installed a VFD	**40**	Would never have installed a VFD
41	Stated _____ years	**41**	Stated _____ years
88	Refused	**88**	Refused
99	Don't know	**99**	Don't know

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

EE VFD Battery (page 4 of 4)

Application # _____ <=== Enter Application Code

[Ask ALL]

[Circle One Entry]	[Answer for Measure #1] What type of pump does the VFD control?	[Circle One Entry]	[Answer for Measure #2] What type of pump does the VFD control?
42	Vertical turbine pump	42	Vertical turbine pump
43	Submiersible pump	43	Submiersible pump
44	Centrifugal pump	44	Centrifugal pump
45	Other / Provide Related Commentary Below:	45	Other / Provide Related Commentary Below:
88	Refused	88	Refused
99	Don't know	99	Don't know

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

[Ask ALL]

(Circle One Entry)	[Answer for Measure #1] What is the horsepower rating of the pump that is being controlled by the VFD? Would you say...	(Circle One Entry)	[Answer for Measure #2] What is the horsepower rating of the pump that is being controlled by the VFD? Would you say...
46	Less than 25 hp	46	Less than 25 hp
47	Between 25 and 50 hp	47	Between 25 and 50 hp
48	Between 50 and 100 hp	48	Between 50 and 100 hp
49	Between 100 and 200 hp	49	Between 100 and 200 hp
50	Between 200 and 300 hp	50	Between 200 and 300 hp
51	More than 300 hp	51	More than 300 hp
52	Rated capacity _____ hp	52	Rated capacity _____ hp
88	Refused	88	Refused
99	Don't know	99	Don't know

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

Short NTG Battery (page 1 of 4)

Application # _____ <=== Enter Application Code

[Answer for Measure #1] **[Answer for Measure #2]**

Now we'd like to ask you some questions about your decision to purchase your VFD flow controls. Specifically, we are interested in why you chose VFD flow controls rather than a less efficient flow contrtol option.

[Circle One Entry]	First, did your organization make the decision to install VFD flow controls before, after, or at the same time as you became aware that rebates were available through the PROGRAM? [IF NEEDED: to reduce the cost of the measure]	[Circle One Entry]	First, did your organization make the decision to install VFD flow controls before, after, or at the same time as you became aware that rebates were available through the PROGRAM? [IF NEEDED: to reduce the cost of the measure]
1	Before	**1**	Before
2	After	**2**	After
3	Same time	**3**	Same time
88	Refused	**88**	Refused
99	Don't know	**99**	Don't know

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

[Ask ALL]

[Answer for Measure #1] **[Answer for Measure #2]**

I'd like you to consider the importance of the program and all program related factors such as the program rebate; and the program information and recommendations you have received from your utility, account representative and program administrator. We are interested in how these program related factors affected your decision about the VFD flow controls you installed. That is, we are interested in what influenced you to choose VFD flow controls you did rather than a less efficient flow control option.

(Enter Score)	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 these program related factors.	(Enter Score)	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 these program related factors.
#	Record 0 to 10 score _____	#	Record 0 to 10 score _____
88	Refused	**88**	Refused
99	Don't know	**99**	Don't know

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

Short NTG Battery (page 2 of 4)

Application # _____ <=== Enter Application Code

[Ask ALL]

[Answer for Measure #1] **[Answer for Measure #2]**

Now I'd like you to consider a number of factors I will call the "non-program factors". These include reasons unrelated to the program that may have influenced you to choose VFD flow controls rather than a less efficient flow control option, such as choosing your equipment …

because it was standard practice in your industry,
because of previous experience with similar equipment,
because of corporate policies or guidelines,
or other reasons that were not related to the program

[Enter Score]	Using the same scale of 0 to 10 where 0 means not at all important and 10 means extremely important, how would you rate the importance of these "non-program" factors.	**[Enter Score]**	Using the same scale of 0 to 10 where 0 means not at all important and 10 means extremely important, how would you rate the importance of these "non-program" factors.
#	Record 0 to 10 score _____	#	Record 0 to 10 score _____
88	Refused	**88**	Refused
99	Don't know	**99**	Don't know

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

[Ask ALL]

[Answer for Measure #1] **[Answer for Measure #2]**

Next, I would like you to compare the importance of the program related factors to the other Non-program factors that may have influenced your decision.

If you were given 10 points to award in total, how many points would you give to the importance of the program related factors versus the other non-program factors in choosing pump VFD flow controls, rather than a less efficient flow control option?

[Enter Score]	How many of the ten points would you give to the importance of the PROGRAM factors in your decision?	**[Enter Score]**	How many of the ten points would you give to the importance of the PROGRAM factors in your decision?
#	Record 0 to 10 score _____	#	Record 0 to 10 score _____
88	Refused	**88**	Refused
99	Don't know	**99**	Don't know

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

Short NTG Battery (page 3 of 4)

Application # _____ <=== Enter Application Code

[Ask ALL]

[Enter Score]	**[Answer for Measure #1]** 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 VFD flow controls that you did for this project, regardless of when you would have installed it?	[Enter Score]	**[Answer for Measure #2]** 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 VFD flow controls that you did for this project, regardless of when you would have installed it?
#	Record 0 to 10 score _____	#	Record 0 to 10 score _____
88	Refused	**88**	Refused
99	Don't know	**99**	Don't know

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

[Ask ALL]

Now I would like you to think about what action you would have taken if the program had not been available.

(Circle One Entry)	**[Answer for Measure #1]** Which of the following alternatives would you have been MOST likely to do if the program had not been available?	(Circle One Entry)	**[Answer for Measure #2]** Which of the following alternatives would you have been MOST likely to do if the program had not been available?
1	Waited longer to install VFD	**1**	Waited longer to install VFD
2	Install standard flow controls such as throttling valve controls	**2**	Install standard flow controls such as throttling valve controls
3	Install bypass controls	**3**	Install bypass controls
4	Done nothing (keep existing controls)	**4**	Done nothing (keep existing controls)
5	Installed the same VFD flow controls	**5**	Installed the same VFD flow controls
6	Repair the existing flow controls	**6**	Repair the existing flow controls
77	Something else _____ (Specify below)	**77**	Something else _____ (Specify below)
88	Refused	**88**	Refused
99	Don't know	**99**	Don't know

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

Short NTG Battery (page 4 of 4)

Application # _____ <=== Enter Application Code

[Ask IF response above =1, waited longer, else skip]

[Circle One Entry]	**[Answer for Measure #1]** And if the program had not been available….. How many years longer would you have waited to install pump VFD flow controls	[Circle One Entry]	**[Answer for Measure #2]** How many years longer would you have waited to install pump VFD flow controls
1	Within 1 year	**1**	Within 1 year
2	1-2 years	**2**	1-2 years
3	2-4 years	**3**	2-4 years
4	> 4 years	**4**	> 4 years
77	Something else _____ (Specify below)	**77**	Something else _____ (Specify below)
88	Refused	**88**	Refused
99	Don't know	**99**	Don't know

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

[Ask IF additional farms associated with decision maker]

[Answer for all measures]

In addition to the VFD installation(s) we described earlier, according to our records your business installed additional VFDs in 2020 through <%Utility>'s energy efficiency programs.

[Circle One Entry]	And thinking about the decision making to install the VFD measures that you just shared with us, do you think the answers you provided generally apply to the additional VFD installation(s)?
1	Yes
2	No
77	Something else _____ (Specify below)
88	Refused
99	Don't know

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

2021 Pumping System Operation by Measure
Measure # _____
Application # _____

Month of 2021	During what months did you irrigate using this pump? **[Check All that Apply]**	How many acres were served by this pump each month? **[Enter Acres]**	List crops grown that were served by this pump? **[Enter Crops and Percentage of Area Served if More Than One Crop]**	List crop age for each crop in years. **[Enter Crops and Age]**	List irrigation method served by this pump? **[Enter Drip, Sprinkler, flood, etc. and Percentages of Area Served if More Than One Method is Used]**	List water supply serving this pump? **[Enter Well Water, District Main, etc. and Percentages of Area Served if More Than One Source was Used]**	Describe any other pumps that irrigate the same acreage, and how/when those pumps operate relative to the pump w/ VFD.	Describe the field configuration? **[Enter Number of Irrigation Sets and Associated Acres and Any Association with Each Crop]**
January								
February								
March								
April								
May								
June								
July								
August								
September								
October								
November								
December								
	Provide additional comments as needed [ENTER BELOW]	Provide additional comments as needed [ENTER BELOW]	Provide additional comments as needed [ENTER BELOW]	Provide additional comments as needed [ENTER BELOW]	Provide additional comments as needed [ENTER BELOW]	Provide additional comments as needed [ENTER BELOW]	Provide additional comments as needed [ENTER BELOW]	Provide additional comments as needed [ENTER BELOW]

2020 Pumping System Operation by Measure
Measure # _____
Application # _____

Month of 2020	During what months did you irrigate using this pump? **[Check All that Apply]**	How many acres were served by this pump each month? **[Enter Acres]**	List crops grown that were served by this pump? **[Enter Crops and Percentage of Area Served if More Than One Crop]**	List crop age for each crop in years. **[Enter Crops and Age]**	List irrigation method served by this pump? **[Enter Drip, Sprinkler, flood, etc. and Percentages of Area Served if More Than One Method is Used]**	List water supply serving this pump? **[Enter Well Water, District Main, etc. and Percentages of Area Served if More Than One Source was Used]**	Describe any other pumps that irrigate the same acreage, and how/when those pumps operate relative to the pump w/ VFD.	Describe the field configuration? **[Enter Number of Irrigation Sets and Associated Acres and Any Association with Each Crop]**
January								
February								
March								
April								
May								
June								
July								
August								
September								
October								
November								
December								
	Provide additional comments as needed [ENTER BELOW]	Provide additional comments as needed [ENTER BELOW]	Provide additional comments as needed [ENTER BELOW]	Provide additional comments as needed [ENTER BELOW]	Provide additional comments as needed [ENTER BELOW]	Provide additional comments as needed [ENTER BELOW]	Provide additional comments as needed [ENTER BELOW]	Provide additional comments as needed [ENTER BELOW]

2019 Pumping System Operation by Measure

Measure # _____

Application # _____

Month of 2019	During what months did you irrigate using this pump? **[Check All that Apply]**	How many acres were served by this pump each month? **[Enter Acres]**	List crops grown that were served by this pump? **[Enter Crops and Percentage of Area Served if More Than One Crop]**	List crop age for each crop in years. **[Enter Crops and Age]**	List irrigation method served by this pump? **[Enter Drip, Sprinkler, flood, etc. and Percentages of Area Served if More Than One Method is Used]**	List water supply serving this pump? **[Enter Well Water, District Main, etc. and Percentages of Area Served if More Than One Source was Used]**	Describe any other pumps that irrigate the same acreage, and how/when those pumps operate relative to the pump w/ VFD.	Describe the field configuration? **[Enter Number of Irrigation Sets and Associated Acres and Any Association with Each Crop]**
January								
February								
March								
April								
May								
June								
July								
August								
September								
October								
November								
December								
	Provide additional comments as needed [ENTER BELOW]	Provide additional comments as needed [ENTER BELOW]	Provide additional comments as needed [ENTER BELOW]	Provide additional comments as needed [ENTER BELOW]	Provide additional comments as needed [ENTER BELOW]	Provide additional comments as needed [ENTER BELOW]	Provide additional comments as needed [ENTER BELOW]	Provide additional comments as needed [ENTER BELOW]

2021 Pumping System Operation by Measure (part 2) (page 1 of 2)

Measure # _____

Application # _____

An important modeling feature we want to define concerns the the ***predominant modes of operation*** that we can define, based on feedback from the farmer, and defined as the pump operating at a certain speed and flow rate.

Predominant Modes of Operation	Motor speed [expressed as percent of full speed] (%)	Pumping Flow Rate (gpm)	VFD Frequency (Hz)	Pump Operating Pressure (psi)	VFD Settings [Manual versus Auto]
Mode 1					
Mode 2					
Mode 3					
Full speed/flow					
	Provide additional comments as needed [ENTER BELOW]	Provide additional comments as needed [ENTER BELOW]	Provide additional comments as needed [ENTER BELOW]	Provide additional comments as needed [ENTER BELOW]	Provide additional comments as needed [ENTER BELOW]

2021 Pumping System Operation by Measure (part 2) (page 2 of 2)

Seasonal Operation by Mode	List Months with Common Irrigation Needs	Predominant Modes of Operation	Days per Week in Each Mode	Hours per Day in Each Mode	Percent of Irrigation From 4 PM until 9 PM
Spring		Mode 1			
		Mode 2			
		Mode 3			
		Full speed/flow			
Summer		Mode 1			
		Mode 2			
		Mode 3			
		Full speed/flow			
Fall		Mode 1			
		Mode 2			
		Mode 3			
		Full speed/flow			
Winter		Mode 1			
		Mode 2			
		Mode 3			
		Full speed/flow			

	Provide additional comments as needed [ENTER BELOW]	Provide additional comments as needed [ENTER BELOW]	Provide additional comments as needed [ENTER BELOW]	Provide additional comments as needed [ENTER BELOW]	Provide additional comments as needed [ENTER BELOW]

EE Measure Installation Verification

Measure # _____

Application # _____

[Circle One Entry]	Was the VFD installed and operable at the time of the interview?	
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] ===>

EE Pumping System Specifications

Measure # _____
Application # _____

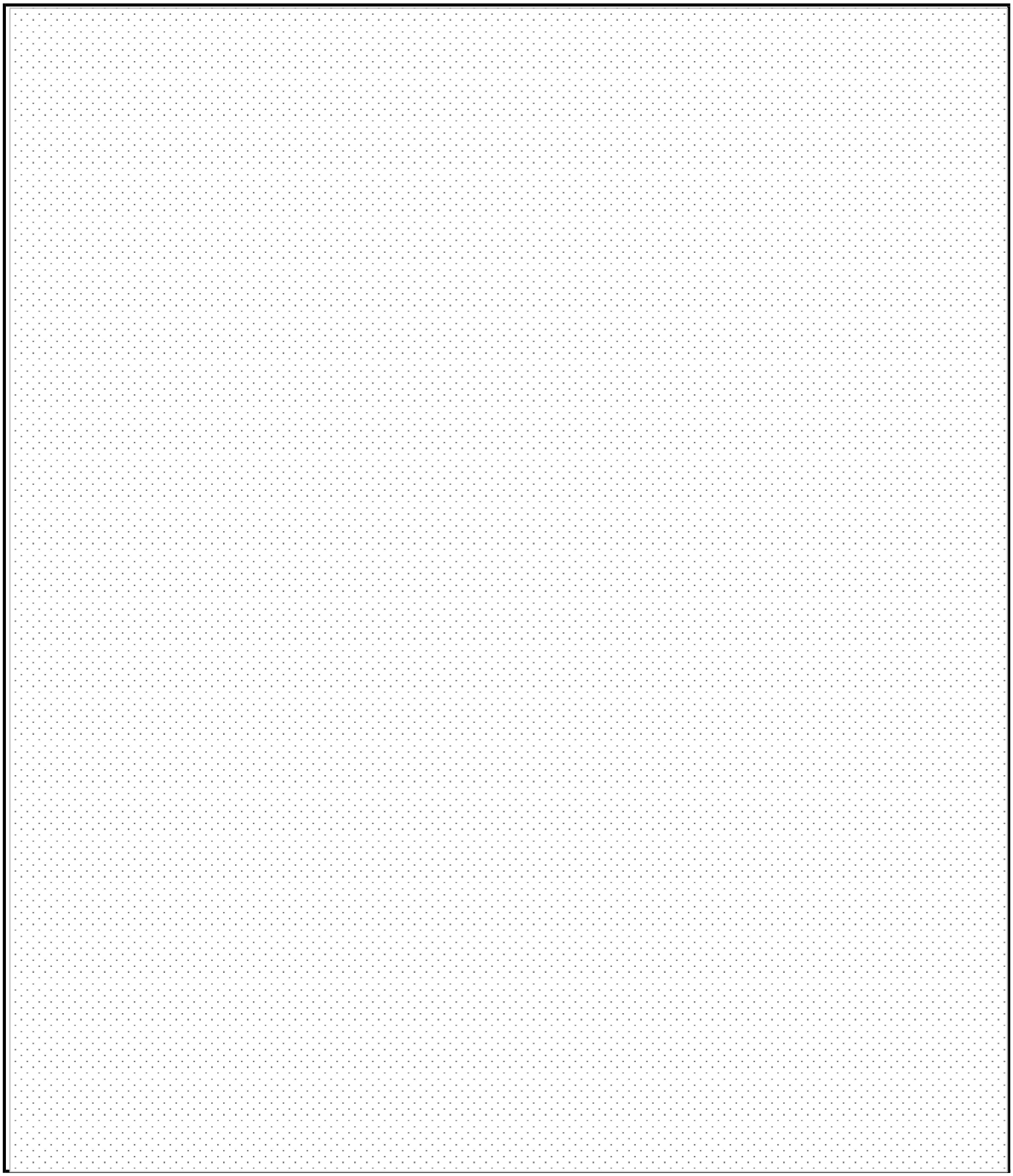
[ENTER OBSERVED PUMP OPERATIONS]	**[Circle One per Line or Write Down Units if Different]**
Pump Type _____	Vertical turbine Submersible Centrifugal
Pumping Application _____	Booster pump Well pump
Current Operating Output Pressure _____	PSIG
Current Operating Flow Rate _____	gpm
[ENTER VFD OBSERVED OPERATIONS]	
Current Operating Frequency _____	Hz
Current Operating Motor Speed _____	rpm %
Cumulative Electric Usage _____	kWh
Cumulative Run Hours _____	Hours

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

[ENTER RELEVANT WELL CHARACTERISTICS]	**[Circle One per Line or Write Down Units if Different]**
Well depth _____	Feet

Provide additional comments as needed [ENTER] ===>
Ask if well depth varies and if so describe

Please provide of sketch of the Pumping Operation/ Field, depicting pump configuration (On-site only)



Additional Notes from Interview

D-2 CLEAN WATER PUMP UPGRADES

Category heading
Input
Auto-Populated
CRITICAL

General Info

DNV ID	
Visit Date & Time	
Field Engineer	
PGE Site ID	
Facility/Customer Name	
Street Address	
City	
Building Type	
Contact Name	
Phone Number	
Alternative Phone and Email	
Project Installation Date	

Measure Data

Tracking Order#	Measure Description	Pump (hp)
1	-	-
2	-	-
3	-	-
4	-	-
5	-	-
6	-	-
7	-	-
8	-	-
9	-	-
10	-	-
11	-	-
12	-	-

Category		Dialogue	Response	Additional notes	
Introduction		Hello, my name is _____ and I'm calling from DNV on behalf of PG&E.			
		My company is contracted by the California Public Utilities Commission to analyze the energy savings associated with clean water pump upgrade projects funded by PG&E's rebate programs. The [Project Name] project for [Owner/Facility Name] is one of the projects that has been selected for this evaluation and we would greatly appreciate your participation in this important study. We are offering a $25 Amazon gift card as a thank-you for participating. Can you spare 15 minutes to answer a few questions about the clean water pump upgrade that occurred at [Address] in 2020?			
		[If yes] Our records indicate that your organization installed [describe quantity and size of high efficiency clean water pumps] through the program on [Install Date]. Does this sound familiar? *[If yes]* record name and title of respondent and proceed to the **"project characteristics"** section. *[If no]* Is there someone I can talk to who might be more familiar with this particular project? [Record contact information and retry].		*[Obtain name, title, email address, phone number]*	
		[If no] Would it be possible to schedule a time for this survey over the next couple of weeks? Or if you prefer, we can send you an email version of the survey.		*[record date/time and/or email]*	
Project Characteristics		*First, I'd like to get a few basic details about the project.*			
		Our records show that the project occured at [Enter address]. Is this correct? *[If no]* Ask for the installed address.		*[record yes or no. If no, record address]*	CRITICAL
		We see from our records that the pump upgrade project occured in [Month/Year]. Is this correct? *[If no]* when did the pump upgrade project occur? [month/year]		*[record yes or no. If no, record date]*	CRITICAL
		Would you classify the building as a [Building Type]?		*[Select from the dropdown]*	CRITICAL
		How many pumps were installed/upgraded?		*[record quantity]*	CRITICAL
Facility Operation		*Ok. Next, I'll ask a few questions about your facility's operation schedule*			
		What is your facility's typical hours of operation?		*[record days/weeks/months]*	
		Is there any seasonality associated with the building operations that could impact on the energy bills? *[If yes]* please explain.		*[record seasonalities if any]*	
		Does the facility operate on holidays? Indicate holidays and/or shutdown with no operation.		*[record number of holidays/shutdowns]*	

Installed System Details														
		Next, I'd like to get some information on the type of irrigation system you installed.												
		As part of our energy study, we are hoping to gather information about the installed pumps. Our original plan for the evaluation was to conduct a site visit to the facility to confirm measure installation and to collect pump operational data for estimating electric energy savings. However, to avoid any risks associated with exposure to the COVID-19 virus, we are conducting virtual assessments in place of site visits to gather data for our evaluation analysis. **(Methods: 1) video conference, or 2) photos of pumps/nameplates, 3) over the phone have the contact read out pump make/model number and nameplate information**											
		If you choose to record the video conference; be sure to notify the contact and ask for their permission first. California is a two-party consent state for recording private or confidential conversations												
		Explain the study objectives to site contact and ask them how they'd like to share the pump nameplate information. **If there are more than three pumps installed on site, visually inspect/gather nameplate pictures for at least 3 pumps (select the 3 biggest pumps), and gather the make and model information of the remaining pumps.**												
				CRITICAL										
		Tracking Data		***Request nameplate pictures for first 3 pumps and request make/model information for all installed pumps***				***Update based on verified nameplate***			**Site Interview**		*[record any additional notes here]*	
		Pump #	**Measure Description**	**Size (hp)**	**Pump Make/Model**	**Quantity**	**Pump Type**	**Pump Controls Strategy**	**Size (hp)**	**Pump Nominal Speed**	**Pump PEI**	**Pump End Use**	**Pump Run Hours/Week**	**Note**
		1	#N/A	#N/A										
		2	#N/A	#N/A										
		3	#N/A	#N/A										
		4	#N/A	#N/A										
		5	#N/A	#N/A										
		9	#N/A	#N/A										
		7	#N/A	#N/A										
		8	#N/A	#N/A										
		9	#N/A	#N/A										
		10	#N/A	#N/A										
		11	#N/A	#N/A										
		12	#N/A	#N/A										
			Total	**#N/A**		**0**			**0**					

Pre-project Details				
		Ok great. The next questions are about the pump system that was in place before.		
		How many preexisting pumps were replaced/upgraded?	*[record quantity]*	CRITICAL
		Were the preexisting old pump(s) same size as the new ones?	*[select from the dropdown]*	
		How were the preexisting pumps controlled?	*[select from the dropdown]*	CRITICAL
		Can you confirm that all preexisting pump(s) were powered by electricity?	*[select from the dropdown]*	
		About how old were the preexisting pumps?	*[record age in years]*	
		What condition were the preexisiting pumps in?	*[Select from the dropdown]*	
		How much longer do you think the preexisting pumps would have lasted if you had not replaced it?	*[record RUL estimate in years]*	
AMI Meter Details		*Ok great. The next questions are about the PG&E electric meters on the installed pumps.*		
		What other major electric end-uses are connected to the same meter as the pump(s)?	*[record equipment connected to meter]*	
		Can you estimate the total load (kW or hp) of the major equipment connected to the same electric meter as the pump(s)? Enter in terms of kW or hp	*[record additional equipment load]*	
		Do you have pump trend data (run hours/cumulative kWh/volume of water pumped) that you can share with us? [If yes] ask for electronic copies.	*[record yes or no]*	
Effects of COVID		How has COVID impacted the hours of operation at your facility?	*[record response]*	
		How has COVID impacted the operation of the installed pumps?	*[record response]*	
Decision Make Contact Information		*The next questions are about the decision maker at your facility.*		
		Are you familiar with and could you speak to the decision to install this equipment?	*[record yes or no]*	CRITICAL
		[If no] Who could I speak to that would be familiar with this decision? (collect information) [If yes] Do you have 10 additional minutes to answer some additional questions about the decision making process? [If yes] continue to NTG survey, [If no] ask for their availability for the net survey phone call.	*[record decision maker contact info]*	CRITICAL

Conclusion		Thank you for your time in helping to improve PG&E's programs.		
		We appreciate your time and would like to compensate you for your participation with either an Amazon gift card (if acceptable) or a donation made in your name. Can you please select from one of the following options: Amazon gift card, donation to CA United Ways?		*[select delivery option]*
		Great! Again, thank you for taking time to answer my questions. [if Gift Card] Could you please provide us the best email address to deliver the gift card? You should expect to see that in your inbox in the coming weeks. If there are no further questions I will let you go about your day. Thanks again!		*[record name and email]*

Phone survey date:		

Reference Information if Needed

Contact at CPUC		I'd be happy to direct you to our contact at the California Public Utilities Commission. Her name is Yeshi Lemma, and she can be reached at yeshi.lemma@cpuc.ca.gov.
Confidentiality		The information we collect during this study will be kept confidential to the California Public Utilities Commission and its contractors.
		The results of each site assessment will be aggregated and kept anonymous in any subsequent public reports.
		The information we collect will not in any way influence your past or future participation in any PG&E energy efficiency programs.
		The results of the study will in no way impact your PG&E electric bill.

D-3 GAS FRYER

Gas Fryer Data Collection Form

Glossary

Page 1 - Glossary

Page 2 - Facility & Project Characteristics

1. Facility busines type
2. Food service type
3. Confirm installed quantity
4. Facility gas meter reading

Page 3 - Facility Operation

1. Gather information on general fryer use (hours/day & days/week)
2. Simultaneous fryer operation question
3. Seasonality
4. Holidays observed by facility

Page 4 - Fryer Inventory

1. Gather general information on all project installed fryers

Page 5 - Installed Fryer Details (sample) - "Metering Sample"

1. Gather fryer specific data for sampled fryers
2. Number of preheats per day
3. Time from idle to cookng temperature
4. Weekly schedule

Page 6 - Logger Details

1. Record information on logger used. (model, ID No., location, date & time deployed)

Page 7 - Equipment Life Questionnaire

1. Questions on the pre-existing fryer's age, condition, fuel type, etc.

Page 8 - Additional Notes

Facility & Project Characteristics

What is the main business ACTIVITY at this facility?	
☐	Offices (non-medical)
☐	Restaurant/Food Service
☐	Food Store (grocery/liquor/convenience)
☐	Agricultural (farms, greenhouses)
☐	Retail Stores
☐	Warehouse
☐	Health Care
☐	Education
☐	Lodging (hotel/rooms)
☐	Public Assembly (church, fitness, theatre, library, museum, convention)
☐	Services (hair, nail, massage, spa, gas, repair)
☐	Industrial (food processing plant, manufacturing)
☐	Laundry (Coin Operated, Commercial Laundry Facility, Dry Cleaner)
☐	Condo Assoc./Apartment Mgr (Garden Style, Mobile Home Park, High-rise, Townhouse)
☐	Public Service (fire/police/postal/military)
☐	Other / Record Business Activity [ENTER BELOW]

Which of the following types of restaurants or food service best describes this facility?	
☐	Fast Food or Self Service
☐	Specialty/Novelty Food Service
☐	Table Service
☐	Bar/Tavern/Nightclub/Brew Pub or Microbrewery/Other entertainment
☐	Caterer
☐	Cafeteria
☐	Other / Record Food Service [ENTER BELOW]

How many gas fryers were installed/upgraded?		[record quantity]

Gas Meter Reading	Record Meter Reading
Spot read gas meter (1st visit, logger deployment)	
Spot read gas meter (2nd visit, pickup loggers)	

Facility Operation

How many hours per day do the gas fryers operate?		[record hours per day]
How many days per week are the gas fryers used?		[record days per week]
[If there are more than one upgraded gas fryer] Are all the gas fryers in operation at the same time typically? [if no] How many gas fryers are typically operating at the same time?		[record yes or no. if no, record number]
Are there any seasonal differences in gas fryer operation, or routine shutdowns/closures?		[record yes or no. if yes, add notes]

During what holidays is the facility closed?

- ☐ New Year's Eve
- ☐ New Year's Day
- ☐ Martin Luther King Day
- ☐ Presidents' Day
- ☐ St. Patrick's Day
- ☐ Easter Sunday
- ☐ Memorial Day
- ☐ Flag Day
- ☐ July 4th
- ☐ Labor Day
- ☐ Columbus Day
- ☐ Veteran's Day
- ☐ Thanksgiving
- ☐ Thanksgiving Friday
- ☐ Christmas Eve
- ☐ Christmas Day
- ☐ Other [ENTER BELOW]

Inventory of Installed Fryers

Record all fryers that were installed as part of the program.

Fryer #	Fryer Make/Model	Qty [Installed and Operable]	Vats per Fryer	Vat Width (in)	Input Rating (Btu/hour)	Year of Mfr.	Notes
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							

16							
17							
18							
19							
20							
Total		0					

Installed Fryer Details (sample)			
Gather the following information from the fryer nameplate, discussions with site contact, or lookup based on fryer model number.			
General Information	**Fryer #1**	**Fryer #2**	**Fryer #3**
Manufacturer			
Model			
Input Rating			
Input (Units) [btu/hr or kBtu/hr or Mbtu/hr]			
Number of Vats per Fryer Unit			
Vat width (inch)			
Year of Manufacture			
On Average how many times per day is the gas fryer vat pre-heated following a period where it is off?			
Approximately how long does it normally take to pre-heat the gas fryer vat?			
Minimum Temperature during Idle			
Cooking Temperature setting			
How long does it take to reach cooking temp from idle temp			
Fryer Schedule	**Fryer #1**	**Fryer #2**	**Fryer #3**
How many hours per day are the gas fryers operate?			
How many days per week are the gas fryers used? [Record each day of week the fryer unit would typically operate]			
Mon			
Tue			
Wed			
Thur			
Fri			
Sat			
Sun			

Data Logger Details	Fryer #1	Fryer #2	Fryer #3
Logger Model			
Logger ID			
Logger Installation Date			
Logger Installation Time (military)			
Target Logger removal date (7 to 10 days)			
Logger data extraction date completed			
Spot reading flue gas temp			
Logger Location Details			

RUL & EUL	Fryer #1	Fryer #2	Fryer #3
Remaining Useful Life (RUL) & Effective Useful Life (EUL)			
Did the new gas fryer replace an existing fryer?	Replaced existing fryer Added the new gas fryer New construction Refused Don't know	Replaced existing fryer Added the new gas fryer New construction Refused Don't know	Replaced existing fryer Added the new gas fryer New construction Refused Don't know
Was the replaced fryer a gas or electric fryer?	Existing gas fryer Existing electric fryer Refused Don't know	Existing gas fryer Existing electric fryer Refused Don't know	Existing gas fryer Existing electric fryer Refused Don't know
Approximately how old was the fryer that was removed and replaced? Would you say…	0-5 years 5-10 years 10-15 years 15+ years Refused Don't know	0-5 years 5-10 years 10-15 years 15+ years Refused Don't know	0-5 years 5-10 years 10-15 years 15+ years Refused Don't know
How would you describe the removed fryer's condition? Would you say it was in…	Poor condition Fair condition Good condition Refused Don't know	Poor condition Fair condition Good condition Refused Don't know	Poor condition Fair condition Good condition Refused Don't know
What was the main reason you replaced the existing fryer	Equipment was not functioning adequately Purchased as part of a general facility renovation Wanted improved performance or functionality Other / Provide Related Commentary Below: Refused Don't know	Equipment was not functioning adequately Purchased as part of a general facility renovation Wanted improved performance or functionality Other / Provide Related Commentary Below: Refused Don't know	Equipment was not functioning adequately Purchased as part of a general facility renovation Wanted improved performance or functionality Other / Provide Related Commentary Below: Refused Don't know

Other Notes

APPENDIX E:

MEASURE NAME MAPPING

PA	Measure Group	Measure Name	Evaluated Measure
PGE	PROCESS PUMPING VFD	VARIABLE FREQUENCY DRIVE ON AGRICULTURAL WELL PUMPS (<=300HP)	Agricultural Pumping VFD
PGE	PROCESS PUMPING VFD	VARIABLE FREQUENCY DRIVE ON AG WELL PUMPS >75HP TO <=300HP (TIER 1)	Agricultural Pumping VFD
PGE	PROCESS PUMPING VFD	TIER 2 MID-TIER SPECIFICATION VFD ON AG BOOSTER PUMPS <=75HP	Agricultural Pumping VFD
PGE	PROCESS PUMPING VFD	VARIABLE FREQUENCY DRIVE ON AGRICULTURAL BOOSTER PUMPS (<=150HP)	Agricultural Pumping VFD
PGE	PROCESS PUMPING VFD	VARIABLE FREQUENCY DRIVE ON AG BOOSTER PUMPS >75HP TO <=150HP (TIER 1)	Agricultural Pumping VFD
PGE	PROCESS PUMPING VFD	TIER 3 ENHANCED SPECIFICATION VFD ON AG WELL PUMPS >75HP TO <=600HP	Agricultural Pumping VFD
PGE	PROCESS PUMPING VFD	TIER 3 ENHANCED SPECIFICATION VFD ON AG BOOSTER PUMPS >75HP TO <=150HP	Agricultural Pumping VFD
PGE	PROCESS PUMPING VFD	TIER 3 ENHANCED SPECIFICATION VFD ON AG BOOSTER PUMPS <=75HP	Agricultural Pumping VFD
SCE	PROCESS PUMPING VFD	EFFICIENT VFD AG PUMPS WELL NC	Agricultural Pumping VFD
SCE	PROCESS PUMPING VFD	EFFICIENT VFD AG PUMPS BOOSTER NC	Agricultural Pumping VFD
SCE	PROCESS PUMPING VFD	EFFICIENT VFD AG PUMPS WELL AOE	Agricultural Pumping VFD
SCE	PROCESS PUMPING VFD	EFFICIENT VFD AG PUMPS BOOSTER AOE	Agricultural Pumping VFD
PGE	PROCESS PUMPING HIGH EFFICIENCY	AG, CL TO CL, LT 0.96 PEI, GTE 3HP, LTE 50HP	Clean Water Pump Upgrades
PGE	PROCESS PUMPING HIGH EFFICIENCY	CLEAN WATER PUMP, HIGH PEI, AG, CONSTANT, 50 < HP <= 200	Clean Water Pump Upgrades
PGE	PROCESS PUMPING VFD	AG, VL TO VL, LT 0.46 PEI, GTE 3HP, LTE 50HP	Clean Water Pump Upgrades
PGE	PROCESS PUMPING VFD	CLEAN WATER PUMP, HIGH PEI, IND, VARIABLE, 50 < HP <= 200	Clean Water Pump Upgrades
PGE	FOOD SERVICE	COMMERCIAL FRYER (GAS)	Gas Fryers
SCG	FOOD SERVICE	COMMERCIAL FRYER, GAS, TIER 1	Gas Fryers
SDGE	FOOD SERVICE	FOOD SERVICE - COMMERCIAL GAS FRYER (SWFS011B)	Gas Fryers

APPENDIX F:

RESPONSE TO COMMENTS

Comment #	PA	Location	Page	Topic	Question/Comment	Evaluator Response
SCE-1	SCE	Overall		Overall	SCE notes that the implementation of the PY 2020 program varied considerably by PA and may not present actionable results or conclusions across the board.	Evaluators agree with SCE. Care must be taken in interpreting the meaning of results throughout the report, as program delivery approach differs acrpss PAs for a particular measure. Additionally, interpretation of results should also include an assessment of sample size, and an array of other potentially influential factors that might steer results or their relevance to a particular program or PA.
SCE-2	SCE	Overall		Overall - Contact Info	SCE agrees that adequate customer contact information and project eligibility are crucial for program performance and EM&V efforts and will continue to improve the collection of this data to facilitate program performance and robust EM&V. SCE agrees that workpapers need to reflect the most recent EM&V results and will strive to meet these requirements.	We appreciate those efforts to make improvements.
SCE-3	SCE	Section 7 - Gross		Gross	SCE recommends that the program savings should be allocated by PA or services territory. The implementation of the programs in 2020 varied considerably by PA and may not present actionable results or conclusions. Additionally, the data pool per PA may need to be expanded to ensure that sufficient data is collected to support the analysis and draw conclusions. Measure Results / First-Year Gross MWh Savings (Ex Ante Savings, Ex Post Savings, GRR, RP) / First-Year Gross MW Savings (Ex Ante Savings, Ex Post Savings, GRR, RP) Agricultural Pump VFDs: 9,589; 5,454; 0.57; 23%; 4.58; 0.80; 0.17; 22% Clean Water Pumps: 2,294; 435; 0.19; 43%; 0; 0; NA; NA	The savings presented in Section 7 are aggregate cross-PA results for each measure. Where relevant/applicable, PA-specific results are presented in Section 5 and Appendix AA. However, for the two electric measures included in-scope, SCE had just a single clean water pump installation in PY2020, so ex ante savings estimates for that one claim are passed through (essentially a realization rate of 1.0 is applied). For the agricultural pump VFD measure there was an adequate number of sample points by PA to develop separate results for SCE and PG&E, as reflected in Section 5 and Appendix AA. Evaluators planned for larger sample sizes than achieved for the clean water pump measure, and would hope that future evaluations will be more successful in achieving the targeted number of completes.
SCE-4	SCE	Section 7 - Gross		Gross	SCE requests that these results be broken down by PA when possible. Measure Results / Lifecycle Gross MWh Savings (Ex Ante Savings, Ex Post Savings, GRR, RP) / Lifecycle Gross MW Savings (Ex Ante Savings, Ex Post Savings, GRR, RP) Agricultural Pump VFDs: 84,493; 58,740; 0.7; 24%; 40.37; 8.93; 0.22; 26% Clean Water Pump Upgrades: 34,410; 6,525; 0.19; 43%; 0; 0; N/A; N/A	Refer to response above.
SCE-5	SCE	Section 5 - Gross		Gross	SCE notes that these helpful criteria above may depend on the timeline of the evaluation. For example, use of these pumps could change from year to year resulting in changing run times. SCE also notes that some of these factors also depend on the crop mix. Strata / First-Year Gross Impact Realization Rate / Pump Run Hours >1500 / Pump Run Hours <500 / Pump Speed Typically 90-100% / Pump Speed is Relatively Low / Farmer Prefers Using District Water / Farmer Also Irrigates with a Different Pump / Pump Peak Coinc. Factor <50% / Pump Type is Incorrect / Applied Mean Modeled Result from Sample / Applied Result from Other Point at Same Farm / Other Up / Dn / Dn / Up / Dn / Dn / Dn / - / - / - / - PGE Well (n=20): 0.32; 8; 1; 7; 0; 1; 6; 12; 2; 4; 0; 7 PGE Booster (n=12): 0.98; 3; 0; 0; 2; 0; 8; 3; 5; 2; 2; 0 SCE Well (n=12): 0.49; 7; 0; 5; 2; 1; 3; 8; 0; 0; 0; 1 SCE Booster (n=13): 1.36; 3; 1; 1; 2; 0; 5; 3; 4; 5; 0; 3 Total: 21; 2; 13; 6; 2; 22; 26; 11; 11; 2; 11	Evaluators agree with SCE. The gross impact results for the agricultural pump VFD measure were driven to a large extent based upon observed post-installation pump operation, as expressed in interval AMI data for all pumps modeled. These loads are driven by factors that inlcude orchard age, the annual crop planted and, importantly, the drought. Regarding the drought, we found that some pumps operated more hours than usual, while other ran fewer hours. Also, for VFDs the pump speeed may vary due to current conditions, and that might change over time due to farmer preferences and other factors that are difficult to quantify. This above set of facts also highlights the reason evaluators chose to evaluate the as-found condition, and did not attempt to analyze results that are normalized for typical conditions. Furthermore, CPUC policy tends to favor analysis of as-found conditions, consistent with our evaluation approach. Forecasting conditions is not generally encouraged without adequate justification.

Comment #	PA	Location	Page	Topic	Question/Comment	Evaluator Response
SCE-6	SCE	Section 5 - Gross		Gross	If possible, can this be broken down by PA?	The sample-based results shown reflect PG&E alone. The one SCE project was not sampled, and there were no SDG&E participants in PY2020.
SCE-7	SCE	Section 5 - Gross		Gross	SCE understands that some PAs are working with the CPUC to change the method to estimate energy savings including basing them on currently available pump databases from the Hydraulic Institute as opposed to other sources such as the Northwest RTF. If possible, SCE would like to understand how PEI values were determined at the installation site and clarify how they verified the PEI values with customers.	PG&E supplied the evaluation team with a database of 540 pumps rebated by their Commercial Deemed Incentives program in 2020. The database included detailed pump specifications, including make/model, application type, and horsepower. This information allowed evaluators to extract the installed and baseline PEI vaues from the Hydraulic Institute database. Evaluators independently verified the PEI values through virtual verifications with 20 customers that elected to participate in the evaluation. The virtual verification process included visual validation (e.g., videochat, photograph exchange) of the installed pump(s) and their nameplates. The make/model information collected from virtual verifications was cross-checked with the PG&E-supplied information. This process generally corroborated the distributors' sales information supplied to PG&E as required for rebate payout.
SCE-8	SCE	Section 6 - Net		Net	SCE notes that NTG and therefore NRR are lower than ex ante. Could the evaluation team provide more detail on the ISP definition recommendation that likely lowered NTG? SCE understands this to mean that some installations were ISP and not influenced by the program and it would be helpful to have an example in the final report. In addition, SCE understands that some VFDs could be installed for multiple reasons such as mitigating water table fluctuations.	Evaluators assume that this SCE comment refers to the agricultural pump VFD measure, with a resulting NTGR of 0.39. And yes, this relatively low NTGR suggests that some customers would still have chosen to install VFDs in the absence of the program. One reason for this might be that VFDs are standard practice under certain circumstances; in fact there are many non-energy benefits associated with VFD installations that can also drive selection. Mitigating water table fluctuations is a good example, and we can add that example to the report. Otherwise we think the ISP discussion on page 1-7 does an adequate job providing examples of non-energy decision making factors that may drive VFD selection.
SCG-1	SoCalGas	Section 8 Conclusions and Recommendations		Segmentation of Findings by Delivery Channel	SoCalGas recommends that the fryer evaluation data be divided by program delivery channel, i.e., downstream vs. Midstream to better distinguish the difference between data collected and validated.	While evaluators agree with this comment in principal, unfortunately the gross impact sample size of 12 points cannot support further segmentation by delivery channel. Regarding the conclusions and recommendations, we believe that delivery channel is already identified in some instances as a driver of a particluar finding, where feasible. Two of the conclusions, FRY1 and FRY4, were informed in-part by the more substantial net impact sample size achieved, and in both cases it is the mid-stream delivery channel that can benefit from improvements suggested in each recommendation.
SCG-2	SoCalGas	Section 6.2.1. NTG Approach for Midstream Programs		NTG Approach for Midstream Programs	While SoCalGas agrees with the approach, SoCalGas suggests that the same evaluation process be implemented for all midstream programs, such as the Midstream Water Heating program.	Thank you for your comments. Evaluators note that the same NTGR approach was also used in PY2019 to evaluate the mid-stream tankless water heater measure. All programs and evaluation designs are unique, so difficult to make any blanket statements about this topic. Best timing for such comments is at the evaluation planning stage.

	Negative		Positive	
Discrepancy Category	Frequency	RR Impact	RR Impact	Frequency
Differences in PEI ratings	399	-74%	5%	141
Pumps not installed	4	-12%	0%	0
Difference in installed pump size	5	-4%	0%	2
Difference in annual operating hours	0	0%	3%	6
Difference in pump load factor	9	0%	0%	5
Claimed savings do not match workpaper	0	0%	0%	1
Residual	5	0%	0%	5
Total	422	-90%	8%	160

Comment #	PA	Location	Page	Topic	Question/Comment	Evaluator Response
SCG-3	SoCalGas	Section 8 - Conclusions and recommendations: Recommendation FRY1 [PG&E, SCG, and SDG&E]: We recommend that PAs require participating distributors and partnering contractors to collaboratively collect and submit basic information for each customer ultimately receiving the equipment or other program support.		Conclusions and recommendation	SoCalGas currently collects customer centric data as it relates to each program market channel. For midstream programs, end-use customer data is collected and submitted to SoCalGas.	Evaluators thank you for collecting and storing the relevant customer contact information described.
SCG-4	SoCalGas	Section 3 - Sampling		Sample Sizes	Sampling plan vs. achieved, the report refers to site M&V sample size for Commercial Gas Fryers as 12 application and vendor NTG telephone survey sample size as only 3 successful cases. SoCalGas believes that sample size is too low to draw meaningful conclusions.	With regard to the M&V sample size obtained, evaluators agree with SCG. Due to a small sample size all gross impact results were passed through. Regarding the vendor sample size of 3, Quantum also agrees this is not a sufficient sample size, which is why Quantum applied the results of the 3 vendor surveys (approx 50% savings), and passed through the NTG to the unevaluated sample (remaining 50% of savings).
SCG-5	SoCalGas	Section 6		NTGR	SoCalGas NTGR There is a discrepancy between the NTGR indicated on page 6-19 section 6.5.3 (0.34) and page 144 (0.39). These two should match and preferably 0.39 if that is accurate.	The appendices on page 144 & 150 include the 5% market adder, while the NTG results in section 6 are evaluated results excluding the 5% market adder, which is where this discrepancy comes from.
SCG-6	SoCalGas	Section 3 - Sampling		Sample Sizes	SoCalGas Down-stream sample rate issue N=32 (table 6-7) is a low sample rate to draw a meaningful conclusion.	We disagree that a sample size of 32 is a low sample rate to draw a meaningful conclusion. For larger populations, such as gas fryers (over 1,000 claims), it is not necessary to have a high sampling rate, it is important to have a sufficient sample size. And a sample size of 32 is sufficient to draw a meaningful conclusion. For smaller populations where you cannot sample a large sample size like 32, then it becomes important to have a high sampling rate. For example, if the population was only 100, and we had the same 3% sampling rate (or a sample size of 3) then this would not be sufficient. Given the parameter that is being measured and the distribution of the resulting responses, we feel the sample size is more than sufficient to draw a meaningful conclusion. The resulting relative precision of 6% suggests a low level of measurement error. We also developed NTG estimates separately for SoCalGas and PG&E and found both strata to have the same 0.34 value, providing further support in the result.
SDGE-1	SDG&E	Section 6 & Appendices	Page 144 & 150	NTG	PG&E and SCG were evaluated, where SDG&E was excluded due to relatively low savings claims for gas fryers. During the webinar, when SDG&E asked for clarity on the application of the evaluated NTGR, evaluators mentioned that SDG&E was a pass-through and no changes should have been applied. However, ex-post NTG was less that ex-ante claim for downstream and the results from PG&E/SCG were applied to SDG&E. This is shown on pages 144 & 150 of the report, having an "Eval Ex-post NTG" of 0.39. Recommend on page 3-19, to update the first "implication" to clearly state SDG&E's claims are a pass-through and no further adjustments were made from the result of PG&E/SCG, as well as adjust the corresponding tables to have the 0.60 ex-ante value since its a pass-through.	Quantum has corrected the error on pages 144 & 150, and SDG&E's NTGR and NRR were passed through. Quantum also added one sentence in section 6 to clarify that SDG&E's NTG was passed through.
SDGE-2	SDG&E	Section 6 & Appendices	Page 144 & 150	NTG	Page 6-19 shows NTGR = 0.34 but differs in Net Savings Table on page 144 & 150 of the report showing a value of 0.39. Recommend updating the values to appropriately note the correct NTGR value for PGE/SCG, as well as note the pass-through for SDG&E.	The appendices on page 144 & 150 include the 5% market adder, while the NTGR results in section 6 are evaluated results excluding the 5% market adder, which is where this discrepancy comes from.

Comment #	PA	Location	Page	Topic	Question/Comment	Evaluator Response
PGE-1	PG&E			Overarching	PG&E commends the evaluation team for a well-written and thorough draft report. PG&E appreciates the level of content detail provided throughout, such as sample design, explanations of results, sample points, recommendations and supporting data to take action on recommendation, and the application of IESR tables. The draft report reflects best practices in technical report writing.	Thank you for your comments.
PGE-2	PG&E		pp. 1-9, 3-19 to 3-20	Gas Fryers	Within the Executive Summary under sub-section 1-5-3, it is stated that "For approximately 83% of projects rebated in 2020, we did not have sufficient participant contact data to verify fryer installations or evaluate savings." However, within Data Sources under sub-section 3-2-1 (PDF pg. 45-46), it states that "PG&E and SCG ultimately provided credible end-user contact information for 55% of the population of PY20 gas fryer installations." There appears to be a discrepancy in the reported rate of obtained participant contact data. Can the evaluation team update the draft report language to ensure clarity around the data obtained for the sample targets?	This language has been clarified in the revised version of the report. The 83% estimate includes unreachable records as well as records that pointed to only the contractor or distributor.
PGE-3	PG&E		pp. 5-5 to 5-42	Discrepancy Tables	PG&E commends the evaluation team for providing the excellent tables (e.g., Tables 5-2, 5-6, 5-24, 5-31) describing the discrepancy factor per measure. These were useful to know what key drivers impacted the evaluated savings estimates up or down from report savings estimates. To allow an opportunity for PAs to identify possible areas of program improvements, can the evaluation team please provide, in a secure manner, a map of the evaluated sample point identifiers and its corresponding Claim ID or Project IDs to assist the PAs in researching specific projects (e.g., 5 PG&E ineligible Well Pumps that led to being zero-saver projects; projects with differences in PEI ratings; 1 ineligible Gas Fryer installed)? The information can allow PAs to understand any failures in project screening, if applicable, and identify opportunities for program improvement.	The CPUC has elected to not comply with this request. There is a desire to retain confidentiality of respondent reports.
PGE-4	PG&E		pp. 5-34 to 5-35	Clean Water Pump Upgrades	PG&E is working with the CPUC to change the method to estimate energy savings based on the currently available pump database from the Hydraulic Institute rather than using the method approved in previous revisions of the measure package and based on the Northwest RTF. For the current evaluation results, PG&E would like to understand how the PEI values were determined from the actual installation. Can the evaluation team clarify how it determined and verified the PEI values with customers?	Evaluators independently verified the PEI values through virtual verifications with 20 customers that elected to participate in the evaluation. The virtual verification process included visual validation (e.g., videochat, photograph exchange) of the installed pump(s) and their nameplates. The make/model information collected from virtual verifications was cross-checked with the PG&E-supplied information. This process generally corroborated the distributors' sales information supplied to PG&E as required for rebate payment.
PGE-5	PG&E		pp. 8-7	Gas Fryers	Table 5-31 illustrated that 'Difference in idle energy rate' accounted for the largest impact on realization rates. There are multiple manufacturers that supply eligible fryers, which could result in a wider variety of idle energy rates. Given the low sample size of units tested, is it possible that the idle energy rates measured may not be representative of the population? Could the evaluation team share their thoughts on this possibility?	The lower-than-desired sample size introduces more uncertainty in the evaluation results, including for the idle energy rate parameter. The low sample size and associated variability in results has caused the evaluation team to elect a 100% GRR for the gas fryer measure in PY2020. The evaluators have more clearly acknowledged this parameter-level uncertainty in the report.