

Process

Cal TF Tier 2 Presentation

(some “term definitions” included at the end)



AYAD AL-SHAIKH
JUNE 2018

Process Measure Affirmation

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“Cal TF affirms the subcommittee recommendations regarding ‘Stage 1 Issues’ for Process Measures.”

- 10.02 - Air Compressor VFD Retrofit
- 10.05 - Glycol Pump Motor VFD
- 10.08 - Commercial Steam Traps
- 10.10 - Circulating Block Heater

Not affirming today:

- 10.01 - Industrial Blower Replacing Air Compressor

Process Measure Q2 Status

(Source – 2017 Q1-Q3, IOU Claims Data)

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Ref No	Description	kWh	kW	Therms	Comment
10.02	Air Compressor VFD Retrofit	-	-	-	
10.05	Glycol Pump Motor VFD	145,917	-	-	
10.08	Commercial Steam Traps	-	-	8,806	
10.10	Circulating Block Heater	43,753	5.46	-	
10.01	Industrial Blower Replacing Air Compressor	42,104	27.45	-	On Hold ; Installation Type issue leading to negative IMC.
10.09	Venturi/GEM Steam Trap	-	-	-	On Hold ; Being considered as a future measure.
10.06	Process Fan VSD	2,491,161	1,436.70	-	On Hold ; Measure was originally designed too broadly; Sunset due to disposition.
10.14	Process Fan VFD - Ag Ventilation	-	-	-	On Hold ; No workpaper available yet. Expected Q4 2018.
10.12	Process, Head Pressure Controls	-	-	-	On Hold ; Too much variability between sites.
10.13	Process, Suction Pressure Controls	-	-	-	On Hold ; Too much variability between sites.
10.03	Cycling Air Dryers for Compressed Air Systems	-	-	-	On Hold ; Previously impacted by code changes; No votes to continue.
10.04	Electronic Zero Air Loss Condensate Drains for Compressed Air Systems	-	-	-	On Hold ; Previously impacted by code changes; No votes to continue.
10.07	Motor Upgrade	-	-	-	On Hold ; no votes
10.11	Boiler Cleaning	-	-	-	On Hold ; no votes

Measure Consensus -

10.02 Air Compressor VFD

● Offering

- ❑ SCE workpaper (SCE17PR005.0 – Nov 2016) – no savings in 2017
 - ✦ SDG&E workpaper (WPSDGENRPR0001, Rev 0 – Aug 2014) – no savings in 2017
- ❑ Existing system
 - ✦ Rotary screw compressor using load/unload controls with rated capacity between 5 and 25 HP
 - ✦ When multiple compressors are included in the base case, the base case operates as a trim compressor
- ❑ Proposed system
 - ✦ Install a new air compressor with a VFD
- ❑ Electric only
- ❑ Compressor ranges: 5 to 15 HP, 15 to 25 HP
- ❑ Build Type: 5 types (Hsp, MBT, MLI, OfS, RtL)
 - ✦ Health/Medical – Hospital (HSP); Manufacturing - Bio/Tech (MBT); Manufacturing - Light Industrial (MLI); Retail - Single-Story Large (RtL); Office – small (OfS)

Measure Consensus -

10.02 Air Compressor VFD

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• Stage 1 Issues

□ Offering:

- ✦ Reclassify this Measure as ROBNC because a new air compressor would be required; load/unload components are fundamentally different. (This was an REA measure.)

□ Savings

- ✦ Calculated using AIRMaster+ modeling (with 8,400 hrs/yr)
- ✦ Savings scaled based upon DEER building type hours, two approaches:
 - “Any” vs Building Specific – Building specific values will be included
 - Using specific building type hours
 - DEER hours need to be updated
- ✦ Interactive effects will be removed since not installed in conditioned spaces

□ Cost

- ✦ *Material cost – web search (Load/Unload Screw Compressor vs VSD Screw)*
- ✦ *Labor cost - RS Means 2016*

• Stage 2 Issues

□ Consider “to code” measure for >25 hp

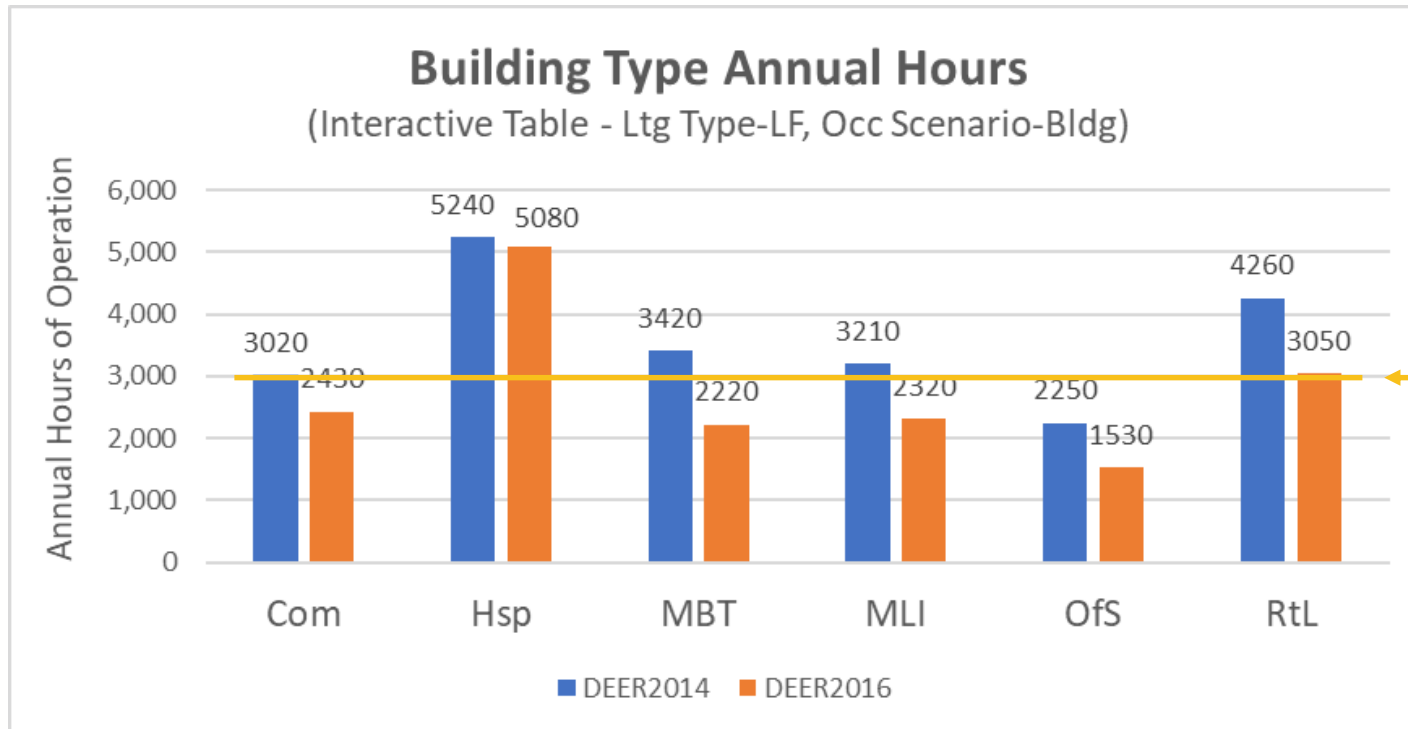
Blue text = Changing and first time that item is mentioned
Italics text = Item that has not been completed

Measure Consensus - 10.02 Air Compressor VFD

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• Savings

- Savings scaled based upon DEER building type hours, two approaches:
 - ✦ “Any” vs Building Specific – Building specific values will be included
 - ✦ Using specific building type hours (Hsp, MBT, MLI, OfS, RtL)
 - ✦ DEER hours need to be updated



Previous SCE
workpaper
used 2,920
hrs/yr

Input Consensus -

10.02 Air Compressor VFD

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	eTRM Measure Value	PG&E	SCE	SDG&E	SCG
BldgType	Hsp,MBT,MLI,OfS,RtL	No Value	Any,Hsp,MBT,MLI,OfS, RtL	Com,Hsp,MBT,MLI,RtL	No Value
BldgVintage	Any	No Value	Any	Ex	No Value
BldgLoc	Any	No Value	Any,CZ06,CZ08,CZ09, CZ10,CZ13,CZ14,CZ15 ,CZ16	CZ06,CZ07,CZ08,CZ10, CZ14,CZ15	No Value
BldgHVAC	Any	No Value	Any	Any	No Value

	eTRM Measure Value	PG&E	SCE	SDG&E	SCG
MeasureAppType	ROB, NC	No Value	REA,RobNc	No Value	No Value
NormUnit	Rated-HP	No Value	Rated-HP	Rated-HP	No Value
EUL ID	CompAir-Screw-VSD	No Value	CompAir-Screw-VSD	HVAC-VSDSupFan	No Value
RUL ID	CompAir-Screw-VSD	No Value	CompAir-Screw-VSD	No Value	No Value
NTGR	Com-Default>2yrs Ind-Default>2yrs Ag-Default>2yrs	No Value	Com-Default>2yrs Ind-Default>2yrs	No Value	No Value
DeliveryType	PreRebDown	No Value	PreRebDown	No Value	No Value
GSIA	Def-GSIA	No Value	Def-GSIA	No Value	No Value

Measure Consensus - 10.05 Winery Glycol Pump VFD

● Offering

- ❑ PG&E workpaper (PGE3PRO108, R2) – minimal savings in 2017
- ❑ Existing system
 - ✦ Constant speed glycol pump for process cooling in a winery
- ❑ Proposed system
 - ✦ VFD controls required
 - ✦ Not applicable for back-up pumps
- ❑ Electric only
- ❑ Pump sizes: 3, 5, 7.5, 10, 15, 20, and 25 HP
- ❑ Build Type:
 - ✦ Winery specific
 - ✦ Updated from Manufacturing Light (MLI) to Vineyards and Processing (VPr)

Measure Consensus - 10.05 Winery Glycol Pump VFD

● Stage 1 Issues

□ Offering:

- ✦ Decided not to consider for other building types
- ✦ Updated existing building type to match Ag sector

□ Savings

- ✦ Based upon typical winery project data
- ✦ Considered changing normalized units to “per HP”
 - Decided not to change the Norm Units to “per HP” because cost variation too large
 - Both savings (5-10%) and cost (50-100%) vary at lower HP range
- ✦ *Follow-up questions:*
 - *Is there a recommendation on how the typical winery system relates to the Closed Loop System Guidance Document*

□ Cost

- ✦ RS Means 2016 (material, labor and mark-up)

● Stage 2 Issues

- *Document that the speed of the pump is tied to the refrigeration load*

Input Consensus -

10.05 Winery Glycol Pump VFD

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	eTRM Measure Value	PG&E	SCE	SDG&E	SCG
BldgType	VPr	MLI	No Value	No Value	No Value
BldgVintage	Ex	Ex	No Value	No Value	No Value
BldgLoc	Any	Any	No Value	No Value	No Value
BldgHVAC	cUnc	cUnc	No Value	No Value	No Value

	eTRM Measure Value	PG&E	SCE	SDG&E	SCG
MeasureAppType	REA	REA	No Value	No Value	No Value
NormUnit	Each	Each	No Value	No Value	No Value
EUL ID	HVAC-VSD-pump	HVAC-VSD-pump	No Value	No Value	No Value
RUL ID	Motors-Pump (1/3 of pump EUL)	HVAC-VSD-pump	No Value	No Value	No Value
NTGR	Ag-Default>2yrs	Ind-Default>2yrs	No Value	No Value	No Value
DeliveryType	PreRebDown	PreRebDown	No Value	No Value	No Value
GSIA	Def-GSIA	Def-GSIA	No Value	No Value	No Value

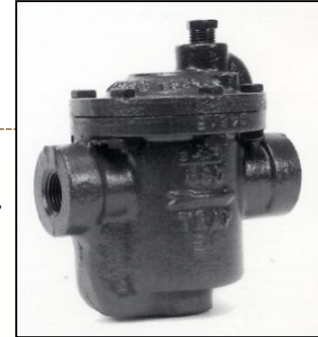
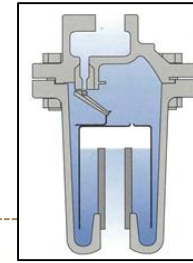
VPr – Vineyards and Processing (Ag Sector)

Blue text = Changing and first time that item is mentioned
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Measure Consensus -

10.08 Commercial Steam Traps

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- Offering

- ❑ SCG workpaper (SCGWP100310A, R9 – Aug 2011) – minimal savings in 2017
 - ✦ Short Forms (WPSDGENRWH0010, Rev2 – Oct 2016)
- ❑ Existing system
 - ✦ Commercial steam trap, 12-24 hrs/day
 - ✦ Replacement of steam trap that has failed in either leaking or blow-through mode (ie, not blocked)
- ❑ Proposed system
 - ✦ New steam trap or new steam trap “capsule”
- ❑ Gas only
- ❑ Build Types:
 - ✦ Large educational facilities, correctional facilities, general medical hospitals, surgical hospitals, agricultural facilities, industrial launderers, tele-production and other postproduction services, and transportation equipment suppliers

- Stage 1 Issues

- ❑ Offering:
 - ✦ Changing Installation Type to ROB (consistent with SDG&E Short Form)
- ❑ Energy Savings
 - ✦ Review 2011 Disposition values to ensure reasonable – confirmed by team that “Adjustment Factors” are reasonable
 - ✦ 2016 Disposition seems to refer specifically to Industrial Steam Traps – agreed by team
 - ✦ *Documenting source of original savings*

- Measure Extension

- ❑ PG&E is planning to adopt this Measure

Input Consensus -

10.08 Commercial Steam Traps

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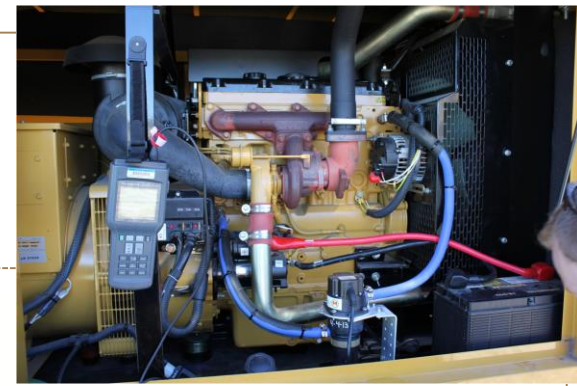
	eTRM Measure Value	PG&E	SCE	SDG&E	SCG
BldgType	Com	No Value	No Value	Com	Com
BldgVintage	Any	No Value	No Value	Ex	Any
BldgLoc	Any	No Value	No Value	Any	IOU
BldgHVAC	Any	No Value	No Value	Any	Any

	eTRM Measure Value	PG&E	SCE	SDG&E	SCG
MeasureAppType	ROB	No Value	No Value	ROB	RET
NormUnit	Each	No Value	No Value	Each	Each
EUL ID	PrcHt-StmTrp	No Value	No Value	HVAC-StmTrp	PrcHt-StmTrp
RUL ID	n/a	No Value	No Value	No Value	No Value
NTGR	NonRes-sAll-mStmTrp-dn	No Value	No Value	Com-Default>2yrs	NonRes-sAll-mStmTrp-dn
DeliveryType	PreRebDown	No Value	No Value	PreRebDown	PreRebDown
GSIA	Def-GSIA	No Value	No Value	No Value	No Value

Measure Consensus -

10.10 Circulating Block Heater

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● Offering

- ❑ SCE workpaper (SCE13HC055, R0 – Sept 2014) – minimal savings in 2017
 - ✦ Short Forms (WPSDGENRWH0010, Rev2–Oct 2016) – no savings for SDG&E/PG&E
- ❑ Existing system
 - ✦ Thermo-siphon heater on a back-up diesel generator
- ❑ Proposed system
 - ✦ Circulating block heater, which includes a circulating pump and electric heater
- ❑ Electric only
- ❑ 4 Sizes of Generators; Under-Sized/Properly-Size Existing Heaters; ROB / NC
 - ✦ Does not vary by Building Type or ROB / NEW

● Stage 1 Issues

- ❑ Savings
 - ✦ Only SCE Climate Zones included; *extrapolate by average yearly temperature data*
- ❑ Cost – Only one cost source (SCE workpaper)
 - ✦ No difference for “undersized” vs “properly sized” heaters

Input Consensus -

10.10 Circulating Block Heater

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	eTRM Measure Value	PG&E	SCE	SDG&E	SCG
BldgType	Any	No Value	Any	No Value	No Value
BldgVintage	Any	No Value	Any	No Value	No Value
BldgLoc	CZ01,CZ02,CZ03,CZ04,CZ05, CZ06,CZ07,CZ08,CZ09,CZ10, CZ11,CZ12,CZ13,CZ14,CZ15, CZ16	No Value	CZ06,CZ08,CZ09, CZ10,CZ13,CZ14, CZ15,CZ16	No Value	No Value
BldgHVAC	Any	No Value	Any	No Value	No Value

	eTRM Measure Value	PG&E	SCE	SDG&E	SCG
MeasureAppType	ROB, NC	No Value	RobNc	No Value	No Value
NormUnit	Each	No Value	Each	No Value	No Value
EUL ID	Motors-pump	No Value	Motors-pump	No Value	No Value
RUL ID	n/a	No Value	Motors-pump	No Value	No Value
NTGR	ET-Default	No Value	ET-Default	No Value	No Value
DeliveryType	PreRebDown	No Value	PreRebDown	No Value	No Value
GSIA	Def-GSIA	No Value	Def-GSIA	No Value	No Value

Process Measure Affirmation

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“Cal TF affirms the subcommittee recommendations regarding ‘Stage 1 Issues’ for Process Measures.”

- 10.02 - Air Compressor VFD Retrofit
- 10.05 - Glycol Pump Motor VFD
- 10.08 - Commercial Steam Traps
- 10.10 - Circulating Block Heater

Measure Consensus -

10.01 Industrial Blower Replacing Air Compressor

● Offering

- ❑ SCE workpaper (SCE13PR006.3) – minimal savings in 2017
- ❑ Existing system
 - ✦ Rotary screw compressor, 25-500 HP
- ❑ Proposed system
 - ✦ Low pressure air application
 - ✦ Blower must be less than 50 HP
- ❑ Electric only
- ❑ Build Types:
 - ✦ Health/Medical – Hospital; Manufacturing - Bio/Tech; Manufacturing - Light Industrial; Retail - Single-Story Large; Office – Small (alternate for Clinic, Misc. Commercial, Transportation Communication Utilities)

● Stage 1 Issues

- ❑ **Negative incremental measure cost (IMC) – see next page.**
- ❑ Savings
 - ✦ BHP is used for normalizing savings. Assumes 100% load. Claims like per rated HP.
- ❑ *Cost - TBD*

Measure Consensus -

10.01 Industrial Blower Replacing Air Compressor

- Stage 1 Issues

- Negative incremental measure cost (IMC); From Resolution E-4818:

“An Add-on Equipment (AOE) measure installs new equipment onto an existing host improving the nominal efficiency of the host system. The existing host system must be operational without the AOE, continue to operate as the primary service equipment for the existing load, and is able to fully meet the existing load at all times without the add-on component.

The AOE must not be able to operate on its own¹². The actual energy reduction occurs at the host equipment, not at the add-on component, although any add-on component energy usage must be subtracted from the host savings”

Our decision not to authorize pony measures as add-on equipment leaves certain types of optimization measures without a clear alteration type classification. Currently these are treated with either normal or accelerated replacement baselines, which does not fit well since no equipment is removed or replaced at the time of installation. In the future it may be worth exploring whether a new category would serve these measure types better.

Measure Consensus -

10.01 Industrial Blower Replacing Air Compressor

• Stage 1 Issues

- Negative incremental measure cost (IMC); From Resolution E-4818
 - ✦ Therefore, this is not an AOE (Add-On Equipment) measure because it can operate on its own.
 - ✦ If this is an ROB / NR (Normal Replacement)
 - Base case cost: New Air Compressor
 - Measure case cost: New Blower
 - This creates a negative IMC
 - ✦ If this is an ER / AR (Accelerated Replacement)
 - Base case cost: n/a
 - Measure case cost: New Blower
 - POE would be required
 - 2nd baseline cost would still be negative (same as ROB method)
- Notes
 - ✦ No documentation could be found to document that negative IMC was not allowed.
 - Any more thoughts on this?

Measure Consensus -

10.01 Industrial Blower Replacing Air Compressor

• Stage 1 Issues

- Negative incremental measure cost (IMC); From Resolution E-4818
 - ✦ If this is an ER / AR (Accelerated Replacement, second baseline cost would be:
 - (see below)
 - D – currently varies by IOU
 - Methodology not applied to other deemed early retirement measures (yet)

Early Retirement Cost (ERC) is the total cost incurred to install the energy efficiency measure reduced by the net present value of the total cost that would have been incurred to install an ISP measure at the end of the remaining useful life period. This cost is considered for Early Retirement

Measures only. D = Discount Rate (fixed per PA); RUL = Remaining Useful Life, in years, of Existing Equipment.

$$\text{ERC} = \text{FMC} - \frac{(\text{FMC} - \text{IMC})}{(1 + D)^{\text{RUL}}}$$

Measure Consensus -

10.01 Industrial Blower Replacing Air Compressor

• Savings Methodology

Description	Light Ind	Industrial	Source
Base Case (kW/100acfm @100 psig)	18.1	18.1	AirMaster+ default for 100HP single-stage lubricant injected rotary screw at full load
Measure Case (kW/100acfm @100 psig)	2.94 (5 psig)	5.94 (10 psig)	Manufacturer data based upon operating pressure
Operating Hours (hrs/yr)	1,534 (a)	7,752 (b)	(a) 50% of Light Industrial DEER hours; (b) 8,760 hrs/yr – 6 wks maintenance

- ❑ Savings normalized per blower HP. Typical value taken from the most commonly used sizes 7.5-15 HP (8.3 BHP, full load)
- ❑ Demand savings assumes operation throughout the 2-5pm period
- ❑ Savings not weather sensitive

Questions...

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Measure Consensus -

10.12 Floating Head Pressure Control – Refrigerated Warehouse

● Offering

- ❑ SCE workpaper (SCE17RN023.0) – no claims in 2017
- ❑ Existing system
 - ✦ Evap-cooled condenser, fixed SCT = 85°F (air-cooled condenser not eligible)
- ❑ Proposed system
 - ✦ DEER ID: D03-307: Evap-cooled condenser, fixed SCT = 70°F, backflood setpoint of 68°F
 - ✦ DEER ID: D03-308: Evap-cooled condenser, control SCT to wetbulb + 9°F TD, 70°F min, backflood setpoint of 68°F
 - ✦ DEER ID: D03-309: Evap-cooled condenser, control SCT to wetbulb + 9°F TD, 70°F min, backflood setpoint of 68°F, var-speed fan control
- ❑ Build Types:
 - ✦ ECC, Eun, Gro, Hsp, Htl, MBT, MLI, Nrs, OfS, RFF, RSD, Rt3, RtL, RtS, SCn, WRf

Floating Head Pressure Controls

This measure adds controls to reset the head pressure setpoint to 70°F minimum, using either a fixed or variable-setpoint.

Methodology: The base case uses the vintage-dependent condenser and SCT control setpoint. The EEM floats the SCT setpoint to a minimum of 70°F. The backflood control setpoint is reduced accordingly (2°F below the control setpoint).

Measure Consensus -

10.13 Floating Suction Pressure Control – Refrigerated Warehouse

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● Offering

- ❑ SCE workpaper (SCE17RN023.0) – no claims in 2017
- ❑ Existing system
 - ✦ Fixed SST; Systems with variable speed evaporator fans not eligible
- ❑ Proposed system
 - ✦ Reset SST based on worst-case zone demand
- ❑ Build Types:
 - ✦ ECC, Eun, Gro, Hsp, Htl, MBT, MLI, Nrs, OfS, RFF, RSD, Rt3, RtL, RtS, SCn, WRf

Floating Suction Pressure

This measure adds controls to reset the suction pressure setpoint based on zone temperature. The compressors then operate more efficiently during periods of low load.

Methodology: The EEM consists of the addition of floating suction head controls to both the MT and LT suction groups. The minimum suction setpoint is the same as the base-case setpoint; the maximum is 5°F above the design temperature.

Blue text = Changing and first time that item is mentioned
Italics text = Item that has not been completed

Measure Consensus -

10.12 Floating Head Pressure Control – Refrigerated Warehouse

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- Stage 1 Issues

- Offering:

- ✦ *Should these measures be included?*
- ✦ *Is the mix of building types appropriate?*
 - *Assumed to be modelled in a refrigerated warehouse.*
- ✦ *Where is the best application?*

- Cost – *TBD for meeting #3*

Blue text = Changing and first time that item is mentioned
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Measure Consensus - 10.02 Air Compressor VFD

• Stage 1 Issues

❑ Savings

- ★ Savings scaled based upon DEER building type hours, two approaches:

- “Any” building type: 2,920 hrs/yr (Manufacturing-Light Industrial, tied to lighting – Com-Indoor-LF), hours now 2,320 hrs/yr (maybe updated in DEER)
- COM 2,430 hrs/yr
- Hsp 5,080 hrs/yr
- MBT 2,220 hrs/yr
- MLI 2,320 hrs/yr
- RtL 3,050 hrs/yr

READI
A utility for viewing CPUC's database of Ex-Ante measure information

Intro & Help | Classification Trees | Measure Catalog | Measures | Energy Impacts | Technology Costs | Technologies | Support Tables

Table Name: schema: Rows: 30

Table Usage:

HOU_cat	StartDate	ExpiryDate	Sector	UseCategory	UseSubCategory	BldgType	BldgLoc	HOU	Comment
Com_InGen-LF	1/1/2016		Com	Lighting	InGen-LF	Asm	Any	1130	
Com_InGen-LF	1/1/2016		Com	Lighting	InGen-LF	Com	Any	2430	
Com_InGen-LF	1/1/2016		Com	Lighting	InGen-LF	ECC	Any	2160	
Com_InGen-LF	1/1/2016		Com	Lighting	InGen-LF	EPr	Any	1170	
Com_InGen-LF	1/1/2016		Com	Lighting	InGen-LF	ERC	Any	957	
Com_InGen-LF	1/1/2016		Com	Lighting	InGen-LF	ESe	Any	1590	
Com_InGen-LF	1/1/2016		Com	Lighting	InGen-LF	EUn	Any	1980	
Com_InGen-LF	1/1/2016		Com	Lighting	InGen-LF	Gro	Any	4710	
Com_InGen-LF	1/1/2016		Com	Lighting	InGen-LF	Hsp	Any	5080	
Com_InGen-LF	1/1/2016		Com	Lighting	InGen-LF	Htl	Any	1210	
Com_InGen-LF	1/1/2016		Com	Lighting	InGen-LF	MBT	Any	2220	
Com_InGen-LF	1/1/2016		Com	Lighting	InGen-LF	MLI	Any	2320	
Com_InGen-LF	1/1/2016		Com	Lighting	InGen-LF	Mtl	Any	1000	
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Com_InGen-LF	1/1/2016		Com	Lighting	InGen-LF	Otl	Any	2070	
Com_InGen-LF	1/1/2016		Com	Lighting	InGen-LF	OFS	Any	1530	
Com_InGen-LF	1/1/2016		Com	Lighting	InGen-LF	RFF	Any	3880	
Com_InGen-LF	1/1/2016		Com	Lighting	InGen-LF	RSD	Any	3120	
Com_InGen-LF	1/1/2016		Com	Lighting	InGen-LF	Rt3	Any	5250	
Com_InGen-LF	1/1/2016		Com	Lighting	InGen-LF	RtL	Any	3050	
Com_InGen-LF	1/1/2016		Com	Lighting	InGen-LF	RtS	Any	2740	
Com_InGen-LF	1/1/2016		Com	Lighting	InGen-LF	s_Agr	Any	2160	
Com_InGen-LF	1/1/2016		Com	Lighting	InGen-LF	s_Cli	Any	2750	
Com_InGen-LF	1/1/2016		Com	Lighting	InGen-LF	SCn	Any	2030	
Com_InGen-LF	1/1/2016		Com	Lighting	InGen-LF	s_FSt	Any	3730	
Com_InGen-LF	1/1/2016		Com	Lighting	InGen-LF	s_Ind	Any	2270	
Com_InGen-LF	1/1/2016		Com	Lighting	InGen-LF	s_MiC	Any	2460	
Com_InGen-LF	1/1/2016		Com	Lighting	InGen-LF	s_TCU	Any	1960	
Com_InGen-LF	1/1/2016		Com	Lighting	InGen-LF	SUn	Any	1870	
Com_InGen-LF	1/1/2016		Com	Lighting	InGen-LF	WRf	Any	4470	

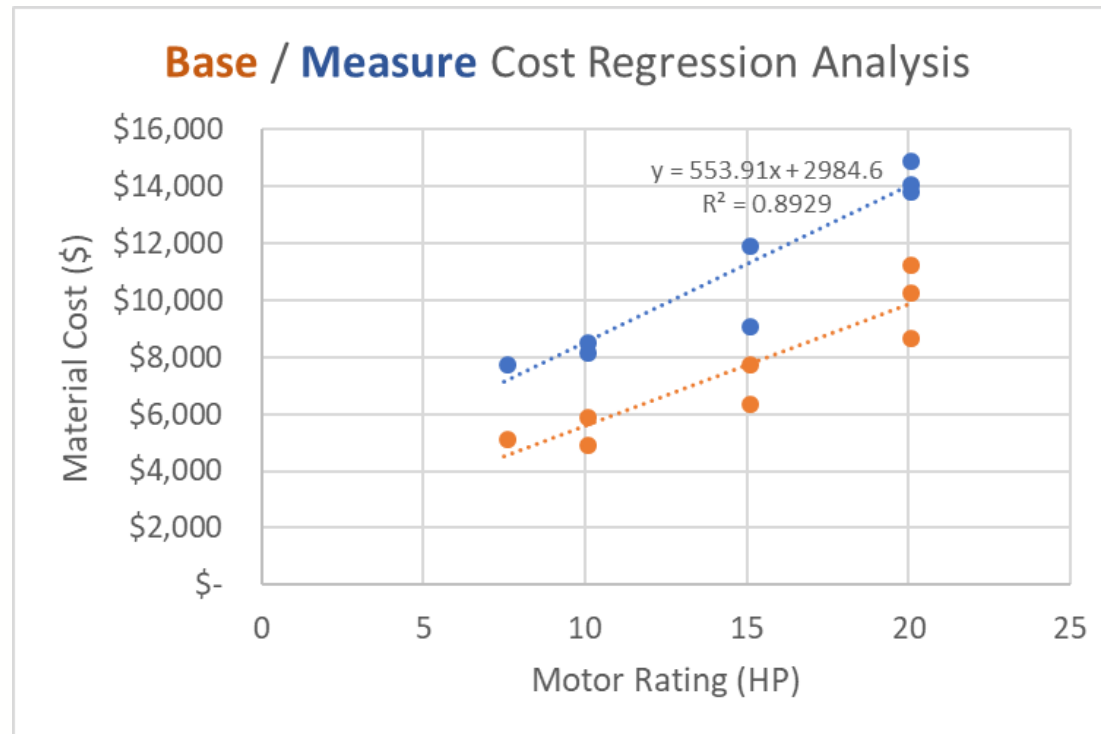
Measure Consensus - 10.02 Air Compressor VFD

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• Stage 1 Issues

□ Cost

- ✦ *Material cost – web search (Load/Unload Screw Compressor vs VSD Screw)*
- ✦ *Labor cost - RS Means 2016*



Blue text = Changing and first time that item is mentioned
Italics text = Item that has not been completed

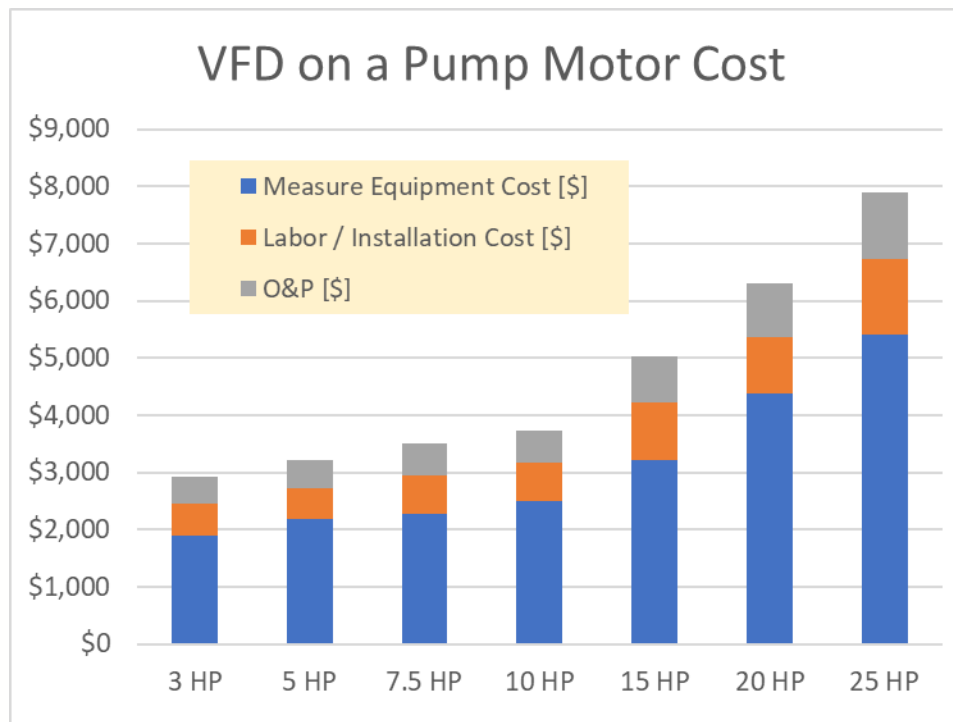
Measure Consensus - 10.05 Winery Glycol Pump VFD

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- Stage 1 Issues

- Cost –

- ✦ RS Means 2016 (material, labor and mark-up)



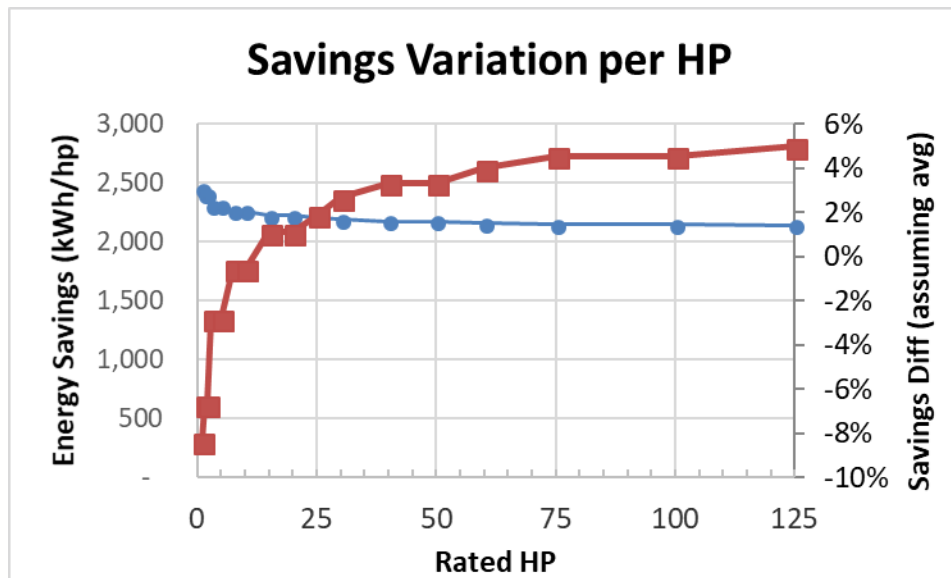
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Measure Consensus - 10.05 Winery Glycol Pump VFD

• Stage 1 Issues

□ Savings

- ✦ Based upon typical winery project data
- ✦ Should savings be normalized to “per HP” to be more consistent with other measures?
 - Variation exists because motor efficiency changes with rated HP.



HP	Baseline Eff	Measure Eff
1	82.5%	82.5%
1.5	84.0%	84.0%
2	84.0%	84.0%
3	87.5%	87.5%
5	87.5%	87.5%
7.5	89.5%	89.5%
10	89.5%	89.5%
15	91.0%	91.0%
20	91.0%	91.0%
25	91.7%	91.7%
30	92.4%	92.4%
40	93.0%	93.0%
50	93.0%	93.0%
60	93.6%	93.6%
75	94.1%	94.1%
100	94.1%	94.1%
125	94.5%	94.5%

Blue text = Changing and first time that item is mentioned
Italics text = Item that has not been completed

Measure Consensus - 10.05 Winery Glycol Pump VFD

30

• Savings Methodology

Description	Base	Measure	Source
Rated HP	3 – 25 HP	3 – 25 HP	Typical rated HP values for glycol pumps
Motor Efficiency (%)	Varies with rated HP	Varies with rated HP	EPAct 1992 values, Subtype II, Enclosed, 4-pole, 1800 rpm (Statewide manual, App C)
Motor Load (%)	80%	80%	Typical Load
Operating Hours (hrs/yr)	8,413 (a)	1,773 (100%) 6,639 (70%)	(a) Average value from 19 projects; (b) Total hours match base case; reduced speed operating hours from 19 projects.

- Typical proposed motor load taken from 18 typical winery sites
 - ✦ 70% speed represents average speed plus one standard deviation to be conservative since significant variation exists from site to site
- Proposed power uses affinity relationships
 - ✦ Uses exponent reduced to 2
 - ✦ Power (measure) = Power (base) * (70% / 100%)^{2.0}

Blue text = Changing and first time that item is mentioned
Italics text = Item that has not been completed

Measure Consensus -

10.08 Commercial Steam Traps

31

• Savings

Parameter	Value
Average steam trap inlet pressure (psig)	35.5
Average heat of evaporation of steam produced (Btu/lb)	924
Average installed boiler efficiency	80%
Boiler energy required to replace lost steam (Btu/lb)	1,155
Annual operating hours	4,380
Average percentage of leaking & blow-thru steam traps	16%
Average leak rate (lb/hr per trap rebated)	13.6
Annual gas savings (therms/year per trap rebated)	687

Measure Description	Gross per Trap Savings (th/yr)
Steam Trap Replacement – Large Commercial 12-24 hr/day [A]	687
Combined Adjustment Factor (CAF)	21.4%
Failed Adjustment Factor (FAF)	81%
Steam Trap Replacement – Large Commercial 12-24 hr/day	119

Measure Consensus -

10.08 Commercial Steam Traps

32

● Savings

□ Savings factors

- ✦ Pressure factor - The inlet pressure of a steam trap is greatly reduced due to the effect of a control valve which is between the steam line pressure and the steam trap.
- ✦ Load factor - The hours that the trap is leaking steam are often less than the steam system operating hours.

Service	Population (%) *	Load Factor (%) **	Pressure Factor (%) *	Combined Factor (%)
Line	25%	32%	100%	8.0%
Load	75%	32%	56%	13.4%
Combined Adjustment Factor (CAF) for Line and Load Traps				21.4%

* Disposition value

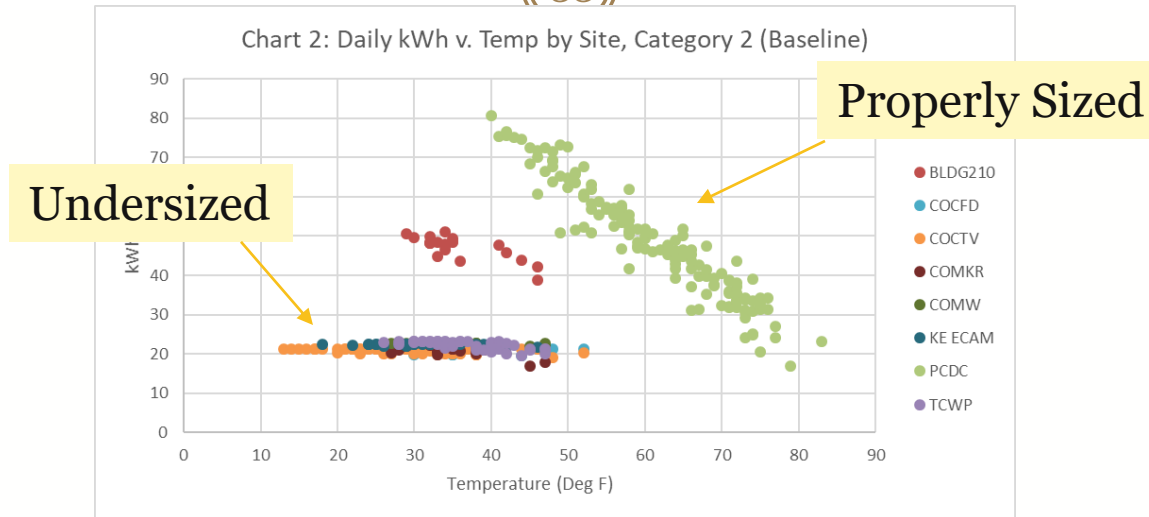
** Conservative value based on the range of operation from Process Boiler workpaper

- ✦ Failed Adjustment Factor - Steam traps that were replaced within this program but were mistakenly identified as meeting the failure eligibility requirements, i.e., instead of being failing open (leaking or blowing through), the trap was failed closed (blocked).
 - From SoCal study: 27.7% failed open; 6.3% failed closed.
 - Therefore, Failed Adj Factor = $27.7 / (27.7 + 6.3) = 81\%$

Measure Consensus - 10.10 Circulating Block Heater

33

• Savings



Site Size Category	Regression Coefficients	
	Intercept	Temp.
1	105.91	-1.178
2	88.92	-0.701
3	139.85	-0.932

Site Size Category	Regression Coefficients		
	Intercept	Heater Size	Heater Size * Temp.
1	3.70	13.135	-0.136
2	5.86	13.195	-0.133
3	10.26	16.688	-0.179
4	229.52	0	-2.577

Blue text = Changing and first time that item is mentioned
Italics text = Item that has not been completed

Measure Consensus - 10.10 Circulating Block Heater

34

● Savings

Savings Estimation Sample Calculation⁵:

Sample 1: Climate Zone 6, site size category 1, baseline heater size 1 kW, new heater size 1 kW, annual operation 334 days / year.

- Designation: Undersized
- Annual Average Temperature: 61.5°F
- Baseline Daily kWh: $20.2 * [\text{Baseline Heater Size}] = 20.2 \text{ kWh / day}$.
- Treatment Daily kWh: $3.70 + 13.135 * [\text{New Heater Size}] - 0.136 * [\text{New Heater Size}] * [61.5^\circ\text{F}]$
 $= 8.4 \text{ kWh / day}$
- Annual Savings: $(20.2 \text{ kWh/day} - 8.4 \text{ kWh/day}) * 334 \text{ days/year} = \mathbf{3,928 \text{ kWh/year}}$.

Sample 2: Climate Zone 8, site size category 3, baseline heater size 6 kW, new heater size 6 kW, annual operation 334 days / year.

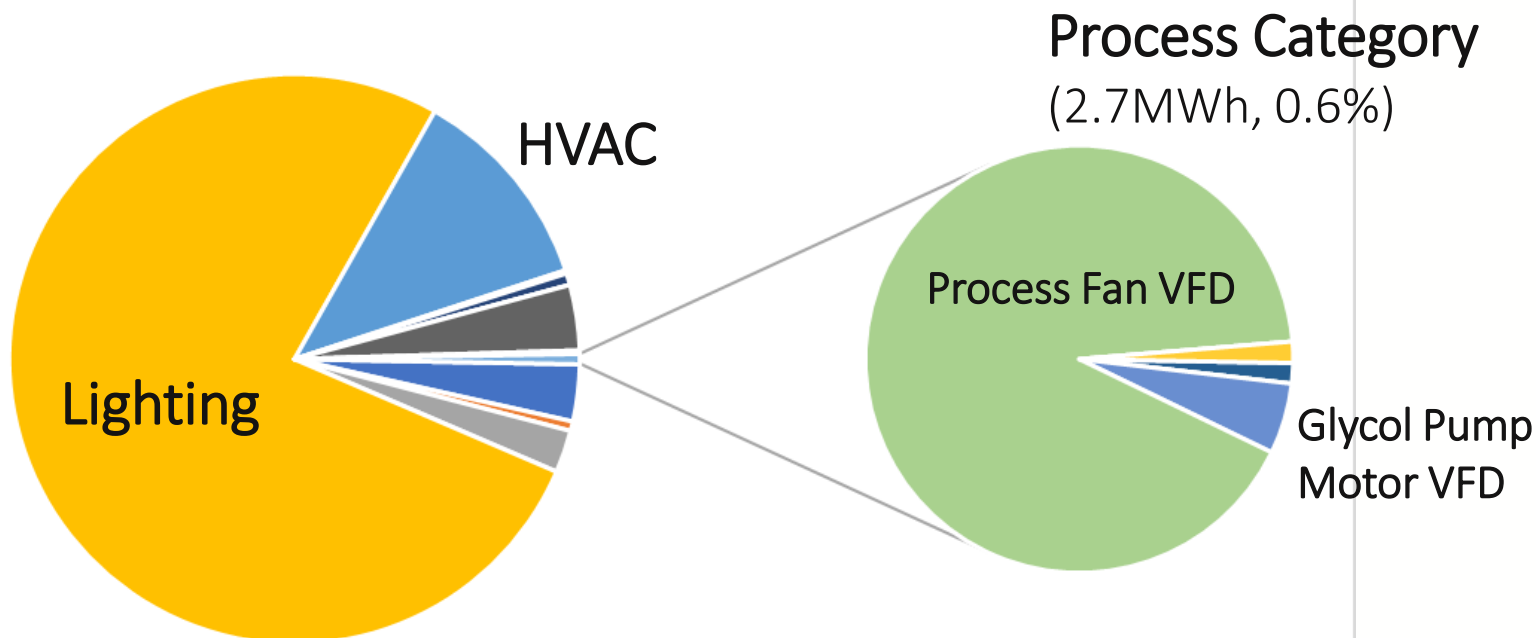
- Designation: Proper-sized
- Annual Average Temperature: 63.4°F
- Baseline Daily kWh: $139.85 - 0.932 * [63.4^\circ\text{F}] = 80.8 \text{ kWh / day}$.
- Treatment Daily kWh: $10.26 + 16.688 * [\text{New Heater Size}] - 0.179 * [\text{New Heater Size}] * [63.4^\circ\text{F}]$
 $= 42.1 \text{ kWh / day}$
- Annual Savings: $(80.8 \text{ kWh/day} - 42.1 \text{ kWh/day}) * 334 \text{ days/year} = 12,908 \text{ kWh/year}$.

Process Savings

(Source – 2017 Q1-Q3, IOU Claims Data)

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Process Breakout (from 2017 Deemed Portfolio)



Measure Consensus -

10.06 Process Fan VFD

36

● Offering

- ❑ SCE workpaper (SCE17PR008.1 – Oct 2016)
 - ✦ Short Forms (PGECOPRO110, R2 – June 2017 and WPSDGENRPR0004, Rev1 – Oct 2017)
- ❑ Existing system
 - ✦ May be used for exhaust, ventilation, pressurization, or other process applications.
 - ✦ May not be used for air compressor systems, HVAC or refrigeration.
- ❑ Proposed system
 - ✦ VFD controls required
 - ✦ Not applicable for back-up pumps
- ❑ Electric only
- ❑ Fan sizes:
 - ✦ 3 to 5HP (SCE and SDG&E)
 - ✦ >5 to 75HP Fan (all IOUs)
- ❑ Build Types:
 - ✦ Manufacturing - Bio/Tech
 - ✦ Manufacturing - Light Industrial

● Stage 1 Issues

- ❑ Offering:
 - ✦ Should the “3 to 5 HP” bin be offered? The text in the workpaper states that SCE and SDG&E were not offering this smaller HP bin.
- ❑ Disposition from 3/2/17:
 - ✦ Document range of applications (including type of process, type of fan, operating hours with control type, and other parameters used in custom input tool)
 - ✦ Split savings into at least two bins (to account for non-linear savings (between Rated-HP and kWh/yr))
- ❑ *Cost - TBD*

Blue text = Changing and first time that item is mentioned
Italics text = Item that has not been completed

Measure Consensus - 10.06 Process Fan VFD

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- Savings

Site Characteristics

Fan System Name	F10_70%	Location/City	Los Angeles CO (Los Angeles)
Fan System Type	Centrifugal	Exhaust Fan?	No
Number of Fans	1		

System Design Conditions @ Maximum Flow

Estimate Ambient Air Temperature?	No	Inlet Air Temperature	85.0 °F
System Design (Max) Flow	6410 CFM	Sys. Total Static Press. @ Max Flow	5.0 "Wg

Fan Operating Information

Number of Operating Modes	1	Operating Hour Input	Yearly
Annual Operating Hours	3372		

	Description	On-Peak?	Average Oper. Data	Hours/Year
1	D3	True	4487	3372

Operating Days Per Month

Operating Hours Per Day

Variable Speed Drive Installation

Full Load Efficiency	96%	Minimum Operating Speed	50%
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Measure Consensus - 10.06 Process Fan VFD

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- Fan Detail

Existing Equipment Specification

Fan #1 Nameplate Data

Fan ID	F3	Manufacturer	M3
Model	M3	Serial Num	S3
Fan Type	Centrifugal Airfoil DIDW	Control Type	Centrifugal On/Off
Drive Type	Std. V-Belt Drive		

Fan Performance (Design)

Fan Speed	1800 rpm	Flow	6410 cfm
Total Static Pressure	5 "Wg	Static Efficiency	64 %

Fan Drive Motor Information

Manufacturer		Model	
Size (HP)	10	Speed (RPM)	1800
Service Factor	1.15	FL Speed	1790
Enclosure	ODP	NEMA Nominal Efficiency	89,5 %

Proposed Equipment Specification

Fan #1 Nameplate Data

Fan ID	F3	Manufacturer	M3
Model	M3	Serial Num	S3
Fan Type	Centrifugal Airfoil DIDW	Control Type	Centrifugal Variable Speed Drive
Drive Type	Std. V-Belt Drive		

Term Definitions

39

- Building Types
- Vintage
- Climate Zone
- HVAC Type
- Measure Application Type
- Delivery Type

Input Consensus

Ex: 2.01 – Convection Oven

40

- Measure Permutations



	eTRM Measure Value	PG&E	SCE	SDG&E	SCG
BldgType	Any	Any	Any	Com	Any
Bldg/Intage	Any	Any	Any	Ex	Any
BldgLoc	Any	Any	Any	Any	Any
BldgHVAC	Any	cWtd	Any	Any	Any

Code	Sector	Building Type/Sub-Sector
Asm	Com	Assembly
ECC	Com	Education - Community College
EPr	Com	Education - Primary School
ERC	Com	Education - Relocatable Classroom
ESe	Com	Education - Secondary School
EUn	Com	Education - University
Gro	Com	Grocery
Hsp	Com	Health/Medical - Hospital
Nrs	Com	Health/Medical - Nursing Home
Htl	Com	Lodging - Hotel
Mtl	Com	Lodging - Motel
OfL	Com	Office - Large
OfS	Com	Office - Small
RFF	Com	Restaurant - Fast-Food
RSD	Com	Restaurant - Sit-Down

Code	Sector	Building Type/Sub-Sector
Rt3	Com	Retail - Multistory Large
RtL	Com	Retail - Single-Story Large
RtS	Com	Retail - Small
SCn	Com	Storage - Conditioned
SUn	Com	Storage - Unconditioned
WRf	Com	Warehouse - Refrigerated
MBT	Ind	Manufacturing Biotech
MLI	Ind	Manufacturing Light Industrial
Com	Com	Commercial
DMo	Res	Residential Mobile Home
MFm	Res	Residential Multi-family
SFm	Res	Residential Single Family
Res	Res	Residential
GHs	Ag	Greenhouse

Input Consensus

Ex: 2.01 – Convection Oven

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- Measure Permutations

	eTRM Measure Value	PG&E	SCE	SDG&E	SCG
BldgType	Any	Any	Any	Com	Any
BldgVintage	Any	Any	Any	Ex	Any
Bldg Loc	Any	Any	Any	Any	Any
Bldg HVAC	Any	cWtd	Any	Any	Any

Code	Description	Comment
1975	Before 1978	existing building stock built before 1978
1985	1978 - 1992	existing building stock built between 1978 and 1992
1996	1993 - 2001	existing building stock built between 1993 and 2001
2003	2002 - 2005	existing building stock built between 2002 and 2005
2007	2006 - 2009	existing building stock built between 2006 and 2009
2011	2010 - 2013	existing building stock built between 2010 and 2013
2014	2014 - 2015	existing building stock built after 2013
New	New Construction	
Ex	Existing (weighted by era)	all non-New vintages weighted by location-specific building stock
MH72	Mobile Home - Before 1976	applies to mobile homes only
MH85	Mobile Home - 1976 - 1994	applies to mobile homes only
MH00	Mobile Home - 1995 - 2005	applies to mobile homes only
MH06	Mobile Home - After 2005	applies to mobile homes only
Any	Any Building Vintage	



Input Consensus

Ex: 2.01 – Convection Oven

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• Measure Permutations

	eTRM Measure Value	PG&E	SCE	SDG&E	SCG
BldgType	Any	Any	Any	Com	Any
BldgVintage	Any	Any	Any	Ex	Any
BldgLoc	Any	Any	Any	Any	Any
BldgHVAC	Any	cWtd	Any	Any	Any

Code	Description
CZ01	Arcata Area
CZ02	Santa Rosa Area
CZ03	Oakland Area
CZ04	San Jose-Reid
CZ05	Santa Maria Area
CZ06	Torrance
CZ07	San Diego-Lindbergh
CZ08	Fullerton
CZ09	Burbank-Glendale
CZ10	Riverside
CZ11	Red Bluff Area
CZ12	Sacramento Area
CZ13	Fresno Area
CZ14	Palmdale
CZ15	Palm Springs-Intl
CZ16	Blue Canyon
IOU	IOU Territory
Any	Any Location





Input Consensus

Ex: 2.01 – Convection Oven

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- Measure Permutations

	eTRM Measure Value	PG&E		SCE		SDG&E	SCG
BldgType	Any	Any		Any		Com	Any
BldgVintage	Any						
BldgLoc	Any						
BldgHVAC	Any						
		Sector	Code	MASControl	Description		
		Res	rDXGF	AC	central AC with gas furnace		
			rNCGF	GF	no cooling, gas furnace		
			rNCEH	ER	no cooling, electric baseboard heating		
			rDXHP	HP	central heat pump with electric resistance backup		
			rEVAP		evaporative cooling with separate gas furnace		
			rWtd		typical, or weighted, HVAC type for residential building types		
		Com	cDXGF	DXGF	split or packaged direct expansion unit with gas furnace		
			cDXEH		split or packaged direct expansion unit with electric heat		
			cDXHP	PKHP	split or packaged direct expansion unit with heat pump		
			cWLHP	WLHP	water loop heat pump		
			cNCEH	EHNC	no cooling with electric heat		
			cNCGF	GFNC	no cooling with gas furnace		
			cPVVG	PVAV	packaged variable air volume system with gas furnace		
			cPVVE	PVVE	packaged variable air volume system with electric heat		
			cSVVG	SVAV	built-up variable air volume system with gas boiler		
			cSVVE	SVVE	built-up variable air volume system with electric reheat		
			cUnc	NSYS	no HVAC (unconditioned)		
		Com	cPTAC		packaged terminal air conditioner		
		Com	cPTHP		packaged terminal heat pump		
		Com	cFPFC		four pipe fan coil		
		Com	cDDCT		dual duct system		
		Com	cEVAP		evaporative cooling with separate gas furnace		
		Com	cWtd		typical, or weighted, HVAC type for commercial building types		

Measure Definitions & Terms

Build Type vs HVAC Type

44

DEER ID => Building Type	gas heat				electric heat						no sys		residential systems			
	5 DXGF	10 GFNC	11 PVAV	12 SVAV	8 PSZE	9 EHNC	13 PVVE	14 SVVE	6 PKHP	7 WLHP	15 NSYS	16 Default	1 AC	2 HP	3 ER	4 GF
Assembly	1	1	0	0	1	1	0	0	1	0	1	5	0	0	0	0
Primary School	1	1	0	0	1	1	0	0	1	1	1	5	0	0	0	0
Secondary School	1	1	1	1	1	1	1	1	1	1	1	5	0	0	0	0
Community College	1	1	1	1	1	1	1	1	1	1	1	12	0	0	0	0
University	1	1	1	1	1	1	1	1	1	1	0	12	0	0	0	0
Relocatable Classroom	1	1	0	0	1	1	0	0	1	0	1	6	0	0	0	0
Grocery	1	1	0	0	1	1	0	0	1	0	1	5	0	0	0	0
Hospital	1	1	1	1	1	1	1	1	1	1	0	12	0	0	0	0
Nursing Home	1	1	1	1	1	1	1	1	1	1	0	5	0	0	0	0
Hotel	1	1	1	1	1	1	1	1	1	1	1	12	0	0	0	0
Motel	1	1	0	0	1	1	0	0	1	0	1	6	0	0	0	0
Bio/Tech Manuf.	1	1	1	1	1	1	1	1	1	1	1	5	0	0	0	0
Light Industrial Manuf.	1	1	0	0	1	1	0	0	1	0	1	5	0	0	0	0
Large Office	1	1	1	1	1	1	1	1	1	1	1	12	0	0	0	0
Small Office	1	1	1	1	1	1	1	1	1	1	1	5	0	0	0	0
Sit-Down Restaurant	1	1	0	0	1	1	0	0	1	0	1	5	0	0	0	0
Fast-Food Restaurant	1	1	0	0	1	1	0	0	1	0	1	5	0	0	0	0
Department Store	1	1	1	1	1	1	1	1	1	1	1	12	0	0	0	0
Big Box Retail	1	1	0	0	1	1	0	0	1	0	1	5	0	0	0	0
Small Retail	1	1	0	0	1	1	0	0	1	0	1	5	0	0	0	0
Conditioned Storage	1	1	0	0	1	1	0	0	1	0	1	5	0	0	0	0
Unconditioned Storage	1	0	0	0	0	0	0	0	0	0	1	5	0	0	0	0
Refrigerated Warehouse	1	0	0	0	0	0	0	0	0	0	1	5	0	0	0	0
Single Family Home	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1
Multifamily Home	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1
Double-Wide Mobile Home	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1

Commercial
Building Types
with Residential
HVAC

Residential Building Types
with Commercial HVAC

Terms to Understand “Measures”

Ex: 2.01 – Convection Oven

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- Measure Implementation

	eTRM Measure Value	PG&E	SCE	SDG&E	SCG
MeasureAppType	ROBNC	ROBNC	ROBNC	ROB	ROB
NormUnit	Each	Each	Each Unit	Each	Each
EUL ID	Cook-ElecConvOven Cook-GasConvOven	Cook-ElecConvOven Cook-GasConvOven	Cook-ElecConvOven	Cook-ElecConvOven Cook-GasConvOven	Cook-ElecConvOven Cook-GasConvOven
NTGR	Agric-Default>2yrs Com-Default>2yrs Ind-Default>2yrs	Com-Default>2yrs	Agric-Default>2yrs Com-Default>2yrs Ind-Default>2yrs	Com-Default>2yrs	Com-Default>2yrs
DeliveryType	NonUpStrm PreRebDown	PreRebDown	PreRebDown	PreRebDown	PreRebDown PreRebUp
GSIA	Def-GSIA	Def-GSIA	Def-GSIA	Def-GSIA	Def-GSIA

Code	Description	R4818	Description
ER	Early retirement	AR	Accelerated Replacement
ROB	Replace on Burnout	NR	Normal Replacement
NC	New Construction	New	New Construction
RC	Retro-Commissioning	BRO	Behavioral, RCx, and Operation
CE	Capacity Expansion (like NC)	n/a	
RET	Retrofit	n/a	
REA	Retrofit Add-On	AOE	Add-On Equipment
ROBNC	ROB or NC	n/a	
		WEA	Weatherization



Input Consensus

Ex: 2.01 – Convection Oven

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- Measure Implementation

	eTRM Measure Value	PG&E	SCE	SDG&E	SCG
MeasureAppType	ROBNC	ROBNC	ROBNC	ROB	ROB
NormUnit	Each	Each	Each Unit	Each	Each
EUL ID	Cook-ElecConvOven	Cook-ElecConvOven		Cook-ElecConvOven	Cook-ElecConvOven
	Cook-GasConvOven	Cook-GasConvOven	Cook-ElecConvOven	Cook-GasConvOven	Cook-GasConvOven
NTGR	Agric-Default>2yrs		Agric-Default>2yrs		
	Com-Default>2yrs		Com-Default>2yrs		
	Ind-Default>2yrs	Com-Default>2yrs	Ind-Default>2yrs	Com-Default>2yrs	Com-Default>2yrs
DeliveryType	NonUpStrm				PreRebDown
	PreRebDown	PreRebDown	PreRebDown	PreRebDown	PreRebUp
GSIA	Def-GSIA	Def-GSIA	Def-GSIA	Def-GSIA	Def-GSIA

Measure Application Type – effects how you claim savings and cost (first and second baseline).



Input Consensus

Ex: 2.01 – Convection Oven

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- Measure Implementation

	eTRM Measure Value	PG&E	SCE	SDG&E	SCG
MeasureAppType	ROBNC	ROBNC	ROBNC	ROB	ROB
NormUnit	Each	Each	Each Unit	Each	Each
EUL ID	Cook-ElecConvOven	Cook-ElecConvOven		Cook-ElecConvOven	Cook-ElecConvOven
	Cook-GasConvOven	Cook-GasConvOven	Cook-ElecConvOven	Cook-GasConvOven	Cook-GasConvOven
NTGR	Agric-Default>2yrs		Agric-Default>2yrs		
	Com-Default>2yrs		Com-Default>2yrs		
	Ind-Default>2yrs	Com-Default>2yrs	Ind-Default>2yrs	Com-Default>2yrs	Com-Default>2yrs
DeliveryType	NonUpStrm				PreRebDown
	PreRebDown	PreRebDown	PreRebDown	PreRebDown	PreRebUp
GSIA	Def-GSIA	Def-GSIA	Def-GSIA	Def-GSIA	Def-GSIA

EUL – “Effective Useful Life” – quantifies the full life of a measure in years. This life is defined as the average life for this measure.

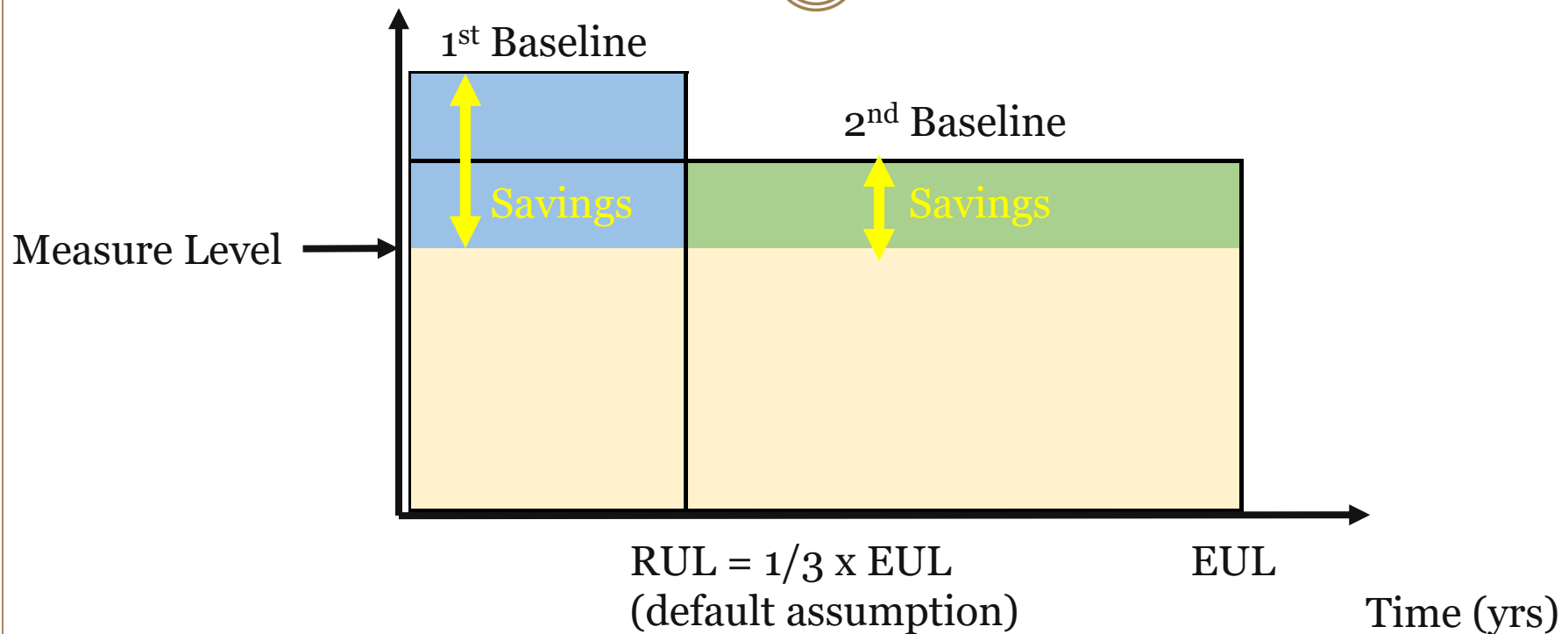
RUL – “Remaining Useful Life” – quantifies the life of a measure in year that is remaining on an existing measure.

Start to consider how these terms can work together:

EUL (Life) and Measure Application Type

EUL / RUL vs 1st / 2nd Baseline Savings

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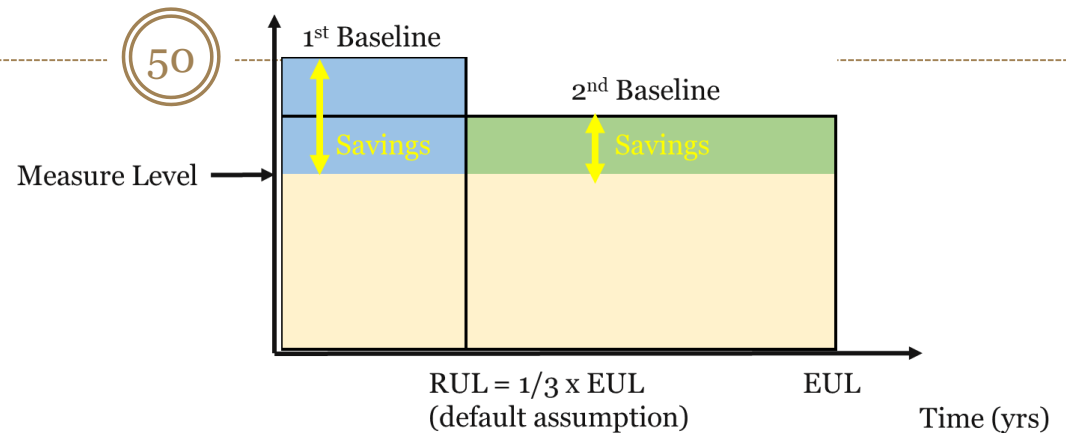
EUL – “Effective Useful Life” – quantifies the full life of a measure in years. This life is defined as the average life for this measure.

RUL – “Remaining Useful Life” – quantifies the life of a measure in year that is remaining on an existing measure.



6/21/2018

EUL / RUL vs 1st / 2nd Baseline Savings



Installation Type	Incremental Measure Cost	Full Measure Cost	
		1 st Baseline	2 nd Baseline
ROB	(MEC + MLC) – (BEC + BLC)	(MEC + MLC) – (BEC + BLC)	N/A
NEW/NC			
ER	(MEC + MLC) – (BEC + BLC)	MEC + MLC	(MEC + MLC) – (BEC + BLC)
REA	MEC + MLC	MEC + MLC	N/A

MEC = Measure Equipment Cost; MLC = Measure Labor Cost
BEC = Base Case Equipment Cost; BLC = Base Case Labor Cost



Input Consensus

Ex: 2.01 – Convection Oven

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• Measure Implementation

	eTRM Measure Value	PG&E	SCE	SDG&E	SCG
MeasureAppType	ROBNC	ROBNC	ROBNC	ROB	ROB
NormUnit	Each	Each	Each Unit	Each	Each
FUL_ID	Cook-ElecConvOven Cook-GasConvOven	Cook-ElecConvOven Cook-GasConvOven	Cook-ElecConvOven	Cook-ElecConvOven Cook-GasConvOven	Cook-ElecConvOven Cook-GasConvOven
NTGR	Agric-Default>2yrs Com-Default>2yrs Ind-Default>2yrs	Com-Default>2yrs	Agric-Default>2yrs Com-Default>2yrs Ind-Default>2yrs	Com-Default>2yrs	Com-Default>2yrs
DeliveryType	NonUpStrm PreRebDown	PreRebDown	PreRebDown	PreRebDown	PreRebDown PreRebUp
GSIA	Def-GSIA	Def-GSIA	Def-GSIA	Def-GSIA	Def-GSIA

NTGR-ID – Net to Gross Ratio is a field that describe “free-ridership”. Value from 0 – 1.0 (*typically 0.6 – 0.7*).

This is a complex term that tries to quantify the number of program participants who would have participated in the program even if there was not incentive. In other words, they were not influenced by the program.

Input Consensus

Ex: 2.01 – Convection Oven

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- Measure Implementation

	eTRM Measure Value	PG&E	SCE	SDG&E	SCG
MeasureAppType	ROBNC	ROBNC	ROBNC	ROB	ROB
NormUnit	Each	Each	Each Unit	Each	Each
EUL ID	Cook-ElecConvOven Cook-GasConvOven	Cook-ElecConvOven Cook-GasConvOven	Cook-ElecConvOven	Cook-ElecConvOven Cook-GasConvOven	Cook-ElecConvOven Cook-GasConvOven
NTGR	Agric-Default>2yrs Com-Default>2yrs Ind-Default>2yrs	Com-Default>2yrs	Agric-Default>2yrs Com-Default>2yrs Ind-Default>2yrs	Com-Default>2yrs	Com-Default>2yrs
DeliveryType	NonUpStrm PreRebDown	PreRebDown	PreRebDown	PreRebDown	PreRebDown PreRebUp
GSIA	Def-GSIA	Def-GSIA	Def-GSIA	Def-GSIA	Def-GSIA

Code	Description
DirInstall	Direct Install
PreRebDown	Downstream prescriptive rebate
PreRebUp	Upstream prescriptive rebate
NonUpStrm	All non-upstream delivery types for deemed measures (Midstream Incentive)