



Connecticut Department of Energy and Environmental Protection



Leading By Example: Update on Reducing Energy Use in State Facilities

Office of Energy Demand
Bureau of Energy and Technology Policy

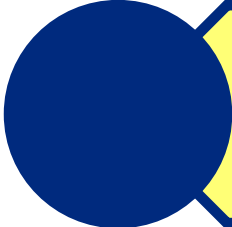
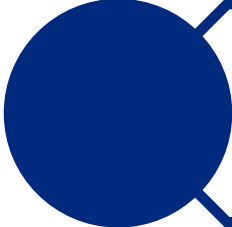
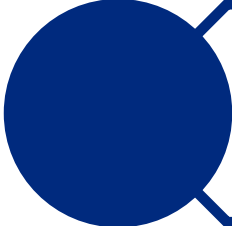
Overview for Public Informational Meeting

February 15, 2017



Connecticut Department of Energy and Environmental Protection

Sharing Important Information

-  ***Key Progress***
-  Facts and Opportunities
-  Next Steps



Key Progress to Date

- ✓ Put in place electronic data collection, and a web-based **analytical platform** to improve data transparency and accessibility at multiple levels: building, campus, and portfolio
- ✓ **Established tiers of interagency collaboration**
- ✓ **Amended programs** to be inclusive of state facilities
- ✓ **Completed energy efficiency upgrades** at multiple sites
- ✓ Kicked off construction of **comprehensive campus wide efficiency upgrade** at CT Valley Hospital, Middletown



Lead By Example Recent Results



Small Projects: Since 2014, 134 projects planned or completed statewide are expected to result in annual energy cost avoidance over \$800,000



Medium Projects: Since 2012, 72 projects
Typical payback period 5.9 years
Almost \$3 million annual energy cost avoidance



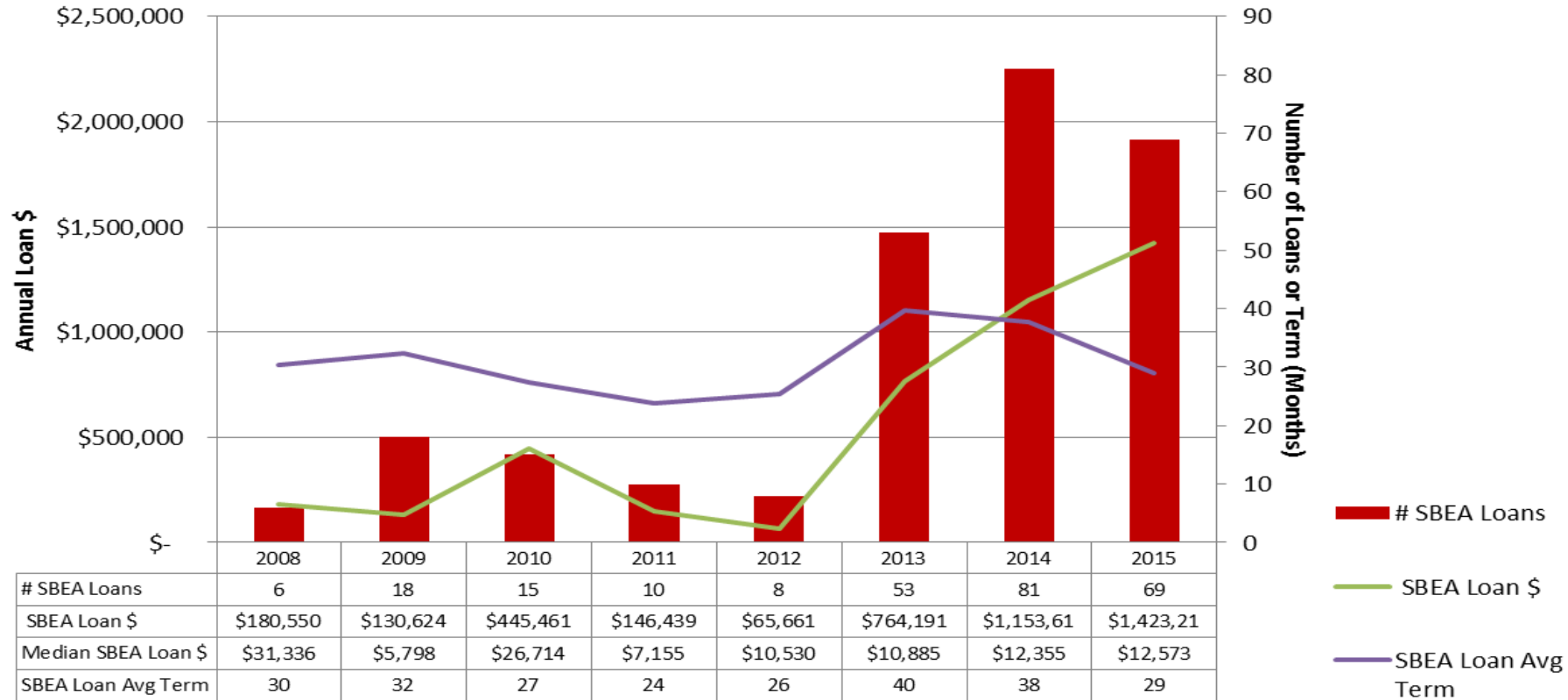
Large Projects: Currently, one project executed in 2016; two projects in development. Anticipated annual energy cost avoidance for initial three projects, once fully implemented, are \$6.0 million.

- CVH & DMV, financed with General Obligation Bonds
- DOC, financed with Green Bonds via the Connecticut Green Bank



Participation is Catalyzing Savings

Public Sector SBEA Loans 2008-2015

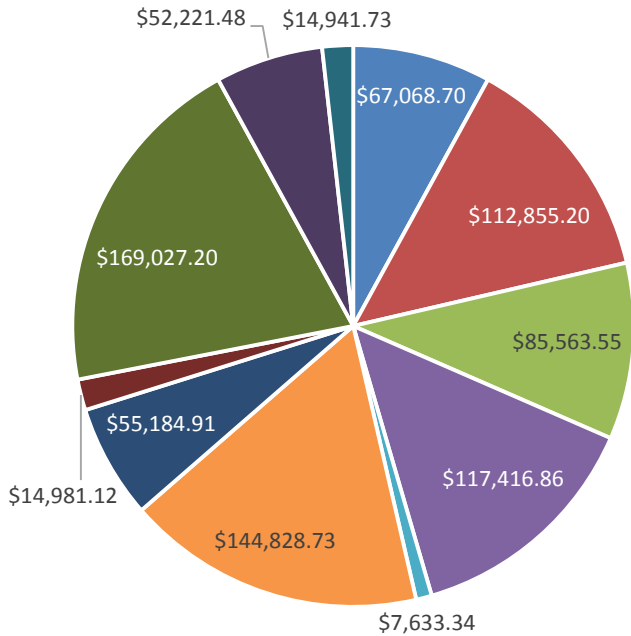


Source: Eversource data analysis 2016



Connecticut Department of Energy and Environmental Protection

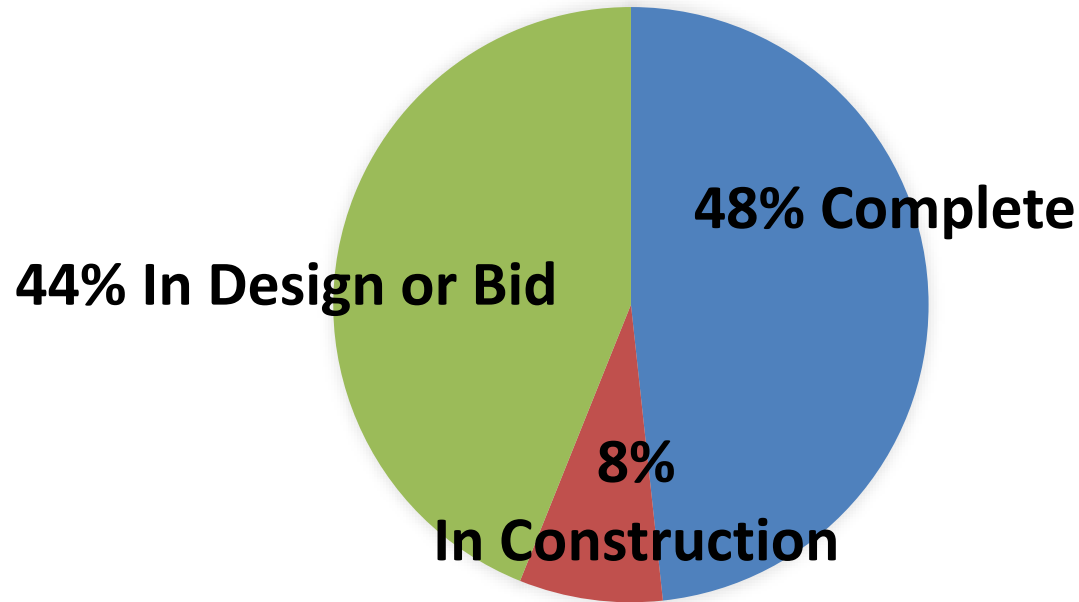
Small-Scale Projects 2014-2016



- Department of Energy & Environmental Protection
- Department of Administrative Services
- Department of Children & Families
- Department of Emergency Services and Public Protection
- Department of Labor
- State Department of Education
- Connecticut State Library
- Department of Mental Health & Addiction Services
- Department of Transportation
- Department of Developmental Services
- Department of Correction



Medium-Scale Projects 2012-2016



72 Projects approved, resulting in estimated 89.3 billion BTUs reduced and \$2.91M savings annually. Average 5.9 year payback



Large-Scale Projects 2012-2016

[Guaranteed Energy Savings Performance Contracting]

- 3 projects being planned or implemented at
 - Department of Correction,
 - Department of Mental Health and Addiction Services Connecticut Valley Hospital, and
 - Department of Motor Vehicles.
- Investment of approximately \$80M in energy savings measures, which will be paid back within 15 to 20 years (depending on the contract).
- Total estimated cost reduction or avoidance is approximately \$6M annually.
- Progress dependent on financing.



Connecticut Valley Hospital, Middletown, CT



Leading By Example: Progress, Ready to Scale Up

CT Valley Hospital, Middletown

2016 Guaranteed Energy Savings Performance Contract

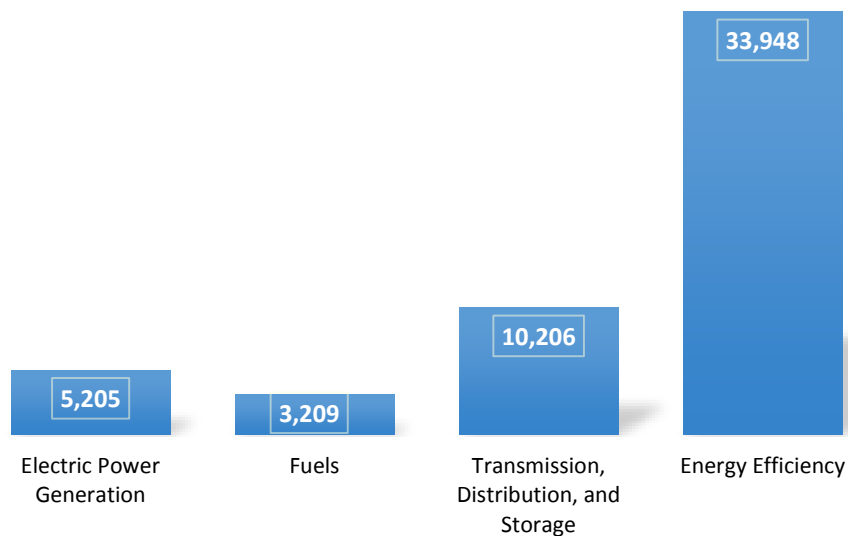


- ✓ \$31.9M in guaranteed energy and maintenance savings
- ✓ 35% reduction in energy use
- ✓ Reduced GHG emissions of est. 10,000 metric tons of CO₂
- ✓ 2 miles of new steam and condensate pipes
- ✓ 1.5 megawatt Cogen System
- ✓ Solar-Powered electric vehicle charging station

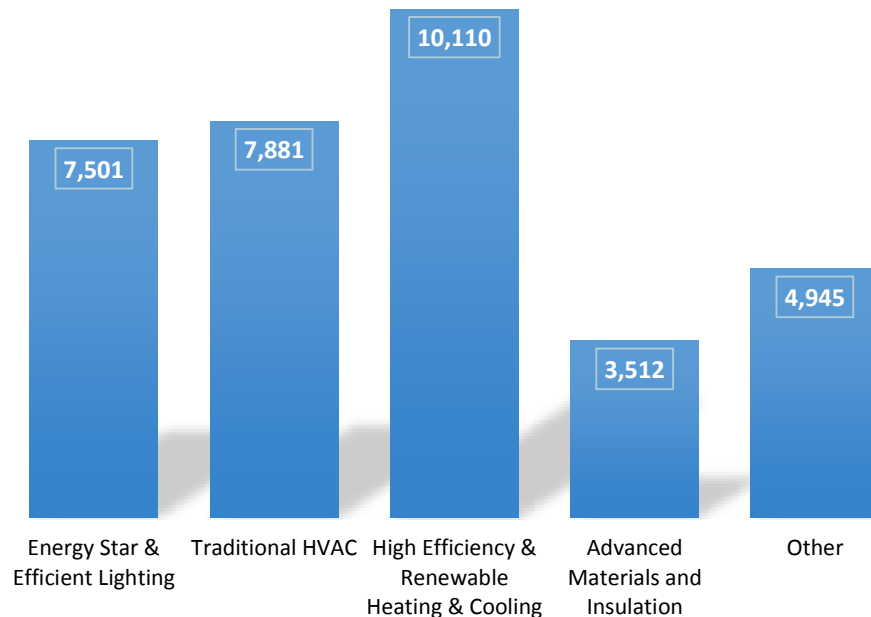


Efficiency is Working

CT Employment by Major Energy Technology



CT Energy Efficiency Jobs



Source: US Dept. of Energy, *Energy and Employment Report*, January 2017



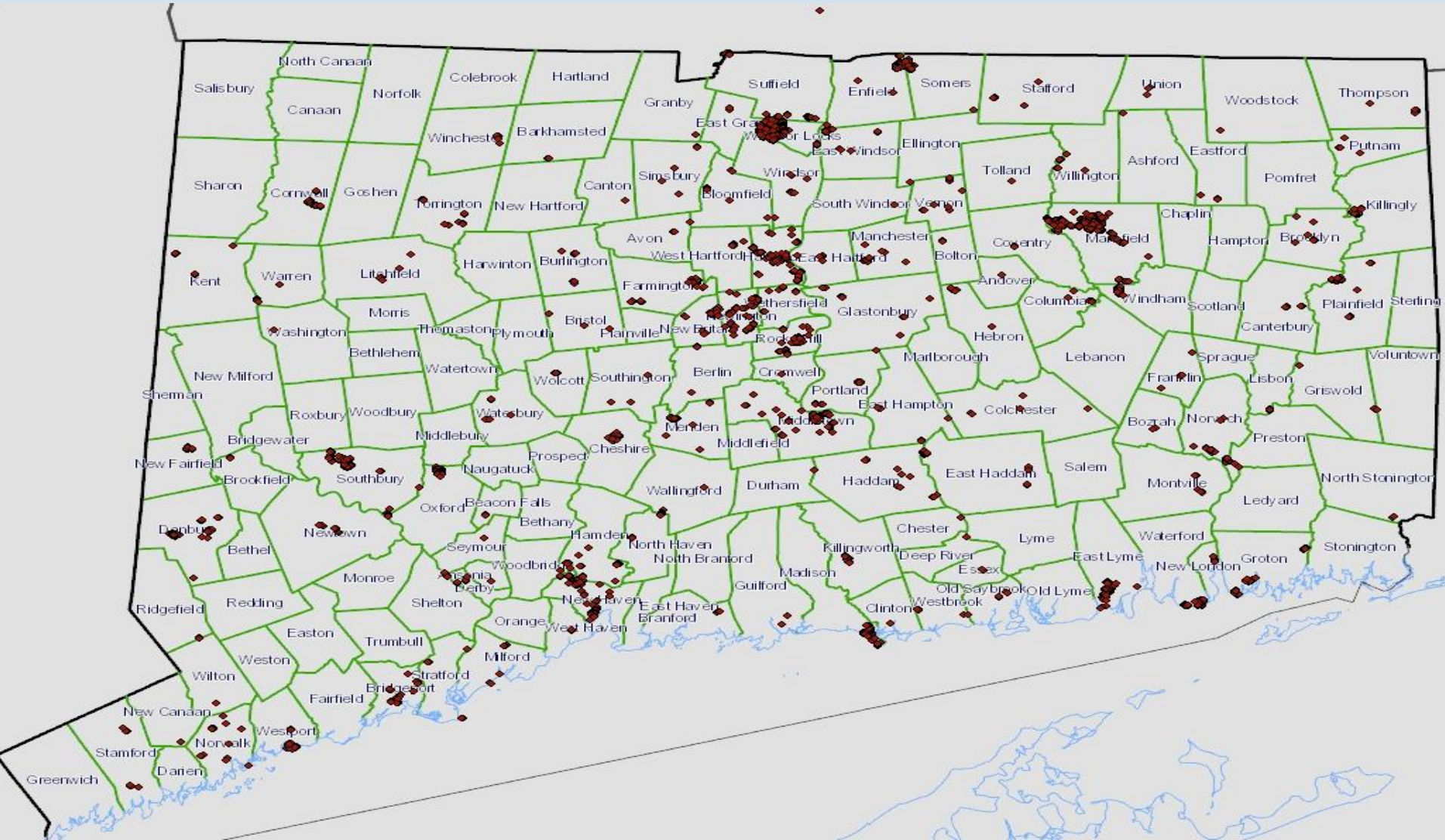
Connecticut Department of Energy and Environmental Protection

Sharing Important Information

- Key Progress
- ***Facts and Opportunities***
- Next Steps



Many State Facilities = Many Opportunities



Connecticut Department of Energy and Environmental Protection

~70 million square feet of state structures

**State Owned
Structures
(3822)**

33 agencies/districts
owning structures
(i.e., unique agency
code numbers)

66.9 million total
square feet

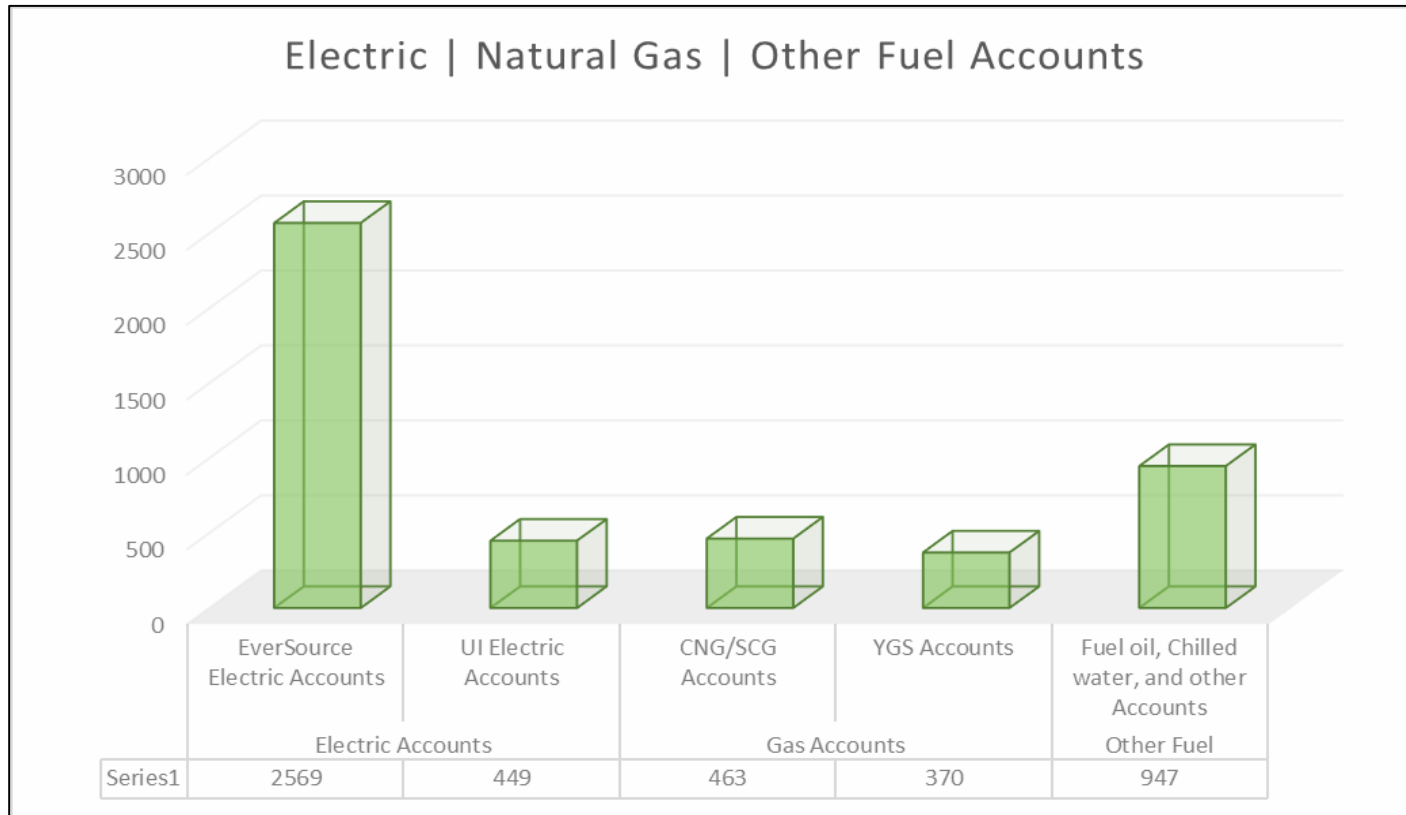
**State Leased
Buildings (189)**

2.9 million total
square feet

Source: CT Office of Policy and Management, JESTIR database 2016



Energy Accounts



Est. 611,370,886 Annual total kWh | 2,516,174 DTh Natural Gas

*Based on Best Estimates from DEEP data available as of 4/28/2016



Connecticut Department of Energy and Environmental Protection

Better Baseline

Estimating a baseline

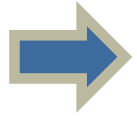
- Incomplete estimates of statewide usage used to estimate previous baselines
- Lack of reliable data has hampered past efforts

Data driven decisions require data

- Solution: Complete inventory of state buildings
- Identify all state energy accounts
- Correlate state buildings to energy accounts

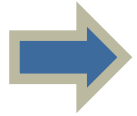


Better Inventory



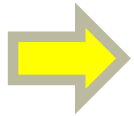
DONE

- Identify all energy accounts paid by state



DONE

- Identify all state owned and leased buildings from OPM's JESTIR database



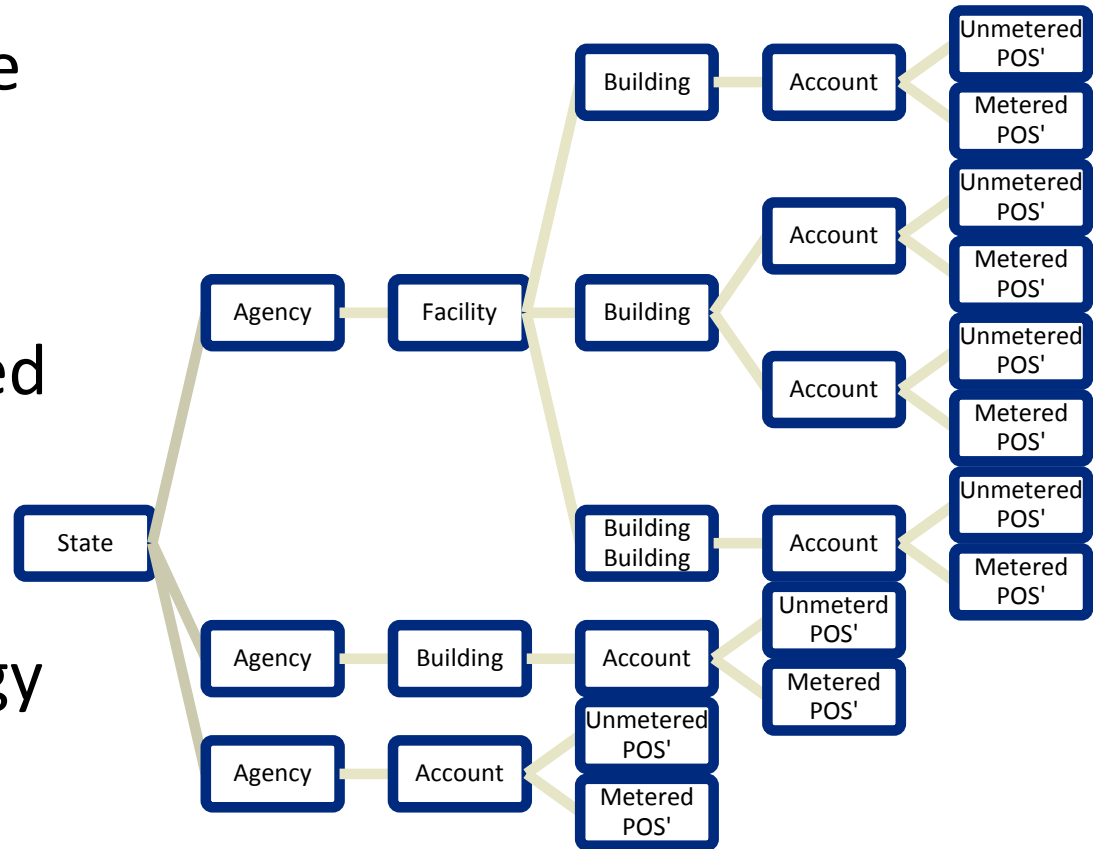
NEXT: Correlate accounts to buildings

- to be done by agencies; by end of 2017
- needs coordination between agency Accounts Payable and Facilities units



Better Correlation of Data

- Measuring energy use
- Determining where energy is used
- How energy is invoiced
- Owned and leased state buildings
- Managing state energy data



Better Data Collection and Analyses

DEEP has put in place a web-based platform that collects energy consumption data on an individual building basis.

Allows state agencies to access their energy cost and usage

Informs Data Driven
Decisions



Statewide Summary Report

STAGING DATABASE - State of Connecticut

Executive Summary by Commodity BL - 12



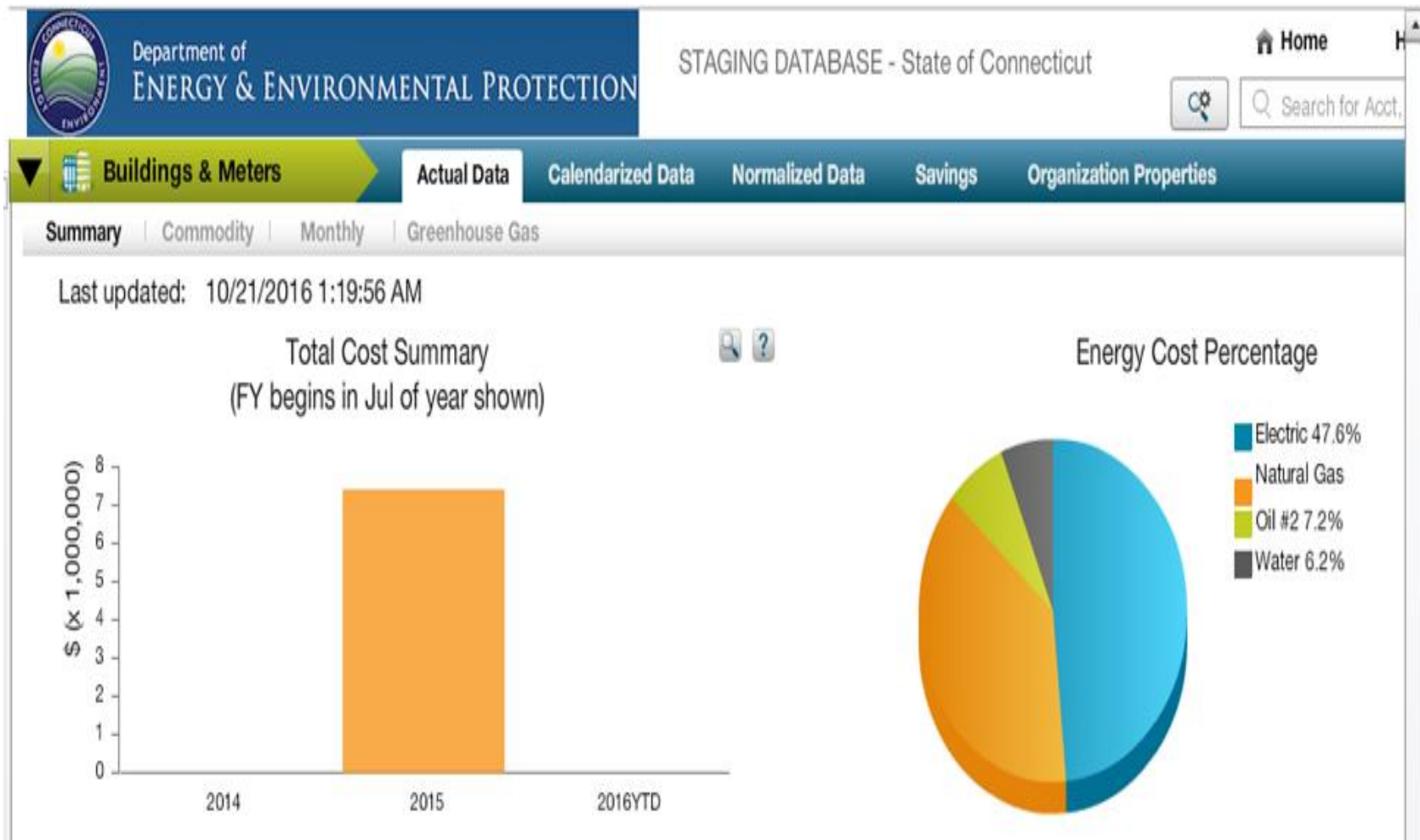
| Commodity | Common Unit | | Energy Use | | Energy Percentage | Cost | Cost Percentage |
|-----------------|-------------|------------------|------------|-------------------|-------------------|------|-----------------|
| | Common Use | Cost/Unit | MMBtu | Cost/MMBtu | | | |
| Chilled Water | | | | | | | 0.06% |
| Electric | | \$0.1397 / kWh | 82,785 | \$40.9232 / MMBtu | 18% | | 52.51% |
| Fire Protection | | | | | | | 0.10% |
| Gasoline | | \$1.7381 / Gal | | | | | 0.98% |
| Lighting | | | | | | | 0.14% |
| Natural Gas | | \$0.6122 / THERM | 338,004 | \$6.1219 / MMBtu | 72% | | 32.07% |
| Oil #2 | | \$1.2016 / Gal | 48,981 | \$8.6640 / MMBtu | 10% | | 6.58% |
| Propane | | \$1.0985 / Gal | 1,460 | \$12.0055 / MMBtu | 0% | | 0.27% |
| Sewer | | \$1.5996 / Kgal | | | | | 0.15% |

10/21/2016 9:49:36AM

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Agency Summary



Usage and Cost Trends



Department of ENERGY & ENVIRONMENTAL PROTECTION

STAGING DATABASE - State of Connecticut

Home Help More Log Out

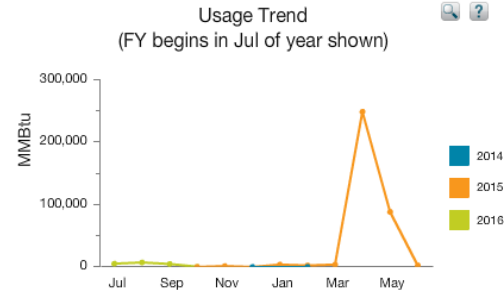
Search for Acct, Bldg, Meter by code or name

Click to view in v4 Beta!

- Home
- Home Dashboard
- Buildings & Meters
- Groups & Benchmarking
- Accounts
- Vendors & Rates
- Bill Processing
- Reports
- Administration

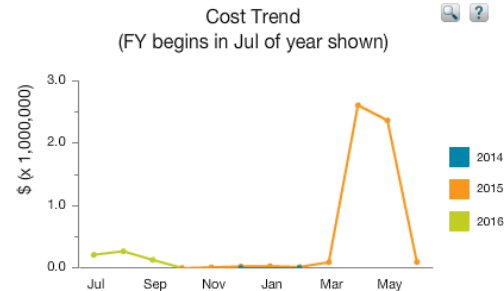
Usage Trend

Data from: All Buildings



Cost Trend

Data from: All Buildings



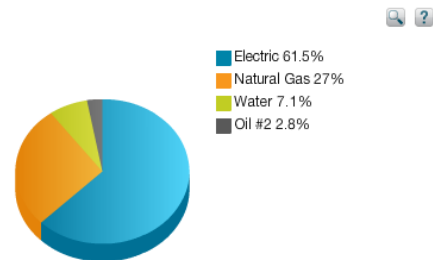
Top 10 Buildings by Cost

Data from: All Buildings

| Building | Total Cost | Annualized Cost | Annualized Cost/Area |
|---------------------------------|-------------|-----------------|----------------------|
| UOC_ToBePlaced | \$1,385,881 | \$25,085,916 | |
| SDE_ToBePlaced | \$959,605 | \$17,545,102 | |
| UHC_ToBePlaced | \$927,829 | \$10,940,524 | |
| DOC_ToBePlaced | \$917,287 | \$28,308,338 | |
| Z TBD | \$278,971 | \$7,187,114 | |
| MIL_ToBePlaced | \$257,407 | \$3,931,381 | |
| 4400-112 | \$224,081 | \$2,726,319 | \$80.85 |
| DEEP_ToBePlaced | \$164,397 | \$19,046,959 | |
| 8000-161 | \$129,470 | \$1,629,150 | \$3.39 |
| DVA_ToBePlaced | \$70,077 | \$1,082,677 | |

Cost Summary

Data from: All Buildings



Usage and Cost Trends

Department of ENERGY & ENVIRONMENTAL PROTECTION

STAGING DATABASE - State of Connecticut

Home Help More Log Out

Search for Acct, Bldg, Meter by code or name

Buildings & Meters Actual Data Calendarized Data Normalized Data Savings Organization Properties Click to view in v4 Beta!

Buildings

- AES [Ag Experiment Station]
- BOR [Board of Regents for Higher Ed]
- BRS [Rehabilitation Services, Dept. of]
- CSL [CT State Library]
- DAG [Agriculture, Dept. of]
- DAS [Administrative Services, Dept. of]
- DCF [Children & Families, Dept. of]
- DCJ [Criminal Justice, Div. of]
- DDS [Developmental Services, Dept. of]
- DEEP [Energy & Env. Protection, Dept. of]
- DMV [Motor Vehicles, Dept. of]
- DOC [Correction, Dept. of]**
 - 8000-183 [Webster Correctional]
 - 8000-241 [Community Enforcement/VNA]
 - 8000-495 [Northern Correctional Institution]
 - DOC-ELE049 [BILTON RD - ELE01]
 - DOC-NG029 [287 BILTON RD - NAT01]
 - BRIDGEPORTCC [Bridgeport CC]
 - 8000-242 [Madison Unit]
 - DOC-ELE078 [1106 NORTH AVE - ELE01]
 - 8000-243 [New Center]
 - 8000-244 [Memorial Unit]
 - 8000-7101 [Fairmont Unit]
 - BROOKLYNCI [Brooklyn CI]
 - CHESHIRECI [Cheshire CI]
 - CORRIGANRADGOWSKICI [Corrigan-Radgowski CI]
 - DOC_ToBePlaced [DOC_To Be Placed]
 - ENFIELDCI [Enfield CI]
 - GARNERCI [Garner CI]
 - GATESCI [Gates CI]
 - HARTFORDCC [Hartford CC]
 - LITCHFIELDCC [Litchfield Correctional Center]
 - MACDOUGALLWALKERCI [MacDougall-Walker CI]
 - MALONEYCI [Maloney CI]
 - MANSONYCI [Manson YCI]

Summary Commodity Monthly Greenhouse Gas

Last updated: 12/01/2016 1:19:13 AM

Total Cost Summary (FY begins in Jul of year shown)

Energy Cost Percentage

- Electric 51.8%
- Water 25.2%
- Natural Gas
- Oil #2 2.9%
- Gasoline 1%

Daily Average Cost

Percentage Change from Previous Year To Current Year

N/A

Current Year: Nov 2015 - Oct 2016 \$3,442.28

Previous Year: Nov 2014 - Oct 2015 \$

AN01 - Place Cost Profile

Continue

Place Cost Profile

Place Cost Profile AN - 01

Place [PHEE_LOCI] Ohmion Lab
323 Kings Chapel Rd
Storrs Campus, CT 06269

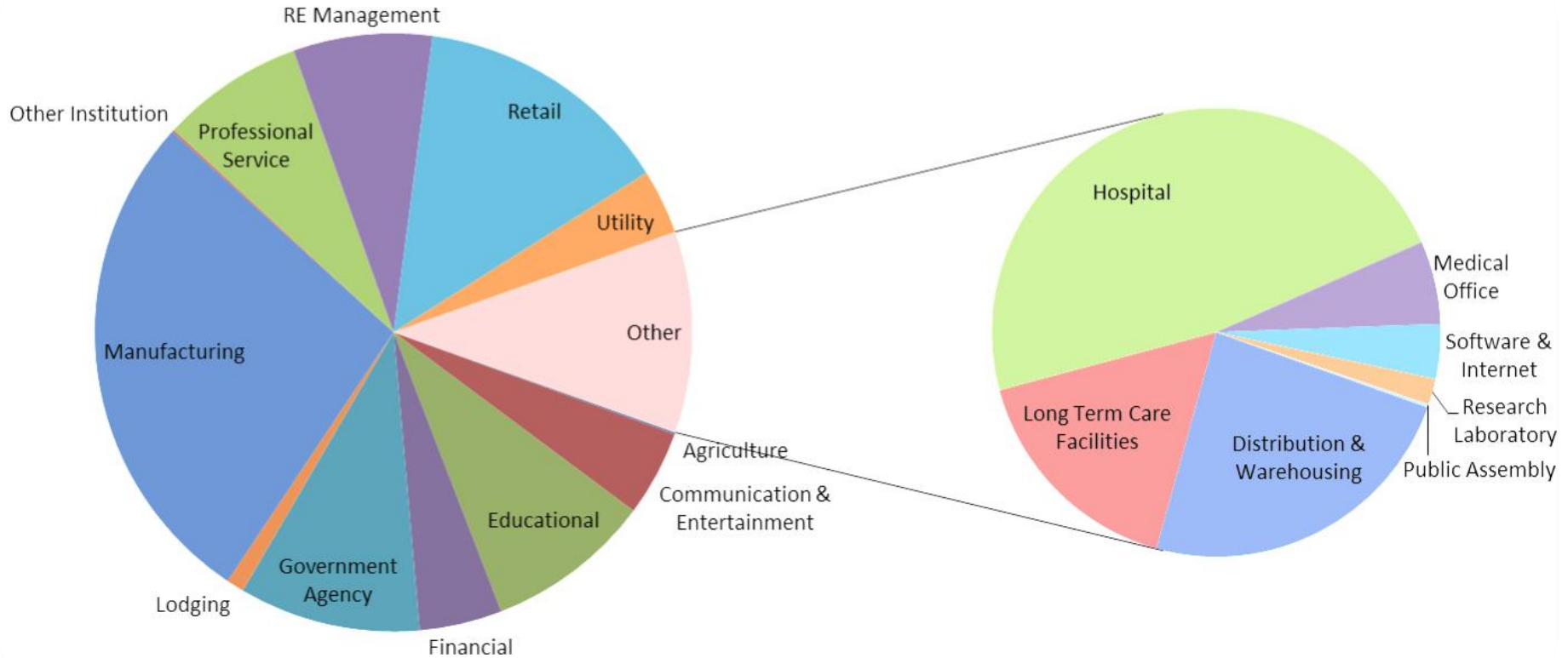
| Year | Jul | Aug | Sep | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun |
|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 2012 | 80000 | 90000 | 85000 | 95000 | 65000 | 80000 | 95000 | 90000 | 95000 | 85000 | 80000 | 70000 |

Note that DOC is organized by facility, buildings within facilities, and accounts associated with the buildings.

The graphs depict DOC cost breakdown of currently entered data, which is not yet complete.



Context: CT Government buildings are 11-15% of Commercial & Industrial sector



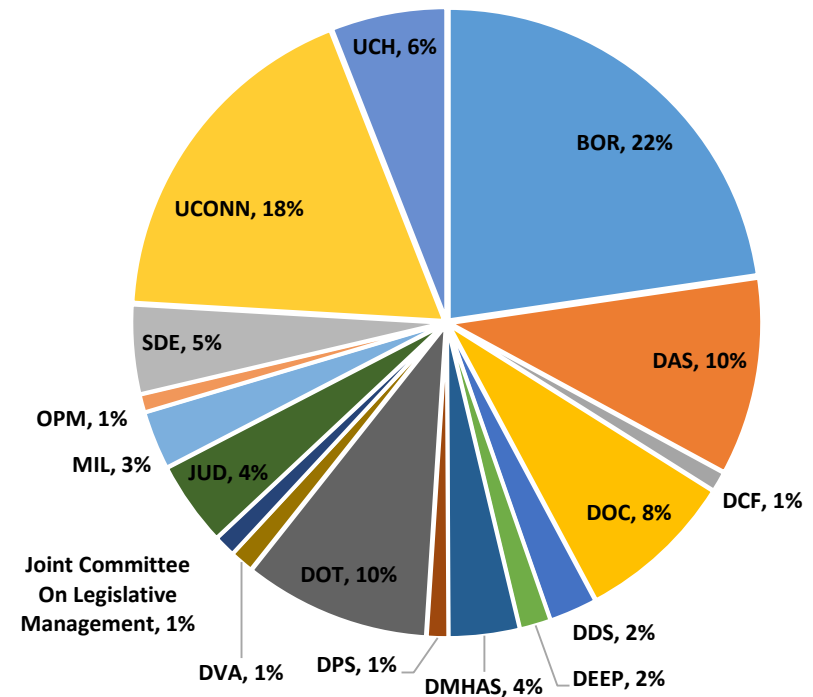
Source: Eversource Data and Graphic, 2015



Connecticut's Opportunity

- Approximately 70 million square feet
- Roughly 3800 buildings
- Nearly ½ are educational facilities

Gross Square Feet of Floor Space
by Agency



Source: CT Office of Policy and Management, JESTIR database 2016



Top 100 buildings [For illustration only, data being verified]

| Place | Total Use in MMBtu | Place | Total Use in MMBtu | Place | Total Use in MMBtu |
|--|--------------------|---|--------------------|---|--------------------|
| [4400-112] Porter Hall | 16,499.43 | [8000-78] Willard Correctional Institution | 451.96 | [5000-61] District 3 HQ & Garage | 132.55 |
| [7001-15] E.C. Goodwin RVTHS | 11,109.48 | [7001-3] Bristol Technical Education Center | 445.70 | [7301-174] 0263 McMahon Hall & Dining Facility | 131.84 |
| [5000-4252] Administration Building - HQ | 9,079.83 | [8000-331] Support Building | 444.14 | [094-01] 30 Christian Ln Newington | 128.95 |
| [7001-20] Albert I. Prince RVTS | 8,632.05 | [8000-158] Walker Reception and Special Management Unit | 433.63 | [151-08] 95 Thomaston Avenue | 128.10 |
| [7001-7] Ella T. Grasso Southeastern RVTS | 7,214.92 | [8000-185] Kitchen/Dining/Gym | 432.60 | [1326-24] 395 West Main Street | 113.36 |
| [7001-14] Norwich Regional Vocational Technical School | 6,524.97 | [1326-488] Office of Chief Medical Examiner | 424.89 | [4400-336] Capitol Region Mental Health Center | 110.92 |
| [1326-491] 38 Wolcott Hill Road | 3,705.94 | [064-28] 110 Bartholomew Ave | 396.13 | [083-04A] 2081 S Main St Middletown | 110.76 |
| [8000-161] MacDougall Correctional Institution | 3,347.42 | [1326-489] 10 Franklin Sq | 369.81 | [7301-516] 3011 Stamford Downtown Campus Garage | 109.76 |
| [8000-46] K Building | 2,872.46 | [135-03] 780 Summer Street | 359.28 | [164-03] 20 Meadow Rd Windsor | 109.62 |
| [5000-23] Information Systems | 2,738.80 | [8000-330] Radgowski Annex | 355.97 | [8000-247] New Haven Correctional Center | 106.23 |
| [8000-154] Cybulski Correctional Institution | 2,184.92 | [1326-8239] Office Building | 346.90 | [8000-242] Madison Unt | 104.85 |
| [064-12] Dept of Insurance | 1,784.04 | [9001-11] Civil Courthouse | 337.19 | [9001-29] GA 5 Courthouse | 99.95 |
| [1326-486] 470 Capitol Ave | 1,419.81 | [2201-73] State Armory Westbrook | 318.99 | [9001-9] Appellate Court | 96.66 |
| [1326-480] 25 Sigourney St | 1,405.61 | [1326-7] Department of Revenue Services | 317.04 | [5000-276] Office/Warehouse | 95.84 |
| [8000-249] Garner Correctional Institution | 1,379.17 | [2101-5] Hamden Branch | 307.77 | [9001-22] JD Courthouse | 93.65 |
| [1326-481] 505 Hudson St | 1,376.00 | [83] 249 Thomaston Ave | 305.06 | [9001-7109] Willimantic Juvenile | 90.82 |
| [8000-325] R. L. Corrigan Correctional Inst | 1,093.40 | [9001-7108] Family Court; Administrative Offices | 299.00 | [034-04] 342 Main St Danbury | 87.51 |
| [1326-8240] Connecticut River Plaza | 1,088.61 | [9001-7] GA13 and Com On Legal Publications | 277.14 | [2101-8] Norwalk Branch | 85.19 |
| [4400-342] Greater Bridgeport Community Mental Health Center | 1,015.71 | [8000-65] A Building | 258.02 | [2101-10] Old Saybrook Branch | 85.00 |
| [7302-7817] R - 400 Farmington Ave | 1,006.53 | [9001-32] Tolland Criminal Court Complex | 257.13 | [1326-479] Dept. of Environmental Protection | 84.92 |
| [1326-8532] 61 Woodland Street | 976.60 | [9001-25] JD Courthouse | 252.14 | [7104-4] Middletown Library Service Center | 81.83 |
| [1001-2] State Capitol Building | 914.34 | [1326-554] Medical Building (Campbell) | 238.03 | [9001-27] JD Courthouse | 81.41 |
| [8000-44] H Building Gymnasium | 899.39 | [9001-2] GA2 Courthouse | 224.23 | | |
| [059-01] 445 Eastern Point Rd Bldg 230 | 890.79 | [9001-26] Juvenile Matters Courthouse | 207.07 | | |
| [9001-7104] Hartford Juvenile Detention | 888.74 | [9001-18] Juvenile Court | 199.07 | | |
| [8000-495] Northern Correctional Institution | 870.83 | [2101-9] Norwich Branch | 198.32 | | |
| [2610-1] Department of Labor | 870.37 | [9001-483] Hartford Community Court | 196.23 | | |
| [7001-5] Harvard H. Ellis RVTS | 751.90 | [1326-534] Nurse's Homes Old and New | 195.08 | | |
| [7302-7816] P 16 Munson Road | 739.67 | [9001-19] JD Courthouse | 194.43 | | |
| [1326-530] Southeastern Mental Health | 730.94 | [9001-20] GA20 Courthouse | 181.03 | | |
| [9001-484] New Britain Superior Court | 726.26 | [1326-36] 30 Trinity St | 176.93 | | |
| [9001-14] GA9 & JD Courthouse | 664.55 | [1326-35] 39 Woodland St | 165.40 | | |
| [1326-32] 79 Elm St | 602.14 | [9001-30] GA7 And JD Courthouse | 164.26 | | |
| [1326-7101] Rowland State Government Center | 599.68 | [1326-7102] Office of the Chief State's Attorney | 160.68 | | |
| [1326-490] 24 Wolcott Hill Rd | 586.00 | [9001-17] GA 23 Courthouse | 155.00 | | |
| [1326-26] State Office Building | 580.92 | [064-36] Van Block State Library Storage Facility | 146.69 | | |
| [8000-140] Guard House Front Gate | 558.26 | [9001-21] GA21 Courthouse | 144.17 | | |
| [9001-7107] Juvenile Court & Detention | 532.09 | [4400-482] DMHAS HR Service Center | 143.89 | | |
| [9001-1] JD Courthouse | 493.17 | [9001-211326] Administrative Offices | 137.61 | | |

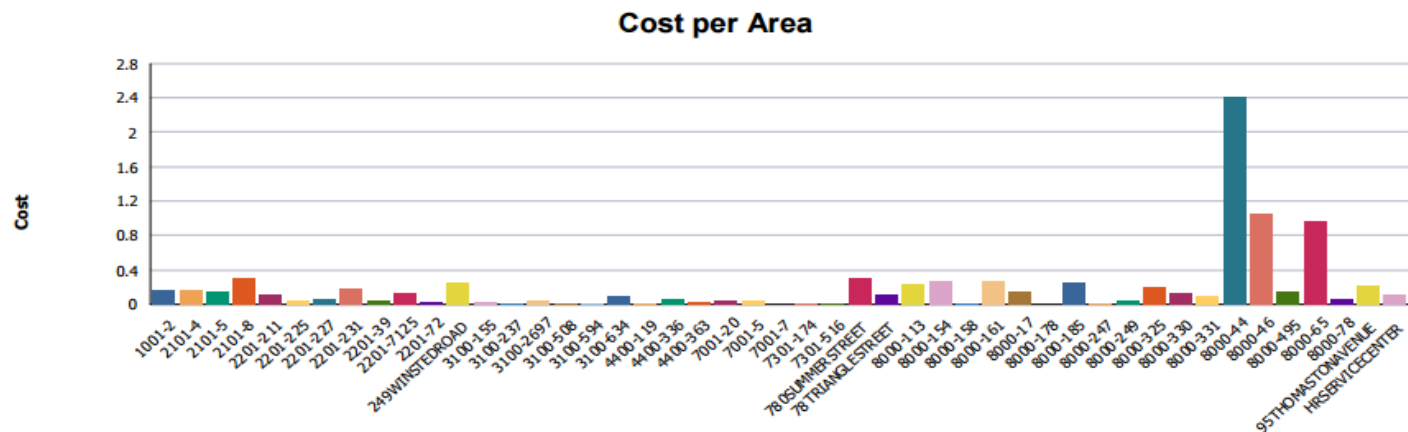
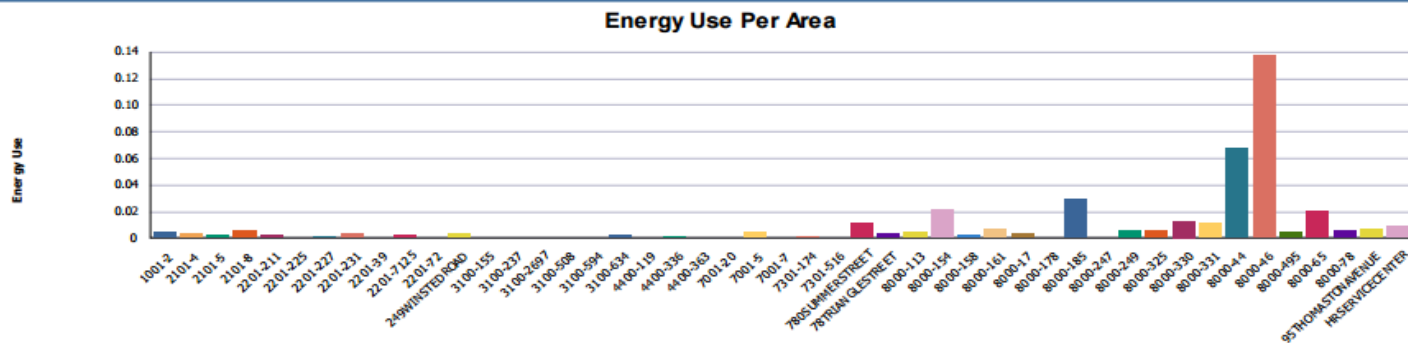


Connecticut Department of Energy and Environmental Protection

EUI for Buildings > 10k sf [data being verified]

STAGING DATABASE - State of Connecticut

Energy Index Summary AN - 08



| Place | Floor Area | Energy (MMBtu) | Cost | Cost / Area | Energy in MMBTU / Area |
|--|--------------|----------------|-------------|---------------|------------------------|
| [1001-2] State Capitol Building [BUILDING] | 181,000 SqFt | 914 | \$29,486.13 | \$0.16 / SqFt | 0.005 |
| [2101-4] Enfield Branch [BUILDING] | 10,520 SqFt | 34 | \$1,772.69 | \$0.17 / SqFt | 0.003 |



Benchmarking & Prioritizing

CTDEEP New Britain Building

10 Franklin Square, New Britain, CT 06050 | [Map It](#)

Portfolio Manager Property ID: 3214300

Year Built: 1995

[Edit](#)



[Apply for ENERGY STAR Certification](#)

ENERGY STAR Score (1-100)

Current Score: 94

Baseline Score: 100

Summary

Details

Energy

Water

Waste & Materials

Goals

Design

Notifications (0)

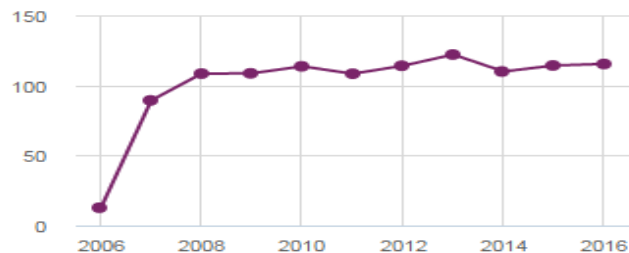
You have no new notifications.

Property Profile

You haven't created a profile for your property yet. Profiles are a way to supplement the information in Portfolio Manager with additional information about your property, including a photo.

[+ Create Profile](#)

Source EUI Trend (kBtu/ft²)



Metrics Summary

[Change Time Period](#)

| Metric | Jan 2010 (Other) | Jan 2017 (Energy Current) | Change |
|---|-------------------------------|-------------------------------|-------------------|
| ENERGY STAR score (1-100) | 95 | 94 | -1(-1.1%) |
| Source EUI (kBtu/ft ²) | 108.7 | 114.7 | 6.0(5.5%) |
| Site EUI (kBtu/ft ²) | 34.6 | 36.5 | 1.9(5.5%) |
| Energy Cost (\$) | 122,054.44 | 101,049.79 | -21004.65(-17.2%) |
| Total GHG Emissions (Metric Tons CO ₂ e) | 177.4 | 187.2 | 9.8(5.5%) |
| Water Use (All Water Sources) (kgal) | Not Available | Not Available | N/A |
| Total Waste (Disposed and Diverted) (Tons) | Not Available | Not Available | N/A |

Check for Possible Data Errors

Run a check for any 12-month time period to see if there are any possible errors found with your data.

[Check for Possible Errors](#)



Connecticut Department of Energy and Environmental Protection

Energy Audit Opportunities

Options

- Conducted by agencies-budget dependent
- Conducted by DEEP-budget dependent
- Conducted by utilities-for priority sector
- Conducted as part of ESPC planning-for large scale projects



ISE Completed Energy Updates for 20 Technical high Schools

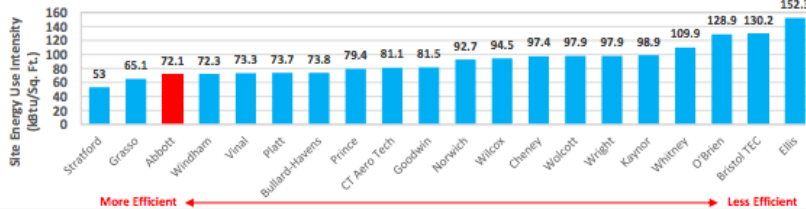
HENRY ABBOTT TECHNICAL HIGH SCHOOL

21 Hayestown Ave. Danbury, CT 06811

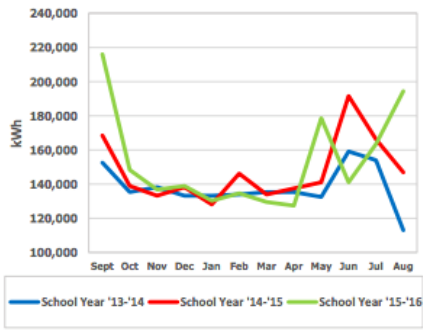
ENERGY USE UPDATE



Current CTHSS Facility Site Energy Use Intensity (kBtu/Sq. Ft.)



Current Site Energy Use Intensity in kBtu/ft² for all CTHSS facilities. Values are calculated using most recent data available for all energy types entered into ENERGY STAR Portfolio Manager. Using Site EUI as a metric for energy efficiency allows for comparison of differently sized facilities. Abbott Tech is currently one of the most energy efficient CTHSS facilities, with a site EUI of 72.1 kBtu/ft².



ELECTRICITY

Electricity use at Abbott Tech has increased throughout the past three academic years. Total kWh consumed in the past three academic years is as follows:

School year '13-'14: 1,714,440 kWh
 School year '14-'15: 1,770,480 kWh
 School year '15-'16: 1,779,120 kWh

The increase in the most recent academic year can be attributed to electricity spikes in September and August that were significantly higher than they had been the previous two years. This could be due to increased hours of facility use during these times, and may not be permanent, depending on school use going forward. However, if extended hours continue to cause an increase in electricity use, care should be taken to ensure that proper lighting controls and scheduling are used to prevent any unnecessary kWh use, along with retrofits of inefficient lighting fixtures.

Although electricity use has increased, the overall Energy Star score of the school has improved from the baseline, mainly due to a decrease in natural gas use.

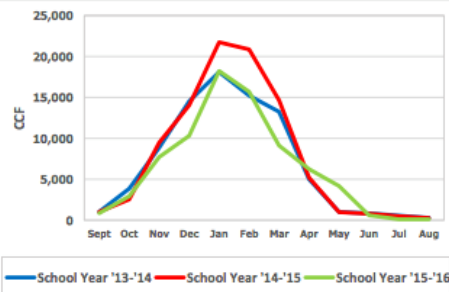
NATURAL GAS

Natural gas use at Abbott Tech has fluctuated throughout the past three academic years. Total CCF consumed in the past three academic years is as follows:

School year '13-'14: 82,580 CCF
 School year '14-'15: 92,140 CCF
 School year '15-'16: 76,140 CCF

Natural gas usage was at its lowest this most recent academic year, decreasing significantly from the previous year and slightly from the baseline year of '13-'14. Fluctuations in natural gas use can very often be attributed to weather, with this past winter being relatively mild in comparison to the previous winter, where the most CCF was consumed due to exceptionally cold weather and increased snowfall.

Abbott Tech's increase in Energy Star Score from the baseline to the current score is mainly due to the decrease in natural gas usage from '13-'14 to '15-'16.



- Abbott Tech HS
- Bristol Tech Educ Center
- Bullard-Havens Tech HS
- Cheney Tech HS
- CT Aero Tech
- Ellis Tech HS
- Goodwin Tech HS
- Grasso Tech HS
- Kaynor Tech HS
- Norwich Tech HS
- O'Brien Tech HS
- Platt Tech HS
- Prince Tech HS
- Stratford School for Aviation
- Vinal Tech HS
- Whitney Tech HS
- Wilcox Tech HS
- Windham Tech HS
- Wolcott Tech HS
- Wright Tech HS

Sharing Important Information

- Key Progress
- Facts and Opportunities
- ***Next Steps***



Path to Energy Savings & Cost Reduction

Benchmarking and Procurement

Compare energy use to prioritize;

Update procurement documents, contract language, and processes;

Identify appropriate financing mechanisms

Inventory Facilities Universe

Data Collection and Correlation

Screening

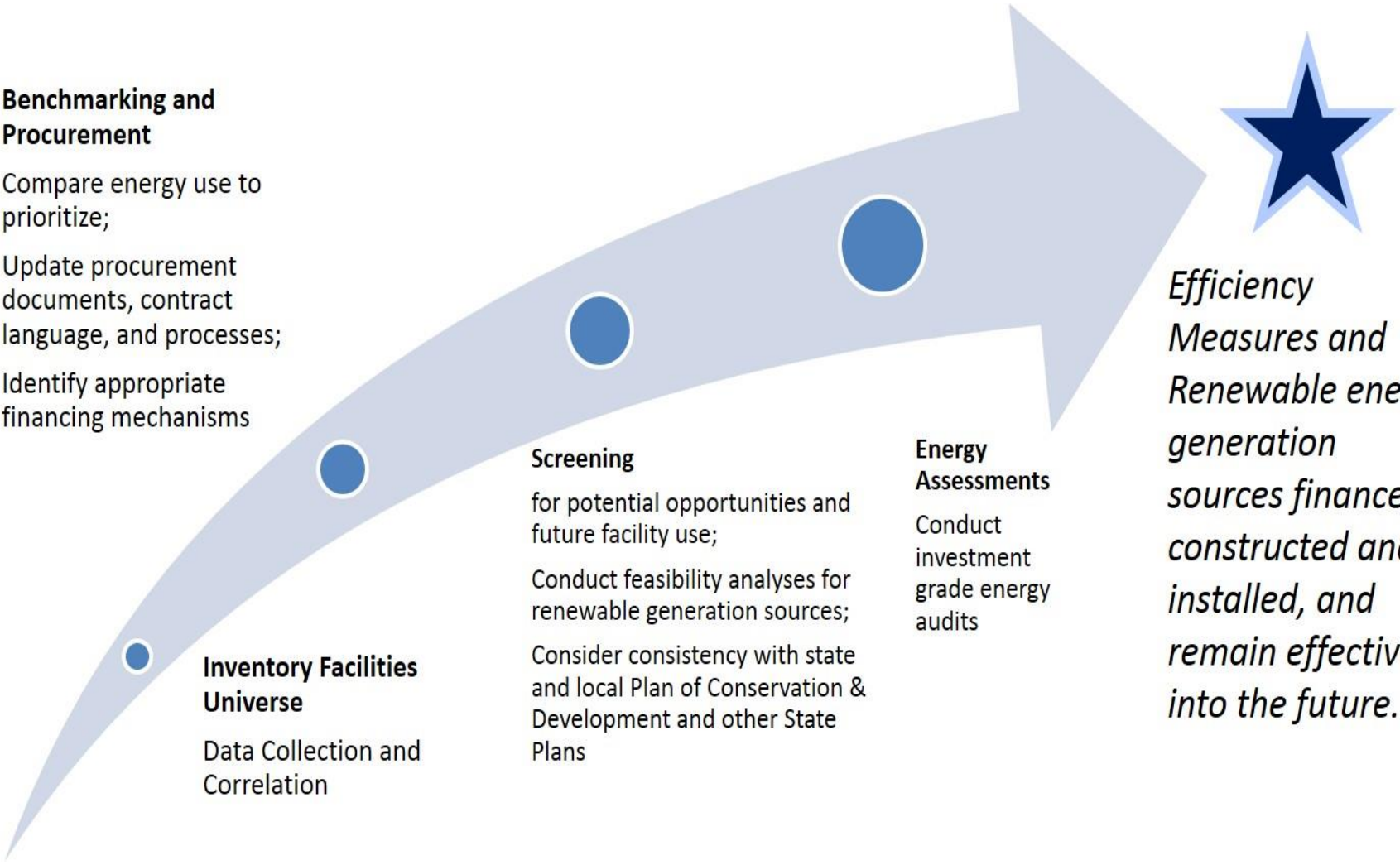
for potential opportunities and future facility use;

Conduct feasibility analyses for renewable generation sources;

Consider consistency with state and local Plan of Conservation & Development and other State Plans

Energy Assessments

Conduct investment grade energy audits



Efficiency Measures and Renewable energy generation sources financed, constructed and installed, and remain effective into the future.



Scale Up ESPC: Value Proposition

Immediate Value of ESPC:

- Guaranteed Savings and Monitoring
- Operation and Maintenance Included
- Equipment upgrades and/or replacement for present need

Long Term Value:

- Measurement and Verification of ongoing energy saving measures
- Reduced cost and impact of failing infrastructure needs
- Reduced unexpected equipment failure (minimizing need for emergency funds)

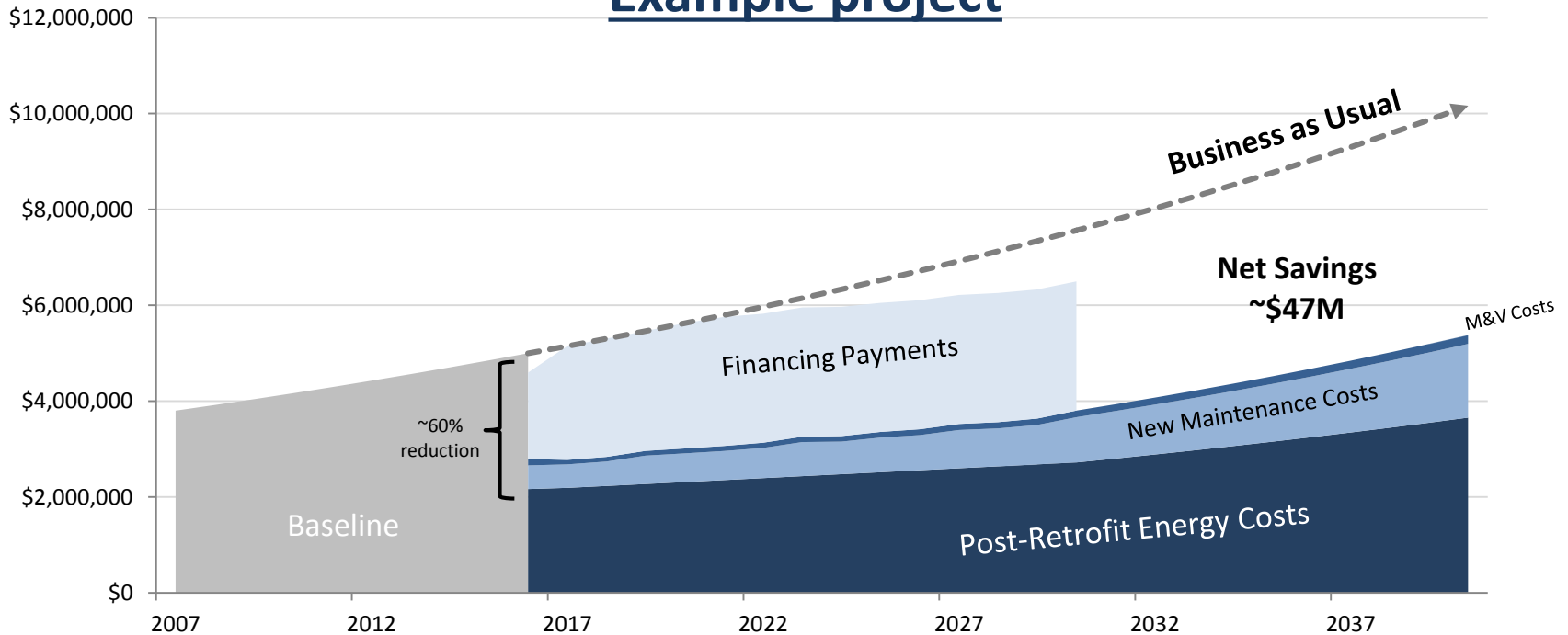
Overall:

- Increased financial stability both present and in future
- Reallocation of utility costs for energy efficient upgrades
- Reduction of energy usage = cost savings



ESPC: Project Lifetime Economics

Example project



National ESPC Model Adopted

Attributes of successful ESPC programs have been identified since 2007. CT has put in place the majority of successful program elements:

- ✓ Enabling Legislation
- ✓ Strong Governor's Level Support
- ✓ Legal
- ✓ Procurement
- Finance
- ✓ Program Administration
- ✓ Program Funding
- ✓ Pre-approved contract instruments
- ✓ Pre-approved providers
- ✓ Benchmarking
- ESC State Chapter
- Awards and Recognition



CT ESPC Progress to Date

- Critical Inter-Agency Coordination:
 1. Procurement
 - Enabling Legislation as alternative means of procurement
 - Pre-Approved list of Energy Services Companies
 2. Legal – Attorney General’s Office
 - Standardized Contracts
 3. Landlord Agency – DAS-Division of Construction Services
 - Defining the DCS role for the 3 inaugural projects
 - Defining DCS role for future ESPC projects
 4. Financial – Office of Policy and Management/Treasurer/CGB
 - Plan for money movement and budgetary support
 - Application of Utility Incentives
 - Source of Funds for Future Projects



Next Step: Financing

- Small Scale Projects: Recapitalize Small Business utility payment plan financing program
- Medium Scale Projects: Expand Small projects approach; requesting bond authorizations
- Large Scale Projects:
 - CT Department of Correction will be first Executive Branch agency financed for an Energy Savings Performance Contract using CT Green Bank-issued Green Bond or alternate financing mechanism
 - Green Bank developing financing for future projects



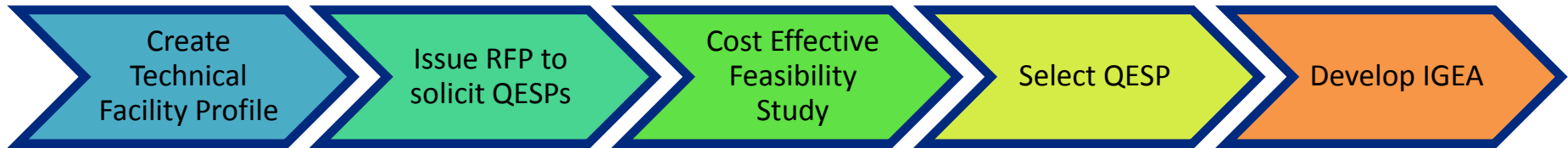
Planning Financing

- Fundamental ESPC concept is to repurpose utility dollars
- For CVH and DMV: use of G.O. Bond funds for capital
- For DOC: Green Bonds for capital
- For future projects?
- Requested authorization for LBE funding.
- Alternate approaches may warrant consideration.
- States typically do not limit the ESPC program to a G.O. Bond allocation



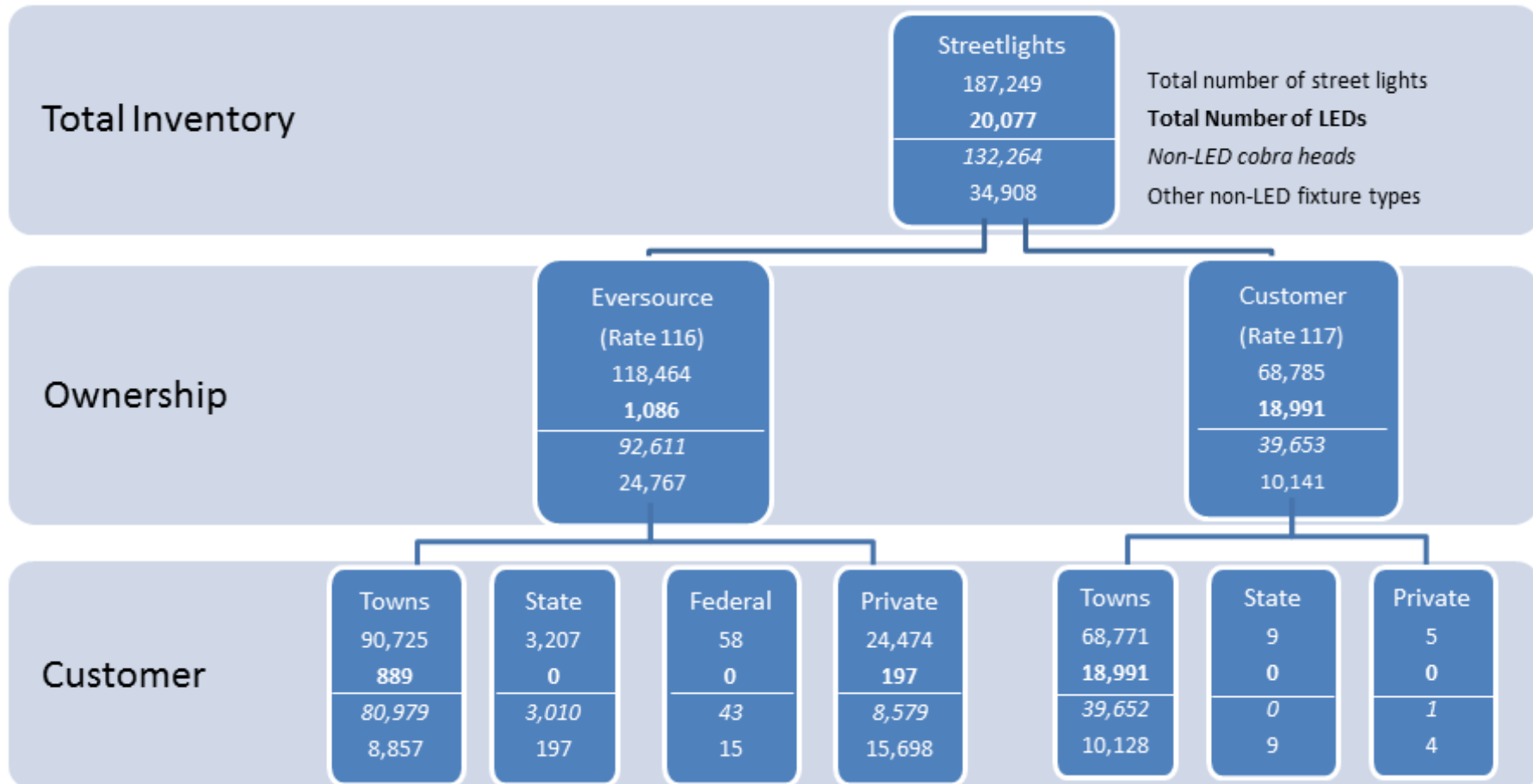
With Financing, Can Scale up Use of ESPC

- Clear path for advancing a project forward, if financing is available
- Standard templates pre-negotiated and available for use statewide
 - www.ct.gov/deep/leadbyexample
- Pre-qualified list of energy service professionals for state agencies and municipalities to request services
 - [Pre-Approved Qualified Energy Services Providers \(QESPs\)](#)
[Pre-Approved Technical Service Providers](#)



Next Step: Converting Streetlights

Many state and municipal streetlights being converted to LED in next 2-3 years



Source: Eversource July 2016



Next Step: Aggregated Procurement

- Spring 2017: DEEP/DAS will issue a Request for Proposal for the firm supply of electricity for state government operations
 - Executive Branch agencies,
 - Judicial Branch,
 - Office of Legislative Management, and
 - some additional entities
- Supply equivalent to basic service product
- Supply must be consistent with Connecticut's Renewable Portfolio Standards
- Will likely request pricing options for the electricity supply to include percentages of renewable generation above the Renewable Portfolio Standards



Next Step: Increasing Scale of Renewables at State Facilities



Connecticut Department of Energy and Environmental Protection

Ongoing Plan for Reducing Energy Use in State Buildings

2016-2020

| Strategy/Task | From (In progress) | To (Goal) | 2016-2017 | 2018-2020 |
|---|--|---|---|---|
| Document baseline energy use in all state buildings | Scattered information in non-consistent formats across state agencies | Standard reporting platform for all agencies. With a few clicks, reports can be generated (by any user) to show energy consumption and costs – by state, agency, facility, building | Continue to work with all agencies to inventory buildings and populate EnergyCAP with energy invoices; continue to train and encourage all agencies to use EnergyCAP; finalize electronic data feeds from utility companies for electricity & natural gas | Agencies continue to feed EnergyCAP monthly, and continue to help correlate buildings to accounts and meters; update as accounts close/open |
| Prioritize needs for energy efficiency upgrades and retrofits | Agencies struggling to find capital \$ to replace failing/inefficient equipment – often band-aided and not able to do the most energy-efficient comprehensive approach | Program is readily available for all necessary energy-efficient upgrades for more comprehensive projects. | Educate, inform, notify state agencies of the LBE programs. Expand C&LM programs. Use baseline data to determine/define projects with the greatest relative energy reductions on the most needed upgrades. | Expand the LBE & C&LM programs to include more than just the most critical projects. Allow for more comprehensive projects |
| Prioritize opportunities for solar | Need feasibility analysis on where solar can be installed | Complete feasibility analysis for solar installation at agencies. All agencies that have appropriate roofs can get solar. Agencies can enter a PPA. | Preliminary analysis done for DEEP locations for solar installation using GIS. Work with the Green Bank on a PPA for agencies to install renewables | Agencies will be able to enter into a Power Purchase Agreement to install solar at their facilities. |



Ongoing Plan for Reducing Energy Use in State Buildings 2016-2020 Continued

| Strategy/Task | From (In progress) | To (Goal) | 2016-2017 | 2018-2020 |
|---|--|---|--|--|
| Prioritize opportunities for other renewables (anaerobic digestion, geothermal) | Need feasibility analysis on where renewables can be installed | Complete feasibility analysis for renewables installation at agencies. All agencies that have appropriate spaces can get renewables. Agencies can enter a PPA | Work with the Green Bank on a PPA for agencies to do install renewables | Agencies will be able to enter into a Power Purchase Agreement to install renewables at their facilities. |
| Establish ongoing financing mechanism(s) | Currently using GO Bonds, capital \$ & Utility Based Incentive Program to fund EE projects | Use the Green Bank to fund EE projects | Continue to work with DAS, OPM, Green Bank, OTT, DEEP, AGO to establish an ongoing financing mechanism for EE projects. | Standardized and streamlined process and mechanism exist for agencies who present viable energy efficiency project proposals, without need for rationing |
| Generate and prioritize a pipeline of energy efficiency projects | Agencies submit project request forms for various EE upgrades to their facilities | Using feasibility analysis and benchmarking to prioritize the largest energy users for EE upgrades. Top 20 facilities | Continue to work with DAS, OPM, Green Bank, OTT, DEEP, AGO to establish an ongoing structure for assessing and prioritizing projects | Standing inter-agency body functions semi-autonomously to support the pipeline of projects – prioritizing and facilitating financing |



Comments welcome

- Verbal comments accepted today
- Written comments may be submitted through February 28
- Send comments to DEEP.EnergyBureau@ct.gov
- www.ct.gov/deep/leadbyexample
- www.energizect.com/your-town/solutions-list/performance-contracting

Thank you!



Connecticut Department of Energy and Environmental Protection