

# **the Standard Program Tracking database:**

an update to Energy Division's measure reporting  
and evaluation process

***under development, sections to be added***

Updated 1 September 2011

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## **Objective and Scope of this document**

This document presents an update to the Standard Program Tracking database (SPTdb) format that allows for a more efficient, cost-effective and productive environment in which to review and evaluate IOU accomplishments.

The SPTdb includes all of the tables and data sources needed to determine the cost-effectiveness of IOU programs. The updated format presented in this document does not include any new data requirements. The information currently reported in claims data or contained in ex-ante tables or otherwise contained in program documentation are merely better identified and more efficiently organized.

Section 1 provides some context and background on why the current process needs to be updated. In this section the current IOU reporting process and the use of frozen ex-ante data is outlined. Problems arising from the current process are discussed and a solution is put forward that addresses these problems.

Section 2 describes how the current SPT tables and reporting requirements will change under the updated scenario.

Section 3 provides details on each of the major tables in the updated SPT database and is likely of interest only to those who may need to create or maintain these tables. This section has an accompanying workbook that defines every field in all of the SPTdb tables.

## Section 1: Background and Motivation for Change

This section provides context and background on why the current SPTdb needs to be updated. In this section the current IOU reporting process and the use of frozen ex-ante data is outlined. Problems arising from the current process are discussed and a solution is described that addresses these problems.

### *Current IOU Reporting Process: a high-level view*

In the current process, each IOU periodically submits a table of accomplishments. The only strict data requirement is that the table contains the information needed by the E3 calculators in order to calculate individual measure avoided costs and program level cost-benefits along with information to support the EM&V (Evaluation, Measurement and Verification) process.

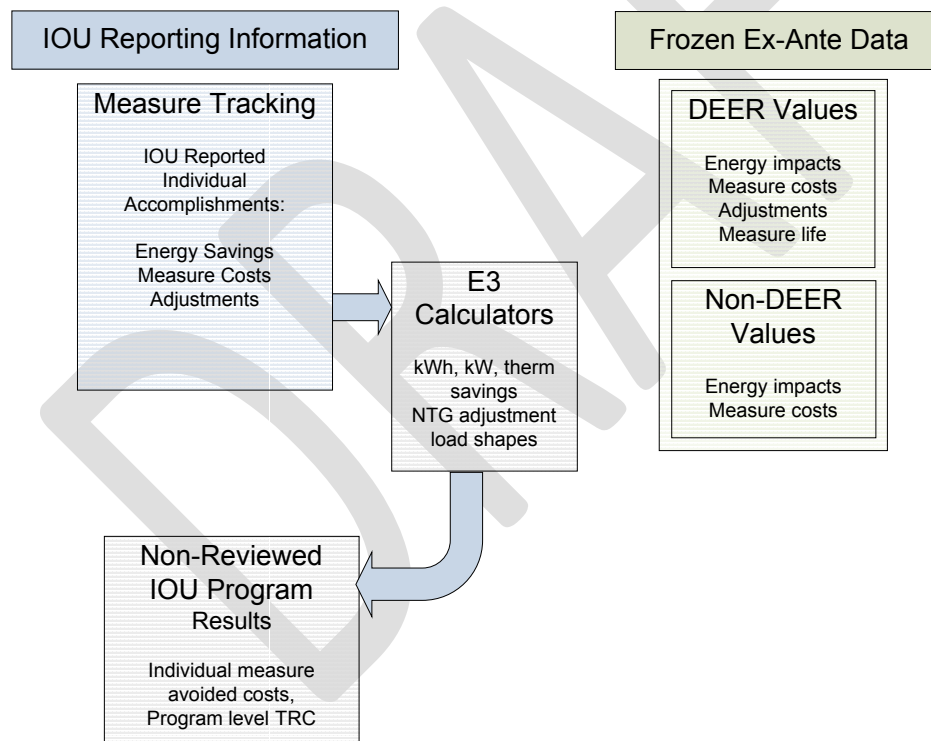


Figure 1. Existing Accomplishment Reporting Process

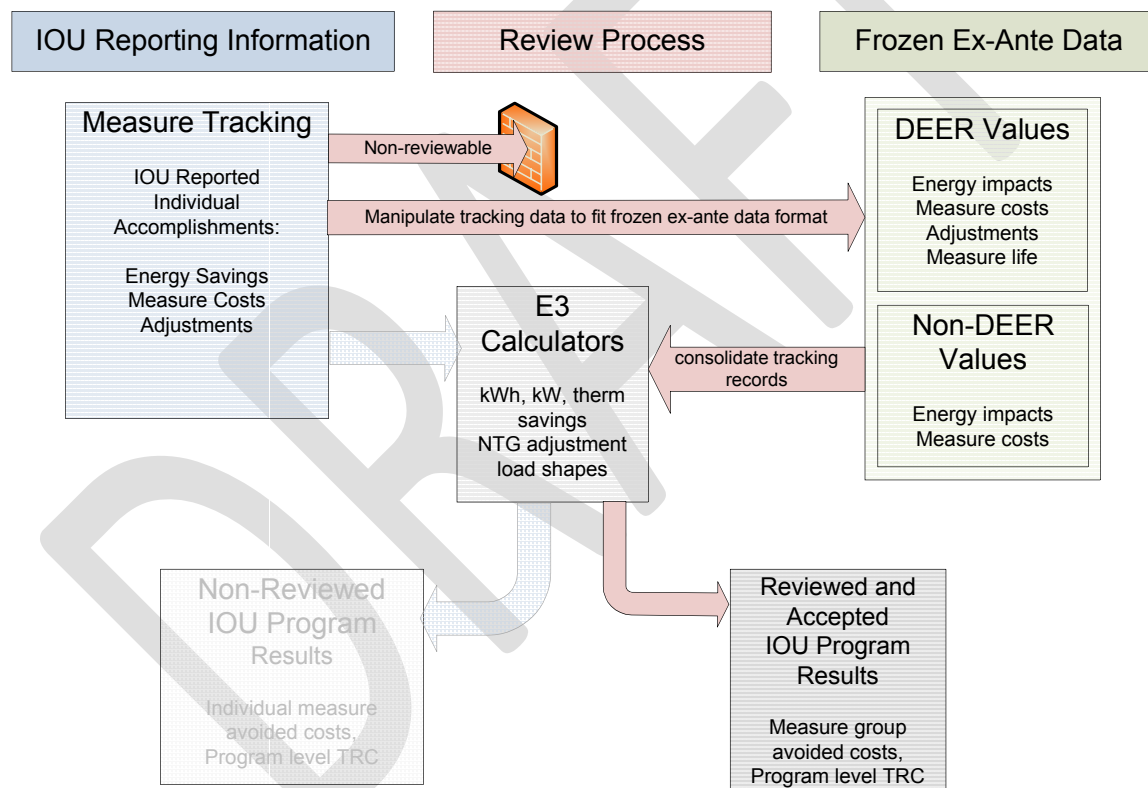
Figure 1 points out that there is no obvious connection between the IOU claims data and the frozen ex-ante data tables. It is usually assumed, and occasionally can be verified, that the data reported in the claims table is based on the required frozen ex-ante data but this time-consuming effort is not practical on a comprehensive scale.

Cost-effectiveness workbooks (known as “E3 Calculators”) use select fields from the measure tracking data to determine accomplishment- specific benefits. Additionally, the IOUs report the results from the E3 calculators for accomplishments grouped by market sector, end-use and IOU program on the “Energy Efficiency Groupware Application (EEGA)” website.

### ***Problems to Solve with the Current Reporting Process***

Significant issues with the process become evident when examining how the current review process is conducted and how EM&V efforts are undertaken.

Before any required EM&V efforts can be initiated, the tracking data must be reviewed and accepted as correct and complete. This conceptually simple process has come to consume significant resources at the expensive of actual EM&V studies efforts. Figure 2 shows the review process added to the existing reporting process.



**Figure 2. Existing Accomplishment Review Process**

The following issues become evident during this attempt at an initial review of the tracking data:

1. Not all of the measure claims data are able to be reviewed. With no standardized data format or descriptive qualifiers, a significant portion of the IOU claims records have to be accepted without fully understanding what they represent. This is depicted in the figure above by the review process that hits a brick wall.

2. Those IOU claims records that can be reviewed must be manipulated to fit into the format of the ex-ante frozen data tables. Building types need to be re-assigned to the list of building types in the frozen database, measure names need to be interpreted and mapped to the measures in the ex-ante database and the appropriateness of the reported NTG and EUL values have to be evaluated. This is a time-consuming and expensive process and can only be done for a subset of the tracking records.
3. For EM&V planning purposes, the subset of reviewed and accepted tracking records need to be grouped (or "classified") by technology and application for the purpose of identifying populations from which to draw a sample. This step is at times a judgment call and invariably some tracking records are excluded from proper evaluation because they cannot be unambiguously classified, or are misclassified due to insufficient or inconsistent measure naming.

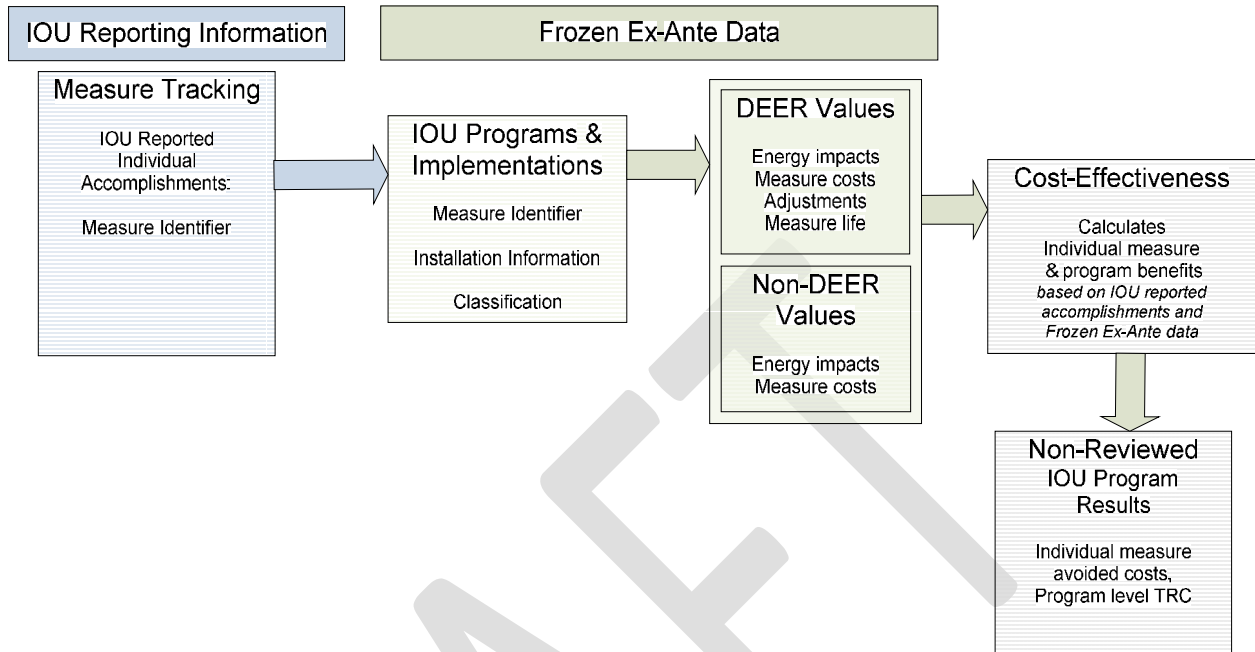
Once the IOU claims data is reviewed and potentially included in an EM&V study, the application of results from the EM&V study also proves to be problematic with the current data structure.

4. The application of EM&V study results can be difficult since existing adjustments are potentially included in IOU reported savings values.

## ***A Solution to the Problems***

The solution presented in this document revolves around using the frozen ex-ante data as part of the accomplishment reporting and evaluation process, instead of an external reference that may or may not be identifiable.

Figure 3 is the update to “Figure”.



**Figure 3. Updated Accomplishment Reporting process utilizing Frozen Ex-Ante data to determine Cost-Effectiveness**

The significant changes to the reporting process include:

1. IOU Claims data references the frozen ex-ante data instead of reporting values selected from the ex-ante tables; this is in addition to reporting the site-specific accomplishment information such as number of units installed.
2. Cost-effectiveness values are calculated based on the claims data and information in the frozen ex-ante tables instead of being calculated based solely on reported measure tracking data.
3. Measure implementations, or definitions of “how measures are planned to be delivered”, are defined prior to reporting measure accomplishments.

Each of the problems listed earlier are addressed by the updated process:

1. Almost by definition, all of the tracking records are readily reviewable. The very fact that the tracking records are linked to the ex-ante data means that they have passed a quality check that records in the current process are not subject to.

The updated review process consists of checking that all links are valid and that data being linked to a measure tracking record is appropriate. A significant portion of the review efforts are made before the tracking data is received as part

of the task of reviewing IOU measure implementations.

2. Since IOU claims data references the frozen ex-ante tables, a structure is imposed that unambiguously identifies all important aspects of the claims record. There is no need to re-assign building types or interpret measure names, as these values are linked from standard tables.
3. The formal references utilized in this design allow for consistent classification of measures, energy impacts, cost data and all other ex-ante data associated with a measure accomplishment. The current use of arbitrary descriptions to characterize measures is replaced by selections from reviewed and collaboratively developed tables. Each measure will be able to be grouped by a standard classification scheme.
4. The application of EM&V study results becomes a relatively simple process of augmenting the ex-ante tables and instructing the cost-effectiveness calculations to utilize updated or alternative impacts and/or savings adjustments. This process is outlined in Figure 4 below in red.

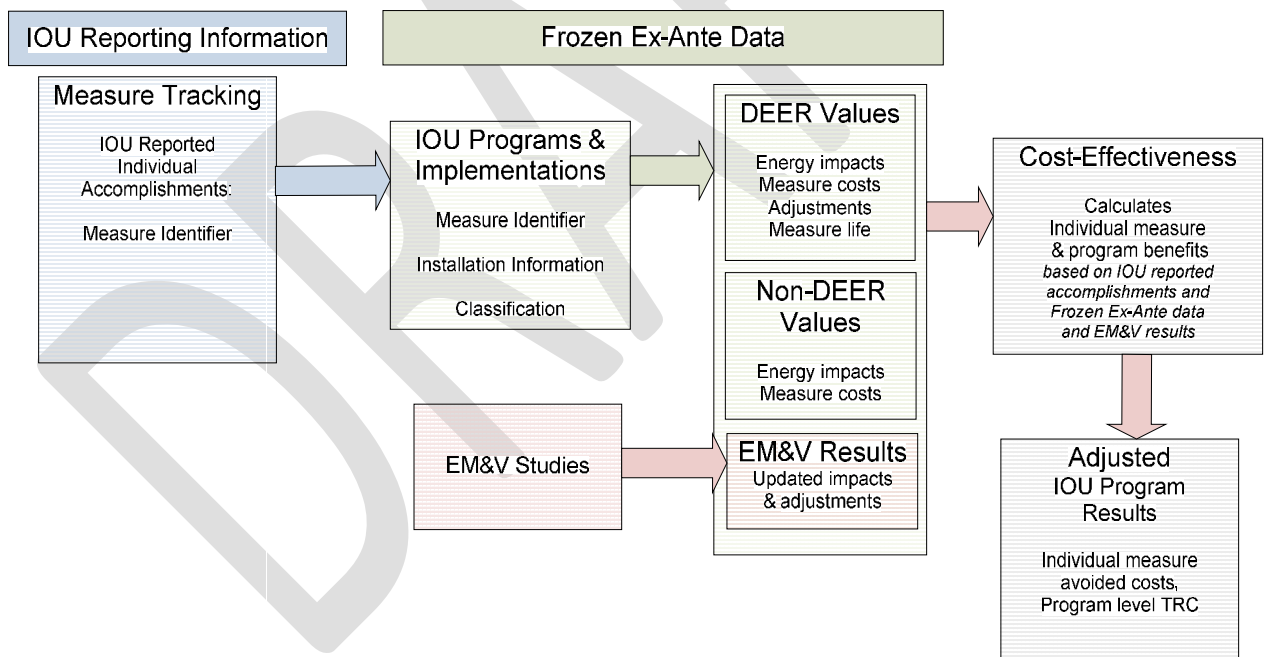


Figure 4. Updated Reporting Process incorporating EM&V results

It should be pointed out and emphasized that *the updated process does not include any new data requirements*. The information currently reported in claims data or contained in ex-ante tables or other documentation are merely better identified and more efficiently organized.



## Section 2: Updated SPTdb Design

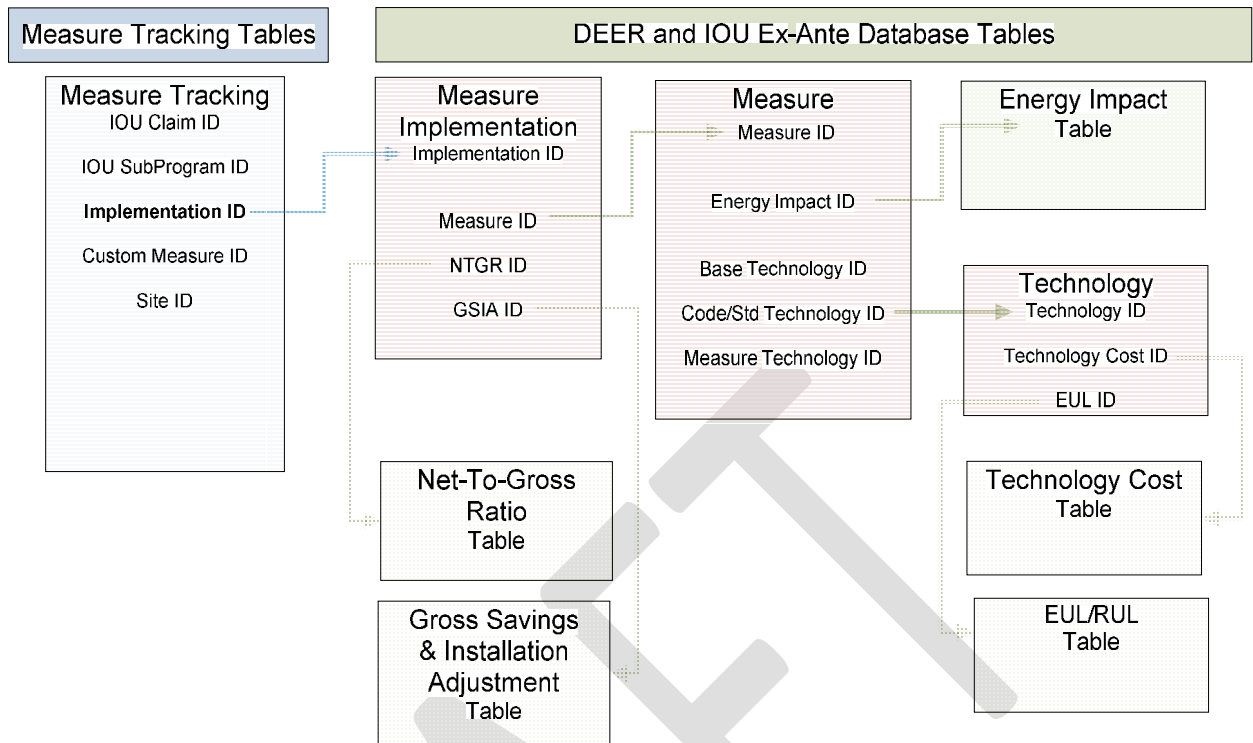
This section describes how the current data structure is changed to accommodate the updated process described in Section 1.

The “Standard Program Tracking database” includes all of the tables and data sources needed to determine the cost-effectiveness of IOU programs. These tables include the IOU submitted measure tracking data along with ex-ante measure definitions and energy impacts and Energy Division (ED) developed cost-effectiveness support tables.

The overall data requirements and individual tables have been designed with the following objectives:

- All data relevant to the cost-effectiveness calculations of the IOU programs are readily available in a documented format and easily reviewable.
- All tracking data values can be resolved back to their source; the links between tracking data, measure definitions, energy impacts, measure costs, savings adjustments and all other cost-effectiveness values can be followed with no ambiguity.
- The reporting requirements and data format support an accurate determination of measure and program cost-effectiveness.
- The reporting requirements and data format support an efficient means of implementing programs and reporting results.

Figure 5 highlights the SPTdb tables that either do not exist in the current scenario or are significantly changed.



**Figure 5. A Re-organization of the current Ex-Ante data**

### ***IOU Claims table***

The most significant change to the IOU Claims table format is the requirement for an “Implementation ID” that associates a “measure implementation” with the claims record. By virtue of this link to the Implementation table, energy impacts, measure costs, technology information and net-to-gross values are associated with the claims record. As such, these data do not need to be repeated in the IOU Claims record.

### ***Implementation table***

This is a new table in the SPTdb, though it is composed of information that already exists as frozen ex-ante data. Each record in this table provides information about how an IOU delivers, or plans to deliver, one specific energy-saving measure. Each record associates a Net-to-Gross record and any applicable Gross-Savings & Installation Adjustment records to a Measure ID.

### *Motivation for the Implementation table*

The main motivations for adding a table in between the measure tracking table and the measure table are *flexibility* and *efficiency*.

A single measure definition, with all of its associated energy impacts and technology costs, may be part of many separate IOU programs and may be delivered, or “implemented”, in a number of ways. The implementation table associates a NTG and GSIA record set with a measure definition and by doing so allows a single measure definition to be used in multiple programs under various scenarios. This is an efficient approach from the database design and maintenance perspective and a more robust, less error-prone method for adding information to the database from the user’s perspective.

This table is created by the IOUs based on their work papers and program planning. The implementations must be defined and reviewed prior to the IOUs submitting any tracking data that refer to the implementations records.

### **Measure table**

The Measure table identifies the technologies associated with a measure and links to energy impact and technology cost values. This table is composed of data currently contained in IOU work papers and DEER documentation. Records in this table are classified by the measure technology type as well as how the technology is used. See the section on “Classification” for more details.

Having all measures defined in this table will prevent unnecessary duplication of efforts between the IOUs and ED and provide a central source for users (including outside stakeholders such as TURN, DRA, NRDC) to examine the available measures and their energy impacts.

ED will convert all DEER measures to this format while the IOUs will accompany all work papers with measure definitions in this format.

### **Technology table**

Each record in the technology table defines one specific technology using the parameters defined for that technology type. The technology table is an extension of the technology classification scheme, adding a final, definitive level of classification that unambiguously identifies a specific technology.

ED will have all DEER measures reference defined technologies in this table and the IOUs will augment the technology table based on the technologies contained in their work papers.

## Section 3. Details of the SPTdb Structure

This section provides details on the updated SPTdb structure that are likely of interest only to those who may need to create or maintain these tables. Refer to the accompanying workbook “SPT database format vXX with Examples.xls” for additional details about these tables.

The following diagram shows the major tables of the new Standard Program Tracking database (SPTdb) and indicates how the tables are linked together.

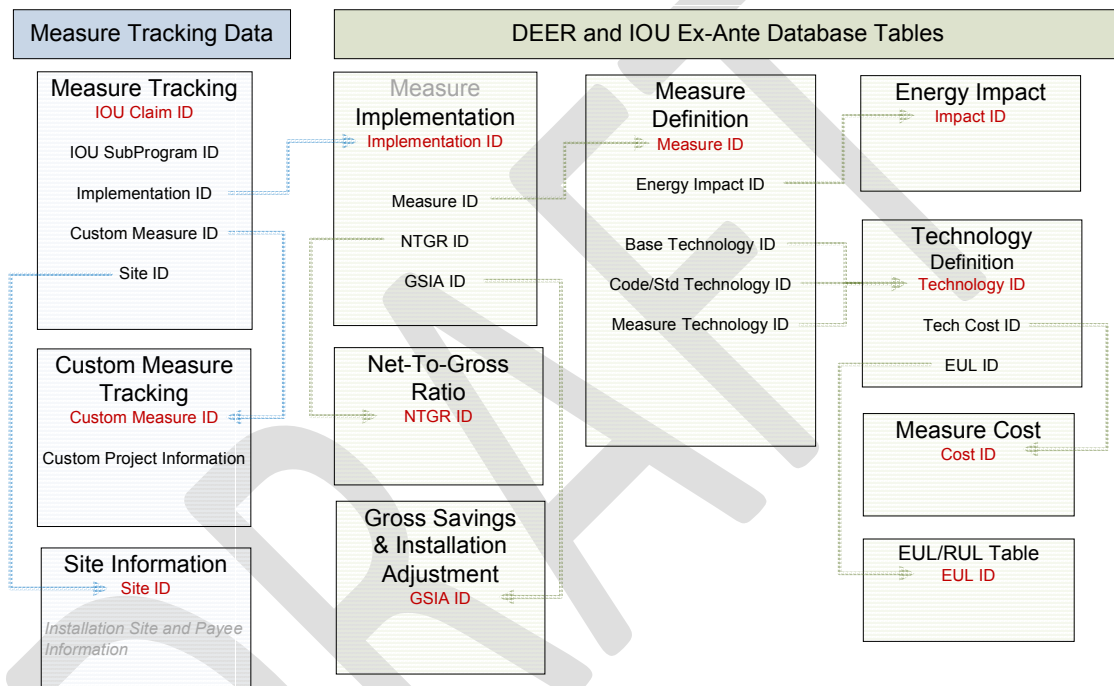


Figure 6. Main Tables of the updated Standard Program Tracking database

The IOU Accomplishment Tables, which the IOUs submit on a periodic basis, consist of three linked tables:

1. **IOU Claim**: consists of one row (or record) for each reported accomplishment, stating the number of units installed and the implementation ID of the accomplishment.
2. **Custom Measure Claim**: If an accomplishment reported in the IOU Claim table is based on a custom measure, site-specific measure information and energy impacts are reported in this table and linked to IOU Claim table via the Custom Measure ID.
3. **Site Information**: the site address and payee contact information is linked from the IOU Claim table via a Site ID.

These tables are submitted by the IOUs as separate, linked tables. Details of each of these tables are presented in this document and in the accompanying workbook.

The DEER and IOU Ex-Ante Database Tables are developed and maintained on an Energy Division central database server. Some of the tables are developed by the IOUs based upon IOU work papers, others are developed by ED and a few are developed by both ED and the IOUs:

4. **Measure Implementation**: each record contains information about how a measure is delivered, or implemented, by the IOU program. Records in this table are developed by the IOUs based on their program design and measure work papers.
5. **Measure**: each record describes a measure and references the technologies and energy impacts that are included in the measure. This table is developed by both the IOUs, based on their measure work papers, and ED, where measure definitions are part of DEER.
6. **Energy Impact**: each record contains the kWh, kW and therm impacts associated with a measure. This table is also developed by both the IOUs and ED.
7. **Technology**: each record describes a technology by the specification of all important parameters associated with the technology.
8. **Technology Cost**: each record contains either the full cost associated with a specific technology or the incremental cost of technology over a specified base case. This table is developed by both the IOUs and ED.
9. **Net-to-Gross Ratio**: contains default and measure application specific net-to-gross ratios. Developed by ED.
10. **Gross Savings and Installation Adjustment**: contains measure application specific gross savings and installation adjustment values. A single GSIA ID may be associated with multiple records in this table, each describing a different GSIA type. Developed by ED.
11. **EUL/RUL**: contains estimated useful life and remaining useful life estimates for comprehensive list of technologies.

One of the major objectives of the SPTdb is an unambiguous link between claims data and the data needed to determine cost-effectiveness. To this end, the content of many of

the fields in the SPTdb tables is a selection from another table. For example, when a measure definition needs to specify an EUL for the installed technology, a reference is given that identifies a record in the EUL table; the EUL *value* is not part of the measure definition but a link that leads to the EUL source that specifies the value is part of the measure definition.

*When describing the fields of the various SPTdb tables in this document, a “source” is often referenced. All of the source tables referenced can be found in the accompanying workbook.*

All DEER 2008 measures (including 2005 non-updated measures), energy impacts and support tables have been translated to the format described in this document and the accompanying workbook. Future releases of all DEER results will conform to the formats described here.

### **Accomplishment Tables**

The accomplishment data consist of three separate tables that link to one another. The motivation to divide the data into three parts is both confidentiality and efficiency, as described below.

#### **IOU Claims Table**

The main function of this table is to report an accomplishment, or measure installation, and describe that accomplishment with enough information such that the cost-effectiveness can be accurately determined and the measure participate in an evaluation if selected to be part of an EM&V project.

As mentioned above, previous versions of this table were not strictly defined and the claims data were not linked to any of the frozen ex-ante data tables. The new table definition, by linking to other tables, actually contains far fewer fields of data than previous.

All of the fields in this table are critical to some aspect of the cost-effectiveness calculation or the EM&V efforts, but the key fields are the Implementation ID, which links to the measure definition and energy impact and the cost data, and the Sub-program ID, which associates the claim with an IOU program and sub-program. If the claim is for a custom measure, the custom project ID links to the pre-define Custom Project table with energy impact and descriptive information for the custom measure.

### *Technology Parameters as Claim data*

Technology parameters are defined within the "Technology Definition" table and may include any of the parameters used to describe a technology.

The reported technology parameter values may be used to determine claim-data-specific deemed energy impacts. For example, a chiller efficiency value could be a "Technology Parameter" included in the claims data; the measure linked to that tracking data would have a range for efficiency values instead of one specific value. If the "kW/ton" is included in the tracking data, it can be used to determine deemed savings more closely tied to the in-situ measure. If it is not included, a value leading to the minimum impact for the defined efficiency range would be used.

Currently, the technology parameters are descriptive only and would be used for EM&V classification only.

### **Custom Projects Table**

The custom projects table is submitted by the IOUs on a regular basis and includes information of project status, energy impacts, costs and other descriptive information. The format for this table is being developed in conjunction with the SPTdb format and is described in a separate document.

### **Site Information Table**

The site information table contains information on both the site and the payee for the measure claim. A single site record may be referenced in many measure claims. This table may contain confidential information and is maintained as a separate table with different privileges than the claims data.

### **DEER and IOU Ex-Ante Database Tables**

These tables comprise what is sometimes referred to as "the frozen ex-ante data". The tables include the DEER net-to-gross, EUL and technology cost tables as well as the DEER measure and energy impacts tables (all of the data currently contained in the MISer tool).

### **Implementation Table**

Each record in this table provides information about how an IOU delivers, or plans to deliver, one specific energy-saving measure. All tracking data records reference an Implementation record and in doing so link to all necessary cost-effectiveness values.

The key values in the implementation table are the reference to an entry in the Measure table and the references to the Net-to-Gross and Gross Savings & Installation Adjustment

tables. These fields and others that are critical to the cost-effectiveness calculations are described in more detail below.

**Table 1. Key fields of the Implementation table**

<i>Field Name</i>	<i>Description</i>	<i>Source</i>
Implementation ID	Unique identifier so that tracking data can reference a specific implementation record.	created by the IOU
Measure ID	Reference to a record in the Measure table; associates a measure and all of the records linked to a measure with an implementation record.	Measure table
GSIA_ID	Reference to a group of records in the GSIA table; the GSIA table will have as many records with the same GSIA_ID as are needed to associate all gross-savings adjustments and installation adjustments applicable to an implementation.	GSIA table
NTG_ID	Reference to a group of records in the NTG table; depending on the NTG record, tracking data applicability values (for building type or vintage) may be needed so resolve to a single NTG record.	NTG table
Application Type	Identifies whether the measure is being applied in an “Early Retirement”, “Replace-on-Burnout” or new construction situation. The selection will affect how cost-effectiveness is determined and which measures can be referenced, as some measures only support certain application types.	Measure-Application table

The [Implementation] tab in the accompanying workbook provides details and examples for all of the fields in this table.

## Measure Table

Each record in this table describes the technical aspects of an energy efficiency measure and indicates how the energy impacts (electricity and gas savings) are determined. The key values in the measure table are listed in Table 2.

**Table 2. Key fields in the Measure table**

<i>Field Name</i>	<i>Description</i>	<i>Source</i>
Measure ID	Unique identifier so that records in the implementation table can reference a specific measure record.	created by the IOU
Supported Applications	Reference to a group of records in the GSIA table; the GSIA table will have as many records with the same GSIA_ID as are needed to associate all gross-savings adjustments and installation adjustments applicable to an implementation.	GSIA table
Calculation Type	Reference to a group of records in the NTG table; depending on the NTG record, tracking data applicability values (for building type or vintage) may be needed so resolve to a single NTG record.	NTG table



Energy Impact ID		Measure-Application table
Technology Cost IDs: Measure Cost ID, Code/Std Cost ID	Depending on the supported Applications type, either one or two technology cost IDs are needed. For Replace-on-Burnout and new construction applications, the incremental cost of the measure technology over the code or standard replacement technology can be specified. Optionally, the full cost of the measure and code technology can be specified. For Early Retirement measure applications, the full cost of the measure and code or standard replacement technologies are specified.	Cost table
Measure Tech EUL ID, Existing Tech RUL ID	For Early Retirement measure applications, the existing technology RUL is specified along with the measure technology EUL. For other application types, only the measure technology EUL is needed. The EUL and RUL values are referenced from the EUL/RUL table.	EUL/RUL table
Technology Descriptions	The customer-average, code/standard replacement and measure technologies are described with enough detail to properly identify them. If Technology IDs are specified, the linked technology table records will supply additional and definitive descriptions.	

## Impact Calculation Types

The measure definition allows for a number of ways for energy impacts to be specified. These methods allow for existing deemed energy impact records to be utilized in new measure definitions. The definition of new measures, therefore, does not always require the development of new energy impact values. As described below, a measure can specify that energy impacts be scaled from existing reference energy impacts, or that they be interpolated from two sets of existing energy impacts. Lighting measures can also utilize HVAC interactive effects tables to determine new energy impacts from existing records.

Note: the energy impacts for measures not using the standard calculation type, as described below, are determined “on the fly” when the measure impacts are requested. As such, the impacts cannot be viewed from the database without applying the required calculation methods first.

### *Standard*

The “standard” calculation type indicates that energy impact values are taken directly from the linked energy impact records. The energy impact records referenced in measure definitions with this calculation type need to include whole-building kWh, kW and therm impacts.

Measure Definition Requirements:

<b><i>Measure table field name</i></b>	<b><i>Required input</i></b>
EnImpCalcType	<b>Standard</b>
ApplyIE	FALSE
PrimImpactID	Impact records that include whole building energy impacts for the measure being defined

***Direct+IE***

This calculation type uses the end-use energy impact fields in the referenced energy impact records and applies HVAC interactive effects factors to arrive at the whole-building energy impacts. For measures that specify this calculation type, an interactive effects table must also be specified. Currently, interactive effects tables are available for commercial lighting measures and residential lighting and appliance measures.

Measure Definition Requirements:

<b><i>Measure table field name</i></b>	<b><i>Required input</i></b>
EnImpCalcType	<b>Direct+IE</b>
ApplyIE	TRUE
IETableName	selection from IETables appropriate to the type of measure being defined
PrimImpactID	Impact records that includes direct energy impacts for the type of measure being defined, energy impact records must include whole-building impacts

***Scaled***

When the impact calculation type is “Scaled” a reference set of impact records are scaled (multiplied by a constant value) to arrive at the final energy impacts for the measure. The referenced impact records must be marked as “scalable” and the scale basis must be the same for the measure definition and the referenced energy impact records.

Measure Definition Requirements:

<b><i>Measure table field name</i></b>	<b><i>Required input</i></b>
EnImpCalcType	<b>Scaled</b>
ApplyIE	FALSE
ImpScaleBasis	selection from ScaleBasis table
PrimImpactID	Impact records that have the same ScaleBasis as specified in the measure definition
CustScaleValue	The constant value that the energy impact record values are multiplied by to arrive at the measure “above-customer average” energy impacts
CodeScaleValue	The constant value that the energy impact record values are multiplied by to arrive at the measure “above-code” energy impacts

***Scaled+Direct+IE***

This calculation type combines the “Scaled” and “Direct+IE” calculation types by scaling the direct impacts of the referenced energy impact records and applying HVAC interactive effects factors to arrive at the final energy impacts.

<b><i>Measure table field name</i></b>	<b><i>Required input</i></b>
EnImpCalcType	<b>Scaled-Direct+IE</b>
ApplyIE	TRUE
ImpScaleBasis	selection from ScaleBasis table
PrimImpactID	Impact records that have the same ScaleBasis as specified in the measure definition, energy impact records must include end-use impacts
CustScaleValue	The constant value that the energy impact record values are multiplied by to arrive at the measure “above-customer average” energy impacts
CodeScaleValue	The constant value that the energy impact record values are multiplied by to arrive at the measure “above-customer average” energy impacts
IETableName	selection from IETables appropriate to the type of measure being defined

This method is utilized by all DEER indoor lighting measure updates that are converted to the new database format described in this document. The direct energy impacts from DEER 2008 v2.05 are made “scalable” based on the difference in lighting fixture watts between the measure and base case. The lighting measure definitions use scaling factors based on the individual measure technologies and the appropriate interactive effects tables are specified.

This method allows for new lighting measures to be defined without the need for new energy impact records. The existing “scalable” energy impact records can be utilized in any number of measure definitions.

### ***Interpolated***

This calculation type allows the energy impacts for the measure to be interpolated based on two sets of energy impacts of the same technology type.

<b><i>Measure table field name</i></b>	<b><i>Required input</i></b>
EnImpCalcType	<b>Interpolated</b>
ApplyIE	FALSE
PrimImpactID	Reference to the First Energy Impact ID. This can be either set of energy impact records that are being interpolated, so long as the Interpolation Fraction is calculated consistent with the definition below.
SecImpactID	Reference to the Second Energy Impact ID. This can be either set of energy impact records that are being interpolated, so long as the Interpolation Fraction is calculated consistent with the definition below.
InterpFraction	The fraction of (Second Impact - First Impact) value that is added to the First Impact value.

An example of this impact calculation type is the use of existing energy impacts for SEER 14 and SEER 15 residential air-conditioners to specify a measure based on a SEER 14.7 technology. Both sets of referenced impact records have a customer average technology of a SEER 10 and code technology of SEER 13. The new SEER 14.7 measure will have the same customer average and code technologies and will include the following specifications:

```
EnImpCalcType:  Interpolated
PrimImpactID:   RE-HV-ResAC-14S
SecImpactID:    RE-HV-ResAC-15S
InterpFraction: 0.70
```

The resulting energy impacts of all measures utilizing interpolated energy impacts should be reviewed carefully.

### Energy Impacts Table

<i>Field Name</i>	<i>Description</i>	<i>Source</i>
Impact ID	Identifies the group of records that are associated with a measure definition. Applicability values for IOU, building type, building vintage and location are typically needed to resolve an Impact ID to a specific record and set of energy impact values.	
Normalizing Units	Identifies how the total savings are determined based on the normalized energy impacts. The normalizing units must agree between energy impacts and cost data linked from the same measure definition.	NormUnits table
Energy Impacts	The energy impact fields required to be populated is based on the impact calculation type specified in the measure definition that references the energy impact. The possibilities are whole-building impacts and/or end-use impacts and above-customer average impacts and/or above-code impacts. In each of these cases, the kWh/unit, kW/unit and therm/unit impacts are specified.	
Load Shapes	Electric and gas load shapes from the library of load shapes are specified. Energy Impact specific loadshapes can be specified as well, if they are available.	

### Gross Savings and Installation Adjustment Table

<i>Field Name</i>	<i>Description</i>	<i>Source</i>

### Net-to-Gross Ratio Table

All Implementations (defined above) reference a record in the Net-to-Gross Ratio (NTGR) table. The decision of which NTGR record is the most appropriate for a given

Implementation is made when the implementation is defined, subject to the usual review process.

The key fields in this table are the NTGR\_ID, the Version and the actual NTGR value. These three fields resolve a reference to the NTGR table to an actual NTGR value.

The remaining fields in the NTGR table are intended to help make the decision of which NTGR record is appropriate for a given Implementation as clear as possible. The standard classification fields are included in the NTGR table along with a number of other descriptive fields, such as a “NTG qualified” and “program delivery mechanism”.

### Measure Costs Table

<i>Field Name</i>	<i>Description</i>	<i>Source</i>
Measure Cost ID	Unique identifier so that records in the implementation table can reference a specific measure record.	created by the IOU
Normalizing Units	Identifies how the total savings are determined based on the normalized energy impacts. The normalizing units must agree between energy impacts and cost data linked from the same measure definition	NormUnits table
Applicability	Though not always applicable, applicability values for IOU, building type, building vintage, location and cost-qualifiers resolve a reference to a measure cost ID to a single record.	Applicability tables
Cost Type		
Cost Values		

### Other SPT Support Tables

#### Classification

Classification fields hold descriptive values that are mainly used to sort and filter the records in a table. Classification fields are also used to assure that records linked together between different tables are appropriately linked by having the same classification values. For example, a measure with a Use-Subcategory of "Indoor general lighting" should likely not be linked to a EUL record that has a Use-Subcategory of "Parking Lot Lighting".

<i>Field Name</i>	<i>Description</i>	<i>Source</i>
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Sector	
Technology	
Use Category	
Technology	NTG table
Use Sub-category	
Technology Group	Measure-Application table
Technology Type	Cost table

## Applicability Tables

Applicability fields hold values that are required in order to resolve the link to or from another table. For example, "Building type" is an applicability field that is specified in the IOU claims table. The Energy Impacts table, which is linked to the IOU claim record, needs to know the "Building Type" before it can resolve the reference to a specific Energy Impact record.

Applicability Field	Description	Example
Building Type	If the measure is applicable to Buildings, specifies the building type or group of building types a measure impact applies to.	Large Office, Residential (All)
Building Vintage	If the measure is applicable to Buildings, specifies the building vintage a measure impact applies to.	Existing, New, pre-1975
Building HVAC type	If the measure is applicable to Buildings, specifies the building HVAC type that the measure impact applies to.	Central Chiller, Packaged AC AC w/Gas furnace, AC w/electric resistance heating
Location	Specifies the specific or general location that the measure impact applies to.	CZ03, SCE Territory, CA

**Table 3. Energy Impact Applicability Fields**

## SPTdb Workbook and Example Table Entries

### *Common Features in the SPTdb Tables*

#### Table Format

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