



Building Energy Evaluation System

Energy Roundtable
June 8th 2010

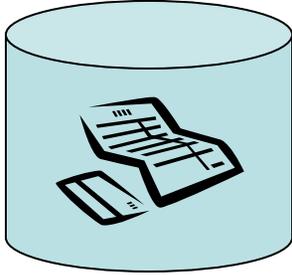
THE STATE OF CONNECTICUT
OFFICE OF POLICY AND MANAGEMENT



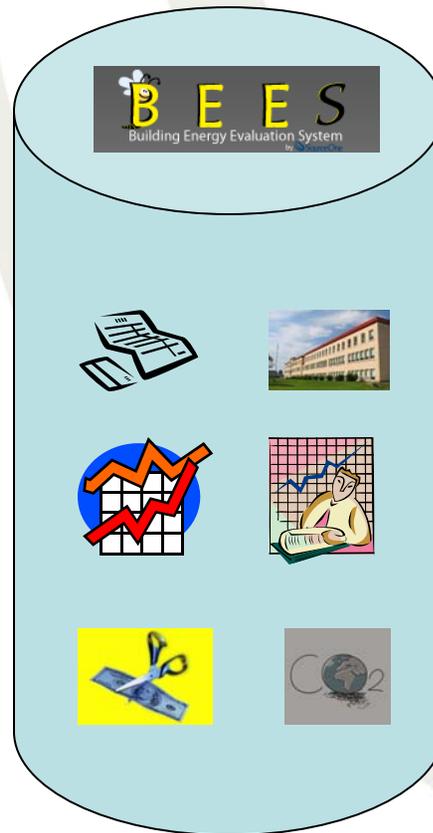
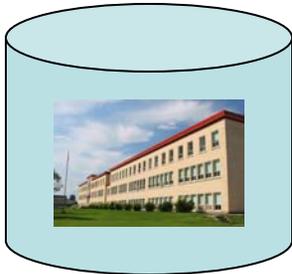
BEEES

Building Energy Evaluation System

OPM Energy
Database



JESTIR



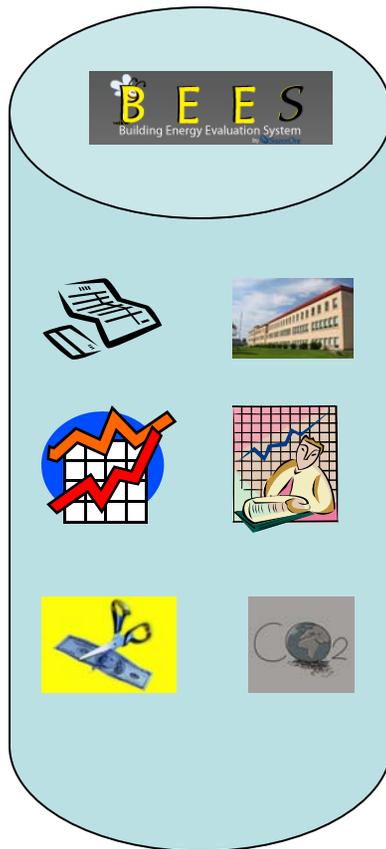
- New Functions

- Integrated Resource
- Inventory of Renewable Technologies
- Building Performance Benchmarking
- Storage Capacity Tracking
- Carbon Tracking
- Invoice Images
- Facility Grouping
- Lease Information
- Historic Comments
- Web Based Reporting



BEES

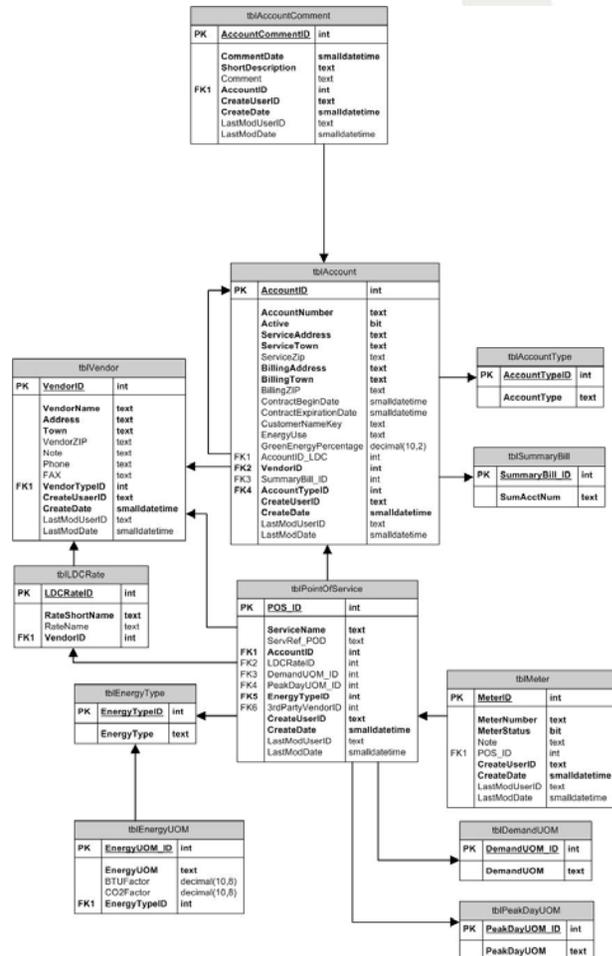
How does this support the agencies?



- Budget Support
- Performance Tracking
- Carbon Footprints
- Auditable Invoices
- Data Export and Import
- Review of Abnormalities



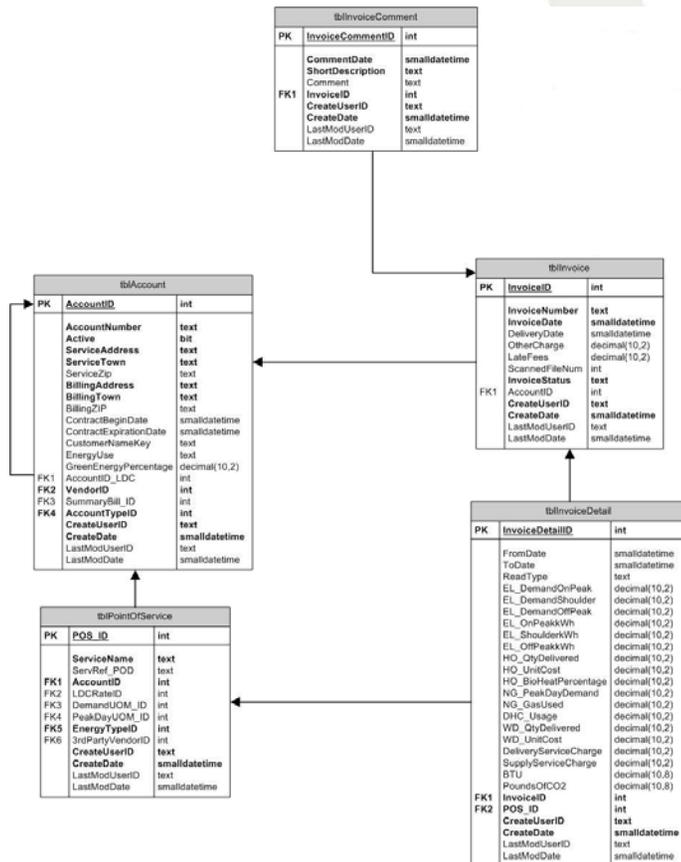
Design – Vendor/Accounts



- **Account Types** - LDC-Default, LDC-Only, LDC-SB (Single Bill) Supply and Other
- **Vendor** - All accounts are owned by a Vendor.
 - **Supply accounts** will point to its corresponding LDC Account.
 - Accounts will **point** to the Vendor that **supplies** the Point Of Service of the account
- **Summary Bill** – identify and group accounts which are part of a Summary Bill.
- **Point of Service** - The Point Of Service table holds the billing details that define a service
- Meters are assigned to a Point-Of-Service. A Point-Of-Service can have zero or more Meters.
- **Energy Type, Rate, UOMs**, conversion factors for **BTU** and **CO2**
- **Accounts Comments** - multiple comments with a date time stamp.



Design - Invoices



- Invoices** - Made up of its Account, Points of Service, Invoice, Invoice Details and Invoice Comment tables. Hold data which is common to the entire Invoice. Items such as Invoice Number, Late fees, Other Charges and the links to the Invoice image.
- Invoice Details** - table contains the details of the bill for a Point-Of-Service. These item include billing period, usage, cost, BTUs and CO2 emissions.
- Energy Type** - determines which details are collected For example when the Energy Type is "Electric" kWh is collected, when the type is "Natural Gas", Gas Used is collected
- The Point-Of-Service** allows for multiple service with varying rates, numbers of meters, suppliers and energy types to be captured on a single invoice.
- Invoice Comments** - multiple comments can be attached to invoices. These comments are dated and time-stamped



Design - Structures



- **Structures** - contains information imported from the JESTIR database such as:
 - JESTIR Reference Number
 - Name and Address
 - Size - Gross & Utilized Sqft,
 - Fuel Types for Heating, Cooling & HW
 - Occupancy and other details
- **Reference Number** – is still as the primary key used to identify the structures
 - Structure **Classification** - Structures may not necessarily be building. All state energy accounts will have a corresponding structure. Structures which are not buildings will be classified as "Other".
- Structure relationship are owned by an Agency
- Structures which are leased will point to a **Lease**
- Structures can be organized into **Facilities**
- **Structure Comments** - multiple comments can be attached to structure. These comments are dated and time-stamped
- **Generators** – can be associated with a structure. Generators can service multiple structures. Energy Type of fuel used to power the generator.
- A structure can have **Other Energy Systems**



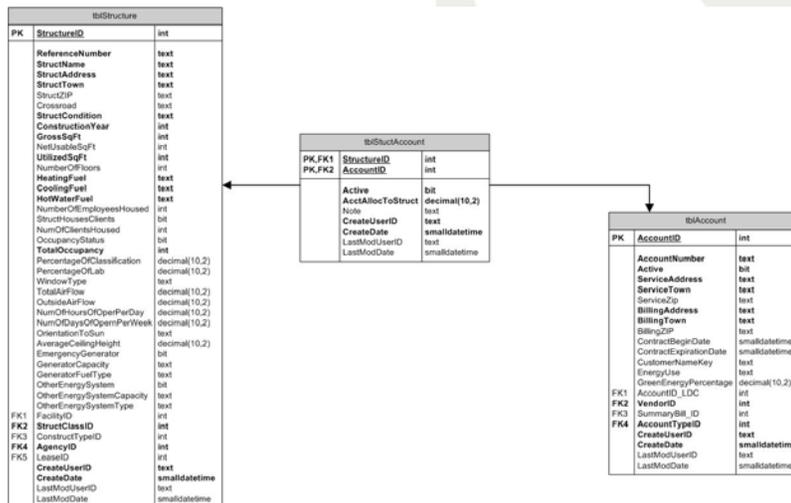
Design - Accounts & Structures

- The **Structure-Account** table relates the energy cost and usage of Accounts to Structures.

- This supports Accounts shared by more than one Structure.

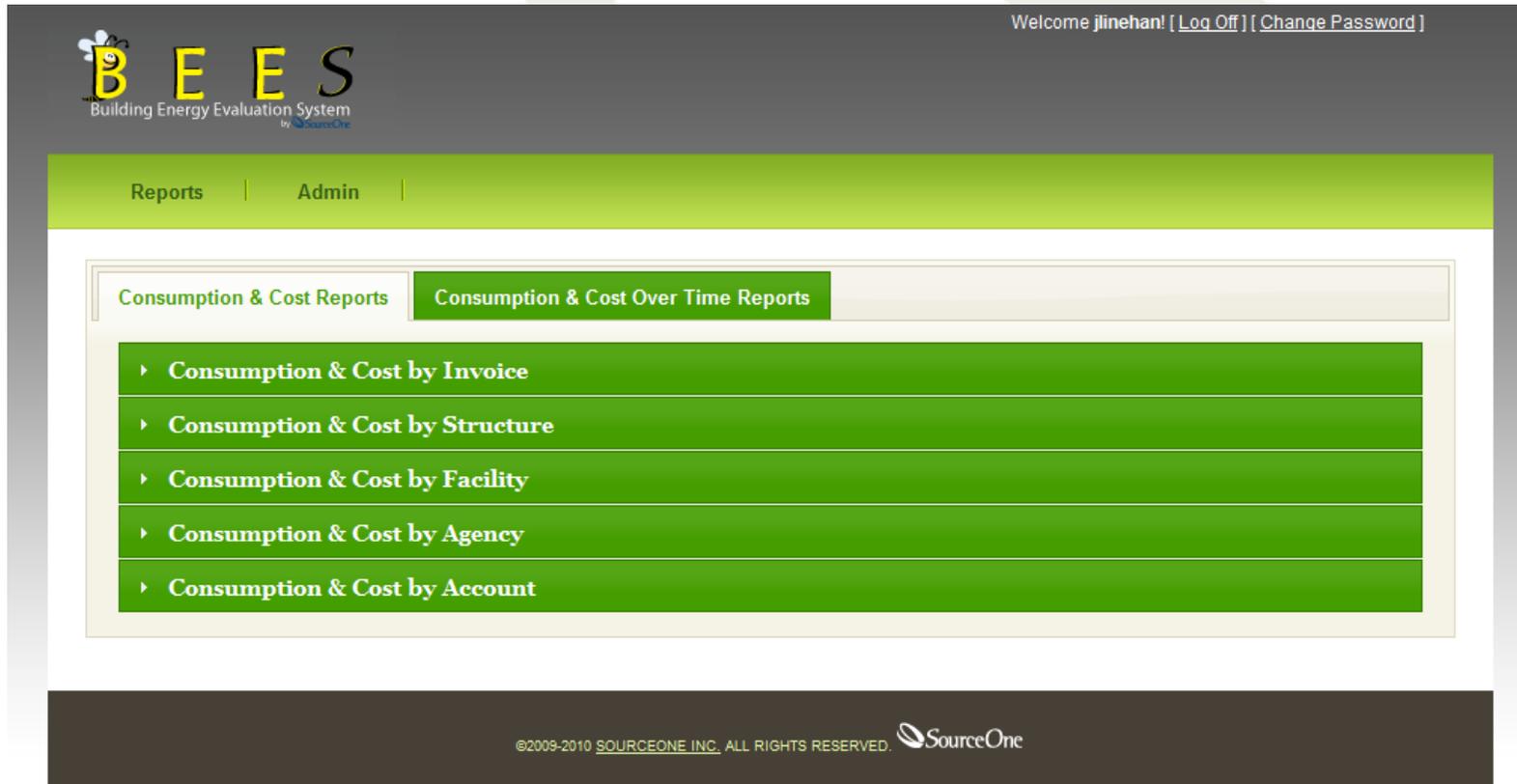
- The Structure-Account table has an **“Account Allocation To Structure”** which contains the apportionment of an account’s cost and usage allocated to this structure.

- The apportionment can not exceed 100%.





Web Reporting Tool



The screenshot shows the BEEES web reporting tool interface. At the top right, it says "Welcome jlinehan! [Log Off] [Change Password]". The logo "BEEES Building Energy Evaluation System by SourceOne" is on the top left. Below the logo is a navigation bar with "Reports" and "Admin" tabs. The main content area has two tabs: "Consumption & Cost Reports" and "Consumption & Cost Over Time Reports". Under the "Consumption & Cost Over Time Reports" tab, there is a list of report categories:

- ▶ Consumption & Cost by Invoice
- ▶ Consumption & Cost by Structure
- ▶ Consumption & Cost by Facility
- ▶ Consumption & Cost by Agency
- ▶ Consumption & Cost by Account

At the bottom of the interface, there is a footer with the text: "©2009-2010 SOURCEONE INC. ALL RIGHTS RESERVED. SourceOne".



Agency Level Reporting

Agency Total Usage and Cost

FY 2009



Energy Type	UOM	Usage	BTUs	Total \$
AES				
PROPANE	Gallons	6,176	564,026,942	\$6,828.49
NATURAL GAS	CCF	70,643	4,880,841,200	\$50,347.02
ELECTRICITY	kWh	4,993,238	17,036,928,056	\$854,131.80
#2 OIL	Gallons	59,809	8,313,492,700	\$101,931.76
Totals			30,795,288,898	\$1,013,239.07



Building Level Reporting

Structure SqFt Cost/Usage



StructName	Reference	Address	SqFt	\$/SqFt	BTU/SqFt
AES					
Britton	3601-4	123 Huntington	13,572	\$1.23	40,697
Greenhouse	3601-10	123 Huntington	1,414	\$8.29	390,039
Greenhouse	3601-7	123 Huntington	2,828	\$8.87	700,695
Greenhouse	3601-8	123 Huntington	1,414	\$13.98	975,069
Greenhouse	3601-9	123 Huntington	1,414	\$8.29	390,039
Headhouse Greenhouse	3601-12	153 Cook Hill R	2,660	\$7.17	448,289
Jenkins Laboratory	3601-3	123 Huntington	16,367	\$10.26	378,675
Johnson/Horsfall Building	3601-2	123 Huntington	29,320	\$8.50	369,753
Osborne Library	3601-5	123 Huntington	6,400	\$2.20	86,640
Pesticide Shed	3601-13	153 Cook Hill R	324	\$2.08	16,123
Slate Laboratory	3601-1	123 Huntington	18,750	\$0.99	29,480
Valley Laboratory	3601-11	153 Cook Hill R	9,851	\$2.32	121,048



Emissions Reporting

Structure SqFt BTUs and CO2



Address	Reference	Name	SqFt	BTU	BTU/SqFt	lbs. CO2
AES						
123 Huntington St	3601-1	Slate Laboratory	18,750	552,749,280	29,480	166,149
123 Huntington St	3601-3	Jenkins Laboratory	16,367	6,197,773,200	378,675	1,834,191
153 Cook Hill Road	3601-11	Valley Laboratory	9,851	1,192,447,600	121,048	220,721



Account/Structure Allocations

Structure Allocations by Agency

AES Connecticut Agricultural Experiment Station

Energy Type	Vendor	Account Number		Allocation
#2 OIL	East River	4588G		
3801-9	Greenhouse	123 Huntington St	New Haven	1.55%
3801-1	Slate Laboratory	123 Huntington St	New Haven	20.50%
3801-10	Greenhouse	123 Huntington St	New Haven	1.55%
3801-8	Greenhouse	123 Huntington St	New Haven	1.55%
3801-2	Johnson/Horsfall Building	123 Huntington St	New Haven	32.05%
3801-7	Greenhouse	123 Huntington St	New Haven	3.09%
3801-3	Jenkins Laboratory	123 Huntington St	New Haven	17.89%
3801-4	Britton	123 Huntington St	New Haven	14.84%
3801-5	Osborne Library	123 Huntington St	New Haven	7.00%
				<u>100.00%</u>
#2 OIL	Dime Oil	8883647		
3801-11	Valley Laboratory	153 Cook Hill Road	Windsor	78.74%
3801-12	Headhouse Greenhouse	153 Cook Hill Road	Windsor	21.26%
				<u>100.00%</u>
ELECTRICITY	UI	01000001367373		
3801-9	Greenhouse	123 Huntington St	New Haven	3.09%
3801-8	Greenhouse	123 Huntington St	New Haven	3.09%
3801-7	Greenhouse	123 Huntington St	New Haven	6.18%
3801-5	Osborne Library	123 Huntington St	New Haven	13.98%
3801-10	Greenhouse	123 Huntington St	New Haven	3.09%
3801-1	Slate Laboratory	123 Huntington St	New Haven	40.95%
3801-4	Britton	123 Huntington St	New Haven	29.64%
				<u>100.00%</u>



Timeline

July 2011 – System Complete

Fall 2011 – Select Group of Users will Pilot Web Tool

Spring 2012 – All Users will be Enabled