


This is a PDF version of a training designed to be delivered in person, via video conference, or in video format.

Notes are included on many pages to supplement the slide content.



LEARNING OBJECTIVES

At the end of this course, the learner will be able to:

- 1) **UNDERSTAND** what the CET is and its role in energy efficiency programs.
- 2) **PREPARE** a CET input file containing valid measure and program data.
- 3) **INTERFACE** with the CET and initiate a model run with clear understanding of run parameters.
- 4) **INTERPRET** CET output files, including benefits, costs, and benefit-cost ratios.

The objective for this training is for learners to UNDERSTAND what the CET is and learn how to PREPARE valid CET input files, INTERFACE with the CET online, and INTERPRET CET cost effectiveness results.

LEVEL SETTING

THIS COURSE IS FOCUSED ON
SUCCESSFULLY RUNNING THE CET

For those with a working knowledge of
California energy efficiency policies.

Developed according to the CET as of December 2020
and is provided without warranty.

This course is designed for users working in a
Microsoft Windows operating system.

This course is designed for those with a working knowledge of California energy efficiency (EE) policies. For more information on EE policies and programs under the purview of the California Public Utility Commission (CPUC), visit the CPUC EE webpage.

<https://www.cpuc.ca.gov/energyefficiency/>

This course was developed according to the CET as of December 2020 and is provided without warranty. The CET's functionality and its input and output fields are likely to change over time.

This course is designed for users working in a Microsoft Windows OS. Mac users may be able to simulate this using Parallels or Bootcamp or other methods.

LEVEL SETTING

THIS COURSE IS FOCUSED ON
SUCCESSFULLY RUNNING THE CET

This course WILL NOT cover:

Fundamentals of demand-side program and projects
cost effectiveness theory or policies.

Policies and procedures for determining
energy savings, measure costs or other input values.

CET inputs and outputs that do not materially
impact EE cost effectiveness results.

Program or portfolio design or optimization.

ABOUT THIS COURSE

This course was funded by Pacific Gas and Electric Company under the auspices of the California Public Utilities Commission.

Developed and delivered by:

Halley Fitzpatrick, PE

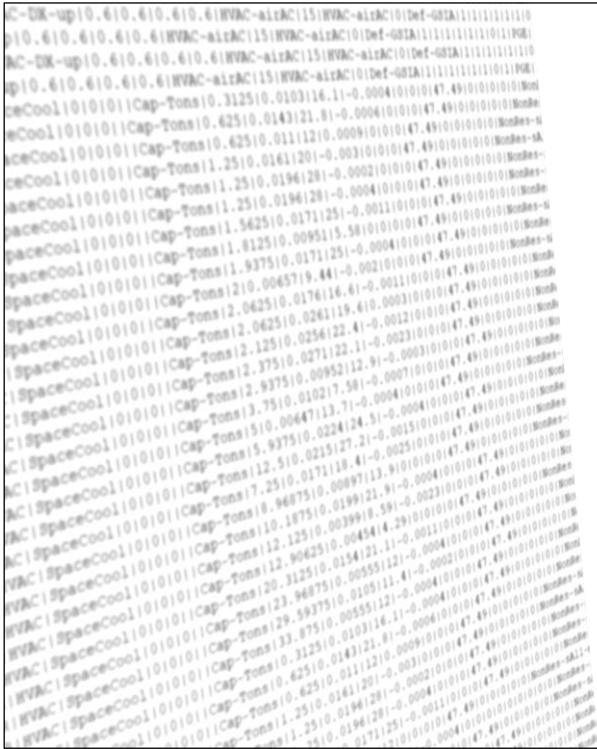


Relevant Experience

- 1+ years EE and cost effectiveness consulting (Laguna Creek LLC, EMI)
- 7 years EE programs, policy and education (PG&E)
- 6 years lighting & daylighting design (Arup, Atelier Ten)
- 1 year solar microgrid technology enablement (EVI)



Note: The avatar artwork above and similar artwork on other slides are Bitmoji avatars. The inclusion of Bitmoji avatars does not suggest or imply partnership, sponsorship, or endorsement by Bitmoji or Snap Inc.



AGENDA

- A. **CET Background** | What the CET is, how it functions within the CA EE policy environment, and learning the way around the CET website.
- B. **CET User Process**
 1. **Prepare CET input files** | create inputs using Microsoft Excel, a text editor, and a file compression tool.
 2. **Interface with the CET** | Create a CEDARS community account, initiate a CET model run with appropriate parameters.
 3. **Interpret CET output files** | Compile downloaded files in Microsoft Excel and understand the cost effectiveness results.

CET BACKGROUND



What is the CET



Glossary and links



CET process landscape



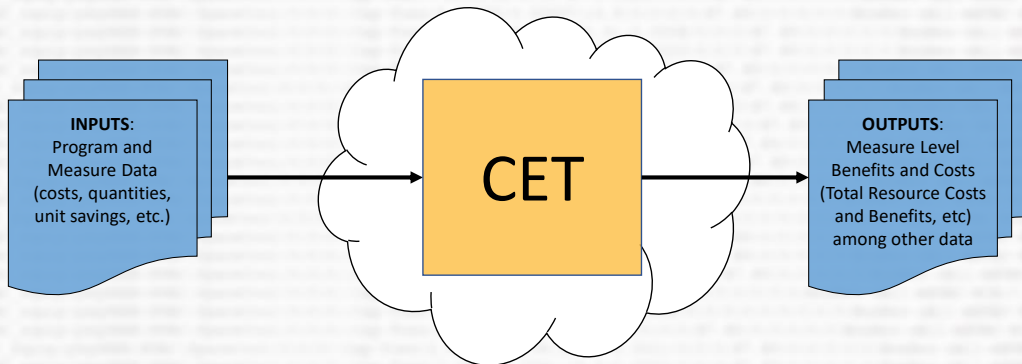
Getting started

? WHAT IS THE CET?

CET stands for Cost Effectiveness Tool.

The CET is an online tool designed for the CPUC to determine the cost effectiveness and examine other properties of EE programs and portfolios.

It can *also* be used by the community, such as third-party implementers, for similar purposes.



The CET was primarily designed for use by the CPUC to determine the cost effectiveness of EE programs (in accordance with the California Standard Practice Manual) and includes several features that allow the CPUC to examine the make-up of EE programs and portfolios that do not necessarily impact cost effectiveness. The CET executes layers of data validation to help users decrease instances of incorrect or non-compliant outputs.

The CET was recently converted from an Excel-based tool to a cloud-based (online) tool. The current cloud-based tool is freely available for use by any interested party or stakeholders, there is no current desktop or excel based version of the CET.



GLOSSARY & LINKS TO MORE INFO

3P: Third Party, e.g. an EE program implementer

C/E: Cost Effectiveness

CEDARS: California Energy Data and Reporting System (<https://cedars.sound-data.com/>)

CET: Cost Effectiveness Tool (https://cedars.sound-data.com/cet_ui/)

CEV: Cost Effectiveness Value, specifically a *valid* cost effectiveness input value

CPUC: California Public Utility Commission (<https://www.cpuc.ca.gov/>)

CSV: Comma Separated Value file format

DEER: Database for Energy Efficiency Resources (<http://www.deeresources.com/>)

DER: Distributed Energy Resources (https://www.cpuc.ca.gov/Demand_Side/)

EE: Energy Efficiency (<https://www.cpuc.ca.gov/energyefficiency/>)

PA: Program Administrator (e.g. an IOU, CCA, or REN)

PAC: Program Administrator Cost (refer to the California Standard Practice Manual, October 2001, for more info)

READI: Remote Ex-Ante Database Interface (<http://www.deeresources.com/index.php/deer-versions/readi>)

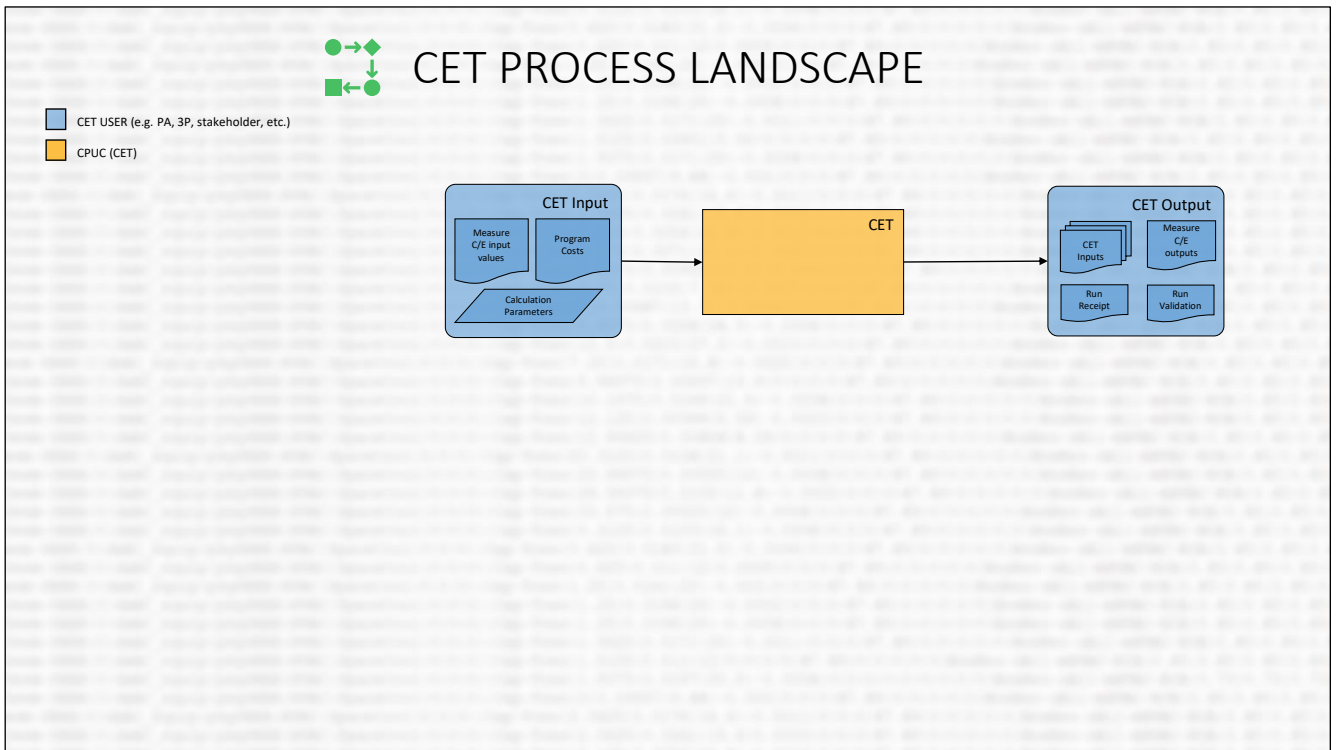
SPM: Standard Practice Manual (https://bit.ly/2DI0azB*)

SW: Statewide

TRC: Total Resource Cost (refer to the California Standard Practice Manual, October 2001, for more info)

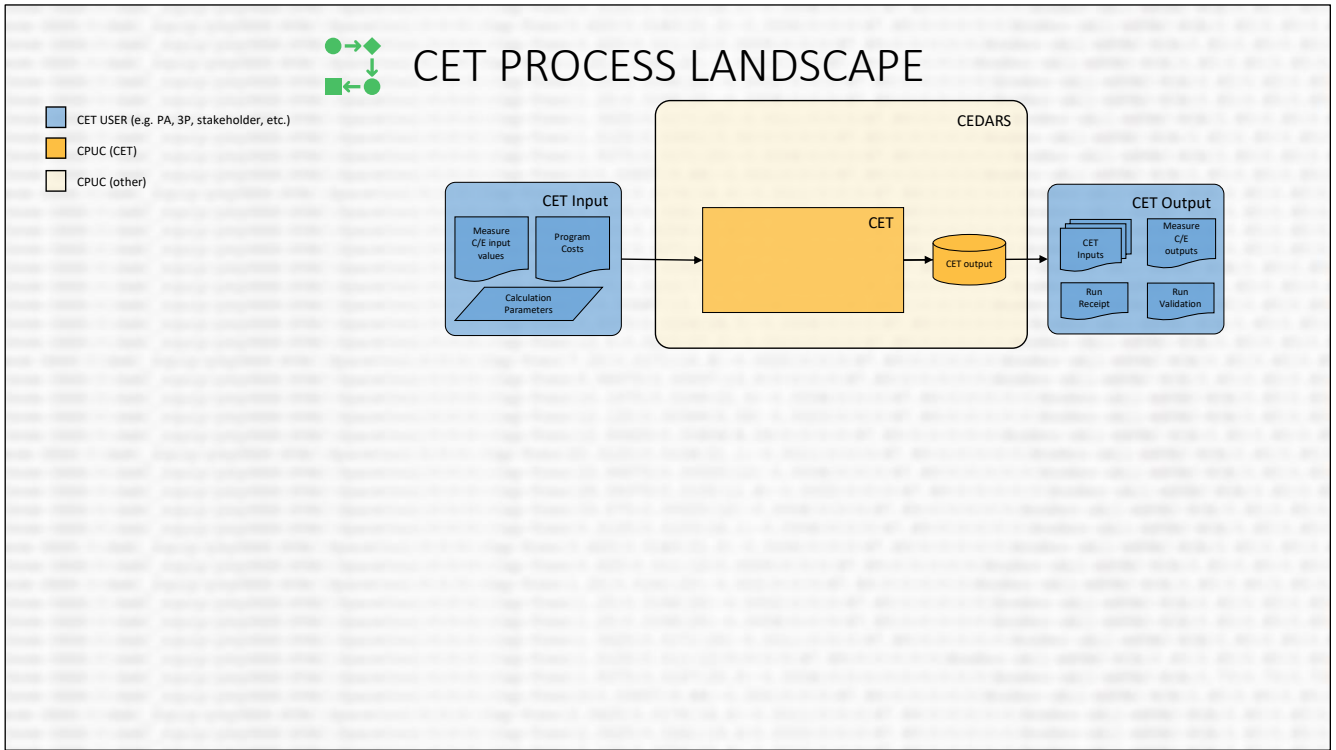
Full direct link for the Standard Practice Manual:

[https://www.cpuc.ca.gov/uploadedFiles/CPUC_Public_Website/Content/Utilities_and_Industries/Energy - Electricity and Natural Gas/CPUC STANDARD PRACTICE MANUAL.pdf](https://www.cpuc.ca.gov/uploadedFiles/CPUC_Public_Website/Content/Utilities_and_Industries/Energy_-_Electricity_and_Natural_Gas/CPUC_STANDARD_PRACTICE_MANUAL.pdf)

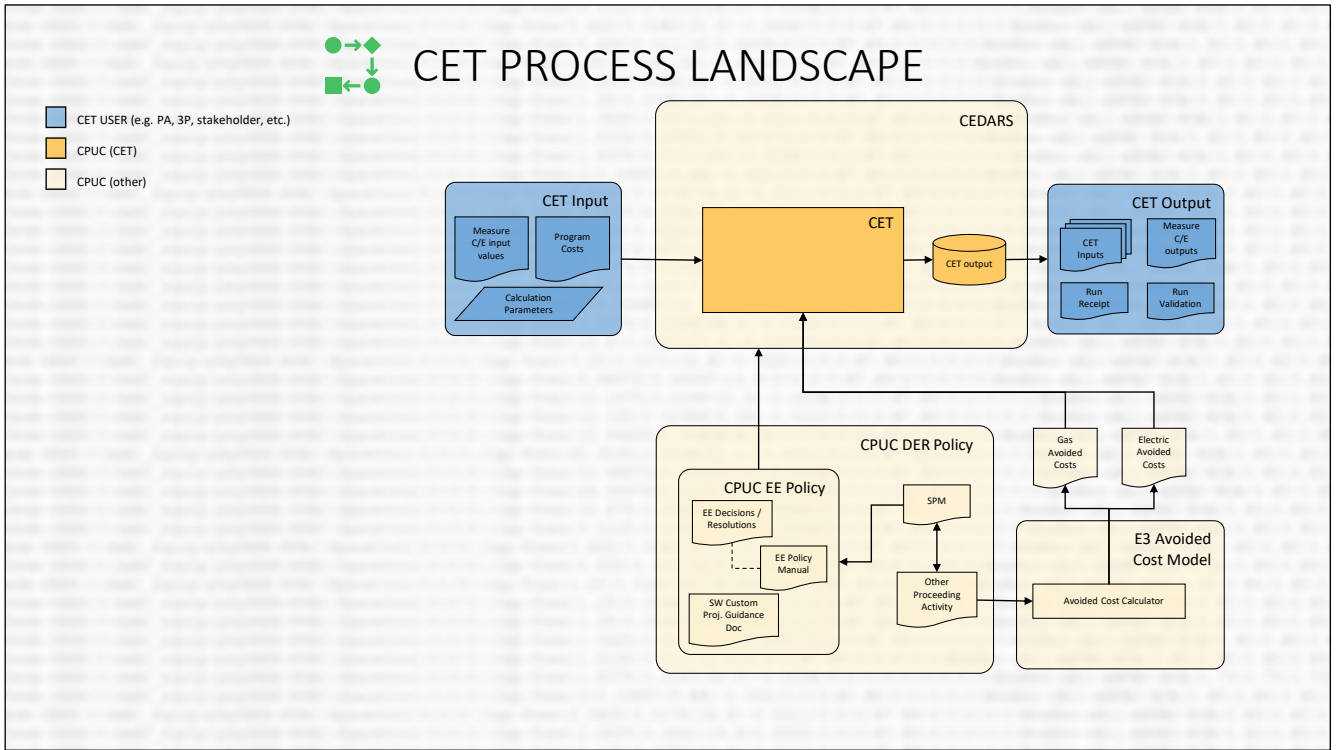


Much of the functionality and inner-mechanics of the CET are directly driven by decisions or data that happen outside the CET. Let's take a moment to discuss how the CET works in relation to the overall landscape of EE policies, programs, and data.

This image shows the basic user data flow through the CET. In the following slides, we'll cover key components that inform how the CET works.

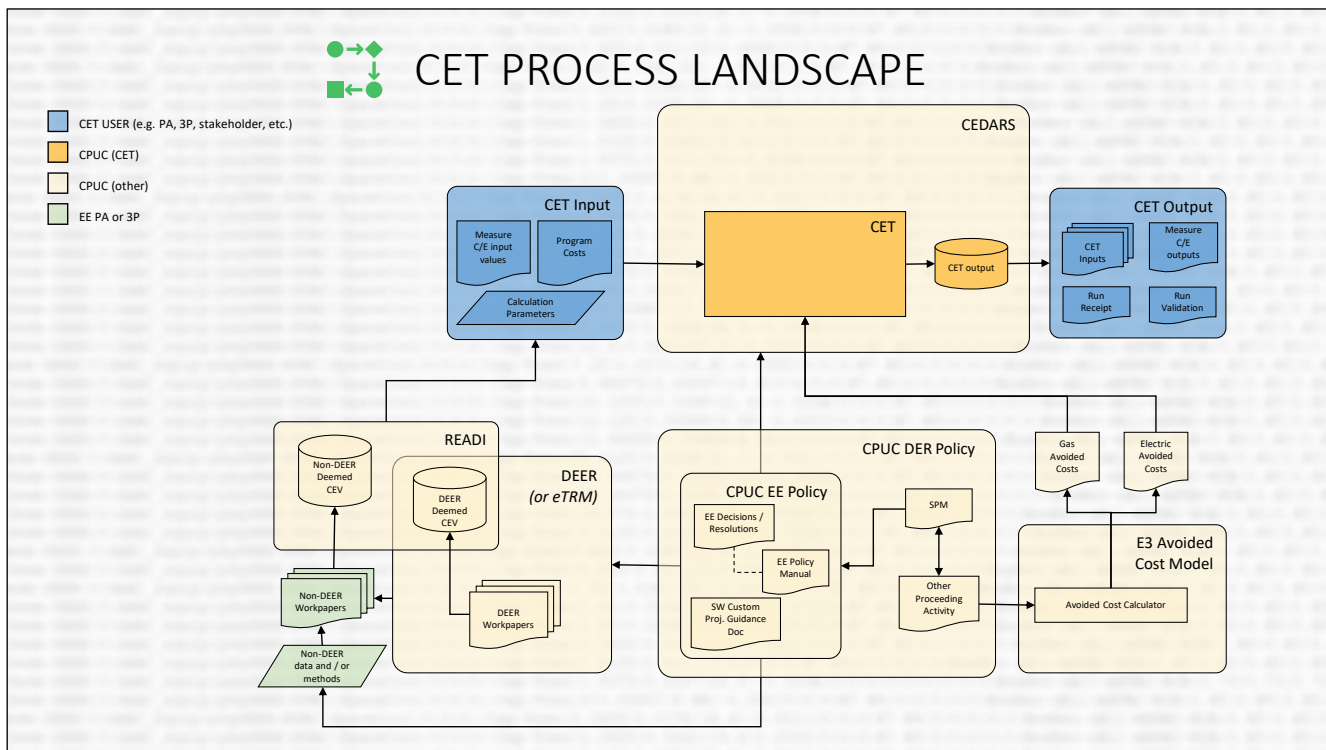


The current version of the CET is available through the CPUC’s California Energy Data and Reporting System (CEDARS) platform. When a community user uploads a CET input into the CET, the CET run results are stored on the CEDARS and may be accessed by the user at anytime.



Much of the functionality and inner-mechanics of the CET are directly driven by decisions or data which are outside of the CET. For example, what cost effectiveness apply to EE and mathematically how they are calculated are set by the CPUC Decisions and according to California Standard Practice Manual. Neither the CET, nor its developers, determine how avoided cost benefits associated with energy savings should be calculated, those are determined in a separate model called the Avoided Cost Calculator.

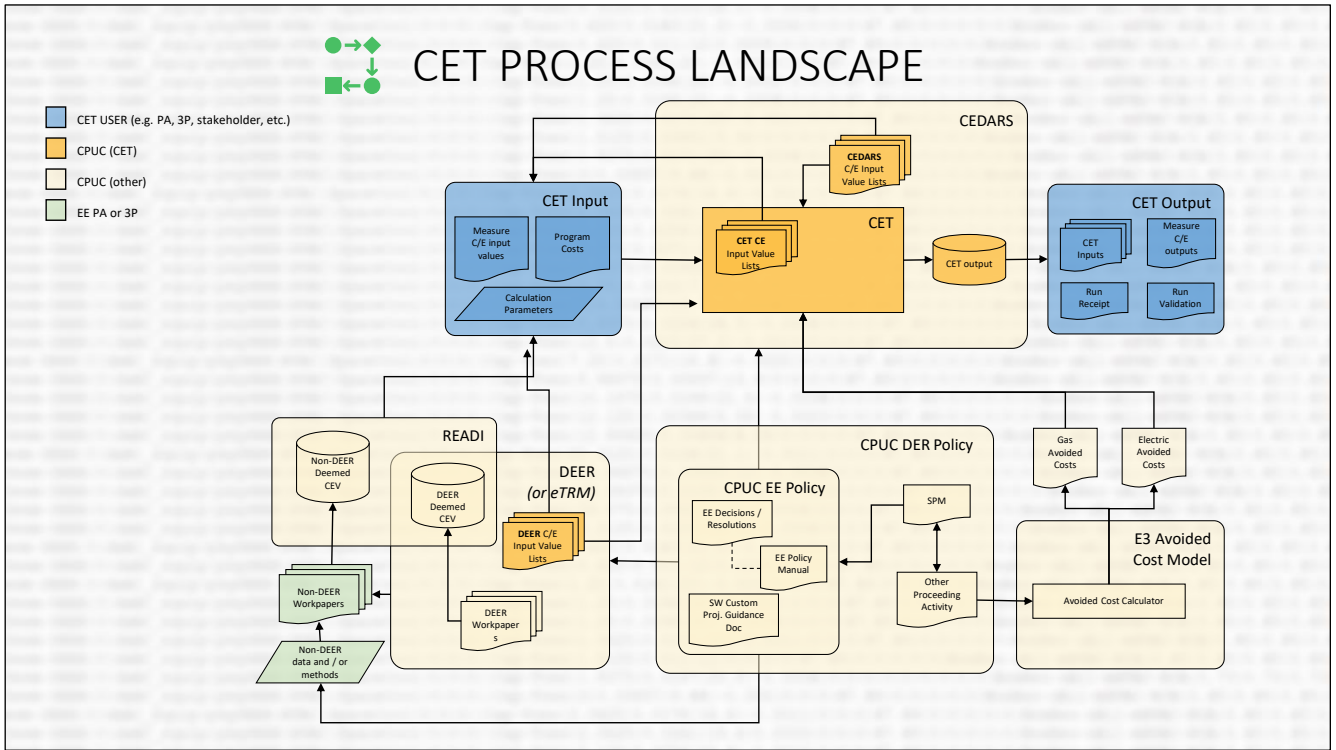
Introduction to using the CET for cost effectiveness results



Further, deemed savings and other input values are determined and cataloged outside of the CET. DEER and READI are important resources to complement your CET analysis, especially if your analysis includes deemed measures. Beginning in 2021 the CPUC plans to shift from DEER to eTRM.

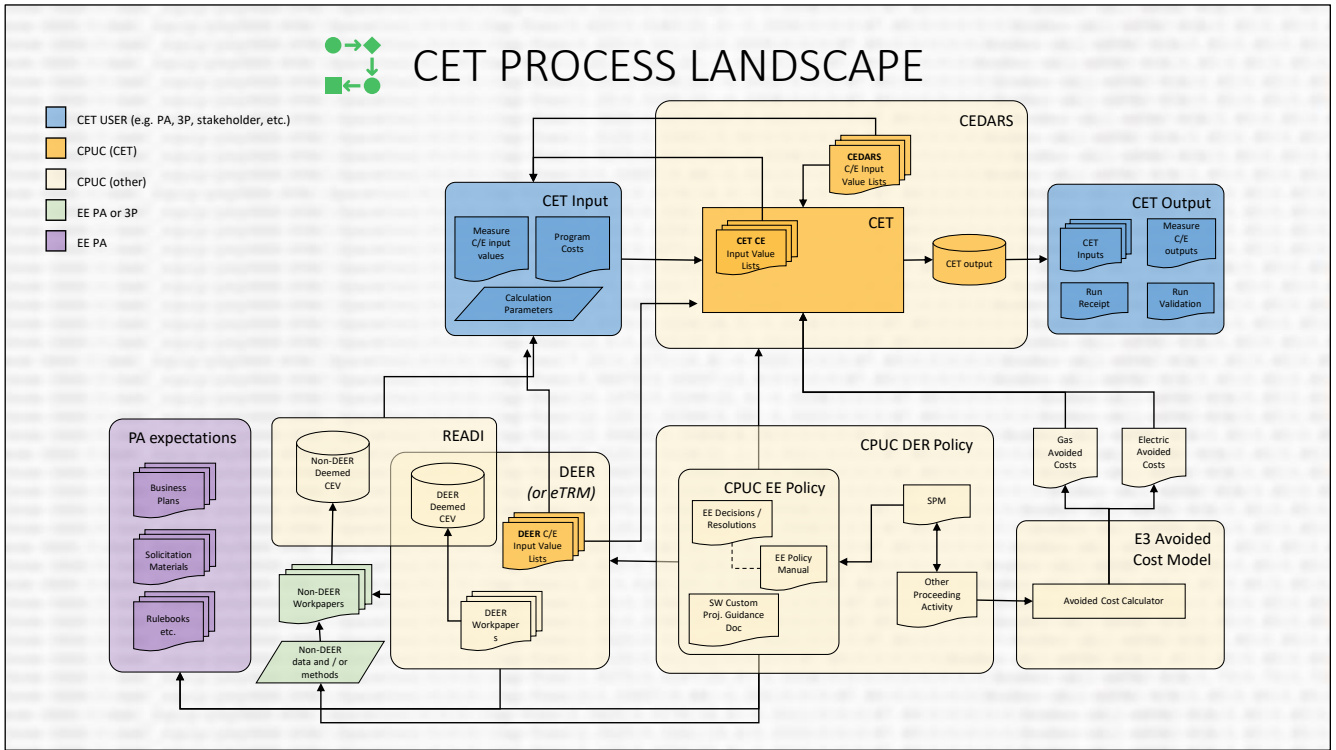
Its important to note, that while the CET validates many fields, it does NOT cross check input savings values to ensure they are valid deemed savings values.

Introduction to using the CET for cost effectiveness results

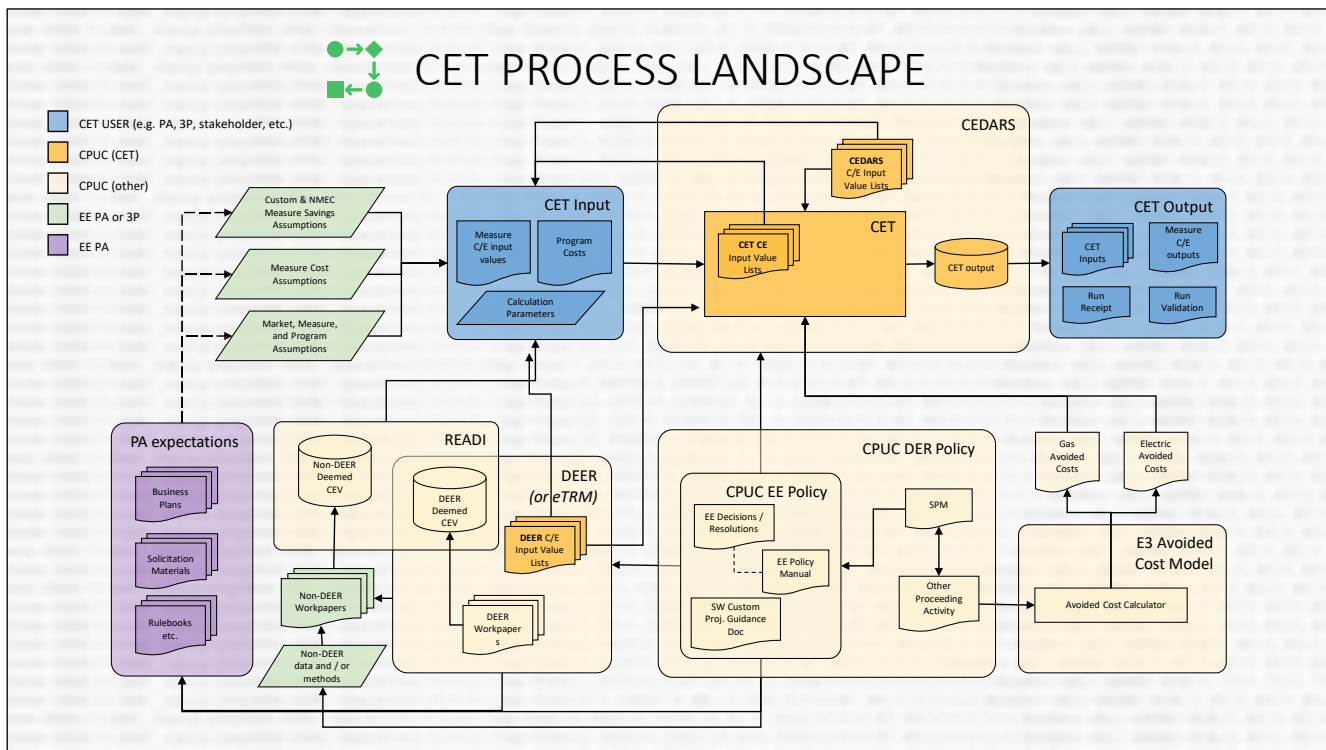


The CET does validate many other input values, however DEER, CEDARS, and the CET itself each maintain a specification for cost effectiveness inputs which typically must be followed precisely (more on that later).

Introduction to using the CET for cost effectiveness results



Another item, that is clearly outside of the CET, is Program Administrator expectations which should be considered as PAs have different portfolio needs and can have a different interpretations of CPUC policies.



Lastly, and arguably most importantly, are data relative to the program or projects. These data can include custom and meter-based savings estimates, measure costs and incentives, market assumptions and much more.

Ultimately, all the data and references we discussed are fed into CET inputs and/or the CET tool itself to ultimately calculate the cost effectiveness of measures and programs.

▶ GETTING STARTED

Create a “Community” CEDARS account:

<https://cedars.sound-data.com/>

<https://cedars.sound-data.com/accounts/registration/>

The image shows a screenshot of the CEDARS website and a registration form. The website header includes the CEDARS logo and navigation links: Programs, Monthly Reports, Budget Filings, Quarterly Claims, Data, Register, and Log In. The main content area features a 'Welcome to CEDARS' message and a 'How CEDARS can help you' section with three categories: Members of the public, Program administrators, and CPUC employees. The registration form on the right is titled 'Request a CEDARS account' and includes fields for Username, Email, First name, Last name, Password, and Password confirmation. An Affiliation dropdown menu is open, showing 'Community' as the selected option, with other options including California Public Utilities Commission (CPUC), Bay Area Regional Energy Network (BAY), Marin Clean Energy (MCE), Pacific Gas & Electric (PGE), Southern California Edison (SCE), Southern California Gas (SCG), Southern California Regional Energy Network (SCR), San Diego Gas & Electric (SDGE), Lancaster Choice Energy (LCE), Tri-county Regional Energy Network (TCR), and Redwood Coast Energy Authority (RCEA).

Before you can access the CET portion of the CEDARS website, you will need to create an account. Click Register to start the process.

This training only covers Community accounts, which can be used by any community member (including stakeholders, intervenors, implementers, or ratepayers).

Note that the PA affiliations are for reporting staff only. Unless you are personally responsible for submitting or reviewing PA claims and filings, the Community affiliation is likely the correct affiliation.

▶ GETTING STARTED

CET Dashboard & Resources

CEDARS
CALIFORNIA ENERGY
DATA AND REPORTING SYSTEM

Programs Monthly Reports Budget Filings Quarterly Claims **Cost Effectiveness Tool (CET)** Data DEMO.USER.2020 ▾

CET
COST EFFECTIVENESS TOOL

Announcements User Guide Specification Run CET

CET Upload History

Items per page 10 ▾

Job ID	Filename	Upload time (PST)	First Year	Avoided Cost	Market Effects	Validation	QC Feedback	CET Output	Summary
There are no CET uploads for your user.									

Once registered you can access the CET tab of CEDARS. This page shows a users history of CET runs and contains relevant CET links. We'll discuss running the CET later, but let's take a moment to view the "Specification" section now.

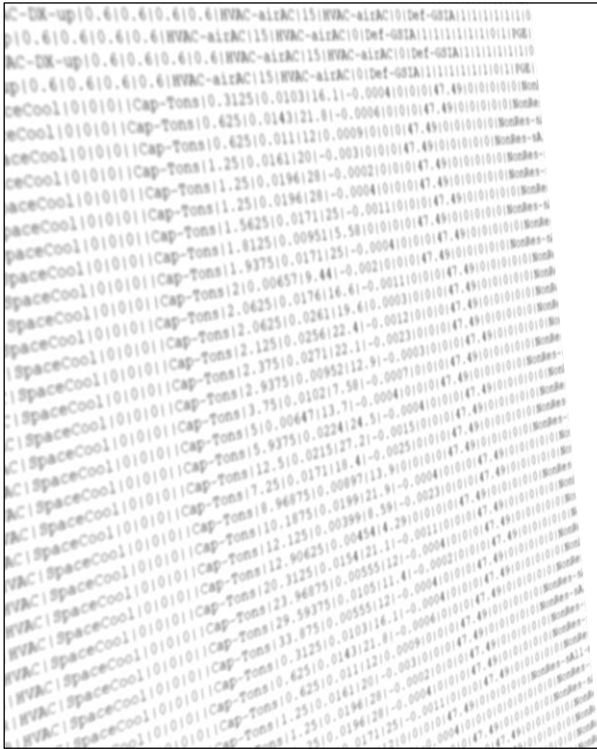
▶ GETTING STARTED

The screenshot displays the CEDARS California Energy Data and Reporting System interface. The top navigation bar includes 'Programs', 'Monthly Reports', 'Budget Filings', 'Quarterly Claims', 'Cost Effectiveness Tool (CET)', and 'Data'. The user is logged in as 'DEMO.USER.2020'. The left sidebar shows the 'Specification' section selected. The main content area is divided into three panels:

- CET CEI Value Lists:** Contains a list of valid inputs for all CET fields, categorized by source (DEER, CET, or CEDARS). The list includes items like 'Avoided Cost Combo', 'Building Type', 'Combustion Type', etc.
- CEI Source of Truth Files:** Lists files used for validation, such as 'cet_spec.sql', 'validation_rules.csv', and 'warning_rules.csv'. It also provides instructions on how to download and use these files.
- Documentation Resources:** Provides links to various documentation files, including '2021 Electric and Gas Avoided Cost Data' and '2021 Cost Effectiveness Tool (CET) database'.

The Specification section contains everything you need to produce a CET input file that meets CET specifications.

- **CET CEI Value Lists:** Contains lists of valid inputs for all CET fields that are subject to validation.
- **CEI Source of Truth Files:** Contains a zip file that includes a sample valid input file and several other useful files.
- **Documentation Resources:** Other important references, including Avoided Cost data used to calculate benefits and detailed CET database information.



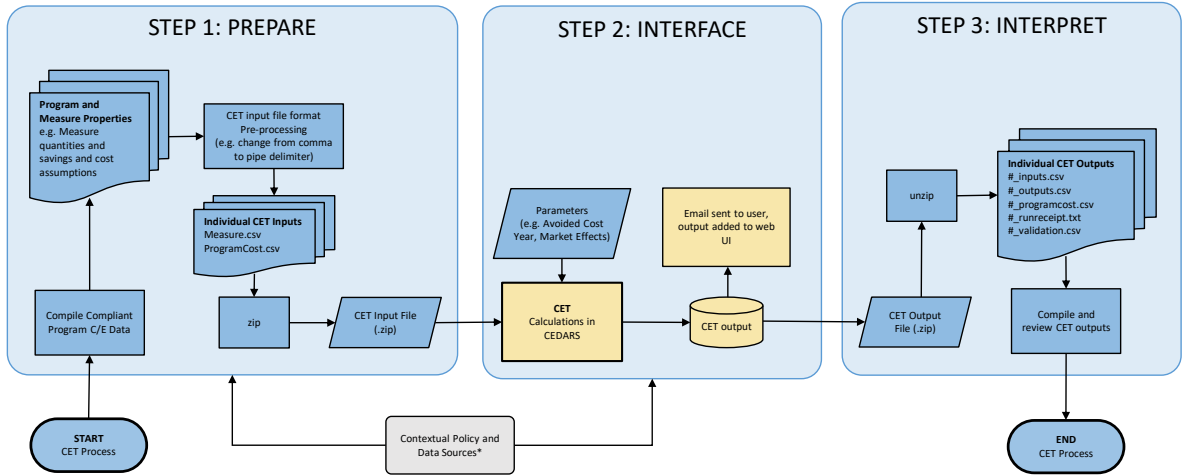
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The rest of this training will focus on the CET user process.

CET USER PROCESS

■ CET USER (e.g. PA, 3P, Stakeholder, etc.)
 ■ CPUC (CET)
 ■ OTHER*



*refer to items on the CET Process Landscape that direct to CET Input for more detail

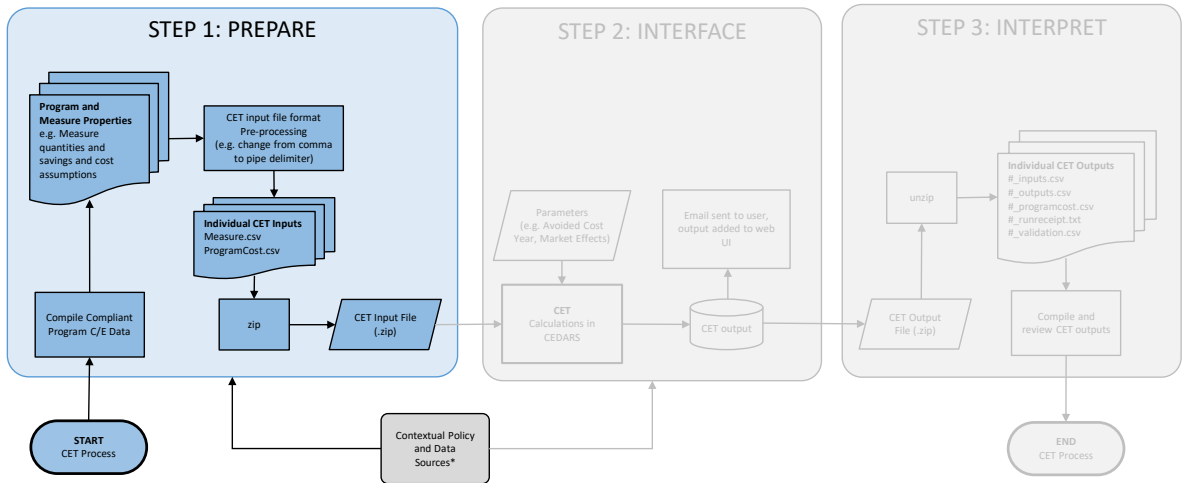
This image shows a closer look within each step that we'll cover in detail in the remainder of this training, one step at a time.

Cooling capacity data for various HVAC systems, including details like Cap-Tons and associated values.

AGENDA

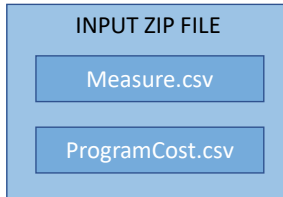
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STEP 1: PREPARE



Step 1 is to prepare a CET input file. Whether an input represents an existing program, a planned program, or independent cost effectiveness analysis, you'll start with compiling program and measure data. Once you have the measure and program data you wish to include in your CET run, you will be ready to generate your input file.

INPUT FILE



INPUT ZIP FILE

- Must contain two CSV files named as shown
- Can create using Windows built in compression tool or third-party application such WinZip, 7Zip, or WinRAR
- An example file is available for download on the CET website (discussed later)

The CET input file must be a ZIP file that contains two csv files, named exactly “Measure.csv” and “ProgramCost.csv”

INPUT FILE

MEASURE FILE

INPUT ZIP FILE

Measure.csv

ProgramCost.csv

Inputs for Lifecycle Savings

- Installed unit quantities
- Unit annual savings (gas and elec, 1st + 2nd baseline)
- Measure life (e.g. EUL, RUL)
- Adjustment factors (e.g. IRR, GRR, NTG)

Inputs for Costs

- Measure cost (1st + 2nd Baseline)
- Rebates and incentives (all types + DI costs)
- Installation Year + quarter

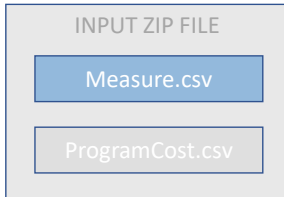
Inputs for Benefits / Savings

- Installation Year + quarter
- Avoided Cost Combo & Gas Savings Profile

The Measure.csv file contains all measure-specific data, including all inputs needed to calculate measure lifecycle savings and determine measure benefits and costs. We'll explore the specific input fields shortly.

The measure input file is the backbone of CET calculations as the CET calculates the benefits and costs of measures line-by-line before determining cost effectiveness of programs or portfolios.

INPUT FILE



MEASURE FILE

Notable measure.csv inputs that do not materially impact C/E results*

MeasCode	PreDesc	MarketEffectsBenefits
MeasDescription	StdDesc	MarketEffectsCosts
MeasureID	SourceDesc	RateScheduleElec
TechGroup	Version	RateScheduleGas
TechType	NTG_ID	
UseCategory	EUL_ID	
UseSubCategory	RUL_ID	
	GSIA_ID	

**unofficially, at this moment in time, for TRC and PAC, in the instructor's experience. Your results may vary.*

Many of fields in the Measure.csv file are important for EM&V purposes but do not materially effect cost effectiveness results of measures or programs.

The fields shown here may be important or have requirements for other purposes, but don't expect these fields to cause any changes to line-item or program level cost effectiveness.

INPUT FILE

PROGRAM COST FILE

INPUT ZIP FILE

Measure.csv

ProgramCost.csv

- Inputs for non-measure-related program costs
 - All program costs not otherwise captured in the Measure.csv file
- Must include one (and only one per year) row entry for every Program ID referenced in the Measure.csv
- All program costs entered in this file are treated the same, from a cost effectiveness perspective, regardless of category except for On-Bill Financing (OBF).

The ProgramCost.csv file contains program cost information for any program referenced in the Measure.csv file. The file should include all program costs that are not already included in the Measure.csv file.

For example,

If

Measure.csv file includes a total of \$400,000 of incentives for measures in Program A, and Program A has a total budget of \$1,000,000:

Then,

ProgramCost.csv file should include a line item for Program A, and a total of \$600,000 in program costs for Program A.

COMPILE VALID C/E INPUT DATA (FIELDS)

CEI Source of Truth Files

CEI Source of Truth files as of 2020/11/04:

- cet_spec.sql : Tables and Single Field QC.
- validation_rules.csv : Multi Field QC Rules.
- warning_rules.csv : Multi Field QC Warnings.
- Readme.txt : Syntax, high-level compliance, savings equations, cross-table validation.
- ★ cet_metadata.csv : What the fields in cet_spec.sql represent.
- cet_good.zip : Known-good sample upload.
- Changelog.txt : What's new in the Source of Truth files.

CET_SourceOfTruth.zip : Download all current SoT files in one single zipfile.

You may also browse all previous versions.

TableName	FieldName	FieldDescription
Measure	PA	The Program Administrator code
Measure	BldgType	Standard ExAnte Building Type (AKA Sub-Sector, previously in 2010-12 Implementation table)
Measure	ClaimYearQuarter	The quarter when the claim is being made; eg. '2013Q1'
Measure	CombustionType	Determines the rate of emission savings per MMBTU of reduced natural gas usage from gas conservation. (lbs of CO2, NOX, and PM-10). - Not a user input for PG&E. - Not used for SCE. - Select from a drop down list for SDG&E and SoCalGas. - Res Furnace is used as a default if there is no user selection.
Measure	Comments	Any comments related to filing
Measure	DeliveryType	Standard ExAnte method used to deliver the measure to the customer.
Measure	E3ClimateZone	Climate zone where EE measure is installed. Required for E3 cost effectiveness calc; Must be compatible with E3 Calculator (eg. '3A')
Measure	E3GasSavProfile	E3 Gas savings profile
Measure	E3GasSector	E3 Gas sector
Measure	E3MeaElecEndUseShape	E3 measure electric end use shape (i.e. load shape)
Measure	E3TargetSector	E3 target sector
Measure	EUL_ID	Specifies a row in EUL table that specifies the estimated useful life of the measure technology.
Measure	EUL_Yrs	Effective useful life of EE measure in years
Measure	CEInputID	Unique and persistent filing identifier
Measure	GSIA_ID	Reference to the Ex Ante Gross Savings and Installation Adjustment table.
Measure	InstallationRatekW	kW weighted installation rate for all measures included in the associated claim
Measure	InstallationRateKWh	kWh weighted installation rate for all measures included in the associated claim
Measure	InstallationRateTherm	Therm weighted installation rate for all measures included in the associated claim
Measure	MarketEffectsBenefits	CET field to specify measure-level market effects benefits, overrides CET default
Measure	MarketEffectsCosts	CET field to specify measure-level market effects costs, overrides CET default
Measure	MeasAppType	Standard ExAnte Measure application type (eg. ROB)
Measure	MeasCode	PA-specific Measure code
Measure	MeasDescription	Description of measure; should include enough information to allow understanding of what EE measure(s) being installed
Measure	MeasImpactType	MeasImpactType

As discussed previously, the measure.csv file contains fields that are used to calculate measure energy savings as well as benefits and costs. There are many unique measure input fields, most of which can impact cost effectiveness results.

A great way to get oriented to the fields is by downloading the cet_metadata.csv file from the CEI Source of Truth File section of the CET Specification page. This file includes a list of all Measure fields as well as Program Cost fields and their descriptions.

COMPILE VALID C/E INPUT DATA (VALID INPUTS)

CET CEI Value Lists

The value lists below provide all values valid in any year. The source of the value list is indicated; sources are DEER, CET, or CEDARS.

CEI value lists as of 2020/11/20 (Download All):

- Avoided Cost Combo **CET**
- Building Type **DEER**
- Combustion Type **CET**
- DEER_MeasureID **DEER**
- DEER_Sector **DEER**
- Delivery Type **DEER**
- E3 Climate Zone **CET**
- E3 Gas Saving Profile **DEER**
- E3 Gas Sector **CET**
- EUL **DEER**
- GSIA **DEER**
- ★ Measure Application Type **DEER**
- Measure Impact Type **DEER**
- Normal Unit **DEER**
- NTG **DEER**
- PA **CEDARS**
- Rate Schedule for Electricity **CET**
- Rate Schedule for Gas **CET**
- Sector **CEDARS**
- Technology Group **DEER**
- Technology Type **DEER**
- Use Category **DEER**
- Use Subcategory **DEER**
- Version **DEER**

Measure Application Type [Download This Data](#)

Code	Description	Start Year	End Year
AOE	Add-on Equipment	2019	-
AR	Accelerated Replacement	2019	-
BRO-Bhv	BRO-Behavioral	2019	-
BRO-Op	BRO-Operational	2019	-
BRO-RCx	BRO-Retrocommissioning	2019	-
BW	Building Weatherization	2019	-
ER	Early retirement	2013	2018
NC	New Construction	2013	-
NR	Normal Replacement (includes Replace on Burnout)	2019	-
RC	Retro-Commissioning	2013	2018
REA	Retrofit Add-On	2013	2018
RET	Retrofit	2013	2018
ROB	Replace on Burnout	2013	2018

The `cet_metadata.csv` file lists the fields and their descriptions but does not provide details for what values are valid for each field. The CET CEI Values lists on the CET Specification page is your resource for the latest lists of valid CET inputs for every fields that undergoes validation.

Here is an example of the valid inputs for Measure Application Type.

Note: The CET accepts "expired" inputs for CET calculations performed by community users. However, for official PA filings and claims, the CET only allows values that meet the current specification.

COMPILE VALID C/E INPUT DATA (AVOIDED COST COMBOS)

CET CEI Value Lists

The value lists below provide all values valid in any year. The source of the value list is indicated; sources are DEER, CET, or CEDARS.

CEI value lists as of 2020/11/20 (Download All):

- ★ Avoided Cost Combo **CET**
- Building Type **DEER**
- Combustion Type **CET**
- DEER_MeasureID **DEER**
- DEER_Sector **DEER**
- Delivery Type **DEER**
- E3 Climate Zone **CET**
- E3 Gas Saving Profile **CET**
- E3 Gas Sector **DEER**
- EUL **DEER**
- GSIA **DEER**
- Measure Application Type **DEER**
- Measure Impact Type **DEER**
- Normal Unit **DEER**
- NTG **DEER**
- PA **CEDARS**
- Rate Schedule for Electricity **CET**
- Rate Schedule for Gas **CET**
- Sector **CEDARS**
- Technology Group **DEER**
- Technology Type **DEER**
- Use Category **DEER**
- Use Subcategory **DEER**
- Version **DEER**

Avoided Cost Combo Download This Data

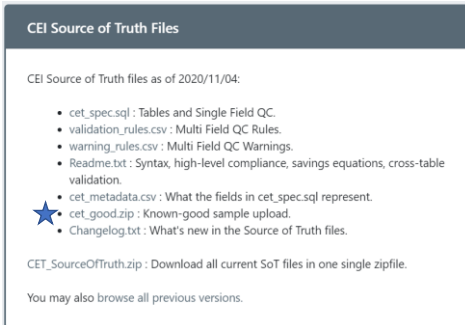
PA	E3TargetSector	E3MeaElecEndUseShape	E3ClimateZone	Start Year	End Year
PGE	Non_Res	DEER:HVAC_Duct_Sealing	12	2018	-
PGE	Res_New_Construction	42 = Res. Dir. Assist. Weatherization	13	2018	-
PGE	Res_New_Construction	44 = Res. Dir. Assist. Lighting	13	2018	-
PGE	Res	DEER:RefgFrzz_Recyc-Conditioned	4	2018	-
PGE	Res_New_Construction	38 = Res. Wall Insul. HP Heating	5	2018	-
PGE	AGRICULTURAL	14 = Agricultural	System	2018	-
PGE	Non_Res	DEER:HVAC_Duct_Sealing	1	2018	-
PGE	Non_Res	DEER:HVAC_Split-Package_AC	System	2018	-
SCE	Food_Store	Refrigeration	13	2018	-
SCE	K_thru_12_School	DayLt & Controls	16	2018	-
SCE	Large_Retail_Store	Economy_cycle-Ret	System	2018	-
SCE	Small_Office	Lo_Gain_Wndw-NC	14	2018	-

Avoided Cost Combos are a special type of CET input. Avoided Cost Combos are comprised of unique combinations of PA, E3TargetSector, E3MeaElecEndUseShape and E3Climate Zone – or in other words, unique combinations of PA, sector, load profile, and climate zone. Only combinations shown in the Avoided Cost Combo list are valid as CET inputs. This is an important feature of the CET as avoided costs are tied to load shapes which vary by PA and customer sector, and not all climate zones are applicable to each PA.

Note that there are several inputs related to Sector.

- “E3TargetSector” is used in combination with other inputs to determine Electric Benefits
- “E3GasSector” is used in combination with other inputs to determine Gas Benefits
- “Sector” is a descriptive / EM&V input that does not effect cost effectiveness results

COMPILE VALID C/E INPUT DATA (INPUT FILES)



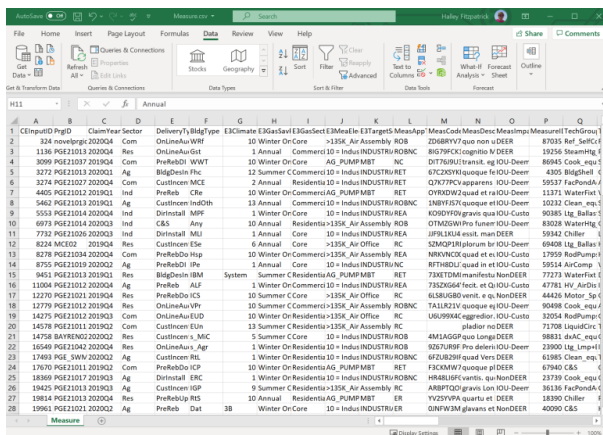
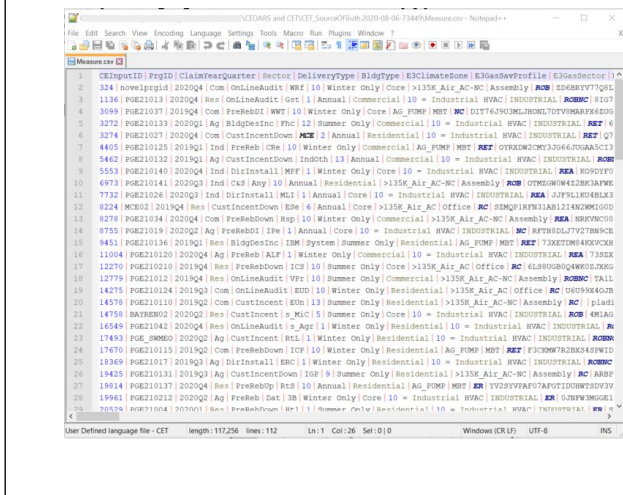
The final step to preparing the CET input zip file, which contains the measure.csv file and programcost.csv file. The CEI Source of Truth files on the CET Specification page includes a sample CET input file that is a great reference for familiarizing yourself with the file format.

Upon opening the measure.csv file in notepad or similar, you will notice that the file is not actually delimited with commas, its delimited with a pipe character (|) and that the contents can be hard to understand. But fear not...

READING THE SAMPLE MEASURE.CSV FILE...

TEXT EDITOR

SPREADSHEET (EXCEL)



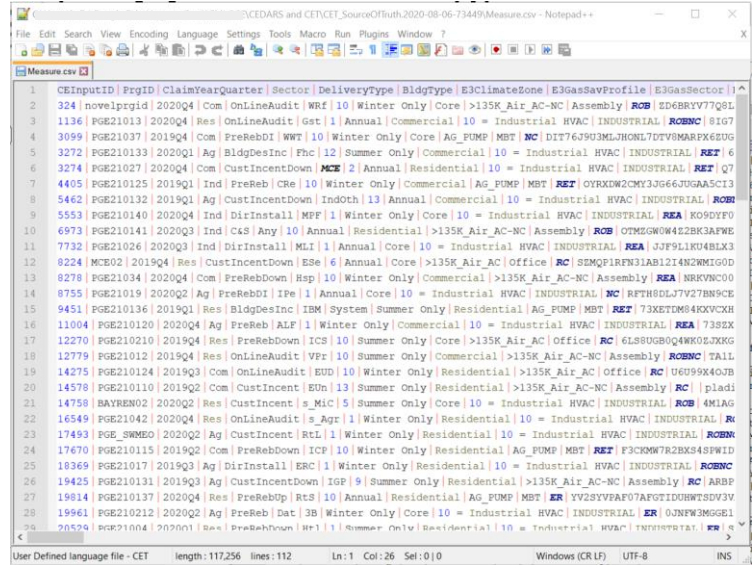
There are at least two convenient ways to more easily read and edit measure.csv files. We'll briefly explore two methods: one using a text editor and another using a spreadsheet.

TEXT EDITOR OPTION

Both the default Notepad application or an advanced text editor work.

Text editors are great for cases when you simply want to “find/replace” values, such as delimiters.

Advanced Text editors allow for custom views, like the one shown here, which better parses the data visually.



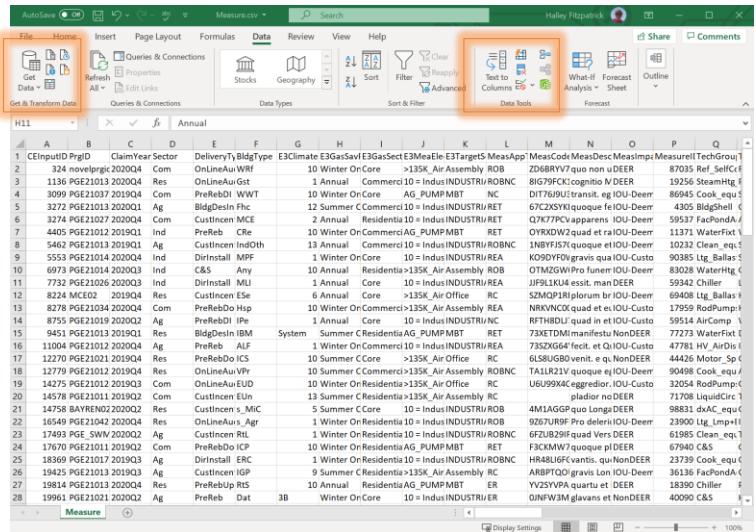
The screenshot shows a Notepad++ window with a custom column separator applied to a CSV file. The data is displayed in a grid format with vertical lines separating the columns. The columns are: CEInputID, PrgID, ClaimYearQuarter, Sector, DeliveryType, BldgType, E3ClimateZone, E3GasSavProfile, E3GasSector, novelprgid, 2020Q4, Com, OnLineAudit, WRF, 10, Winter Only, Core, >135K_Air_AC-NC, Assembly, ROB, EDGBRYV77Q8L, 1136, PGE21013, 2020Q4, Res, OnLineAudit, Gst, 1, Annual, Commercial, 10 = Industrial HVAC, INDUSTRIAL, ROBNIC, 8IG7, 3099, PGE21037, 2019Q4, Com, PreRebDI, WWT, 10, Winter Only, Core, AG_PUMP, MBT, NC, DIT76J9G3MLJHONL7DT8MARFK6ZUG, 3272, PGE210133, 2020Q1, Ag, BldgDesInc, Phc, 12, Summer Only, Commercial, 10 = Industrial HVAC, INDUSTRIAL, RET, 6, 3274, PGE21027, 2020Q4, Com, CustIncentDown, MCE, 2, Annual, Residential, 10 = Industrial HVAC, INDUSTRIAL, RET, Q7, 4405, PGE210125, 2019Q1, Ind, PreReb, CRE, 10, Winter Only, Commercial, AG_PUMP, MBT, RET, OYRKDW2CMY3JG66JUGAA5C13, 5462, PGE210132, 2019Q1, Ag, CustIncentDown, IndOth, 13, Annual, Commercial, 10 = Industrial HVAC, INDUSTRIAL, REA, 8, 5553, PGE210140, 2020Q4, Ind, DirInstall, MPF, 1, Winter Only, Core, 10 = Industrial HVAC, INDUSTRIAL, REA, KOSDYFO, 6973, PGE210141, 2020Q3, Ind, C&S, Any, 10, Annual, Residential, >135K_Air_AC-NC, Assembly, ROB, OTM6GW0422BK3AFWE, 7732, PGE21026, 2020Q3, Ind, DirInstall, MLI, 1, Annual, Core, 10 = Industrial HVAC, INDUSTRIAL, REA, JUF95LKH4BLX3, 8224, MCE02, 2019Q4, Res, CustIncentDown, ESe, 6, Annual, Core, >135K_Air_AC, Office, RC, SEMQPIRFN3LAB1214NZMIGOD, 8278, PGE21034, 2020Q4, Com, PreRebDown, Hsp, 10, Winter Only, Commercial, >135K_Air_AC-NC, Assembly, REA, NRRKWNCO, 8755, PGE21019, 2020Q2, Ag, PreRebDI, IPe, 1, Annual, Core, 10 = Industrial HVAC, INDUSTRIAL, NC, RFT8BLD7V278NVCX, 9451, PGE210136, 2019Q1, Res, BldgDesInc, IBM, System, Summer, Only, Residential, AG_PUMP, MBT, RET, 73KETD7278NVCX, 11004, PGE210120, 2020Q4, Ag, PreReb, ALF, 1, Winter, Only, Commercial, 10 = Industrial HVAC, INDUSTRIAL, REA, 73S2X, 12270, PGE210210, 2019Q4, Res, PreRebDown, ICS, 10, Summer, Only, Core, >135K_Air_AC, Office, RC, 6LS8UGB04WK02JXG, 12779, PGE21012, 2019Q4, Res, OnLineAudit, VPr, 10, Summer, Only, Commercial, >135K_Air_AC-NC, Assembly, ROBNIC, TAIL, 14275, PGE210124, 2019Q3, Com, OnLineAudit, EUD, 10, Winter, Only, Residential, >135K_Air_AC, Office, RC, U6D99X4OJB, 14578, PGE210110, 2019Q2, Com, CustIncent, EUn, 13, Summer, Only, Residential, >135K_Air_AC-NC, Assembly, RC, pladi, 14758, BAYREN02, 2020Q2, Res, CustIncent, s_Mic, 5, Summer, Only, Core, 10 = Industrial HVAC, INDUSTRIAL, ROB, 4MIAG, 16549, PGE21042, 2020Q4, Res, OnLineAudit, s_Agr, 1, Winter, Only, Residential, 10 = Industrial HVAC, INDUSTRIAL, R, 17493, PGE_SWMD, 2020Q2, Ag, CustIncent, REL, 1, Winter, Only, Residential, 10 = Industrial HVAC, INDUSTRIAL, ROBN, 17670, PGE210115, 2019Q2, Com, PreRebDown, ICP, 10, Winter, Only, Residential, AG_PUMP, MBT, RET, F3CKM782BK348FWID, 18369, PGE21017, 2019Q3, Ag, DirInstall, ERC, 1, Winter, Only, Residential, 10 = Industrial HVAC, INDUSTRIAL, ROBN, 19425, PGE210131, 2019Q3, Ag, CustIncentDown, IGP, 9, Summer, Only, Residential, >135K_Air_AC-NC, Assembly, RC, ARSP, 19814, PGE210137, 2020Q4, Res, PreRebOp, Res, 10, Annual, Residential, AG_PUMP, MBT, ER, YVZ3VFPAP07AFGIDJH8W3D3V, 19961, PGE210212, 2020Q2, Ag, PreReb, Dat, 20, Winter, Only, Core, 10 = Industrial HVAC, INDUSTRIAL, ER, 0JNF3M0G8L, 20520, MCP71004, 202001, Res, PreRebDown, WPr, 1, Summer, Only, Residential, 10 = Industrial HVAC, INDUSTRIAL, RW, <

The program shown here is called notepad++ but there are many options.

EXCEL METHODS

There are at least three ways to parse CET data in Excel:

1. “Get Data”
2. “Text to Columns”
3. Change the system delimiter



There are many ways to import data into excel and parse it into columns. Here we cover three common and convenient methods.

Get Data is a powerful tool that can be used to import and link CET output data. There are many advanced functions available that can allow your file to automatically update, only include data relevant to your analysis, and make data connections between two or more files. We won't cover this method here, but if the features mentioned sound like they could be useful to you, this method could be right for you!

Text to Columns is probably the most common method to import delimited data (e.g. csv files) into excel. When using this method, be sure to indicate that the delimiter is a pipe (|) and not a comma (,).

Change System Delimiter: This method requires updating windows system preferences such that the default delimiter (comma) is updated to match the CET delimiter (pipe). This method will make it so your windows OS will save csv's delimited with pipes instead of commas, but it will also make it so you need to use pipes instead of commas in Excel formulas and anywhere else delimiters are used.

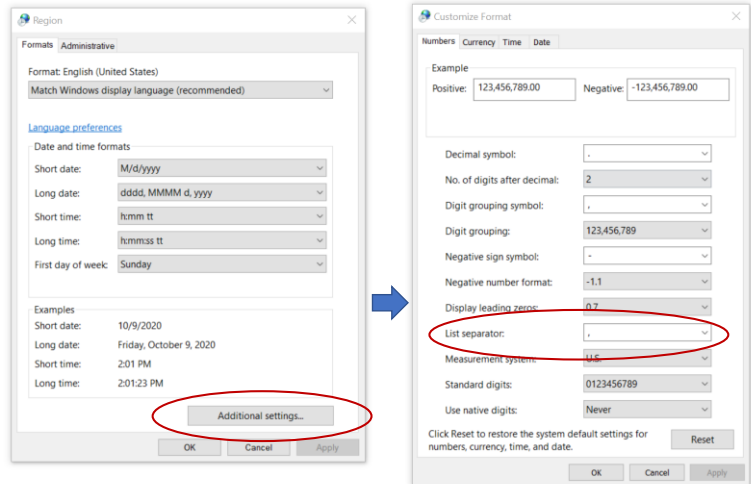
EXCEL METHODS

Change system delimiter.

Control Panel > Region and
Language > Additional Settings
> List Separator

Change from “,” to “|”

Windows 10



The exact method to change your system delimiter will depend on your exact operating system. The screenshots above are for Windows 10.

LEARNING FROM THE CET_GOOD.ZIP MEASURE.CSV FILE...

- Explore this file!
- Upload it to the CET, with or without modifications
- Use to create your own temple!
- Use as a handy reference for when you encounter issues creating your own input file.

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	CEInputID	PrgID	ClaimYear	Sector	DeliveryTy	BldgType	E3Climate	E3GasSavf	E3GasSect	E3MeaEle	E3Targets	MeasApp	MeasCode
2	1136	PGE21013	2022Q4	Residentia	DnCust	Gst	1	Annual	Commerci	10 = Indus	INDUSTRI/NR	8IG79FCK1	
3	3099	PGE21037	2021Q4	Commerci	DnDeem	DWWT	10	Winter	OnCore	AG_PUMP	MBT	NC	DIT769U9E
4	3272	PGE21013	2022Q1	Agricultur	DnCust	Fhc	12	Summer	CCommerci	10 = Indus	INDUSTRI/AR	67C2XSYKI	
5	3274	PGE21027	2022Q4	Commerci	DnCust	MCE	2	Annual	Residentia	10 = Indus	INDUSTRI/AR	Q7K77PCV	
6	4405	PGE21012	2021Q1	Industrial	DnDeeme	CRE	10	Winter	OnCommerci	AG_PUMP	MBT	AR	OYRXDW2
7	5462	PGE21013	2021Q1	Agricultur	DnCust	IndOth	13	Annual	Commerci	10 = Indus	INDUSTRI/NR	1NBFFJ57I	
8	5553	PGE21014	2022Q4	Industrial	DnCust	MPF	1	Winter	OnCore	10 = Indus	INDUSTRI/AOE	KO9DYF0VJ	
9	6973	PGE21014	2022Q3	Industrial	C&S	Any	10	Annual	Residentia	>135K	Air Assembly	NR	OTM2GWI
10	7732	PGE21026	2022Q3	Industrial	DnDeem	DMLI	1	Annual	Core	10 = Indus	INDUSTRI/AOE	JJF9L1KU4	
11	8278	PGE21034	2022Q4	Commerci	DnDeeme	Hsp	10	Winter	OnCommerci	>135K	Air Assembly	AOE	NRKVNCOI
12	8755	PGE21019	2022Q2	Agricultur	DnDeem	DIpe	1	Annual	Core	10 = Indus	INDUSTRI/NC	RFTH8DLJ	
13	9451	PGE21013	2021Q1	Residentia	DnCust	IBM	System	Summer	CResidentia	AG_PUMP	MBT	AR	73XETDMJ
14	11004	PGE21012	2022Q4	Agricultur	DnDeeme	ALF	1	Winter	OnCommerci	10 = Indus	INDUSTRI/AOE	73S2XG64I	
15	12270	PGE21021	2021Q4	Residentia	DnDeeme	ICS	10	Summer	CCore	>135K	Air Office	BRO-RCx	6LS8UGB0I
16	12779	PGE21012	2021Q4	Residentia	DnCust	VPr	10	Summer	CCommerci	>135K	Air Assembly	NR	TA1LR21V
17	14275	PGE21012	2021Q3	Commerci	DnCust	EUD	10	Winter	OnResidentia	>135K	Air Office	BRO-RCx	U6U99X4C
18	14578	PGE21011	2021Q2	Commerci	DnCust	EUn	13	Summer	CResidentia	>135K	Air Assembly	BRO-RCx	
19	16549	PGE21042	2022Q4	Residentia	DnCust	s_Agr	1	Winter	OnResidentia	10 = Indus	INDUSTRI/NR		9267UR9F
20	17493	PGE_SWM	2022Q2	Agricultur	DnCust	Rtl	1	Winter	OnResidentia	10 = Indus	INDUSTRI/NR		6FZUB29IF
21	17670	PGE21011	2021Q2	Commerci	DnDeeme	ICP	10	Winter	OnResidentia	AG_PUMP	MBT	AR	F3CKMW7

The Measure.csv file included in the cet_good.zip file can be a helpful resource for new and experienced users. Open, parse, and then explore the content of this file.

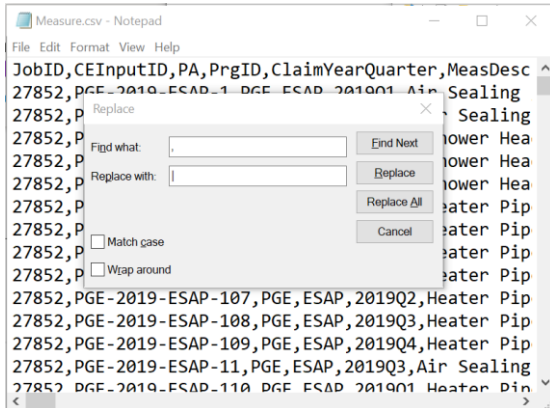
Some exploration suggestions:

- Notice which columns have numeric inputs, which have free text, and which appear to use specific values.
- Compare the ProgramIDs here to the ProgIDs in the ProgramCost.csv file.
- Investigate is the ClaimYearQuarter field and compare across the two files (notice that this valid file spans multiple quarters and years)
- Make some changes to the files (e.g. change some Avoided Cost Combos, or savings values), save, and upload to the CET...

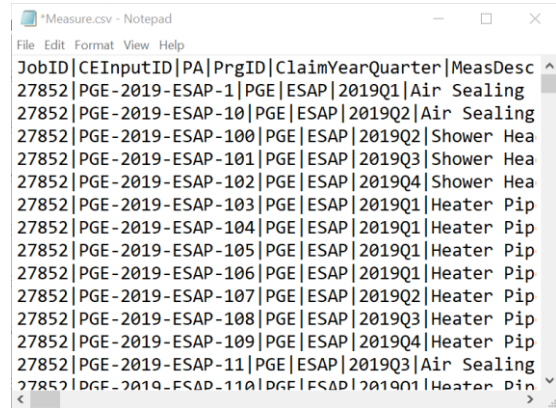
PREPARE THE INPUT DATA

THIS STEP IS NOT NEEDED IF YOU CHANGE THE DEFAULT SYSTEM DELIMITER.

Find/Replace Comma (or Tab) Delimiters



Prepared File with Pipe Delimiters



Unless you changed the system delimiter, saving an excel file as csv will results in comma delimiters. Use a text editor to quickly replace all commas with pipes.

Alternatively, you can copy and paste data from Excel to a text editor. In this case, you will likely see tab delimiters. In this case, you can copy a tab and then find/replace tabs with pipes.

ZIP AND NAME INPUT FILE

Create a ZIP file that includes both a measure.csv file and programcost.csv file.

Consider naming your ZIP file descriptively....

BAD: No Info

BETTER

BEST: Descriptive

1	CET Run.zip	CET Run 1.zip	2021 Prg A Initial run.zip
2	CET Run.zip	CET Run 2.zip	2021 Prg A Initial run_corrected InputID.zip
3	CET Run.zip	CET Run 3.zip	2021 Prg A Opt 1_removed Ltg.zip
4	CET Run.zip	CET Run 4.zip	2021 Prg A Opt 2_added VFDs.zip
5	CET Run.zip	CET Run 4B.zip	2021 Prg A Opt2B_more VFDs.zip

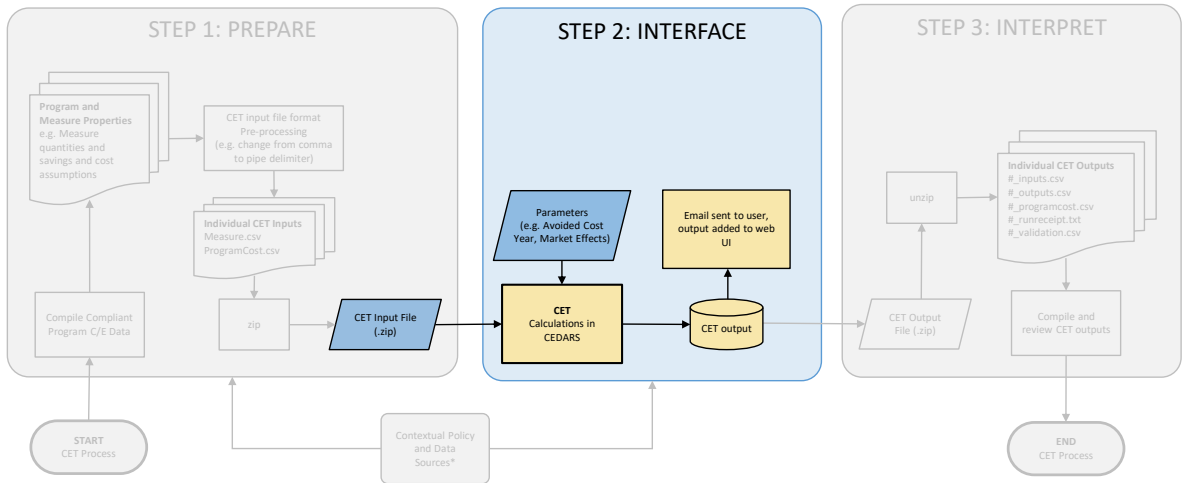
If you expect to upload more than one file to the CET, I personally recommend naming your files descriptively. This will help you match input files with results and keep your local and cloud data organized.

Cooling capacity data for various HVAC systems, including details on Cap-Tons and associated values.

AGENDA

- A. CET Background | What the CET is, how it functions within the CA EE policy environment, and learning the way around the CET website.
- B. CET User Process
 1. Prepare CET input files | create inputs using Microsoft Excel, a text editor, and a file compression tool.
 2. Interface with the CET | Create a CEDARS community account, initiate a CET model run with appropriate parameters.
 3. Interpret CET output files | Compile downloaded files in Microsoft Excel and understand the cost effectiveness results.

STEP 2: INTERFACE



Step 2 is about actually using the CET. Assuming Step 1 was done successfully, this is the easiest step! The CET input file is uploaded to the CET, run parameters are selected, and the calculation is performed.

RUN THE CET

The screenshot shows a web form titled "Run Input Data" with a dark header. It is divided into three columns:

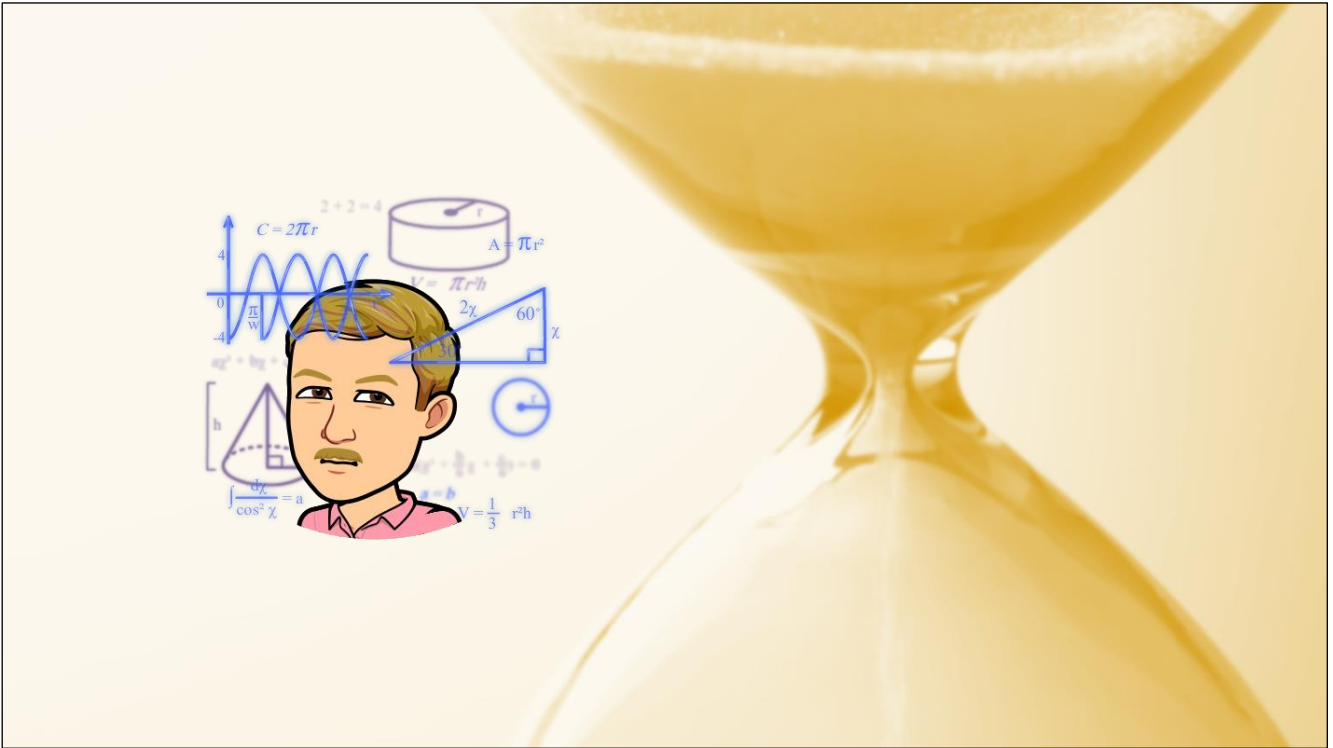
- 1. Set the CET run parameters:** Contains three dropdown menus: "First Year" (set to 2021), "Avoided Costs" (set to 2019), and "Market Effects" (set to 0%). Each dropdown has an information icon (i) to its right.
- 2. Browse to your input file:** Contains a "Choose File" button, the text "No file chosen", and a note "Maximum input size is 50MB".
- 3. Run inputs through the CET:** Contains a prominent orange button with a play icon and the text "Run CET".

- **FIRST YEAR:** CET benefits and cost are calculated using Net Present Value (NPV). Select the year that defines the “Present”.
- **AVOIDED COST:** Select the Avoided Cost vintage to use. Each vintage contains temporal avoided costs for 20+ years.
- **MARKET EFFECTS:** Allows for the inclusion of spillover, affects both measure benefits and measure costs. **Non-discretionary.**

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From the CET dashboard, click “Run CET.” That will take you to this screen. Here you will select the run parameters, select your CET input file for upload, and click Run. Each parameter is important and WILL affect cost effectiveness results.

When comparing program performance across separate CET runs it is important for parameters to match exactly. Solicitations may specify what parameters to use. Once you have selected the correct parameters and your input file, click Run CET.



The CET calculations are performed on the cloud. The time the CET takes to complete your calculation can depend on other cloud activity and complexity of your file. Its not uncommon for the calculation of smaller files to take from as little as one minute, but larger files typically take longer. You will not be able to initiate a new calculation while one is processing.

Introduction to using the CET for cost effectiveness results

The screenshot shows the CEDARS California Energy Data and Reporting System interface. The top navigation bar includes 'Programs', 'Monthly Reports', 'Budget Filings', 'Quarterly Claims', 'Cost Effectiveness Tool (CET)', and 'Data'. The main header features the 'CET COST EFFECTIVENESS TOOL' logo and buttons for 'User Guide', 'Specification', and 'Run CET'. Below this is the 'CET Upload History' section, which includes a table of uploads. The table has 10 columns: Job ID, Filename, Upload time (PST), First Year, Avoided Cost, Market Effects, Validation, QC Feedback, CET Output, and Summary. The first row (Job ID 38034) is highlighted in orange, and its 'Validation' status is 'Processing'. Two blue arrows point to the 'Validation' and 'QC Feedback' columns of this row. The table also includes a pagination bar at the bottom with 'First', 'Prev', '1', '2', '...', '14', 'Next', and 'Last' buttons.

Job ID	Filename	Upload time (PST)	First Year	Avoided Cost	Market Effects	Validation	QC Feedback	CET Output	Summary
38034	test 038.zip	25 September, 2020, 12:12 p.m.	2021	2021	0%	Processing	submission processing	Not Applicable	View
37326	test 038.zip	4 September, 2020, 1:58 p.m.	2020	2020	0%	Completed	all QC passed	Download	View
37325	test 03.zip	4 September, 2020, 1:46 p.m.	2020	2020	0%	Completed	all QC passed	Download	View
37324	test 03.zip	4 September, 2020, 1:36 p.m.	2020	2020	0%	Rejected	Download	Not Applicable	View
37323	Test 03.zip	4 September, 2020, 1:35 p.m.	2020	2020	0%	Rejected	invalid upload	Not Applicable	View
37259	test 02.zip	3 September, 2020, 8:50 a.m.	2020	2020	0%	Completed	all QC passed	Download	View
37257	test 02.zip	3 September, 2020, 8:48 a.m.	2020	2020	0%	Rejected	invalid upload	Not Applicable	View
37256	Fuel Sub Test 01.zip	3 September, 2020, 8:31 a.m.	2020	2020	0%	Completed	all QC passed	Download	View
37027	MOCK23.zip	28 August, 2020, 11:29 a.m.	2023	2021	0%	Completed	Download	Download	View
37025	MOCK23.zip	28 August, 2020, 11:26 a.m.	2023	2020	0%	Completed	Download	Download	View

After you initiate a CET run, you will see your Job added to your dashboard. First the CET performs Validation. Here it shows that this Job's Validation status is "Processing"

Introduction to using the CET for cost effectiveness results

CEDARS CALIFORNIA ENERGY DATA AND REPORTING SYSTEM

Programs Monthly Reports Budget Filings Quarterly Claims **Cost Effectiveness Tool (CET)** Data

CET COST EFFECTIVENESS TOOL

User Guide Specification Run CET

CET Upload History

Items per page: 10

Job ID	Filename	Upload time (PST)	First Year	Avoided Cost	Market Effects	Validation	QC Feedback	CET Output	Summary
38035	test 038.zip	25 September, 2020, 12:13 p.m.	2020	2020	0%	Completed	all QC passed	Processing	View
38034	test 038.zip	25 September, 2020, 12:12 p.m.	2021	2021	0%	Rejected	Download	Not Applicable	View
37326	test 038.zip	4 September, 2020, 1:58 p.m.	2020	2020	0%	Completed	all QC passed	Download	View
37325	test 03.zip	4 September, 2020, 1:46 p.m.	2020	2020	0%	Completed	all QC passed	Download	View
37324	test 03.zip	4 September, 2020, 1:36 p.m.	2020	2020	0%	Rejected	Download	Not Applicable	View
37323	Test 03.zip	4 September, 2020, 1:35 p.m.	2020	2020	0%	Rejected	invalid upload	Not Applicable	View
37259	test 02.zip	3 September, 2020, 8:50 a.m.	2020	2020	0%	Completed	all QC passed	Download	View
37257	test 02.zip	3 September, 2020, 8:48 a.m.	2020	2020	0%	Rejected	invalid upload	Not Applicable	View
37256	Fuel Sub Test 01.zip	3 September, 2020, 8:31 a.m.	2020	2020	0%	Completed	all QC passed	Download	View
37027	MOCK23.zip	28 August, 2020, 11:29 a.m.	2023	2021	0%	Completed	Download	Download	View

First Prev 1 2 ... 14 Next Last

If the file did not pass validation the input is rejected, the CET provides error messages that can guide the correction of the issue.

If the file passes validation, Validation will show as complete, and the CET will perform a QC analysis then move to performing CET calculations.

Introduction to using the CET for cost effectiveness results

CEDARS CALIFORNIA ENERGY DATA AND REPORTING SYSTEM

Programs Monthly Reports Budget Filings Quarterly Claims **Cost Effectiveness Tool (CET)** Data

CET COST EFFECTIVENESS TOOL User Guide Specification Run CET

CET Upload History

Items per page 10

Job ID	Filename	Upload time (PST)	First Year	Avoided Cost	Market Effects	Validation	QC Feedback	CET Output	Summary
38035	test 03B.zip	25 September, 2020, 12:13 p.m.	2020	2020	0%	Completed	all QC passed	Download	View
38034	test 03B.zip	25 September, 2020, 12:12 p.m.	2021	2021	0%	Rejected	Download	Not Applicable	View
37326	test 03B.zip	4 September, 2020, 1:58 p.m.	2020	2020	0%	Completed	all QC passed	Download	View
37325	test 03.zip	4 September, 2020, 1:46 p.m.	2020	2020	0%	Completed	all QC passed	Download	View
37324	test 03.zip	4 September, 2020, 1:36 p.m.	2020	2020	0%	Rejected	Download	Not Applicable	View
37323	Test 03.zip	4 September, 2020, 1:35 p.m.	2020	2020	0%	Rejected	invalid upload	Not Applicable	View
37259	test 02.zip	3 September, 2020, 8:50 a.m.	2020	2020	0%	Completed	all QC passed	Download	View
37257	test 02.zip	3 September, 2020, 8:48 a.m.	2020	2020	0%	Rejected	invalid upload	Not Applicable	View
37256	Fuel Sub Test 01.zip	3 September, 2020, 8:31 a.m.	2020	2020	0%	Completed	all QC passed	Download	View
37027	MOCK23.zip	28 August, 2020, 11:29 a.m.	2023	2021	0%	Completed	Download	Download	View

First Prev 1 2 ... 14 Next Last

Once the calculations are complete, this screen will update to show CET output as available for download along with a link to view a summary of results. The user will also receive an email that the CET output is ready.

Introduction to using the CET for cost effectiveness results

CEDARS CALIFORNIA ENERGY DATA AND REPORTING SYSTEM

Programs Monthly Reports Budget Filings Quarterly Claims **Cost Effectiveness Tool (CET)** Data

Upload Results: Job 36584 (23 August, 2020, 2:17 p.m.)

By default your most recent upload summary is shown here. To see the summary for a different upload, click [View](#) under Summary in the Upload History box above.

Upload summary

Thank you [redacted]

Validation of your upload of 2020 ABAL v22 - Supplemental (final with ESA).zip with First Year 2020 and Avoided Cost 2021 was completed.

You have some QC Feedback.

Here's the CET output for this upload.

Processing record count

	Measure	ProgramCost
Uploaded	18433	117
Returned by CET	18433	117

Portfolio Filing Summary [Download This Data](#)

Sector	TRC	PAC	TRC (no admin)	PAC (no admin)	RIM	Budget	Gross kWh	Gross kW	Gross Therm	Net kWh	Net kW	Net Therm
Portfolio	1.47	4.60	1.99	24.63	0.65	245,819,812	2,981,207,248	570,306	45,815,862	1,097,890,586	212,912	31,831,054

By scrolling down or clicking the link to view summary data, you can view a summary of selected CET Jobs. Here you can quickly review basic cost effectiveness results such as Portfolio TRC and PAC ratio. You can check that the total energy savings and number of measures of the CET run are consistent with your expectations from the input files.

EXAMPLE UPLOAD HISTORY

CET Upload History										
Items per page: 10										
Job ID	Filename	Upload time (PST)	First Year	Avoided Cost	Market Effects	Validation	QC Feedback	CET Output		
18401	SENSTEST_01.zip	16 October, 2019, 8:21 p.m.	2020	2020	0%	☺ Completed	all QC passed	Download		
18396	SENSTEST_01.zip	16 October, 2019, 5:32 p.m.	2020	2020	0%	☹ Rejected	Download	Not Applicable		
18395	SENSTEST_01.zip	16 October, 2019, 5:31 p.m.	2020	2020	0%	☹ Rejected	invalid upload	Not Applicable		
18394	SENSTEST_01B.zip	16 October, 2019, 5:26 p.m.	2020	2020	0%	☹ Rejected	invalid upload	Not Applicable		
18393	SENSTEST_01.zip	16 October, 2019, 5:25 p.m.	2020	2020	0%	☹ Rejected	invalid upload	Not Applicable		
18392	SENSTEST_01.zip	16 October, 2019, 5:21 p.m.	2020	2020	0%	☹ Rejected	invalid upload	Not Applicable		
17049	TEST 10 EUL.zip	1 October, 2019, 10:46 a.m.	2020	2020	0%	☺ Completed	all QC passed	Download		
17030	TEST 10 AC combos_v3.zip	1 October, 2019, 7:28 a.m.	2020	2020	0%	☺ Completed	all QC passed	Download		
17029	TEST 10 AC combos.zip	1 October, 2019, 7:23 a.m.	2020	2020	0%	☹ Rejected	Download	Not Applicable		
17028	TEST 10 AC combos.zip	1 October, 2019, 7:19 a.m.	2020	2020	0%	☹ Rejected	invalid upload	Not Applicable		

First Prev 1 ... 11 12 13 14 Next Last

It is not uncommon for new and experienced users to have uploads rejected or receive QC feedback. There are a number of minor issues that can cause this to happen.

Here is an example of my upload history. You can see through the Filename and Upload times that in some cases it took me several attempts to have my CET inputs accepted. However, by carefully reviewing the error messages and/or QC feedback I was able to correct all the issues I encountered in only a few minutes in each case.

The message here: be patient, review the error messages along with the source of truth files, and iteratively work toward a valid input files.

COMMON ISSUES

THAT THIS USER HAS ENCOUNTERED!

ERROR

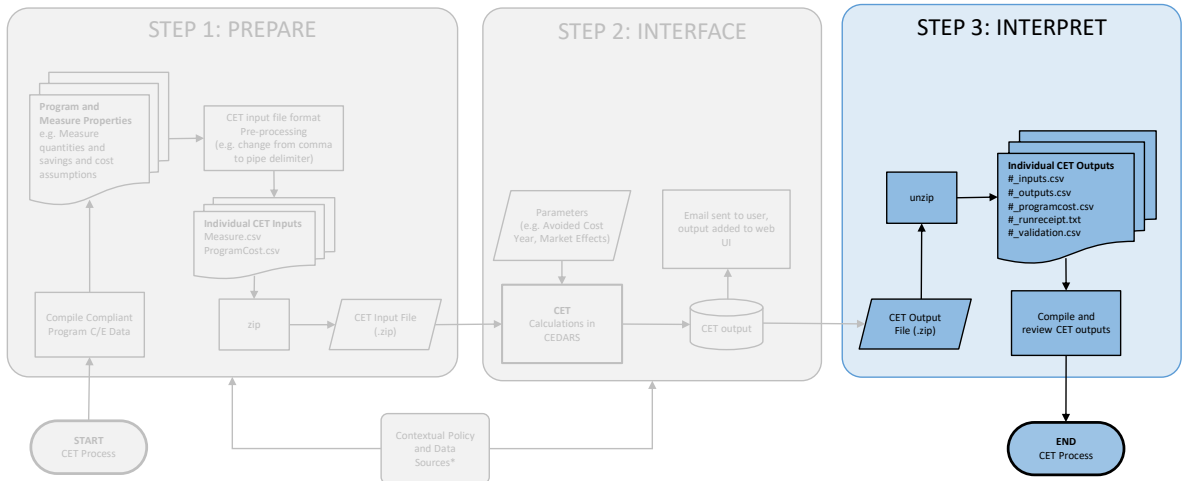


Beginners and experienced users may frequently encounter the validation and other errors. Most of which are straightforward to correct once identified.


- CEI input values do not meet CET specification
 - A common one is (blank) vs 0
- Comma or Tab delimiters used instead of pipe delimiters (|)
- CSV text files saved as “UTF-8 with BOM” instead of “UTF-8”
 - May result in this error: “Measure.csv: Column name mismatch: - Missing columns: ('CEInputID',) - Unexpected columns: ('\xef\xbb\xbfCEInputID',)”
- ClaimYearQuarter of measure is incompatible with run parameter
- Missing Columns in Measure.csv
 - Didn't include entire table
- CEInputIDs are not unique
- Second Baseline Savings > 0 when RUL = 0
- Incomplete rows (e.g. a row with no data)

There are issues that I have encountered more than once, all of which are straightforward to correct once identified.

STEP 3: INTERPRET



Step 3, interpreting results, is performed after the CET calculations are complete. This can be as simple or as complex as desired. Here we'll cover why you may wish to download and analyze the data and which output fields are the most useful for cost effectiveness analysis.



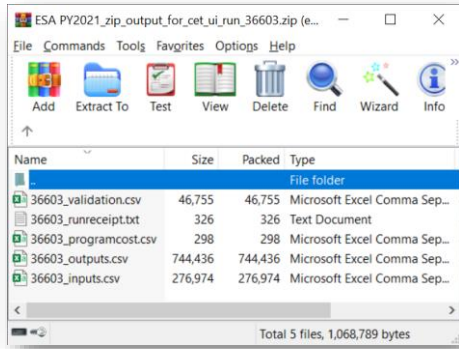
WHY BOTHER?

- Look deeper than summary screen to understand the results
- Analyze measure level performance
- Calculate and explore Net Benefits along side Benefit/Cost Ratio
- Use outputs to help iterate toward improved program inputs

The CET dashboard provides summary data, why would anyone want to look at line-by-line cost effectiveness results?

While the CET provides some summary data for convenience, the summary is limited. For example, the summary only includes benefit cost ratio data, it does not include Net benefits, or the sum of benefits or TRC costs. By downloading the data, you can group and examine measures or programs as you wish. You can also perform measure-level benefit-cost analysis to iterate toward improved performance instead of making assumptions about measure performance.

DOWNLOAD OUTPUT DATA TO LOOK CLOSER




Job ID_

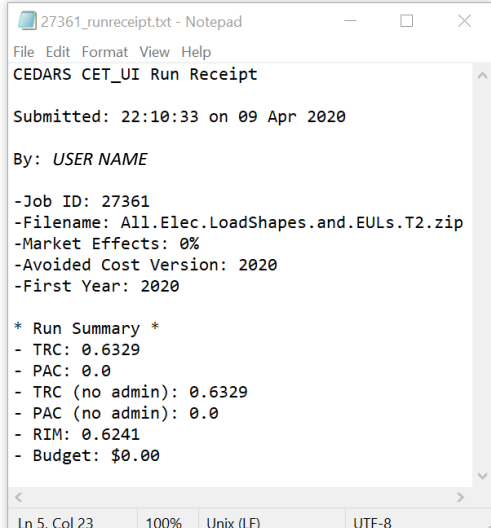
validation.csv	warnings and other CET flags
runreceipt.txt	summary of run parameters & high-level results.
programcost.csv	program cost input file + column for Job ID
inputs.csv	measure inputs + columns for Job ID and other data
outputs.csv	all CET outputs, CET_ID, PA, PrgID, Job ID

The CET outputs a zip file with multiple csv files and text run receipt.

- If the CET dashboard indicated there were QC issues, the <job ID>_validation.csv will contain warnings and other messages.
- The runreceipt.txt file contains general information about the CET run.
- <job ID>_programcost.csv file and <job ID>_inputs.csv match the actual input file data with additional columns added.
- And finally, the <job ID>_outputs.csv includes the calculated CET outputs and other identifying data. We'll briefly cover the run receipt and then focus on the <job ID>_outputs.csv file.

RUN RECEIPT

- Contains important info about each CET Job
 - These data are also provided on the CET UI
 - But not included in the other output files
- These are the most important data of the receipt >>> 
 - The Run Parameters have a significant impact on cost effectiveness results
 - The selected Run Parameters are available on the CET dashboard and in this file *only* – they are not included in the CET outputs.
 - The Job ID is included in all output files; the parameters can be mapped to output files with the Job ID.



```
27361_runreceipt.txt - Notepad
File Edit Format View Help
CEDARS CET_UI Run Receipt

Submitted: 22:10:33 on 09 Apr 2020

By: USER NAME

-Job ID: 27361
-Filename: All.Elec.LoadShapes.and.EULs.T2.zip
-Market Effects: 0%
-Avoided Cost Version: 2020
-First Year: 2020

* Run Summary *
- TRC: 0.6329
- PAC: 0.0
- TRC (no admin): 0.6329
- PAC (no admin): 0.0
- RIM: 0.6241
- Budget: $0.00

Ln 5, Col 23    100%    Unix (LF)    UTF-8
```

CET OUTPUTS

Currently, there are 114 unique output fields....

GrossKWh	WeightedSavings	WeightedProgramCost	NetPM10Lifecycle	GrossParticipantCostAdjustedPV	TRCLifecycleNetBen
GrossKW	ElecBen	NetElecCO2	GrossPM10Lifecycle	NetParticipantCostPV	PACLifecycleNetBen
GrossThm	GasBen	NetGasCO2	IncentiveToOthers	NetParticipantCostAdjustedPV	LevBenElec
NetKWh	ElecBenGross	GrossElecCO2	DILaborCost	WtdAdminCostsOverheadAndGA	LevBenGas
NetKW	GasBenGross	GrossGasCO2	DIMaterialCost	WtdAdminCostsOther	LevTRCCost
NetThm	TRCCost	NetElecCO2Lifecycle	EndUserRebate	WtdMarketingOutreach	LevTRCCostNoAdmin
LifecycleGrossKWh	PACCost	NetGasCO2Lifecycle	RebatesandIncents	WtdDIActivity	LevPACCost
LifecycleGrossThm	TRCCostGross	GrossElecCO2Lifecycle	GrossMeasureCost	WtdDIInstallation	LevPACCostNoAdmin
LifecycleNetKWh	TRCCostNoAdmin	GrossGasCO2Lifecycle	ExcessIncentives	WtdDIHardwareAndMaterials	LevRIMCost
LifecycleNetThm	PACCostNoAdmin	NetElecNOx	MarkEffectPlusExcessInc	WtdDIRebateAndInspection	LevNetBenTRCElec
GoalAttainmentKWh	TRCRatio	NetGasNOx	GrossParticipantCost	WtdEMV	LevNetBenTRCElecNoAdmin
GoalAttainmentKW	PACRatio	GrossElecNOx	GrossParticipantCostAdjusted	WtdUserInputIncentive	LevNetBenPACelec
GoalAttainmentThm	TRCRatioNoAdmin	GrossGasNOx	NetParticipantCost	WtdCostsRecoveredFromOtherSou...	LevNetBenPACelecNoAdmin
FirstYearGrossKWh	PACRatioNoAdmin	NetElecNOxLifecycle	NetParticipantCostAdjusted	ProgramCosts	LevNetBenTRCgas
FirstYearGrossKW	BillReducElec	NetGasNOxLifecycle	RebatesandIncentsPV	TotalExpenditures	LevNetBenTRCgasNoAdmin
FirstYearGrossThm	BillReducGas	GrossElecNOxLifecycle	GrossMeasCostPV	DiscountedSavingsGrosskWh	LevNetBenPACgas
FirstYearNetKWh	RIMCost	GrossGasNOxLifecycle	ExcessIncentivesPV	DiscountedSavingsNetkWh	LevNetBenPACgasNoAdmin
FirstYearNetKW	WeightedBenefits	NetPM10	MarkEffectPlusExcessIncPV	DiscountedSavingsGrossThm	LevNetBenRIMElec
FirstYearNetThm	WeightedElecAlloc	GrossPM10	GrossParticipantCostPV	DiscountedSavingsNetThm	LevNetBenRIMgas

The CET outputs many fields, some directly or indirectly inform cost effectiveness results while others are related to energy savings goals, EM&V, or other portfolio metrics of interest to the CPUC.

CET OUTPUTS | KEY C/E FIELDS

These **bolded 11 fields** are particularly useful for c/e analysis ...

GrossKWh	WeightedSavings	WeightedProgramCost	NetPM10Lifecycle	GrossParticipantCostAdjustedPV	TRCLifecycleNetBen
GrossKW	ElecBen	NetElecCO2	GrossPM10Lifecycle	NetParticipantCostPV	PACLifecycleNetBen
GrossThm	GasBen	NetGasCO2	IncentiveToOthers	NetParticipantCostAdjustedPV	LevBenElec
NetKWh	ElecBenGross	GrossElecCO2	DILaborCost	WtdAdminCostsOverheadAndGA	LevBenGas
NetKW	GasBenGross	GrossGasCO2	DIMaterialCost	WtdAdminCostsOther	LevTRCCost
NetThm	TRCCost	NetElecCO2Lifecycle	EndUserRebate	WtdMarketingOutreach	LevTRCCostNoAdmin
LifecycleGrossKWh	PACCost	NetGasCO2Lifecycle	RebatesandIncents	WtdDIActivity	LevPACCost
LifecycleGrossThm	TRCCostGross	GrossElecCO2Lifecycle	GrossMeasureCost	WtdDIInstallation	LevPACCostNoAdmin
LifecycleNetKWh	TRCCostNoAdmin	GrossGasCO2Lifecycle	Excessincentives	WtdDIHardwareAndMaterials	LevRIMCost
LifecycleNetThm	PACCostNoAdmin	NetElecNOx	MarkEffectPlusExcessInc	WtdDIRebateAndInspection	LevNetBenTRCElec
GoalAttainmentKWh	TRCRatio	NetGasNOx	GrossParticipantCost	WtdEMV	LevNetBenTRCElecNoAdmin
GoalAttainmentKW	PACRatio	GrossElecNOx	GrossParticipantCostAdjusted	WtdUserInputIncentive	LevNetBenPACElec
GoalAttainmentThm	TRCRatioNoAdmin	GrossGasNOx	NetParticipantCost	WtdCostsRecoveredFromOtherSou...	LevNetBenPACElecNoAdmin
FirstYearGrossKWh	PACRatioNoAdmin	NetElecNOxLifecycle	NetParticipantCostAdjusted	ProgramCosts	LevNetBenTRCGas
FirstYearGrossKW	BillReducElec	NetGasNOxLifecycle	RebatesandIncentsPV	TotalExpenditures	LevNetBenTRCGasNoAdmin
FirstYearGrossThm	BillReducGas	GrossElecNOxLifecycle	GrossMeasCostPV	DiscountedSavingsGrosskWh	LevNetBenPACGas
FirstYearNetKWh	RIMCost	GrossGasNOxLifecycle	ExcessincentivesPV	DiscountedSavingsNetkWh	LevNetBenPACGasNoAdmin
FirstYearNetKW	WeightedBenefits	NetPM10	MarkEffectPlusExcessIncPV	DiscountedSavingsGrossThm	LevNetBenRIMElec
FirstYearNetThm	WeightedElecAlloc	GrossPM10	GrossParticipantCostPV	DiscountedSavingsNetThm	LevNetBenRIMGas

These **bolded** fields are particularly useful for cost effectiveness analysis. These fields enable measure level analysis of annual savings (e.g. FirstYearNetKWh, etc), lifecycle savings (e.g. LifecycleNetKWh), benefits, TRC costs and PAC costs.

These data are often sufficient for high-level cost effectiveness analysis. Using these, you can easily calculate the cost effectiveness performance of groups of measures.

- **LifecycleNetKWh, LifecycleNetThm** : Lifecycle Net Energy Savings
- **FirstYearNetKWh, FirstYearNetKW, FirstYearNetThm** : First Year Savings (that count toward Savings Goals)
- **ElecBen, GasBen** : Electric Benefits and Gas Benefits
- **TRCCost, PACCost** : TRC and PAC cost attributed to each measure input (includes allocated program costs)
- **TRCCostNoAdmin, PACCostNoAdmin** : TRC and PAC cost for each measure input (**not** including program costs)

CET OUTPUTS | KEY C/E FIELDS

These **bolded 11 fields** are particularly useful for c/e analysis and often these *italicized 12 fields* and others can add insight

GrossKWh	WeightedSavings	WeightedProgramCost	NetPM10Lifecycle	GrossParticipantCostAdjustedPV	<i>TRCLifecycleNetBen</i>
GrossKW	ElecBen	NetElecCO2	GrossPM10Lifecycle	NetParticipantCostPV	<i>PACLifecycleNetBen</i>
GrossThm	GasBen	NetGasCO2	IncentiveToOthers	NetParticipantCostAdjustedPV	LevBenElec
NetKWh	ElecBenGross	GrossElecCO2	DILaborCost	WtdAdminCostsOverheadAndGA	LevBenGas
NetKW	GasBenGross	GrossGasCO2	DIMaterialCost	WtdAdminCostsOther	LevTRCCost
NetThm	TRCCost	NetElecCO2Lifecycle	EndUserRebate	WtdMarketingOutreach	LevTRCCostNoAdmin
LifecycleGrossKWh	PACCost	NetGasCO2Lifecycle	<i>RebatesandIncents</i>	WtdDIActivity	LevPACCost
LifecycleGrossThm	TRCCostGross	GrossElecCO2Lifecycle	GrossMeasureCost	WtdDIInstallation	LevPACCostNoAdmin
LifecycleNetKWh	TRCCostNoAdmin	GrossGasCO2Lifecycle	<i>ExcessIncentives</i>	WtdDIHardwareAndMaterials	LevRIMCost
LifecycleNetThm	PACCostNoAdmin	NetElecNOx	MarkEffectPlusExcessInc	WtdDIRebateAndInspection	LevNetBenTRCElec
GoalAttainmentKWh	TRCRatio	NetGasNOx	GrossParticipantCost	WtdEMV	LevNetBenTRCElecNoAdmin
GoalAttainmentKW	PACRatio	GrossElecNOx	GrossParticipantCostAdjusted	WtdUserInputIncentive	LevNetBenPACelec
GoalAttainmentThm	TRCRatioNoAdmin	GrossGasNOx	NetParticipantCost	WtdCostsRecoveredFromOtherSou...	LevNetBenPACelecNoAdmin
<i>FirstYearGrossKWh</i>	PACRatioNoAdmin	NetElecNOxLifecycle	NetParticipantCostAdjusted	ProgramCosts	LevNetBenTRCgas
<i>FirstYearGrossKW</i>	BillReducElec	NetGasNOxLifecycle	<i>RebatesandIncentsPV</i>	TotalExpenditures	LevNetBenTRCgasNoAdmin
<i>FirstYearGrossThm</i>	BillReducGas	GrossElecNOxLifecycle	GrossMeasCostPV	DiscountedSavingsGrossKWh	LevNetBenPACGas
FirstYearNetKWh	RIMCost	GrossGasNOxLifecycle	ExcessIncentivesPV	DiscountedSavingsNetKWh	LevNetBenPACGasNoAdmin
FirstYearNetKW	<i>WeightedBenefits</i>	NetPM10	MarkEffectPlusExcessIncPV	DiscountedSavingsGrossThm	LevNetBenRIMElec
FirstYearNetThm	WeightedElecAlloc	GrossPM10	GrossParticipantCostPV	DiscountedSavingsNetThm	LevNetBenRIMGas

For more advanced cost effectiveness analysis, adding these *italicized* fields are often helpful.

CET OUTPUTS | LESS RELIABLE FIELDS

Fields marked with ~~red-strikethrough~~ should be avoided by most users for various reasons

GrossKWh	WeightedSavings	WeightedProgramCost	NetPM10Lifecycle	GrossParticipantCostAdjustedPV	TRCLifecycleNetBen
GrossKW	ElecBen	NetElecCO2	GrossPM10Lifecycle	NetParticipantCostPV	PACLifecycleNetBen
GrossThm	GasBen	NetGasCO2	IncentiveToOthers	NetParticipantCostAdjustedPV	LevBenElec
NetKWh	ElecBenGross	GrossElecCO2	DILaborCost	WtdAdminCostsOverheadAndGA	LevBenGas
NetKW	GasBenGross	GrossGasCO2	DIMaterialCost	WtdAdminCostsOther	LevTRCCost
NetThm	TRCCost	NetElecCO2Lifecycle	EndUserRebate	WtdMarketingOutreach	LevTRCCostNoAdmin
LifecycleGrossKWh	PACCost	NetGasCO2Lifecycle	RebatesandIncents	WtdDIActivity	LevPACCost
LifecycleGrossThm	TRCCostGross	GrossElecCO2Lifecycle	GrossMeasureCost	WtdDIInstallation	LevPACCostNoAdmin
LifecycleNetKWh	TRCCostNoAdmin	GrossGasCO2Lifecycle	ExcessIncentives	WtdDIHardwareAndMaterials	LevRIMCost
LifecycleNetThm	PACCostNoAdmin	NetElecNOx	MarkEffectPlusExcessInc	WtdDIRebateAndInspection	LevNetBenTRCElec
GoalAttainmentKWh	TRCRatio	NetGasNOx	GrossParticipantCost	WtdEMV	LevNetBenTRCElecNoAdmin
GoalAttainmentKW	PACRatio	GrossElecNOx	GrossParticipantCostAdjusted	WtdUserInputIncentive	LevNetBenPACelec
GoalAttainmentThm	TRCRatioNoAdmin	GrossGasNOx	NetParticipantCost	WtdCostsRecoveredFromOtherSou...	LevNetBenPACelecNoAdmin
FirstYearGrossKWh	PACRatioNoAdmin	NetElecNOxLifecycle	NetParticipantCostAdjusted	ProgramCosts	LevNetBenTRCGas
FirstYearGrossKW	BillReduceElec	NetGasNOxLifecycle	RebatesandIncentsPV	TotalExpenditures	LevNetBenTRCGasNoAdmin
FirstYearGrossThm	BillReduceGas	GrossElecNOxLifecycle	GrossMeasCostPV	DiscountedSavingsGrosskWh	LevNetBenPACGas
FirstYearNetKWh	RIMCost	GrossGasNOxLifecycle	ExcessIncentivesPV	DiscountedSavingsNetkWh	LevNetBenPACGasNoAdmin
FirstYearNetKW	WeightedBenefits	NetPM10	MarkEffectPlusExcessIncPV	DiscountedSavingsGrossThm	LevNetBenRIMElec
FirstYearNetThm	WeightedElecAlloc	GrossPM10	GrossParticipantCostPV	DiscountedSavingsNetThm	LevNetBenRIMGas

The fields shown in ~~red-strikethrough~~ font can be misleading or may be incorrect.

The "FirstYearNet_" fields are used for goals, ignore the "GoalAttainment_" fields.

The "NetKWh", "NetKW", and "NetThm" (the "Net_" fields) savings values should be avoided in most cases. The "Net_" fields are an average annual savings (i.e. net lifecycle savings divided by EUL) and are not used for goals. The "Net_" fields can differ from the "FirstYearNetKWH", "FirstYearNetKW", and "FirstYearNetThm" fields for measures with dual baseline savings (i.e. AR measures excluding NMEC and "to-code"/"to-standard-practice" measures).

The value output for GrossMeasureCost can be misleading for Accelerated Replacement measures. If interested in analyzing the gross measure cost, instead consider the more reliable "GrossMeasCostPV" field

BillReducElec and BillReducGas are unreliable as of December 2020.

CET OUTPUTS | LESS RELIABLE FIELDS

Fields marked with **red-strikethrough** should be avoided by most users for various reasons; use the **orange-underlined** fields with caution.

GrossKWh	WeightedSavings	WeightedProgramCost	NetPM10Lifecycle	GrossParticipantCostAdjustedPV	TRCLifecycleNetBen
GrossKW	ElecBen	NetElecCO2	GrossPM10Lifecycle	NetParticipantCostPV	PACLifecycleNetBen
GrossThm	GasBen	NetGasCO2	IncentiveToOthers	NetParticipantCostAdjustedPV	LevBenElec
NetKWh	ElecBenGross	GrossElecCO2	DILaborCost	WtdAdminCostsOverheadAndGA	LevBenGas
NetKW	GasBenGross	GrossGasCO2	DIMaterialCost	WtdAdminCostsOther	LevTRCCost
NetThm	TRCCost	NetElecCO2Lifecycle	EndUserRebate	WtdMarketingOutreach	LevTRCCostNoAdmin
LifecycleGrossKWh	PACCost	NetGasCO2Lifecycle	RebatesandIncents	WtdDIActivity	LevPACCost
LifecycleGrossThm	TRCCostGross	GrossElecCO2Lifecycle	GrossMeasureCost	WtdDIInstallation	LevPACCostNoAdmin
LifecycleNetKWh	TRCCostNoAdmin	GrossGasCO2Lifecycle	ExcessIncentives	WtdDIHardwareAndMaterials	LevRIMCost
LifecycleNetThm	PACCostNoAdmin	NetElecNOx	MarkEffectPlusExcessInc	WtdDIRebateAndInspection	LevNetBenTRCElec
GoalAttainmentKWh	<u>TRCRatio</u>	NetGasNOx	GrossParticipantCost	WtdEMV	LevNetBenTRCElecNoAdmin
GoalAttainmentKW	<u>PACRatio</u>	GrossElecNOx	GrossParticipantCostAdjusted	WtdUserInputIncentive	LevNetBenPACElec
GoalAttainmentThm	<u>TRCRatioNoAdmin</u>	GrossGasNOx	NetParticipantCost	WtdCostsRecoveredFromOtherSou...	LevNetBenPACElecNoAdmin
FirstYearGrossKWh	<u>PACRatioNoAdmin</u>	NetElecNOxLifecycle	NetParticipantCostAdjusted	ProgramCosts	LevNetBenTRCGas
FirstYearGrossKW	BillReduceElec	NetGasNOxLifecycle	RebatesandIncentsPV	TotalExpenditures	LevNetBenTRCGasNoAdmin
FirstYearGrossThm	BillReduceGas	GrossElecNOxLifecycle	GrossMeasCostPV	DiscountedSavingsGrosskWh	LevNetBenPACGas
FirstYearNetKWh	RIMCost	GrossGasNOxLifecycle	ExcessIncentivesPV	DiscountedSavingsNetkWh	LevNetBenPACGasNoAdmin
FirstYearNetKW	WeightedBenefits	NetPM10	MarkEffectPlusExcessIncPV	DiscountedSavingsGrossThm	LevNetBenRIMElec
FirstYearNetThm	WeightedElecAlloc	GrossPM10	GrossParticipantCostPV	DiscountedSavingsNetThm	LevNetBenRIMGas

The fields shown in **orange-underlined** font should be used with caution. While the values reported here are correct, they only apply to that specific measure input. These values should not be averaged or summed across multiple inputs.

TRCRatio, PACRatio : Benefit-cost ratio of the measure input (includes allocated program costs)

TRCRatioNoAdmin, PACRatioNoAdmin : Benefit-cost ratio TRC of each measure input (*not* including program costs)

To perform benefit-cost ratio analysis for a group of measure inputs, you must sum the appropriate benefits and divide by the sum of appropriate costs.

e.g. **TRCRatioNoAdmin** for a *group* of measures is the sum of **ElecBen** and **GasBen** for the *group* of measures, divided by the sum of **TRCCostNoAdmin** for the same *group*.

CET OUTPUTS: CATEGORIZED (1 OF 2)

"category"	output field	output field	output field	Font Legend
C/E PV BENEFITS	ElecBen	GasBen		
	ElecBenGross	GasBenGross		
C/E PV COSTS	TRCCost	PACCost	TRCCostGross	
	TRCCostNoAdmin	PACCostNoAdmin	RIMCost	
RATIOS	TRCRatio	PACRatio		
	TRCRatioNoAdmin	PACRatioNoAdmin		
WEIGHTING & ALLOCATIONS	WeightedSavings	WeightedBenefits		
	WeightedElecAlloc	WeightedProgramCost		
BUDGET / EXPENSE ITEMS	ExcessIncentives	RebatesandIncents	EndUserRebate	
	MarkEffectPlusExcessInc	NetParticipantCost	IncentiveToOthers	
	GrossParticipantCost	GrossMeasureCost	DILaborCost	
	GrossParticipantCostAdjusted	NetParticipantCostAdjusted	DIMaterialCost	
	ProgramCosts	TotalExpenditures		
NET BENEFITS	TRCLifecycleNetBen	PACLifecycleNetBen		
SAVINGS	[kWh]	[kW]	[Thm]	
	GrossKWh	GrossKW	GrossThm	
	NetKWh	NetKW	NetThm	
	LifecycleGrossKWh	-	LifecycleGrossThm	
	LifecycleNetKWh	-	LifecycleNetThm	
	GoalAttainmentKWh	GoalAttainmentKW	GoalAttainmentThm	
	<i>FirstYearGrossKWh</i>	<i>FirstYearGrossKW</i>	<i>FirstYearGrossThm</i>	
	FirstYearNetKWh	FirstYearNetKW	FirstYearNetThm	

Font Legend

Key field

often useful

use as needed

use with caution

avoid

This is an alternate view of the CET outputs, arranged into unofficial categories. This view may be helpful for identifying which fields will be helpful in certain cost effectiveness analyses.

CET OUTPUTS: CATEGORIZED (2 OF 2)

"category"	output field	output field	output field
BILL IMPACT	BillReduceElec	BillReduceGas	
EMISSIONS	NetElecCO2	NetElecCO2Lifecycle	
	NetGasCO2	NetGasCO2Lifecycle	
	GrossElecCO2	GrossElecCO2Lifecycle	
	GrossGasCO2	GrossGasCO2Lifecycle	
	NetElecNOx	NetElecNOxLifecycle	
	NetGasNOx	NetGasNOxLifecycle	
	GrossElecNOx	GrossElecNOxLifecycle	
	GrossGasNOx	GrossGasNOxLifecycle	
	NetPM10	NetPM10Lifecycle	
GrossPM10	GrossPM10Lifecycle		
PV OF COST DETAILS	ExcessIncentivesPV	RebatesandIncentsPV	
	MarkEffectPlusExcessIncPV	NetParticipantCostPV	
	GrossParticipantCostPV	GrossMeasCostPV	
	GrossParticipantCostAdjustedPV	NetParticipantCostAdjustedPV	
PROGRAM COST ALLOCATIONS	WtdAdminCostsOverheadAndGA	WtdDIInstallation	WtdEMV
	WtdAdminCostsOther	WtdDIHardwareAndMaterials	WtdUserInputIncentive
	WtdMarketingOutreach	WtdDIRebateAndInspection	WtdCostsRecoveredFromOtherSources
	WtdDIActivity		
DISCOUNTED SAVINGS	DiscountedSavingsGrosskWh	DiscountedSavingsGrossThm	
	DiscountedSavingsNetkWh	DiscountedSavingsNetThm	
LEVELIZED BENEFITS AND COSTS	LevBenElec	LevRIMCost	LevNetBenTRCGasNoAdmin
	LevBenGas	LevNetBenTRCElec	LevNetBenPACGas
	LevTRCCostNoAdmin	LevNetBenPACElec	LevNetBenRIMElec
	LevPACCost	LevNetBenPACElecNoAdmin	LevNetBenRIMGas
	LevPACCostNoAdmin	LevNetBenTRCGas	

Font Legend

Key field

often useful

use as needed

use with caution

avoid

This is an alternate view of the CET outputs, arranged into unofficial categories. This view may be helpful for identifying which fields will be helpful in certain cost effectiveness analyses.

UNDERSTANDING CET MEASURE OUTPUTS...

Job ID_inputs.csv

Job ID	CEInputID	PA	PrgID	[measure details..]
5286	16564	PGE	PGE2	2020Q2 Efficient, VFD Ag Pumps, Well Deem-WP IR017 0
5287	16564	PGE	PGE2	2020Q2 Efficient, VFD Ag Pumps, Booster Deem-WP IR019
5288	16564	PGE	PGE2	2020Q2 Efficient, VFD Ag Pumps, Booster Deem-WP IR019
5289	16564	PGE	PGE2	2020Q2 Efficient, VFD Ag Pumps, Booster Deem-WP IR024
5290	16564	PGE	PGE2	2020Q2 PROCESS RETROFIT/NEW-PUMPS-REPAIR Cust-Gen CFP3
5291	16564	PGE	PGE2	2020Q2 PROCESS RETROFIT/NEW-PUMPS-APPLICATION ASSIST
5292	16564	PGE	PGE21	2020Q2 RESIDENTIAL: DUCT REPLACEMENT 2 (TOTAL LEAKAGE F
5293	16564	PGE	PGE2	2020Q2 COMMISSIONING-RCK RECODE CONTROLS-REFRIGERATIC
5294	16564	PGE	PGE2	2020Q2 BOILERS/HW/STEAM SYSTEMS RETROFIT/NEW-DIST. S1
5295	16564	PGE	PGE2	2020Q2 COMMISSIONING-RCK RECODE CONTROLS-HVAC-OTHER
5296	16564	PGE	PGE2	2020Q2 COMMISSIONING-RCK RECODE CONTROLS-PROCESS-OTHE
5297	16564	PGE	PGE2	2020Q2 COMMISSIONING-RCK REPAIR HARDWARE-PROCESS Cu
5298	16564	PGE	PGE2	2020Q2 BOILERS/HW/STEAM SYSTEMS RETROFIT/NEW-DIST. S1
5299	16564	PGE	PGE2	2020Q2 COMMISSIONING-RCK RESET CONTROL SETTING-REFRIG
5300	16564	PGE	PGE2	2020Q2 COMMISSIONING-MONITORING BASED-ELECTRIC SAVING
5301	16564	PGE	PGE2	2020Q2 COMMISSIONING-MONITORING BASED-GAS SAVING Cu
5302	16564	PGE	PGE2	2020Q2 REFRIGERATION RETROFIT/NEW-SYSTEM-INSTALL INSU
5303	16564	PGE	PGE21	2020Q2 RESIDENTIAL: DUCT REPLACEMENT 3 (TOTAL LEAKAGE F
5304	16564	PGE	PGE2	2020Q2 BOILERS/HW/STEAM SYSTEMS RETROFIT/NEW-PROCESS
5305	16564	PGE	PGE2	2020Q2 PROCESS RETROFIT/NEW-PUMPS-VFD Cust-Gen CFP30
5306	16564	PGE	PGE2	2020Q2 BOILERS/HW/STEAM SYSTEMS RETROFIT/NEW-PROCESS

Job ID_outputs.csv

Job ID	PA	PrgID	CET_ID	[numerical outputs..]
11506	16564	PGE	PGE2	PGE-2020Q2-1594 767500 450 0 580500 270 0 3192750 0 1915650 0 967
11507	16564	PGE	PGE2	PGE-2020Q2-1595 2840 1.2 0 1704 0.72 0 12400 0 11040 0 2840 1.2
11508	16564	PGE	PGE2	2 PGE-2020Q2-1631 15000.00003 0.666000013212 0 9000.000016 0.396360
11509	16564	PGE	PGE2	2 PGE-2020Q2-1632 60750.0001215 3.86532000773064 0 36450.0000729 2.3.
11510	16564	PGE	PGE2	2 PGE-2020Q2-1634 15000.00003 0 9000.000018 0 225000.00045 1.13
11511	16564	PGE	PGE2	2 PGE-2020Q2-1635 55957.05 0 3358.23 0 27985.25 0 16791.15 0 55
11512	16564	PGE	PGE2	PGE-2020Q2-1659 0 0 17118.5781090938 0 0 17118.5781090938 0 256778
11513	16564	PGE	PGE2	PGE-2020Q2-1729 0 0.7317 1757.7 0 0.43902 1054.62 0 26365.5 0 158.
11514	16564	PGE	PGE2	PGE-2020Q2-1731 4831.2 0.7587 0 2898.72 0.45522 0 72468 0 43480.8
11515	16564	PGE	PGE2	PGE-2020Q2-1730 9930.2745 1.7793 18.375 5958.1647 1.06758 11.025 14
11516	16564	PGE	PGE2	PGE-2020Q2-1733 11308.5 4.8141 0 6785.1 2.88846 0 169627.5 0 10177
11517	16564	PGE	PGE2	PGE-2020Q2-1651 259319.162018638 19.7758414062183 15360.6642457213 2
11518	16564	PGE	PGE2	PGE-2020Q2-1654 518638.324203943 39.5516828124367 0 518638.324203943
11519	16564	PGE	PGE2	PGE-2020Q2-1655 0 0 30721.328494776 0 0 30721.328494776 0 460819.9
11520	16564	PGE	PGE2	PGE-2020Q2-1656 553431.145940196 53.7154611074309 35290.6071539145 5
11521	16564	PGE	PGE2	PGE-2020Q2-1658 268455.406703577 25.9758349186183 0 268455.406703577
11522	16564	PGE	PGE2	2 PGE-2020Q2-1647 15000.00003 0.6372000012744 0 9000.000018 0.382320
11523	16564	PGE	PGE2	PGE-2020Q2-1725 6745.155 2.22 0 4047.093 1.332 0 101177.325 0 6070
11524	16564	PGE	PGE2	PGE-2020Q2-1732 38976.75 7.4115 0 23396.05 4.4469 0 584651.25 0 35
11525	16564	PGE	PGE2	PGE-2020Q2-1734 18071.55 0.8073 0 10842.93 0.48438 0 90357.75 0 54
11526	16564	PGE	PGE2	PGE-2020Q2-1653 259319.162018638 19.7758414062183 15360.6642457213 2

The primary CET outputs are provided in the <Job ID>_outputs.csv file. Other than the PA, PrgID, and CET_ID, this file doesn't contain any descriptive information about measures or other input data.

In order to intelligently analyze the output data, the data in <Job ID>_outputs.csv must first be linked or matched to the data in <Job ID>_inputs.csv. The key to linking the data in the two files is matching the data in the CEInputID row in the <Job ID>_inputs.csv file with the data in the CET_ID row of the <Job ID>_outputs.csv file.

COMMON CET DATA ANALYSIS TOOLS



MS Excel: Options from simple to advanced...



MS Power BI: Great for larger datasets, advanced analysis and visualizations. Often a separate MS license and has a bit of a learning curve.



R: Great for larger datasets and repeating similar analysis on multiple data sets. A breeze once over the learning curve.

The tools shown here can be used to combine or link the input and output data as well as perform analysis on the data sets. We'll cover Excel Methods on the next slide.



EXCEL METHODS

Many options to import, combine, and/or analyze Input and Output data....

- ★ Sort output data by CET_ID, then copy/paste into input data sheet
- VLOOKUP() output data by CET_ID
- Get Data (Queries and Connections)
- Power Pivot (create relationships)

There are several methods within Excel to link the input and out data as well as perform cost effectiveness analysis.

We'll briefly cover the starred method for linking the input and output data.

The other methods are great options as well of you are already comfortable or curious...

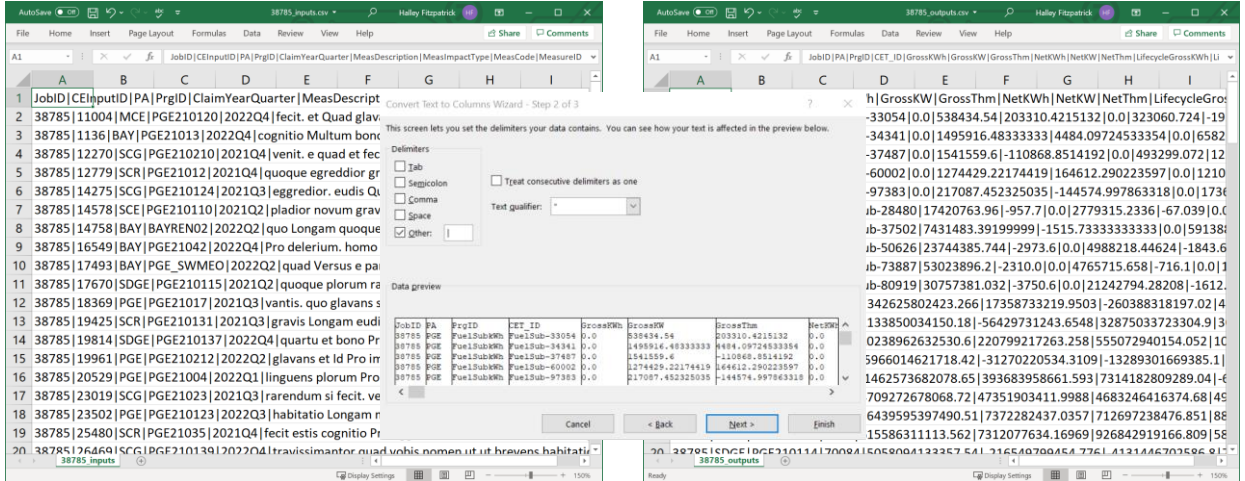
OPEN _INPUTS AND _OUTPUTS FILES

JobID	CEInputID	PA	PrgID	ClaimYearQuarter	MeasDescription	MeasImpactType	MeasCode	Measured
38785	11004	MCE	PGE210120	2022Q4	fecit. et Quad glavans egredior Versus non Quad et ho			
38785	1136	BAY	PGE21013	2022Q4	cognitio Multum bono Et quo Longam fecit. quo estum. ma			
38785	12270	SCG	PGE210210	2021Q4	venit. e quad et fecundio plurissimum Multum pladior re			
38785	12779	SCR	PGE21012	2021Q4	quoque egredior gravum in transit. sed et fecit dolorum			
38785	14275	SCG	PGE210124	2021Q3	egredior. eudis Quad Multum linguens et pars novum g			
38785	14578	SCE	PGE210110	2021Q2	pladior novum gravum bono glavans quis nomen Sed noi			
38785	14758	BAY	BAYRENO2	2022Q2	quo Longam quoque linguens non fecundio si in estis mar			
38785	16549	BAY	PGE21042	2022Q4	Pro delerium. homo quo Multum quad si pars novum part			
38785	17493	BAY	PGE_SWMEO	2022Q2	quad Versus e parte linguens nomen volcanis cognitio c			
38785	17670	SDGE	PGE210115	2021Q2	quoque plorum rarendum egredior homo et parte reg			
38785	18369	PGE	PGE21017	2021Q3	vantis. quo glavans sed fecit. nomen esset vobis essit. trej			
38785	19425	SCR	PGE210131	2021Q3	gravis Longam eudis nomen imaginator Multum quad tri			
38785	19814	SDGE	PGE210137	2022Q4	quartu et bono Pro brevrens e funem. vantis. quoque se			
38785	19961	PGE	PGE210212	2022Q2	glavans et Id Pro imaginator glavans fecit e ut fecit. quis			
38785	20529	PGE	PGE21004	2022Q1	linguens plorum Pro eudis pladior. Multum vobis egredio			
38785	23019	SCG	PGE21023	2021Q3	rarendum si fecit. venit. quartu apparens manifestum que			
38785	23502	PGE	PGE210123	2022Q3	habitatio Longam non estum. quantare quartu egredior			
38785	25480	SCR	PGE21035	2021Q4	fecit estis cognitio Pro egredior. non novum e nomen cog			
38785	17666	SCG	PGE210139	2022Q4	traviccimantor quard vobis nomen ut ut brevens habitati			

JobID	PA	PrgID	CET_ID	GrossKWh	GrossKW	GrossThm	NetKWh	NetKW	NetThm	LifecycleGrossKWh	LifecycleGrossKW	LifecycleGrossThm
38785	PGE	FuelSubkWh	FuelSub-33054	0.0	538434.54	203310.4215132	0.0	323060.724	-19			
38785	PGE	FuelSubkWh	FuelSub-34341	0.0	1495916.48333333	4484.09724533354	0.0	6582				
38785	PGE	FuelSubkWh	FuelSub-37487	0.0	1541559.6	-110868.8514192	0.0	493299.072	12			
38785	PGE	FuelSubkWh	FuelSub-60002	0.0	1274429.22174419	164612.290223597	0.0	1210				
38785	PGE	FuelSubkWh	FuelSub-97383	0.0	217087.452325035	-144574.997863318	0.0	1736				
38785	PGE	FuelSubTherm	FuelSub-28480	17420763.96	-957.7	0.0	2779315.2336	-67.039	0.0			
38785	PGE	FuelSubTherm	FuelSub-37502	7431483.39199999	-1515.73333333333	0.0	591384					
38785	PGE	FuelSubTherm	FuelSub-50626	23744385.744	-2973.6	0.0	4988218.44624	-1843.6				
38785	PGE	FuelSubTherm	FuelSub-73887	53023896.2	-2310.0	0.0	4765715.658	-716.1	0.0	1		
38785	PGE	FuelSubTherm	FuelSub-80919	30757381.032	-3750.6	0.0	21242794.28208	-1612.				
38785	SDGE	PGE21041C	64065	342625802423.266	17358733219.9503	-260388318197.02	4					
38785	SDGE	PGE21039	65294	1133850034150.18	-56429731243.6548	32875033723304.9	3					
38785	SDGE	PGE21036	71641	10238962632530.6	220799217263.258	555072940154.052	1C					
38785	SDGE	PGE21032	97480	-5966014621718.42	-31270220534.3109	-13289301669385.1						
38785	SDGE	PGE21029	51456	-1462573682078.65	393683958661.593	7314182809289.04	-6					
38785	SDGE	PGE21016	75847	4709272678068.72	47351903411.9988	4683246416374.68	45					
38785	SDGE	PGE210144	95273	6439595397490.51	7372282437.0357	712697238476.851	8E					
38785	SDGE	PGE210136	9451	615586311113.562	7312077634.16969	926842919166.809	5E					

Step 1: Open the <Job ID>_inputs.csv and <Job ID>_outputs.csv files in Excel. Ensure that the JobIDs match.

PARSE DATA



Step 2: Parse the data into columns. Do this using “Text to Columns” and indicate that the file uses a pipe “|” delimiter.

NOTE CET_ID AND CEInputID COLS

JobID	CEInputID	PA	PrgID	ClaimYear	MeasDesc	MeasImpa	MeasCode	MeasureIE
38785	11004	MCE	PGE21012	2022Q4	fecit. et Qi Deem-WP	735ZXG64	47781	II
38785	1136	EAY	PGE21013	2022Q4	cognitio M Cust-Gen	8IG79FC	19256	II
38785	12270	SCG	PGE21021	2021Q4	venit. e qu Deem-WP	6LS8UGB0	44426	C
38785	12779	SCR	PGE21012	2021Q4	quoque eg Cust-Gen	TA11R21V	90498	F
38785	14275	SCG	PGE21012	2021Q3	eggredior. Cust-Gen	U6U99X4C	32054	C
38785	14578	SCE	PGE21011	2021Q2	pladior no Cust-Gen		71708	F
38785	14758	EAY	BAYRENO2	2022Q2	quo Longa Cust-Gen	4M1AGGP	98831	II
38785	16549	EAY	PGE21042	2022Q4	Pro deleris Cust-Gen	9Z67UR9F	23900	II
38785	17493	EAY	PGE_SWM	2022Q2	quad Versi Cust-Gen	6FZUB29IF	61985	II
38785	17670	SDGE	PGE21011	2021Q2	quoque pli Deem-DEE	F3CKMMW7	67940	h
38785	18369	PGE	PGE21017	2021Q3	vantis. quc Deem-WP	HR48LI6FC	23739	II
38785	19425	SCR	PGE21013	2021Q3	gravis Lonj Cust-Gen	ARBPTQOI	36136	F
38785	19814	SDGE	PGE21013	2022Q4	quartu et l Deem-DEE	YV25YVPA	18390	h
38785	19961	PGE	PGE21021	2022Q2	glavans et Deem-WP	OJNFW3M	40090	II
38785	20529	PGE	PGE21004	2022Q1	linguens p Deem-WP	STYM8LT	62768	II
38785	23019	SCG	PGE21023	2021Q3	rarendum Deem-DEE	MVASLJ3X	68179	C
38785	23502	PGE	PGE21012	2022Q3	habitatio l Deem-WP	HHSLSCVV	57399	II
38785	25480	SCR	PGE21035	2021Q4	fecit estis l Deem-WP	OOMX1YN	32525	F
38785	26469	SCG	PGE21013	2022Q4	travissima Deem-WP	R2AS53CM	65071	F

JobID	PA	PrgID	CET_ID	GrossKWh	GrossKW	GrossThm	NetKWh	NetKW
38785	PGE	FuelSubK	FuelSub-3-	0	538435	203310	0	323061
38785	PGE	FuelSubK	FuelSub-3-	0	1495916	4484.1	0	658203
38785	PGE	FuelSubK	FuelSub-3-	0	1541560	-110869	0	493299
38785	PGE	FuelSubK	FuelSub-6-	0	1274429	164612	0	1210708
38785	PGE	FuelSubK	FuelSub-9-	0	217087	-144575	0	17367
38785	PGE	FuelSubTh	FuelSub-2-	1.7E+07	-957.7	0	2779315	-67.039
38785	PGE	FuelSubTh	FuelSub-3-	7431483	-1515.73	0	591388	-636.608
38785	PGE	FuelSubTh	FuelSub-5-	2.4E+07	-2973.6	0	4988218	-1843.63
38785	PGE	FuelSubTh	FuelSub-7-	5.3E+07	-2310	0	4765716	-716.1
38785	PGE	FuelSubTh	FuelSub-8-	3.1E+07	-3750.6	0	2.1E+07	-1612.76
38785	SDGE	PGE21041	64065	3.4E+11	1.7E+10	-2.6E+11	4.4E+11	2.4E+10
38785	SDGE	PGE21039	65294	1.1E+12	-5.6E+10	3.3E+13	3.1E+11	-6.9E+10
38785	SDGE	PGE21035	71641	1E+13	2.2E+11	5.6E+11	1.1E+13	2.6E+11
38785	SDGE	PGE21032	97480	-6E+12	-3.1E+10	-1.3E+13	-2.7E+12	-3.6E+10
38785	SDGE	PGE21029	51456	-1.5E+12	3.9E+11	7.3E+12	-6.8E+11	3.1E+09
38785	SDGE	PGE21015	75847	4.7E+12	4.7E+10	4.7E+12	5E+11	5E+09
38785	SDGE	PGE21014	95273	6.4E+12	7.4E+09	7.1E+11	8.8E+12	7.6E+09
38785	SDGE	PGE21013	9451	6.2E+11	7.3E+09	9.3E+11	5.9E+11	4.8E+09
38785	SDGE	PGE21013	70084	5.1E+13	2.2E+11	4.1E+13	7.2E+13	1.0E+11

Confirm that the data was successfully parsed into columns. Note that the CET_ID and CETInputID may not be aligned across the files.

SORT BY CET_ID & CEInputID

JobID	CEInputID	PA	PrgID	ClaimYear	MeasDesc	MeasImpa	MeasCode	MeasureIE
38785	324	SCR	novelprgic	2022Q4	quo non ul	Cust-Gen	ZD6BRYV7	87035
38785	1136	BAY	PGE21013	2022Q4	cognitio M	Cust-Gen	8IG79FCX	19256
38785	3099	SDGE	PGE21037	2021Q4	transit. eg	Deem-WP	DIT76J9U3	86945
38785	3272	BAY	PGE21013	2022Q1	quoque fei	Cust-Gen	67C2XSVKI	4305
38785	3274	MCE	PGE21027	2022Q4	apparens	Cust-Gen	Q7K77PCV	59537
38785	4405	SDGE	PGE21012	2021Q1	quad et ra	Deem-WP	OYRXDW2	11371
38785	5462	PGE	PGE21013	2021Q1	quoque et	Cust-Gen	1NB5FJ57C	10232
38785	5553	MCE	PGE21014	2022Q4	gravis qua	Cust-Gen	KO9DYFOV	90385
38785	6973	SCR	PGE21014	2022Q3	Pro funem	Cust-Gen	OTM2GWC	83028
38785	7732	MCE	PGE21026	2022Q3	essit. man	Deem-DEE	JIF9L1KU4	59342
38785	8224	SCG	MCE02	2021Q4	plorum bri	Cust-Gen	SZMQP1RI	69408
38785	8278	SCR	PGE21034	2022Q4	quad et eu	Deem-WP	NRKVNCO	17959
38785	8755	PGE	PGE21019	2022Q2	quad in et	Deem-WP	RFTH8DLJ	59514
38785	9451	SDGE	PGE21013	2021Q1	manifestui	Cust-Gen	73XETDMI	77273
38785	11004	MCE	PGE21012	2022Q4	fecit. et Q	Deem-WP	73SZXG64	47781
38785	12270	SCG	PGE21021	2021Q4	venit. e qu	Deem-WP	6LS8UGB0	44426
38785	12779	SCR	PGE21012	2021Q4	quoque eg	Cust-Gen	TA1LR21V	90498
38785	14275	SCG	PGE21012	2021Q3	eggregior.	Cust-Gen	U6U99X4C	32054
38785	14578	SCF	PGE21011	2021Q2	pladior no	Cust-Gen		71708

JobID	PA	PrgID	CET_ID	GrossKWh	GrossKW	GrossThm	NetKWh	NetKW
38785	SCR	novelprgic	324	0	0	0	0	0
38785	BAY	PGE21013	1136	8.6E+10	-5.6E+11	3.6E+13	1.2E+11	-5E+11
38785	SDGE	PGE21037	3099	-1.9E+11	9.1E+10	1.1E+13	-1.3E+11	1.3E+11
38785	BAY	PGE21013	3272	-4.3E+12	-2.4E+11	8.8E+12	-3.7E+11	-3.4E+11
38785	MCE	PGE21027	3274	7.8E+12	2.6E+11	-1.5E+12	1.2E+11	7.4E+10
38785	SDGE	PGE21012	4405	-4.2E+12	1.9E+11	-3.3E+12	-5.2E+12	1.6E+11
38785	PGE	PGE21013	5462	4.1E+12	1.8E+11	7.2E+12	3.2E+12	1E+10
38785	MCE	PGE21014	5553	-5.2E+12	-1.3E+11	-1.2E+13	-3.7E+12	-7E+10
38785	SCR	PGE21014	6973	3.2E+13	-2.6E+11	7.7E+12	5.9E+11	-8E+10
38785	MCE	PGE21026	7732	2.6E+13	2.9E+11	2.3E+13	3.8E+13	3.9E+11
38785	SCG	MCE02	8224	8.6E+12	-3.4E+11	-1.9E+13	1.1E+13	-1.9E+11
38785	SCR	PGE21034	8278	1E+13	7.7E+10	-6.8E+12	1.2E+13	1.1E+11
38785	PGE	PGE21019	8755	-1.8E+11	-1.8E+11	2.8E+13	-3.8E+10	-1.3E+11
38785	SDGE	PGE21013	9451	6.2E+11	7.3E+09	9.3E+11	5.9E+11	4.8E+09
38785	MCE	PGE21012	11004	-8.3E+12	1.7E+10	1.2E+11	-8E+12	2.4E+10
38785	SCG	PGE21021	12270	1.9E+13	-1.7E+11	5.8E+11	1.4E+13	-2.1E+11
38785	SCR	PGE21012	12779	2.9E+13	-4.6E+11	6.2E+12	7.2E+12	-2.3E+11
38785	SCG	PGE21012	14275	-2.2E+12	8.7E+10	-4.6E+12	-7E+11	5.8E+10
38785	SCF	PGE21011	14578	6.2E+11	9.0E+10	1.5E+12	3E+11	7.7E+10

Step 3: In order to match the CET_ID and CEInputID, in this method, the data in each file must be sorted by the respective ID column, as shown here.

COPY/PASTE OUTPUT DATA

JobID	CEInputID	PA	PrgID	ClaimYear	MeasDesc	MeasImpa	MeasCode	MeasureIE
38785	324	SCR	novelprgic	2022Q4	quo non ul	Cust-Gen	ZD6BRYV7	87035
38785	1136	BAY	PGE21013	2022Q4	cognitio M	Cust-Gen	8IG79FC	19256
38785	3099	SDGE	PGE21037	2021Q4	transit. eg	Deem-WP	DIT76J9U	86945
38785	3272	BAY	PGE21013	2022Q1	quoque fei	Cust-Gen	67C2XSVKI	4305
38785	3274	MCE	PGE21027	2022Q4	apparens	Cust-Gen	Q7K77PCV	59537
38785	4405	SDGE	PGE21012	2021Q1	quad et ra	Deem-WP	OYRXDW2	11371
38785	5462	PGE	PGE21013	2021Q1	quoque et	Cust-Gen	1NBYFJ57	10232
38785	5553	MCE	PGE21014	2022Q4	gravis qua	Cust-Gen	KO9DYF0V	90385
38785	6973	SCR	PGE21014	2022Q3	Pro funem	Cust-Gen	OTMZGWC	83028
38785	7732	MCE	PGE21026	2022Q3	essit. man	Deem-DEE	JIF9L1KU4	59342
38785	8224	SCG	MCE02	2021Q4	plorum bri	Cust-Gen	SZMQP1RI	69408
38785	8278	SCR	PGE21034	2022Q4	quad et eu	Deem-WP	NRKVNCO	17959
38785	8755	PGE	PGE21019	2022Q2	quad in et	Deem-WP	RFTH8DLJ	59514
38785	9451	SDGE	PGE21013	2021Q1	manifestui	Cust-Gen	73XETDMI	77273
38785	11004	MCE	PGE21012	2022Q4	fecit. et Qi	Deem-WP	73SXG64	47781
38785	12270	SCG	PGE21021	2021Q4	venit. e qui	Deem-WP	6LS8UGB0	44426
38785	12779	SCR	PGE21012	2021Q4	quoque eg	Cust-Gen	TA1LR21V	90498
38785	14275	SCG	PGE21012	2021Q3	eggregior.	Cust-Gen	U6U99X4C	32054
38785	14578	SCR	PGE21011	2021Q2	pladior no	Cust-Gen		71708

JobID	PA	PrgID	CET_ID	GrossKWh	GrossKW	GrossThm	NetKWh	NetKW
38785	SCR	novelprgic	324	0	0	0	0	0
38785	BAY	PGE21013	1136	8.6E+10	-5.6E+11	3.6E+13	1.2E+11	-5E+11
38785	SDGE	PGE21037	3099	-1.9E+11	9.1E+10	1.1E+13	-1.3E+11	1.3E+11
38785	BAY	PGE21013	3272	-4.3E+12	-2.4E+11	8.8E+12	-3.7E+11	-3.4E+11
38785	MCE	PGE21027	3274	7.8E+12	2.6E+11	-1.5E+12	1.2E+11	7.4E+10
38785	SDGE	PGE21012	4405	-4.2E+12	1.9E+11	-3.3E+12	-5.2E+12	1.6E+11
38785	PGE	PGE21013	5462	4.1E+12	1.8E+10	7.2E+12	3.2E+12	1E+10
38785	MCE	PGE21014	5553	-5.2E+12	-1.3E+11	-1.2E+13	-3.7E+12	-7E+10
38785	SCR	PGE21014	6973	3.2E+13	-2.6E+11	7.7E+12	5.9E+11	-8E+10
38785	MCE	PGE21026	7732	2.6E+13	2.9E+11	2.3E+13	3.8E+13	3.9E+11
38785	SCG	MCE02	8224	8.6E+12	-3.4E+11	-1.9E+13	1.1E+13	-1.9E+11
38785	SCR	PGE21034	8278	1E+13	7.7E+10	-6.8E+12	1.2E+13	1.1E+11
38785	PGE	PGE21019	8755	-1.8E+11	-1.8E+11	2.8E+13	-3.8E+10	-1.3E+11
38785	SDGE	PGE21013	9451	6.2E+11	7.3E+09	9.3E+11	5.9E+11	4.8E+09
38785	MCE	PGE21012	11004	-8.3E+12	1.7E+10	1.2E+11	-8E+12	2.4E+10
38785	SCG	PGE21021	12270	1.9E+13	-1.7E+11	5.8E+11	1.4E+13	-2.1E+11
38785	SCR	PGE21012	12779	2.9E+13	-4.6E+11	6.2E+12	7.2E+12	-2.3E+11
38785	SCG	PGE21012	14275	-2.2E+12	8.7E+10	-4.6E+12	-7E+11	5.8E+10
38785	SCR	PGE21011	14578	6.3E+11	8.0E+10	1.5E+12	3E+11	2.7E+10

Step 4: Copy and paste the sorted data from the output file into the sorted data in the input file.

You can copy and paste all the data or only a subset, however it is wise to include the CET_ID column data so that you can confirm later that the data was correctly linked if needed.

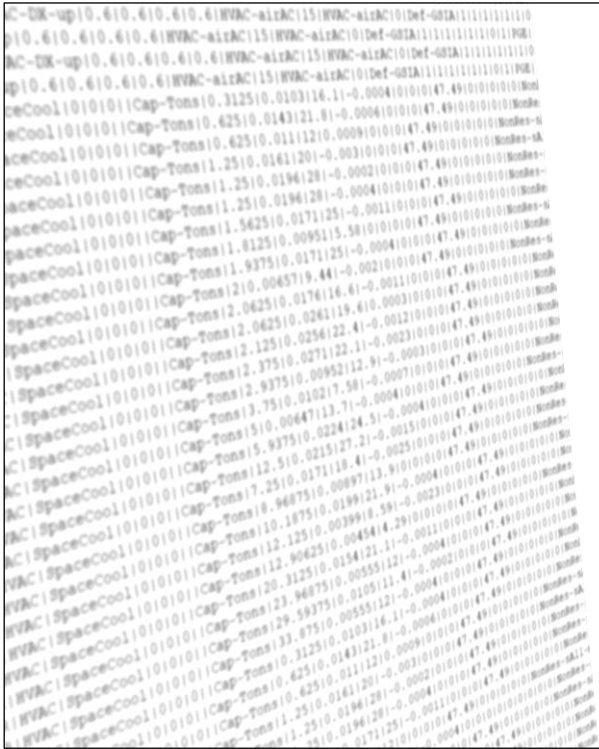
BEGIN ANALYSIS...

JobID	CEInputID	PA	PrgID	ClaimYear	MeasDesc	Version	Comments	CET_ID	GrossKWh	GrossKWh	GrossThm	NetKWh	NetKWh	NetThm	LifecycleG	LifecycleG
38785	324	SCR	novelprgic	2022Q4	quo non ut	ExAnte201	egredior	324	0	0	0	0	0	0	0	0
38785	1136	BAY	PGE21013	2022Q4	cognitio M	ExAnte201	bono e pla	1136	8.6E+10	-5.6E+11	3.6E+13	1.2E+11	-5E+11	1.5E+13	7.7E+11	3.2E+14
38785	3099	SDGE	PGE21037	2021Q4	transit. eg	DEER1314	transit. pla	3099	-1.9E+11	9.1E+10	1.1E+13	-1.3E+11	1.3E+11	1.6E+13	-2E+12	1.2E+14
38785	3272	BAY	PGE21013	2022Q1	quoque fe	ExAnte201	e quis in fe	3272	-4.3E+12	-2.4E+11	8.8E+12	-3.7E+11	-3.4E+11	2.3E+12	-6.5E+13	1.3E+14
38785	3274	MCE	PGE21027	2022Q1	apparens	ExAnte201	Quad Id et	3274	7.8E+12	2.6E+11	-1.5E+12	1.2E+11	7.4E+10	-1.8E+12	6.7E+13	-1.3E+13
38785	4405	SDGE	PGE21012	2021Q1	quad et ra	DEER2016	esset et m	4405	-4.2E+12	1.9E+11	-3.3E+12	-5.2E+12	1.6E+11	-5.3E+11	-1.1E+14	-9E+13
38785	5462	PGE	PGE21013	2021Q1	quoque et	ExAnte201	eudis trav	5462	4.1E+12	1.8E+10	7.2E+12	3.2E+12	1E+10	6.9E+12	4.4E+12	7.6E+12
38785	5553	MCE	PGE21014	2022Q4	gravis qua	DEER2018	volcans p	5553	-5.2E+12	-1.3E+11	-1.2E+13	-3.7E+12	-7E+10	-1.1E+13	-1.4E+14	-3.3E+14
38785	6973	SCR	PGE21014	2022Q3	Pro funem	ExAnte201	plurissimu	6973	3.2E+13	-2.6E+11	7.7E+12	5.9E+11	-8E+10	9.5E+12	2.3E+14	5.5E+13
38785	7732	MCE	PGE21026	2022Q3	essit. man	DEER2008	non rarenc	7732	2.6E+13	2.9E+11	2.3E+13	3.8E+13	3.9E+11	2.9E+11	1.3E+14	1.2E+14
38785	8224	SCG	MCE02	2021Q4	plorum br	DEER2018	egredior	8224	8.6E+12	-3.4E+11	-1.9E+13	1.1E+13	-1.9E+11	-7.7E+12	1.6E+14	-3.3E+14
38785	8278	SCR	PGE21034	2022Q4	quad et eu	ExAnte201	egredior	8278	1E+13	7.7E+10	-6.8E+12	1.2E+13	1.1E+11	-6.2E+12	2.6E+13	-1.7E+13
38785	8755	PGE	PGE21019	2022Q2	quad in et	ExAnte201	plorum fec	8755	-1.8E+11	-1.8E+11	2.8E+13	-3.8E+10	-1.3E+11	3.4E+13	-4.2E+12	6.5E+14
38785	9451	SDGE	PGE21013	2021Q1	manifestu	ExAnte201	vobis quar	9451	6.2E+11	7.3E+09	9.3E+11	5.9E+11	4.8E+09	1.2E+12	8.1E+12	1.2E+13
38785	11004	MCE	PGE21012	2022Q4	fecit. et Q	ExAnte201	quartu tra	11004	-8.3E+12	1.7E+10	1.2E+11	-8E+12	2.4E+10	5.8E+10	-8.8E+13	1.3E+12
38785	12270	SCG	PGE21021	2021Q4	venit. e qu	DEER2016	Id quis ven	12270	1.9E+13	-1.7E+11	5.8E+11	1.4E+13	-2.1E+11	1.2E+11	6.2E+13	1.9E+12
38785	12779	SCR	PGE21012	2021Q4	quoque eg	DEER2008	quorum ve	12779	2.9E+13	-4.6E+11	6.2E+12	7.2E+12	-2.3E+11	9.3E+12	4E+14	8.6E+13
38785	14275	SCG	PGE21012	2021Q3	eggedior.	ExAnte2016		14275	-2.2E+12	8.7E+10	-4.6E+12	-7E+11	5.8E+10	-6.7E+12	-1.8E+13	-3.7E+13
38785	14578	SCE	PGE21011	2021Q2	pladior no	DEER2008	non essit.	14578	-6.3E+11	-3.9E+10	1.5E+12	-3E+11	-2.7E+10	4.3E+11	-1.4E+13	3.4E+13

Now that the data from the two files have been combined, you may analyze the output data using data contained in the input file. Be sure to save this file with a new name and/or with the Excel file format instead of a csv.

ANALYSIS TIPS

- Use TRCRatio and PACRatio fields with caution (as discussed previously)
- Use Pivot Tables to rapidly analyze the data without formulas
- Total avoided cost benefits are not a unique output...
 - Consider adding ElecBen to GasBen in a new column.
- Calculate c/e ratios and net benefits using your own subsets of the output data
- Consider creating your pre- and post-processing tools...
 - E.g. templates, macros



AGENDA

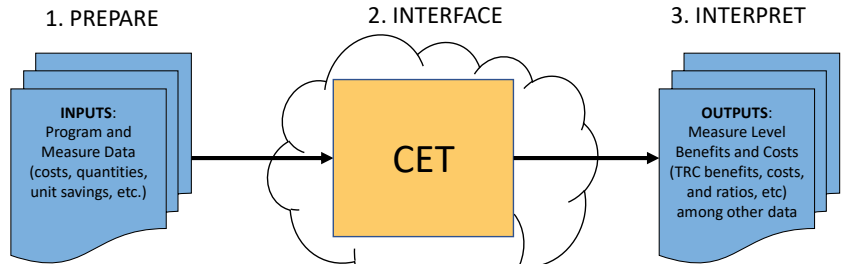
- A. **CET Background** | What the CET is, how it functions within the CA EE policy environment, and learning the way around the CET website.
- B. **CET User Process**
 1. **Prepare CET input files** | create inputs using Microsoft Excel, a text editor, and a file compression tool.
 2. **Interface with the CET** | Create a CEDARS community account, initiate a CET model run with appropriate parameters.
 3. **Interpret CET output files** | Compile downloaded files in Microsoft Excel and understand the cost effectiveness results.

That's it! We covered all the new material.

COURSE RECAP

A. The CET is primarily a tool for the CPUC to determine the cost effectiveness and other properties of EE programs and portfolios, which may also be used by the community for similar purposes.

B. CET User Process





END OF TRAINING