

HVAC Status READi / MASControl / Etc...



CALIFORNIA

TECHNICAL FORUM

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HVAC Measure List – for Q2 Consolidation

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- **Draft HVAC Measure List for Q2**
 - ❑ 5.03 Space Heating Boilers
 - ❑ 5.51 Water Source Heat Pumps
 - ❑ 5.22 Variable Refrigerant Flow - Commercial (*POU only*)
 - ✦ Heat Pump & Heat Recovery Systems, 5 – 80 tons
 - ❑ 5.05 Water-Cooled Chillers
 - ❑ 5.39 Air-Cooled Packaged Chiller
 - ❑ 5.09 Res Duct Test & Seal
 - ❑ 5.17 Whole House Fan
 - ❑ 5.18 High Efficiency Furnaces - Residential
 - ❑ 5.24 Unitary Air-Cooled - Commercial
 - ✦ Air Conditioners and Heat Pump ≥ 65 kBtu/h
 - ❑ 5.25 Unitary Air Cooled - Commercial
 - ✦ Air Conditioners and Heat Pump Units Under 65 kBtu/h
 - ❑ 5.27 High Efficiency Package Terminal AC and Heat Pump
 - ✦ 24kBtu/h (2 tons) and under
 - ❑ 5.40 Upstream Residential HVAC (*splitting offerings*)

Parallel Path Approach – eTRM / HVAC

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- DEER Measure ID:

- D08-NE-HVAC-airAC-Pkg-55to64kBtuh-17p0seer

Bldg Type	BldgVint	BldgLoc	NormUnit
Com	Ex	CZ05	Cap-Tons
AStdEUkWh	AStdEUkW	AStdEUtherm	
282	0.106	1.85	

EX = weighted
average of
Vintages

Vintage

- 1975 existing building stock built before 1978
- 1985 existing building stock built between 1978 and 1992
- 1996 existing building stock built between 1993 and 2001
- 2003 existing building stock built between 2002 and 2005
- 2007 existing building stock built between 2006 and 2009
- 2011 existing building stock built between 2010 and 2013
- 2014 existing building stock built after 2013

COM = weighted
average of
Commercial
Building Types

Building Type

- | | | | |
|-------|-------------------------------|-------|-----------------------------|
| • Asm | Assembly | • Mtl | Lodging - Motel |
| • ECC | Education - Community College | • OfL | Office - Large |
| • EPr | Education - Primary School | • OfS | Office - Small |
| • ERC | Education – Reloc. Classroom | • RFF | Restaurant - Fast-Food |
| • ESe | Education - Secondary School | • RSD | Restaurant - Sit-Down |
| • EUn | Education - University | • Rt3 | Retail - Multistory Large |
| • Gro | Grocery | • RtL | Retail - Single-Story Large |
| • Hsp | Health/Medical - Hospital | • RtS | Retail - Small |
| • Nrs | Health/Medical - Nursing Home | • SCn | Storage - Conditioned |
| • Htl | Lodging - Hotel | • SUn | Storage - Unconditioned |
| | | • WRf | Warehouse - Refrigerated |

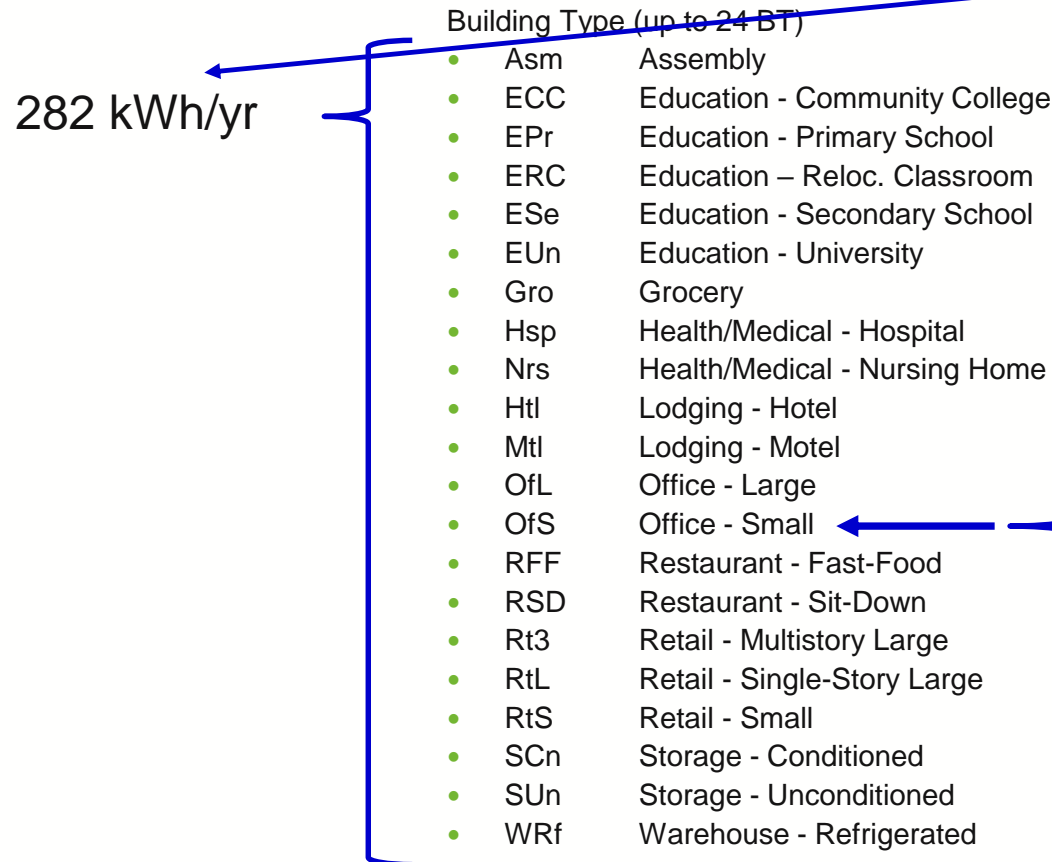
Parallel Path Approach – eTRM / HVAC

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282	0.106	1.85	



24 x 8 x 2 = 384 models

Vintage (up to 8 Vint)

- 1975, existing building stock built before 1978
- 1985, existing building stock built between 1978 and 1992
- 1996, existing building stock built between 1993 and 2001
- 2003, existing building stock built between 2002 and 2005
- 2007, existing building stock built between 2006 and 2009
- 2011, existing building stock built between 2010 and 2013
- 2014, existing building stock built after 2013

Base Case



eQUEST

Measure Case



eQUEST

Parallel Path Approach – eTRM / HVAC

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AStdEUkWh	AStdEUkW	AStdEUtherm	
282	0.106	1.85	

Base Case



eQUEST

Measure Case



eQUEST

(versus)

- Heat Maps

- Base, Measure, Savings
 - Electric / Gas

- Daily Profiles

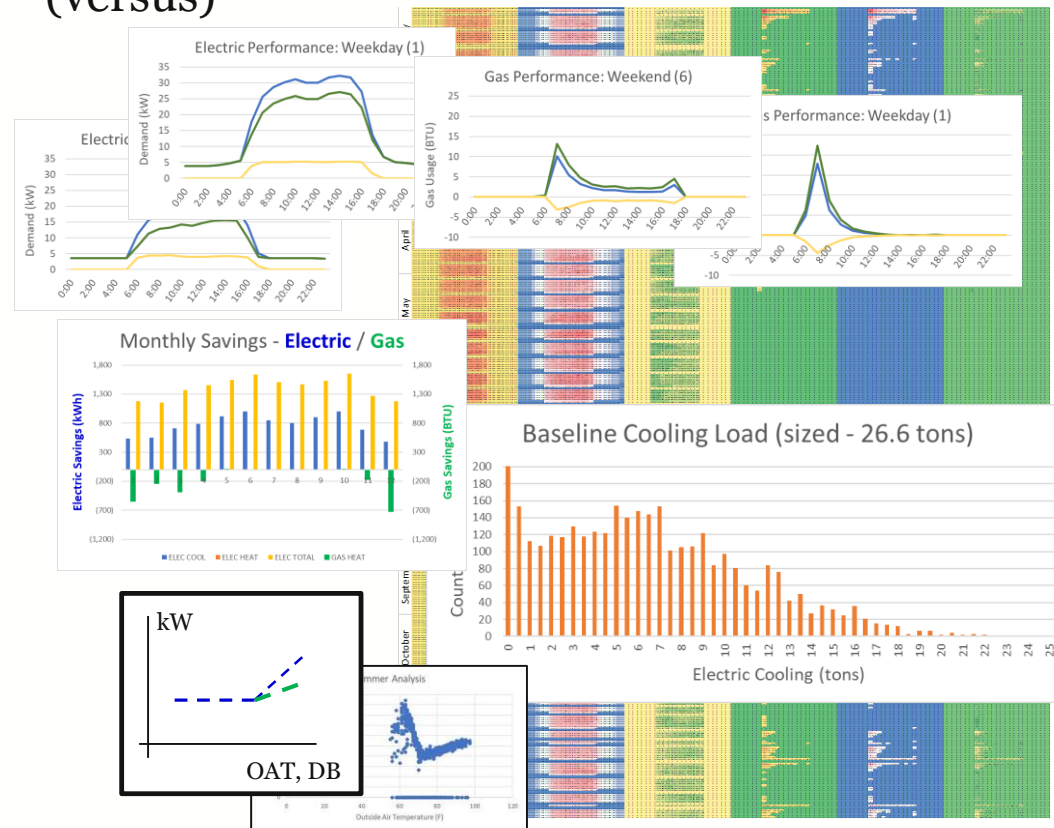
- Weekday, Weekend
 - Electric / Gas

- Monthly Usage

- Cooling Load Histogram

- Graphs (OAT vs kW)

- And more...



DEER Measure Process

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1. Background Info

- Existing Workpapers and EAD tables
- Get “Measure ID” and understand permutations

2. Download Savings

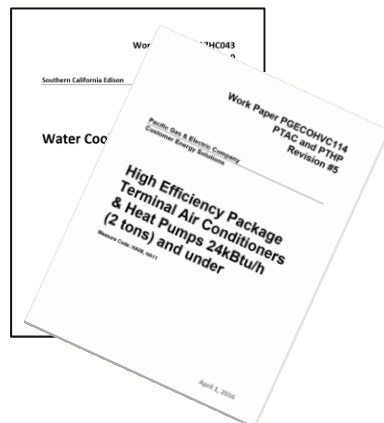
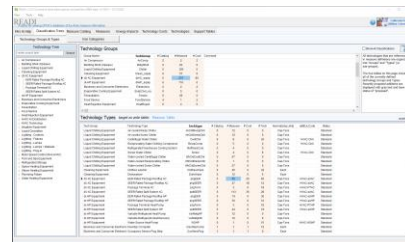
- READi
- Download full set of impact values and measure definition
- Weighting

3. Reproduce Savings

- MASControl
- Generate building models that form basis for permutation values

4. Measure Model Parameters

- *.INP / *.BDL
- Compare Base and Measure Case models

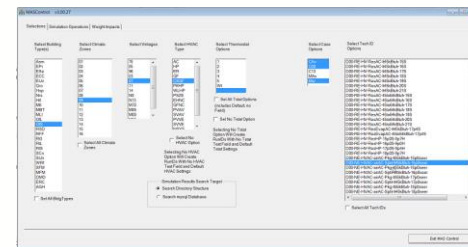
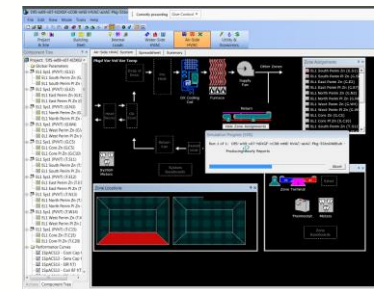
This workbook documents the energy impact weights used in DEER. These weights are used to "roll up" the energy impact records associated with DEER's measures into new energy impact records.

The weights are calculated and documented in the "Measure Weighting" worksheet in the DEER workbook. The "Measure Weighting" worksheet is located in the "Measure Weighting" folder in the DEER workbook.

The following process outlines the measure weighting process to create new energy impact records:

1. A measure is selected in DEER and the associated energy impacts are reviewed for the measure.
2. The energy impacts are reviewed for the measure.
3. The energy impacts are reviewed for the measure.

For example, the "High Efficiency Package & Heat Pumps 24kBtu/h (2 tons) and under" measure is selected in DEER. The associated energy impacts are reviewed for the measure.

DEER Measure Process (part 2)

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5. Implementation Summary

- Claims data
- Actually being done in parallel to be available early in the process

6. Measure Summary

- Measure summary template
- Strategically choose comparison

7. Measure Report

- Power Point
- Summary of key findings and questions

8. Feedback

- Weekly meeting
- Get feedback to define measure; improve process

Est No.	Ref No.	Name	Implement Location	PA	MeasureID	MeasureDescription	MeasureID
15.02	15.02	Economizer Controls	PA		190294	Economizer Control Replacement on AC Unit with 1-10VAC Com-EconoCtrl rep	190294
					190295	Economizer Control Replacement on Heat Pump 1-10VAC Com-EconoCtrl rep	190295
					190296	Economizer Control Adjustment on AC Unit with 1-10VAC Com-EconoCtrl ad	190296
					190297	Economizer Control Adjustment on Heat Pump 1-10VAC Com-EconoCtrl ad	190297
					190300	Economizer Control Adjustment on Variable Volume 1-10VAC Com-EconoCtrl ad	190300
					190301	Economizer Control Adjustment on AC Only Units 1-10VAC Com-EconoCtrl ad	190301
					190302	Economizer Control Adjustment on AC Unit with Gas 1-10VAC Com-EconoCtrl ad	190302
					190303	Economizer Control Adjustment on Heat Pump 1-10VAC Com-EconoCtrl ad	190303
					190304	Economizer Control Adjustment on AC Only Units 1-10VAC Com-EconoCtrl ad	190304
					190305	Economizer Control Replacement on Heat Pump 1-10VAC Com-EconoCtrl rep	190305
					190306	Economizer Control Replacement on AC Only Units 1-10VAC Com-EconoCtrl rep	190306
					190307	Economizer Control Replacement on Heat Pump 1-10VAC Com-EconoCtrl rep	190307
					190308	Economizer Control Replacement on AC Only Units 1-10VAC Com-EconoCtrl rep	190308
					190309	Economizer Control Replacement on Heat Pump 1-10VAC Com-EconoCtrl rep	190309
					190310	Economizer Control Replacement on AC Only Units 1-10VAC Com-EconoCtrl rep	190310
					190311	Economizer Control Replacement on Heat Pump 1-10VAC Com-EconoCtrl rep	190311
					190312	Economizer Control Replacement on AC Only Units 1-10VAC Com-EconoCtrl rep	190312
					190313	Economizer Control Replacement on Heat Pump 1-10VAC Com-EconoCtrl rep	190313
					190314	Economizer Control Replacement on AC Only Units 1-10VAC Com-EconoCtrl rep	190314
					190315	Economizer Control Replacement on Heat Pump 1-10VAC Com-EconoCtrl rep	190315
					190316	Economizer Control Replacement on AC Only Units 1-10VAC Com-EconoCtrl rep	190316
					190317	Economizer Control Replacement on Heat Pump 1-10VAC Com-EconoCtrl rep	190317
					190318	Economizer Control Replacement on AC Only Units 1-10VAC Com-EconoCtrl rep	190318
					190319	Economizer Control Replacement on Heat Pump 1-10VAC Com-EconoCtrl rep	190319
					190320	Economizer Control Replacement on AC Only Units 1-10VAC Com-EconoCtrl rep	190320
					190321	Economizer Control Replacement on Heat Pump 1-10VAC Com-EconoCtrl rep	190321
					190322	Economizer Control Replacement on AC Only Units 1-10VAC Com-EconoCtrl rep	190322
					190323	Economizer Control Replacement on Heat Pump 1-10VAC Com-EconoCtrl rep	190323
					190324	Economizer Control Replacement on AC Only Units 1-10VAC Com-EconoCtrl rep	190324
					190325	Economizer Control Replacement on Heat Pump 1-10VAC Com-EconoCtrl rep	190325
					190326	Economizer Control Replacement on AC Only Units 1-10VAC Com-EconoCtrl rep	190326
					190327	Economizer Control Replacement on Heat Pump 1-10VAC Com-EconoCtrl rep	190327
					190328	Economizer Control Replacement on AC Only Units 1-10VAC Com-EconoCtrl rep	190328
					190329	Economizer Control Replacement on Heat Pump 1-10VAC Com-EconoCtrl rep	190329
					190330	Economizer Control Replacement on AC Only Units 1-10VAC Com-EconoCtrl rep	190330
					190331	Economizer Control Replacement on Heat Pump 1-10VAC Com-EconoCtrl rep	190331
					190332	Economizer Control Replacement on AC Only Units 1-10VAC Com-EconoCtrl rep	190332
					190333	Economizer Control Replacement on Heat Pump 1-10VAC Com-EconoCtrl rep	190333
					190334	Economizer Control Replacement on AC Only Units 1-10VAC Com-EconoCtrl rep	190334
					190335	Economizer Control Replacement on Heat Pump 1-10VAC Com-EconoCtrl rep	190335
					190336	Economizer Control Replacement on AC Only Units 1-10VAC Com-EconoCtrl rep	190336
					190337	Economizer Control Replacement on Heat Pump 1-10VAC Com-EconoCtrl rep	190337
					190338	Economizer Control Replacement on AC Only Units 1-10VAC Com-EconoCtrl rep	190338
					190339	Economizer Control Replacement on Heat Pump 1-10VAC Com-EconoCtrl rep	190339
					190340	Economizer Control Replacement on AC Only Units 1-10VAC Com-EconoCtrl rep	190340

