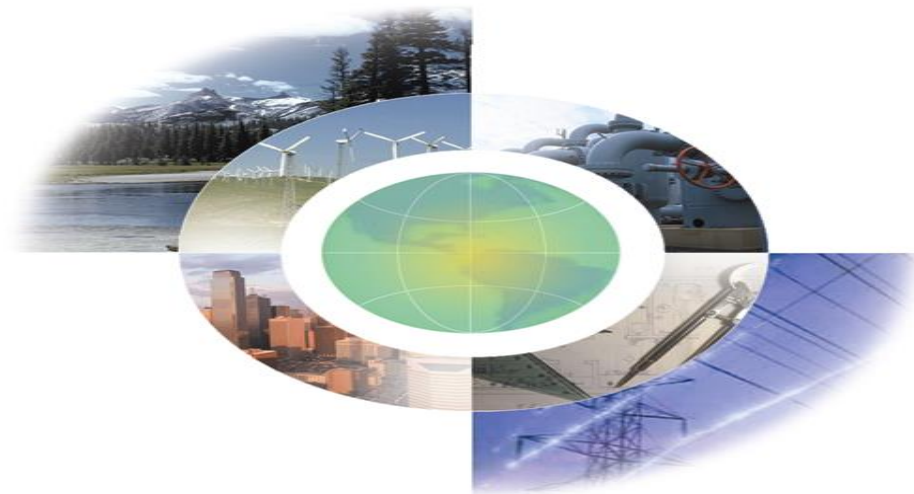




EEM Overview Webinar



Energy Division

Office of Facilities Management & Services Programs

January 21, 2016

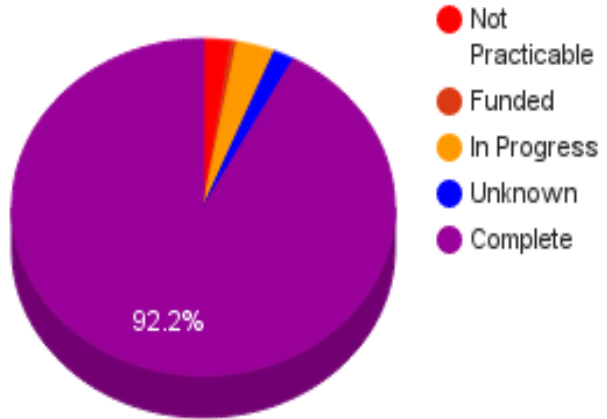


	Establishing Authority	
	Energy Policy Act of 2005	Energy Independence and Security Act of 2007
Metering Requirements Section	Section 103. Energy Use Management and Accountability	Section 434 (b)
Applicability	All Federal Agencies	All Federal Agencies
Key Requirements	<ul style="list-style-type: none"> - By October 1, 2012 - All buildings - Electricity only - Hourly interval data (minimum) collected at least daily - Development and submission to DOE implementation plans 	<ul style="list-style-type: none"> - By October 1, 2016 - Each agency shall provide for equivalent (as to Section 03 EPAAct 2005) metering of natural gas and steam - Metering of water is encouraged to obtain data to support water intensity reduction goals
Supporting Information and Documents	FEMP Metering Best Practices Guide Release 2.0	EPAAct 2005 and the <i>National Energy Conservation Policy Act</i> FEMP Metering Best Practices Guide Release 2.0



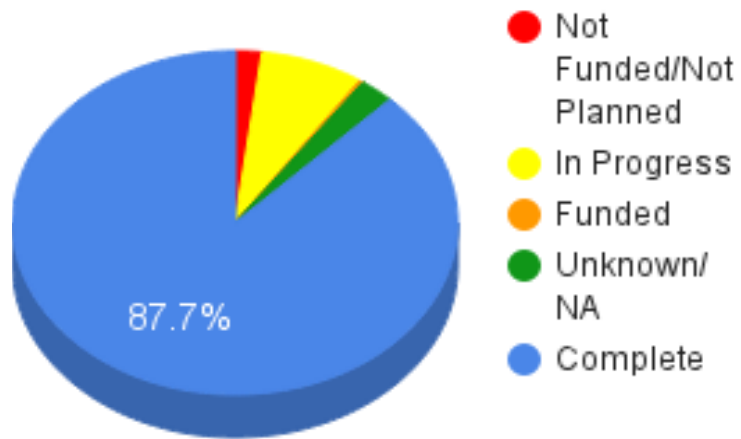
GSA Advanced Metering - ION EEM Status

Advanced Metering: Electric Metering Status-2014



Shown as a percentage of total annual electric consumption

ION EEM: Progress FY14

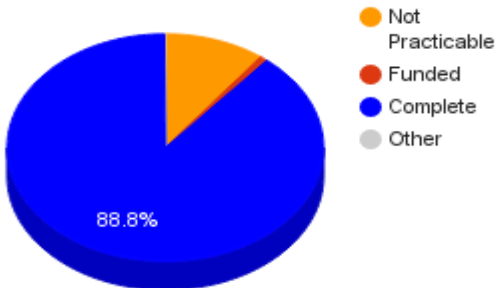


Currently, 465 GSA Facilities have advanced metering installed that has been integrated into ION EEM

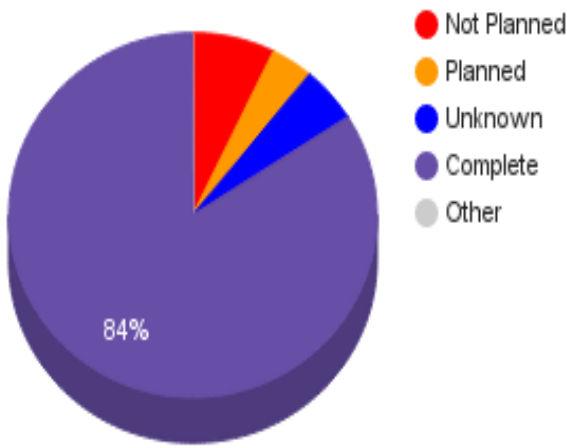


GSA Advanced Metering - Other Utility Types (Gas, Steam & Water)

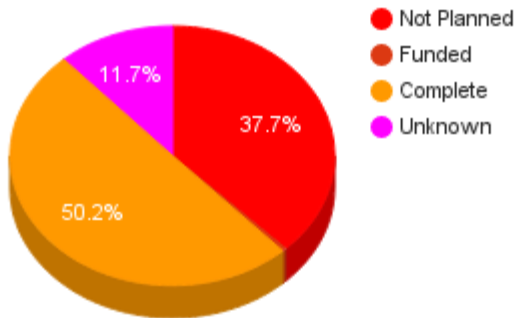
Advanced Metering: Steam Metering Status-2014



Advanced Metering: Gas Metering Status-2014



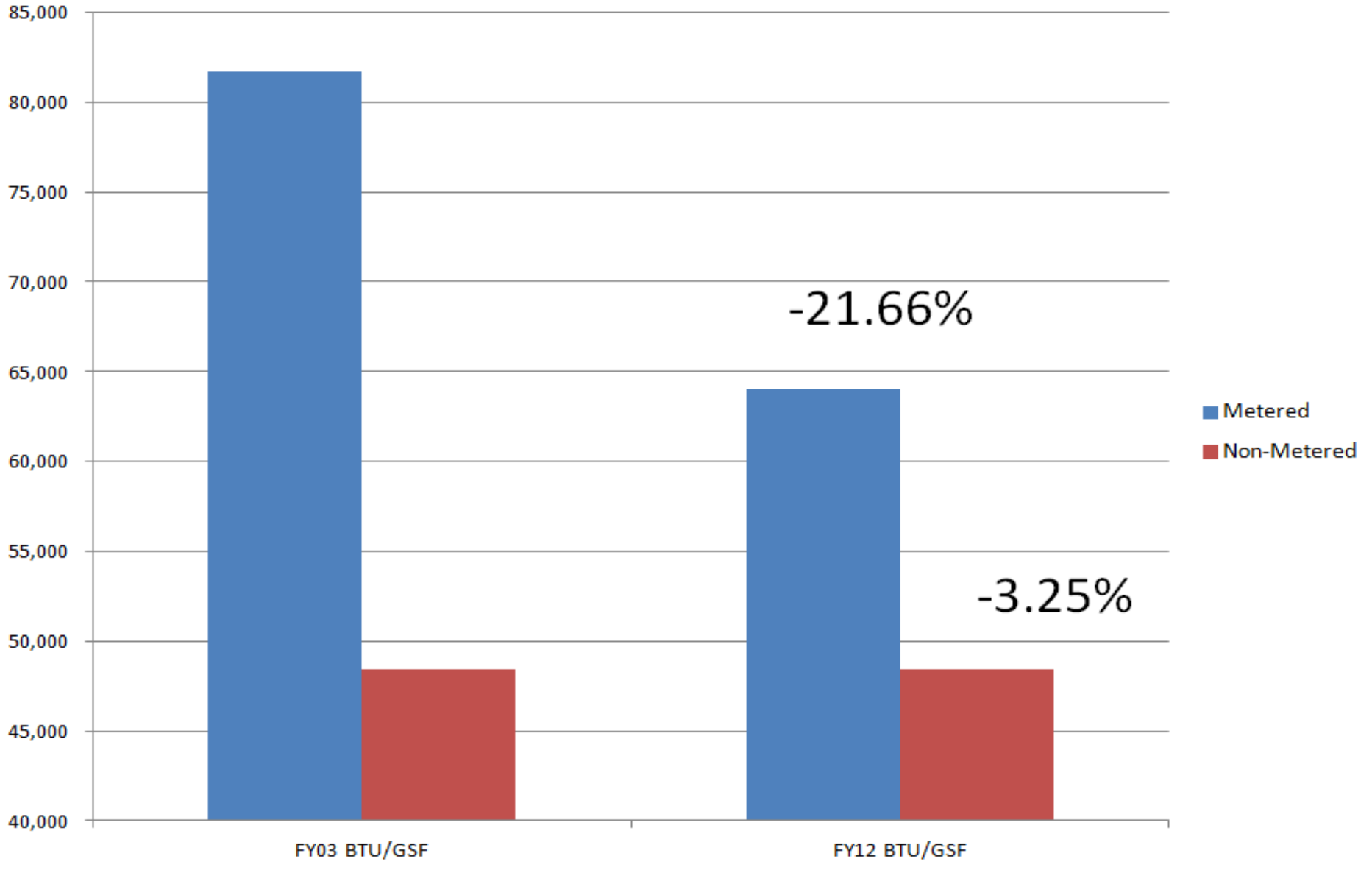
Advanced Metering: Water Metering Status-2014



Shown as a percentage of total annual consumption for each utility type

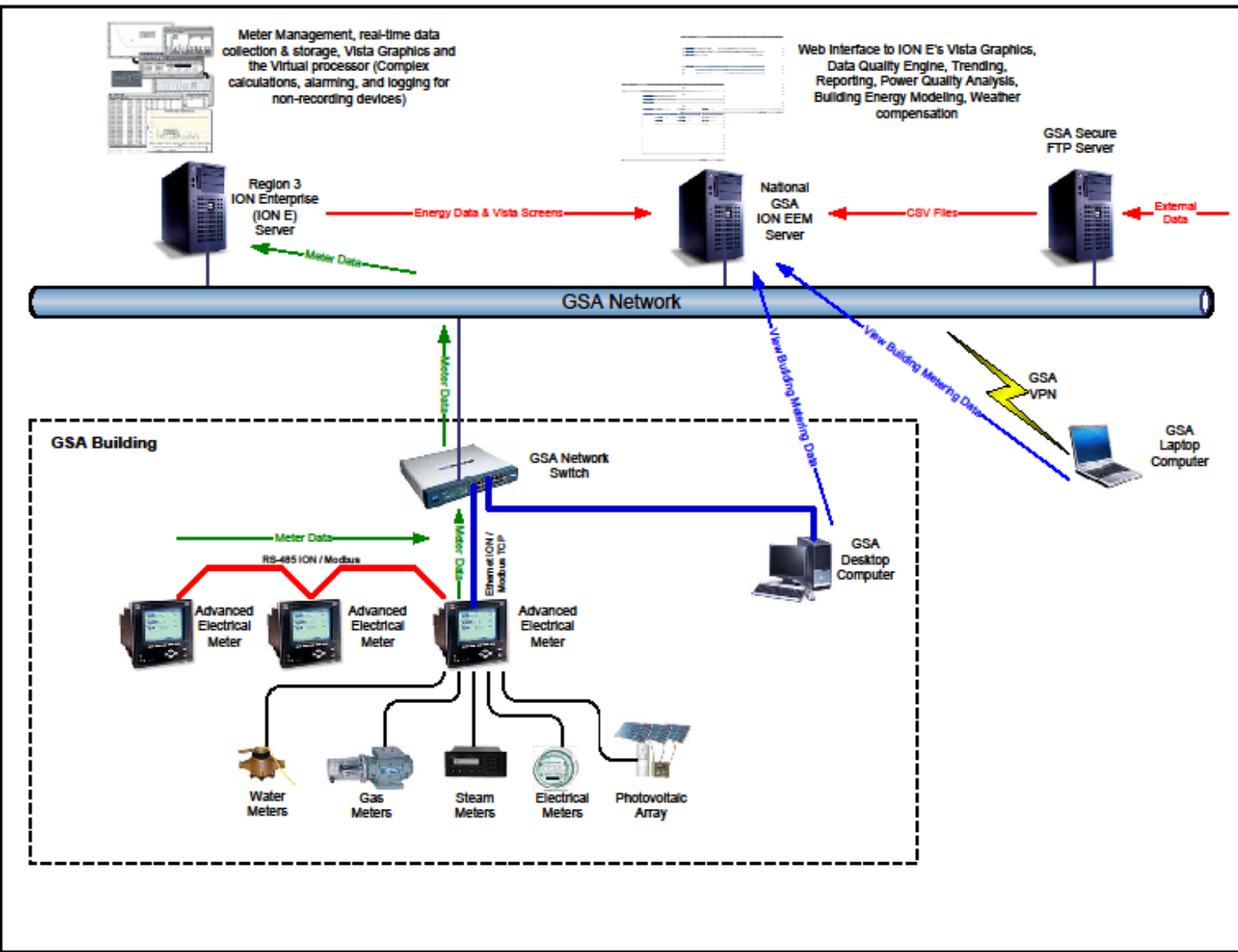


EUI Performance - Adv Metered vs Non- Adv Metered





Adv Metering Data Flow Diagram





GSA Server Architecture

Customer



GSA EEM Server (Distributed)

- ION EEM 3.96
- 2008 R2 Std SP1 x64
- SQL 2008 R2 SP1
- 1203 General Sources
- 277 Buildings
- 231 Virtual Sources
- 13516 SMP

Access to metered/monitored data via GSA EEM server



Region 1

- ION E 6.0 SP1
- 2008 R2 Std SP1 x64
- SQL Std 2008 SP1 x64
- 161 sources

Region 3

- ION E 6.0 SP1
- 2003 Std SP2 x86
- SQL 2005 Express Edition with Advanced Services SP3
- 174 sources

Region 6

- ION E 6.0 SP1
- 2003 Std SP2 x86
- SQL Std 2008 SP2
- 117 sources

Region 11

- ION E 5.6 SP2
- 2003 Std SP2 x86
- SQL Std 2005 SP4
- 278 sources
- OPC alarming included

Region 2

- ION E 6.0 SP1
- 2003 Std SP2 x86
- SQL Std 2008 SP2
- 81 sources

Region 5

- ION E 6.0 SP1
- 2003 Std SP2 x86
- SQL Std 2008 SP2
- 123 sources

Region 10

- ION E 6.0 SP1
- 2003 Std SP2 x86
- SQL Std 2008 SP2
- 45 sources

Region 9 (future)

- SPM7 (ION E v7)

Region 4

- Rhea System ETL
- ETL support only

Region 8

- WinPM 3.2 SP3
- 2003 R2 Std SP2 x86
- ETL support only

Region 7 (future)

- Tridium ETL
- ETL support only

Source Node Hierarchies

Node Hierarchies

Configure Node Attributes

Node Attributes

Hierarchies

Sources

Columns

- Category
- Comm. Freq. (min)
- Import Enabled
- Last Comm. (UTC)
- Load Type
- Namespace
- Node Count
- Source ID
- Source Name
- Status
- Timezone
- Type
- Utility Type

Drag a column header here to group by that column

Source Name	Source ID	Category	Type	Import Enabled	Comm. Freq. (min)	Last Comm. (UTC)
%el				—		
AL0003AC.EL_1	7729	General		✓	1440	4/23/2015 6:05
AL0003AC.EL_2	7098	General		✓	1440	4/23/2015 6:05
AL0043AC.EL_1	7100	General		✓	1440	4/23/2015 2:05
AZ0015ZZ.EL-1	8247	General		✓	1440	10/30/2014 6:59
AZ0052ZZ.EL-1	8248	General		✓	1440	10/30/2014 6:59
AZ0052ZZ.EL_PHX_Bankrup...	9178	General	SA300	✓	1440	11/14/2015 3:1
AZ0307ZZ.EL-1	8249	General		✓	1440	10/30/2014 6:59
AZ0307ZZ.EL-2	8250	General		✓	1440	10/30/2014 6:59
AZ0307ZZ.EL-3	8251	General		✓	1440	10/30/2014 6:59
AZ0551BB.EL-1	8242	General		✓	1440	10/30/2014 6:59
AZ0555BB.EL-1	8243	General		✓	1440	10/30/2014 6:59
AZ0555BB.EL-2	8244	General		✓	1440	10/30/2014 6:59
AZ0555BB.EL-3	8245	General		✓	1440	10/30/2014 6:59
AZ0661WW.EL-1	8246	General		✓	1440	10/30/2014 6:59
CA0041ZZ.EL-2-A	6213	General		✓	1440	10/30/2014 6:59
CA0041ZZ.EL_1	9252	General	SA300	✓	1440	7/9/2015 5:29 A
CA0083ZZ.EL-1	6242	General		✓	1440	10/30/2014 6:59
CA0083ZZ.EL-2	6240	General		✓	1440	10/30/2014 6:59
CA0088ZZ.EL-1	6241	General		✓	1440	10/30/2014 6:59
CA0091AA.EL-1	5855	General		✓	1440	10/30/2014 6:59
CA0091AA.EL-2	5854	General		✓	1440	10/30/2014 6:59
CA0091AA.EL-3	5884	General		✓	1440	10/30/2014 7:00
CA0091AA.EL_3	9198	General	SA300	✓	1440	9/18/2014 7:15
CA0093ZZ.EL_E_M_0_12	9521	General	Eaton_I...	✓	1440	12/11/2014 3:19
CA0093ZZ.EL_E_M_1_5	9523	General	Eaton_I...	✓	1440	12/11/2014 3:19

Select All

Deselect All

 [Status] Like 'off%' And [Source Name] Like '%el%'

Data Quality

Reports

Templates

Audit Log

Data Editor

Displaying summary reports which were last run between Wednesday, December 09, 2015 and Wednesday, December 16, 2015 [Edit Report Filter](#)

Last Report Run Time

Template Name	Data Start Time	Data End Time	Report Re
Last Report Run Time: Today			
AR0021ZZ Jitter	12/14/2015 12:00:00 AM	12/15/2015 12:00:00 AM	Pass
B.Wright Edit report	12/14/2015 12:00:00 AM	12/15/2015 12:00:00 AM	Pass
IN1703.PV Jitter	12/14/2015 12:00:00 AM	12/15/2015 12:00:00 AM	Pass
Region 2 - Keating Bldg - Steam	12/14/2015 12:00:00 AM	12/15/2015 12:00:00 AM	Failed
TM_WA0811KA.EL_MDP Duplicates	12/14/2015 12:00:00 AM	12/15/2015 12:00:00 AM	Pass
WA0811KA.EL_MDP Duplicates	12/14/2015 12:00:00 AM	12/15/2015 12:00:00 AM	Pass
WA0821KF.EL Bay 1_2 Dup	12/14/2015 12:00:00 AM	12/15/2015 12:00:00 AM	Pass
WA0823KF.EL Bay1_2 Dup	12/14/2015 12:00:00 AM	12/15/2015 12:00:00 AM	Pass

Report Run Details

Template Name: Region 2 - Keating Bldg - Steam

Date Range: Monday, December 14, 2015 to Tuesday, December 15, 2015

Violations Found: 97

Violations Repaired: 0

Source Name

Measurement Name

Violation Type

Steam (lbs)	Jitter
Steam (lbs)	Nulls
Steam (lbs)	Spikes
Steam (lbs)	Zeros
Steam (lbs) Int	Duplicates
Steam (lbs) Int	Gaps
Steam (lbs) Int	Jitter
Steam (lbs) Int	...

Violations found by the Report

Violations repaired by the Report

General Report Errors



http://gsameteringioneem/ion
eem

Schneider Electric - ION EEM : Dashboard - Windows Internet Explorer provided by General Service...

http://gsameteringioneem/IONEEM/default.aspx

File Edit View Favorites Tools Help

☆ Favorites [icon] Schneider Electric - ION E... X Home - Metering

Schneider Electric

Dashboards Reporting Trend Analysis PQ Analysis

File Help

Pages

- GSA_Nationwide
- PV_Vs_UTILITY
- Data Centers
- Reg_Aggregation
- Gold DayExamp
- StartUpComparis
- Sanford PV
- Weather Sample
- MCR_Aggreg_SC
- EnergySharePt
- R3_ThWkVsLastWk
- Load Factor
- NY0282_GasStm
- Reg1_NARA_PV
- GSA Main
- R11_POTOMAC
- SnowStorm_Feb10
- Reg3_Today
- Reg3_Snow
- Daily Trend
- 4th July Week
- MLKHolidayTrend

WebReach Diagram

Nationwide_Webreach (Read-Only)

PowerLogic ION EEM

User Name

Password

Login

UN: GSA_User
PW: energy

GSA Help

Nation Map

- 1: New England
- 2: Northeast and Caribbean
- 3: Mid-Atlantic
- 4: Southeast
- 5: Great Lakes
- 6: The Heartland
- 7: Greater Southwest
- 8: Rocky Mountain
- 9: Pacific Rim

• EUROPE
• AFRICA
• MIDDLE EAST

• AMERICAN SAMOA
• FAR EAST

• VIRGIN ISLANDS



Source Naming Convention

GSA - PBS

- + Region 01
- + Region 02
- Region 03
 - DE
 - DE0016ZZ
 - DE0016ZZ.EL_Service_1
 - DE0016ZZ.EL_Service_2
 - DE0016ZZ.EL_Sub_FirstFloor_1213_LP
 - DE0016ZZ.EL_Sub_Panel_LHG
 - DE0016ZZ-BLDG
 - DE0016ZZ-DW-1
 - DE0016ZZ-DW-2
 - DE0016ZZ-NG-1
 - + MD
 - + NJ

DE0016ZZ | J. Caleb Boggs Courthouse

GSF : 206,566

Back

Region Page

Nation Map

Help

Network Diagram

Electric Meters	(A)	(kW)	(pf)	Comms	Alert	UPS
DE0016ZZ.EL_Service_1	219.1	178.9	-98.5	✓	ON	🔋
DE0016ZZ.EL_Service_2	414.8	308.6	-89.4	✓	ON	🔋
EL_Sub_FirstFloor_1213_LP	10.0	8.0	-94.4	✓	ON	
EL_Sub_Panel_LHG	12.0	5.0	-53.3	✓	ON	
Totals:	633.6	487.3	-92.6			

Water Meters	(gal)
DE0016ZZ-DW-1	28,223,000
DE0016ZZ-DW-2	2,009,900

Gas Meter	(cf)
DE0016ZZ-NG-1	0

OK

www.gsa.gov | Region 3 | Wilmington, DE 19801

General Services Administration

FMSP Energy Division

October 4th, 2011



Open Trend Analysis -- Webpage Dialog

- APPA Project Team
- COHEN ALL FEEDERS DAILY 7/10
- COHEN BUILDING WEEK TO DATE FEEDERS
- COTTON FEEDERS WEEK TO DATE
- DC0000AB_EPA
- DC0001ZZ_Steam Plant
- DC0004ZZ_Cotton Annex
- DC0007ZZ_VA_Bldg810
- DC0010ZZ_FOB6
- DC0011_Postal Square
- DC0014ZZ_PrettymanCourthouse
- DC0021_CentralOffice
- DC0026ZZ_Lafayette
- DC0030ZZ_NationalBldgMuseum
- DC0031_ROB
- DC0033_Switzer
- DC0034ZZ_Cohen Bldg

OK

http://s1120c.ccm01/IONEEM/Core/FileManagement/EEMRep...

Save trends in appropriate folders

Open Trend Analysis -- Webpage Dialog

- ZRS_Postal.Sq
- Zuser - SarahWenninger
- zUser Brian Wright
- ZUser Mark Ewing
- ZUser Tom_Chiles
- zUser_apuckett
- ZUser_Curran_Karen
- ZUser_Don Brown
- zuser_EnergyDiv
- ZUser_Hotchkiss
- zUser_JohnTegan
- zuser_Matlutz
- zUser_MFoster
- ZUser_mneas
- zuser_norcott
- zUser_sguard
- Zuser-DavidJohnson

OK Cancel

http://gsameteringioneem/IONEEM/Core/FileManagement/EEMRep... Local intranet

Save trends in Zuser folders when in development



Using Analytics to Find and Realize Additional Savings in the Reagan Building

DC0549AF Ronald Reagan Building - [04/01/11 - 03/31/12]
PDF Report

Summary
Whole Building Analysis
End Use Analysis
Recommendations
Monitoring
Comments
kBTU
On
Off

© 2012 Microsoft Corporation Available Exclusively by DigitalGlobe Pictometry Bird's Eye © 2012 Pictometry International Corp

Open in new window

Building Name: DC0549AF Ronald Reagan Building

Building Address: 1300 Penn Ave NW, Washington, District Of Columbia, 20004, United States

Building Size(SqFt): 3,100,000 GSF

Primary Activity: Office

Heating Type: District Steam

Cooling Type: Electricity

Average Occupancy(%): 100

Year Constructed: 1998

Last Renovated: N/A

Electricity Cost: \$7,730,727 at average cost/kWh of 12 cents

District Steam Cost: \$1,834,212 at average cost/MLB of \$ 39.00

Energy Consumption	Total	Per SqFt	Per SqFt
Electricity	64,422,724 kWh	20.78 kWh	70.91 kBTU
District Steam	47,031 MLbs	0.02 MLbs	18.11 kBTU
Total	275,965,435 kBTU	89.02 kBTU	89.02 kBTU
Peak Demand (Electric)	12,399 kW	4.00 W	13.66 BTU/hr

Observations ▾

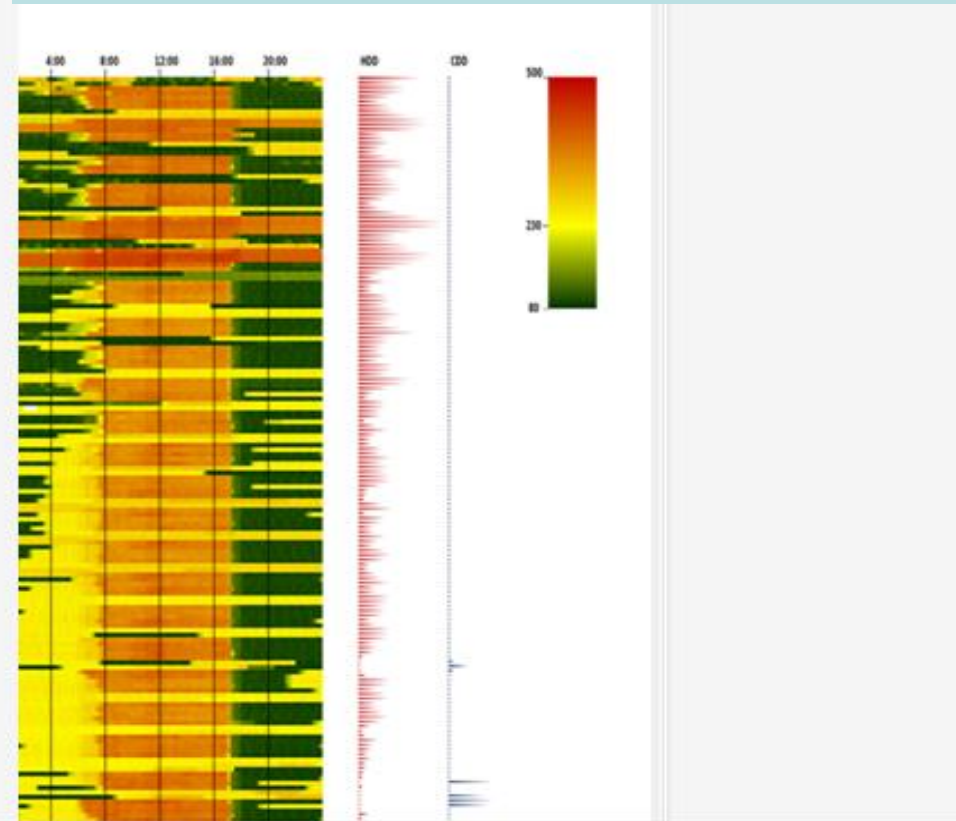
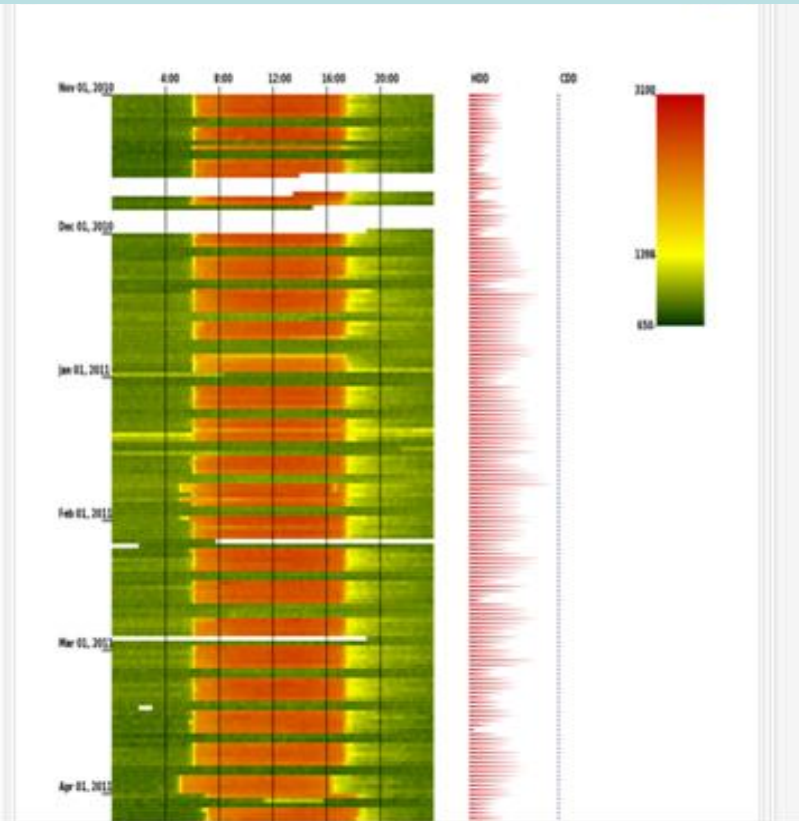
Savings Potential	Energy	Savings	Carbon
Electricity	5,541,718 kWh (9%)	\$665,006	2,501 tonnes
District Steam	1,742 MLbs (4%)	\$67,938	110 tonnes
Total	20,988,290 kBTU	\$732,944	2,611 tonnes



First Fuel: Good vs. Bad Building

Ted Weiss Federal Building in NYC

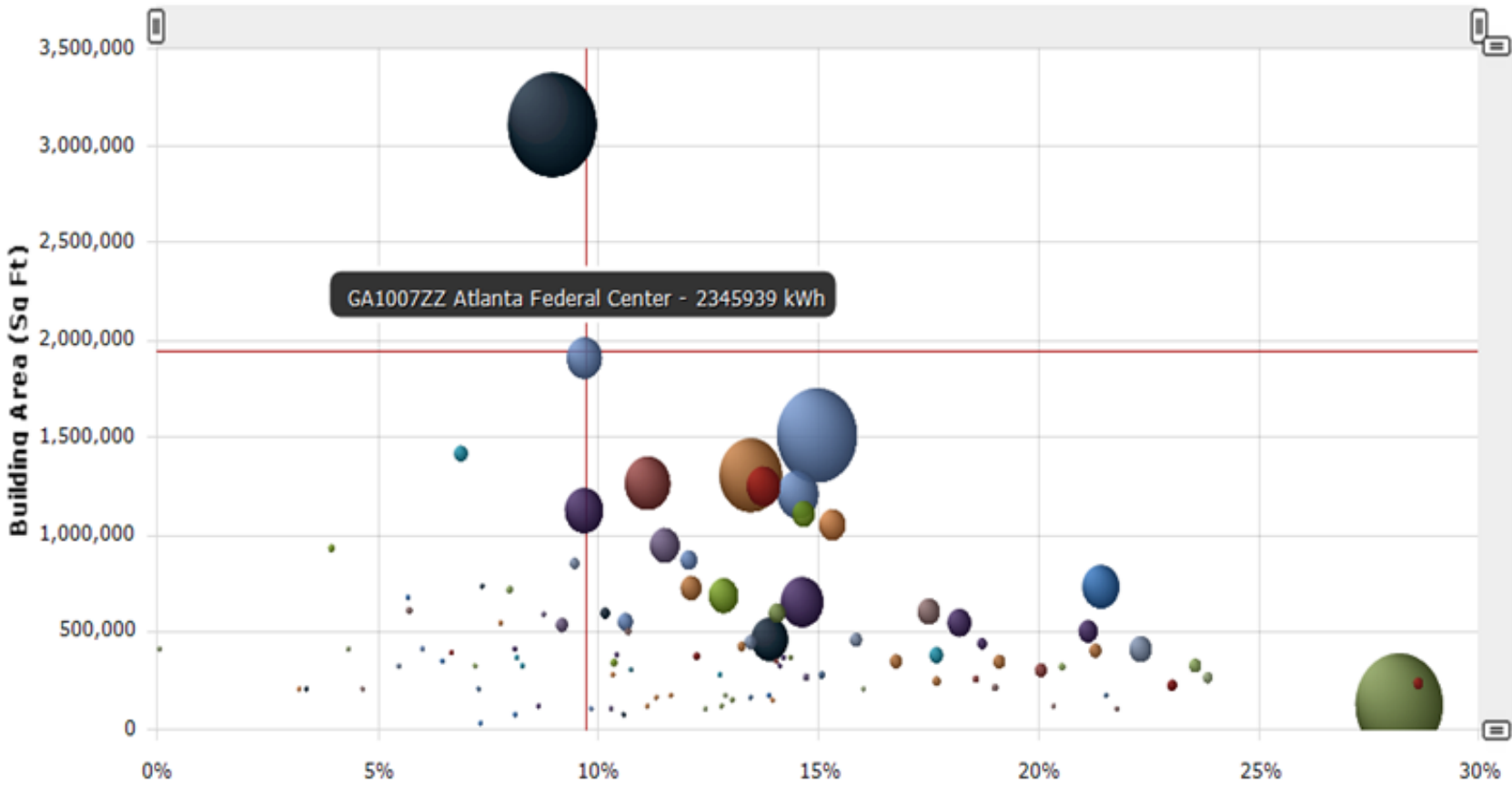
Alfred Arraj Courthouse in Denver





Select Portfolios By:

Potential Savings End Use

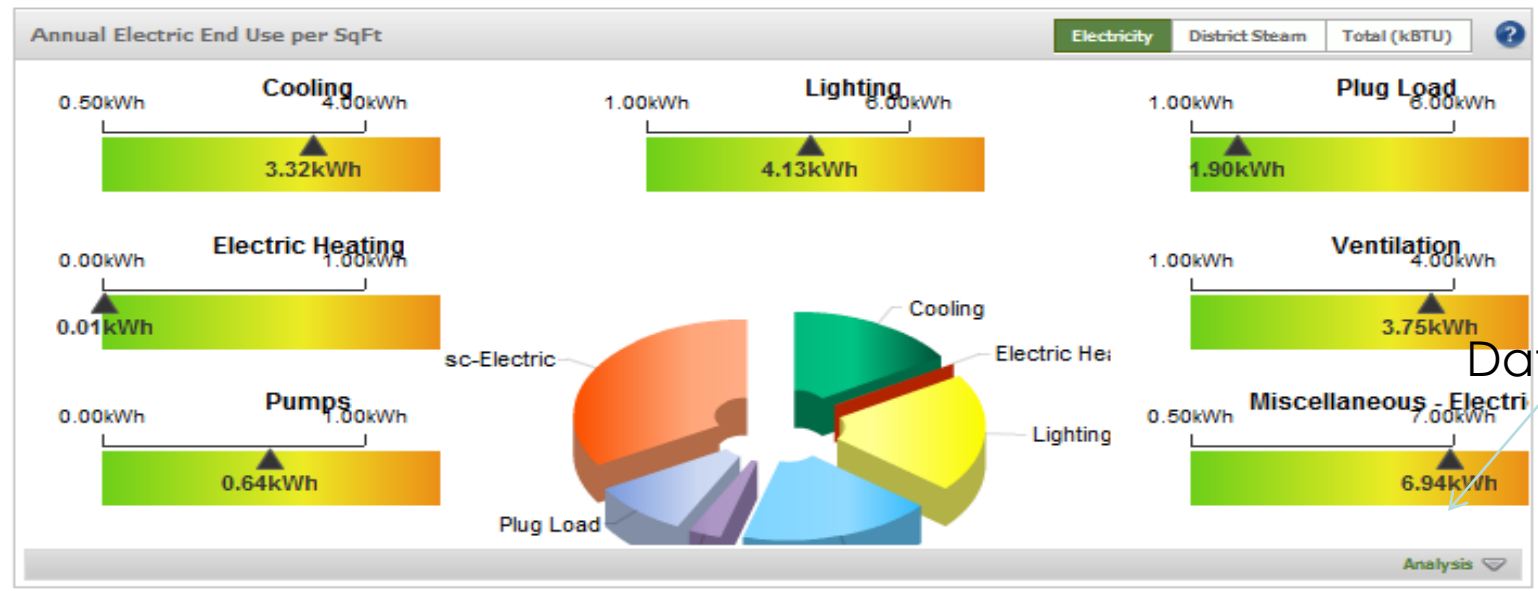


Note: Bubble Size represents Annual kWh Savings Potential for Consumption.



First Fuel Analytics

Savings Potential	Energy	Savings	Carbon
Electricity	5,754,406 kWh (9%)	\$690,529	2,597 tonnes
District Steam	1,742 MLbs (4%)	\$87,938	110 tonnes
Total	21,713,981 kBtu	\$758,467	2,707 tonnes



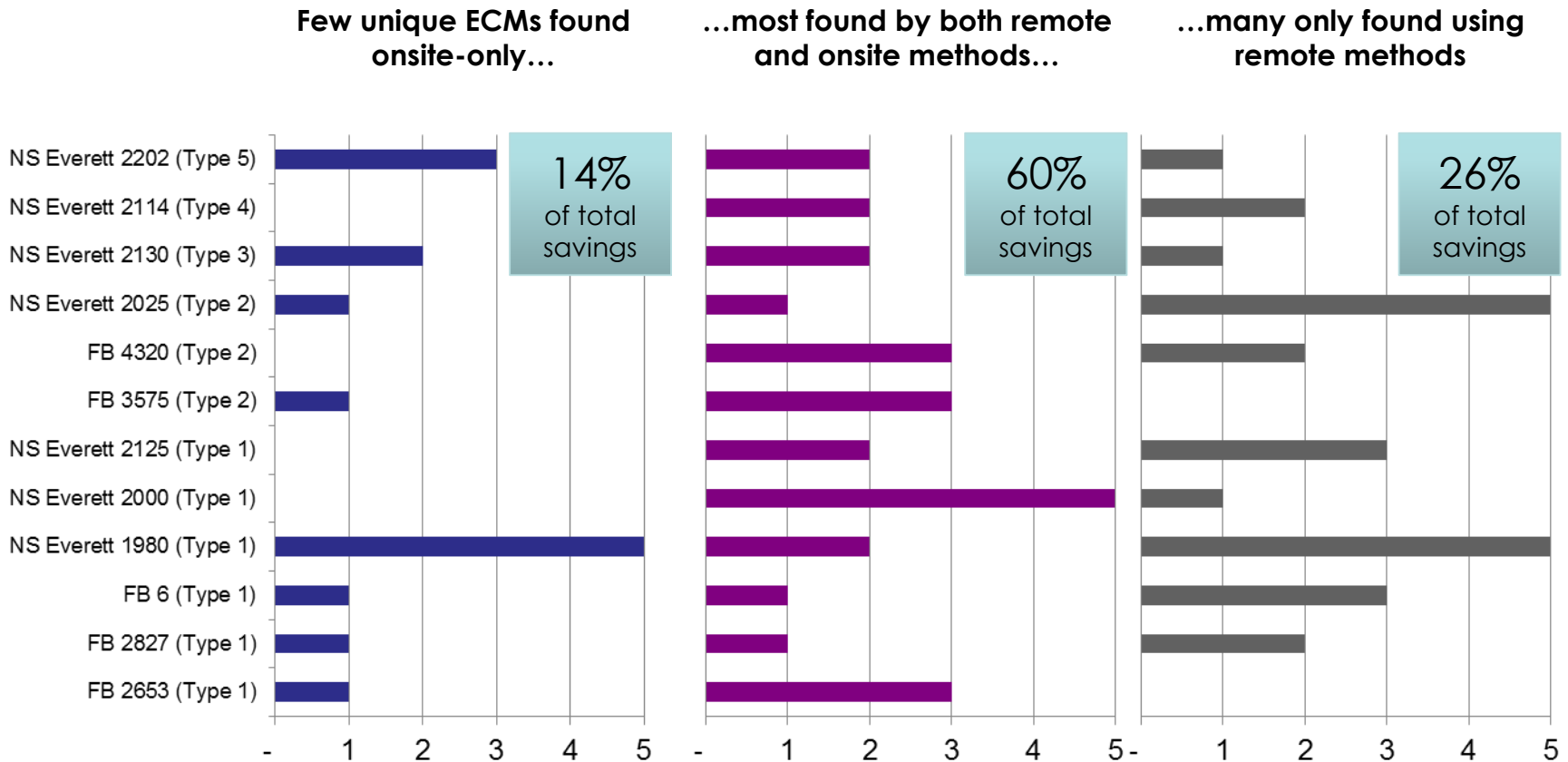
Data Center

Operational	Savings	Retrofit	Savings
Review the existing control sequences for all Ventilation equipment.	<ul style="list-style-type: none"> 1,163,617 kWh 10,173 Therms \$ 172,882 579 tonnes 	Evaluate the existing chilled water production equipment and pumping system components for replacement and upgraded control strategies.	<ul style="list-style-type: none"> 2,059,094 kWh \$ 247,091 929 tonnes
	Cost: \$ 86,430 to \$ 172,880		Cost: \$ 2,985,100 to \$ 4,941,830 ROI: 12 Years to 20 Years

First Fuel

Results: ECM Comparison

FirstFuel found more overall savings

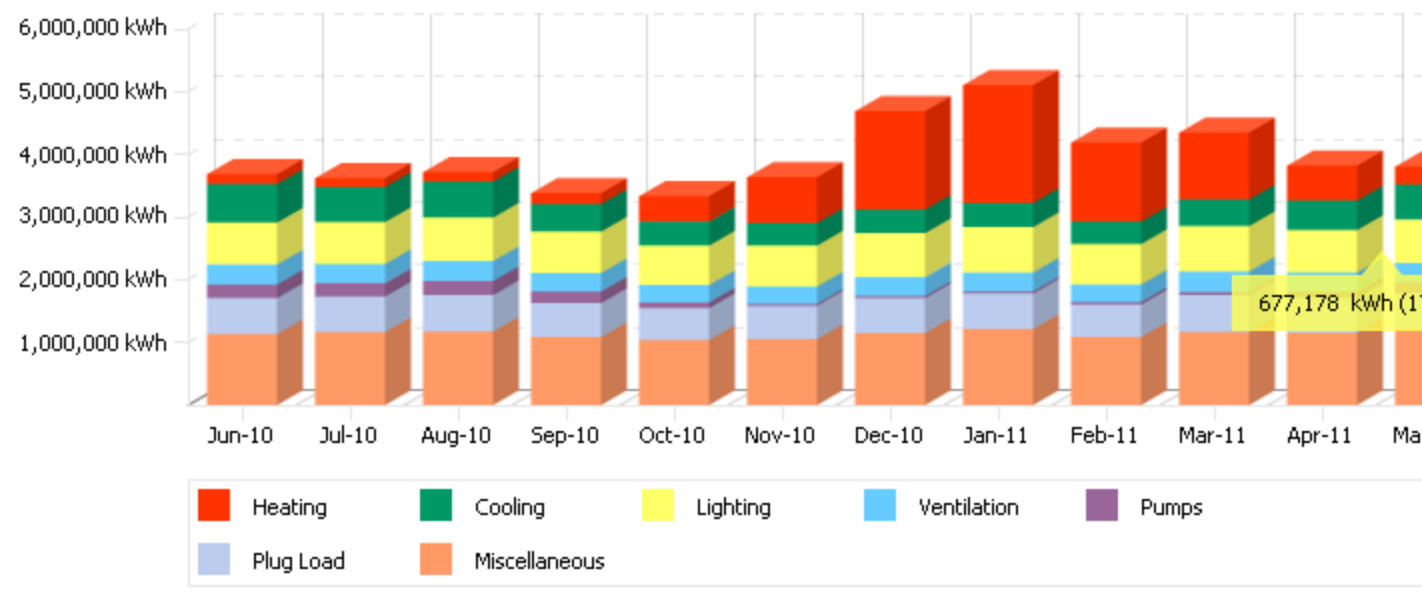


- Although ECMs recommended in the Level II audit may not appear in the RBA, omissions may reflect a different, broad approach to energy management, rather than an indication that the RBA "missed" ECMs.

Please select any of the buildings to see its full details.

End Use Consumption Daily Electric Load Profile

End Use Electric Consumption



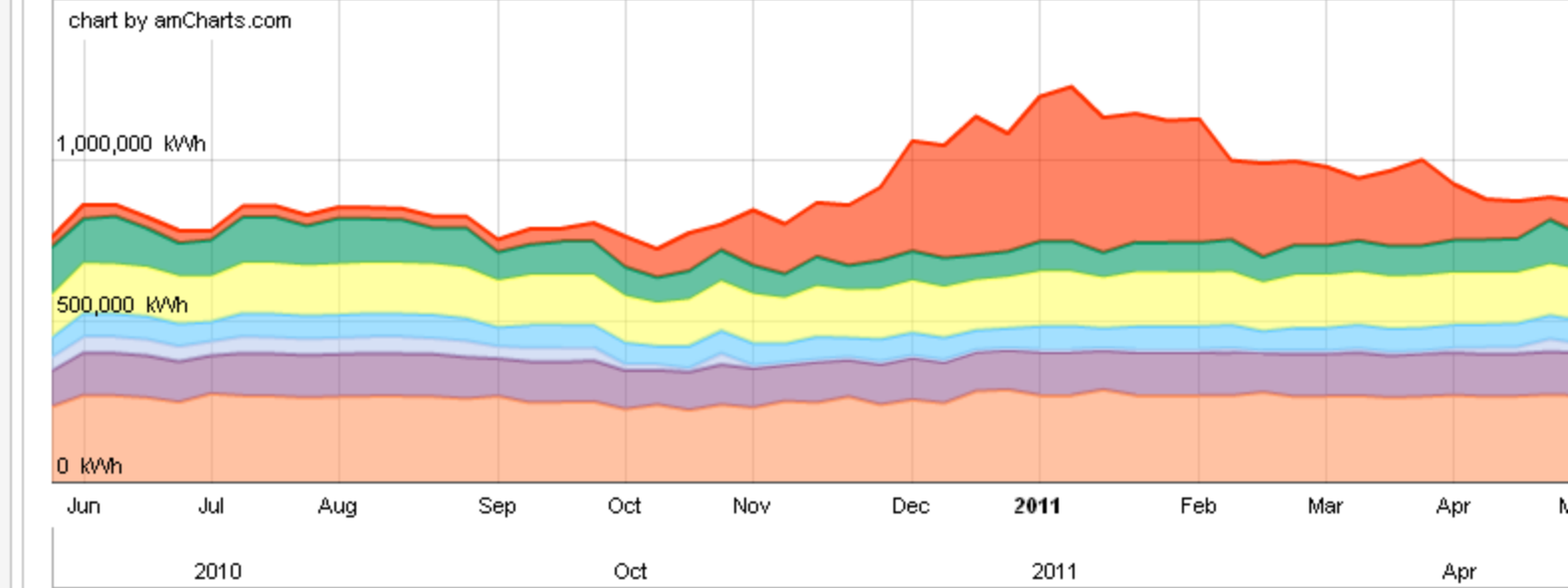
Monthly Daily Electric Peak Demand

Please select any of the buildings to see its full details.

End Use Consumption **Daily Electric Load Profile**

Daily Load Profile

Miscellaneous 91,638 Plug Load 34,068 Pumps 11,673 Ventilation 14,087 Lighting 41,087 Cooling 45,596 Heating 63,220



Monthly Peak Demand

Zoom: 100%



New Carrollton Federal Building - FirstFuel - Windows Internet Explorer provided by General Services Administration

http://gsa.firstfuel.com/buildings/65/dashboard

File Edit View Favorites Tools Help

★ Favorites | How to Caramelize Onions, ...

New Carrollton Federal B... | https://sharepoint.pbs.gsa....

building dashboard > New Carrollton > whole building Analysis

Page Safety Tools



Start | Internet | 95%

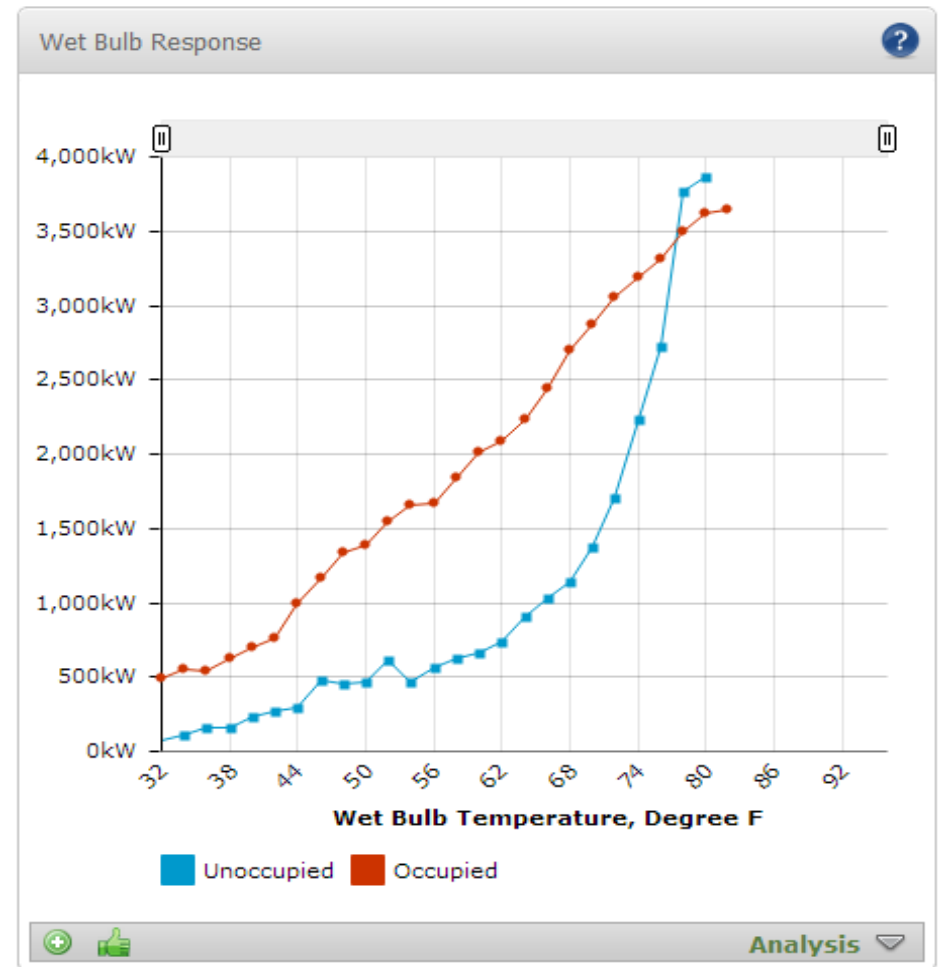
GSA.gov ... | 2 Micro... | 3 Inter... | 2 Wind... | SCE_09-... | Region 1... | 5 Micro...

3:57 PM Friday



Operational Savings Most Evident in the Data

- **ECM:** Investigate the reason the building was responding like a “Constant Air Volume” building even though Variable Air Handling units are installed in the building





Reagan Building Monitoring & Tracking Summary

Daily Summary: Compare actual consumption to baseline [?](#)

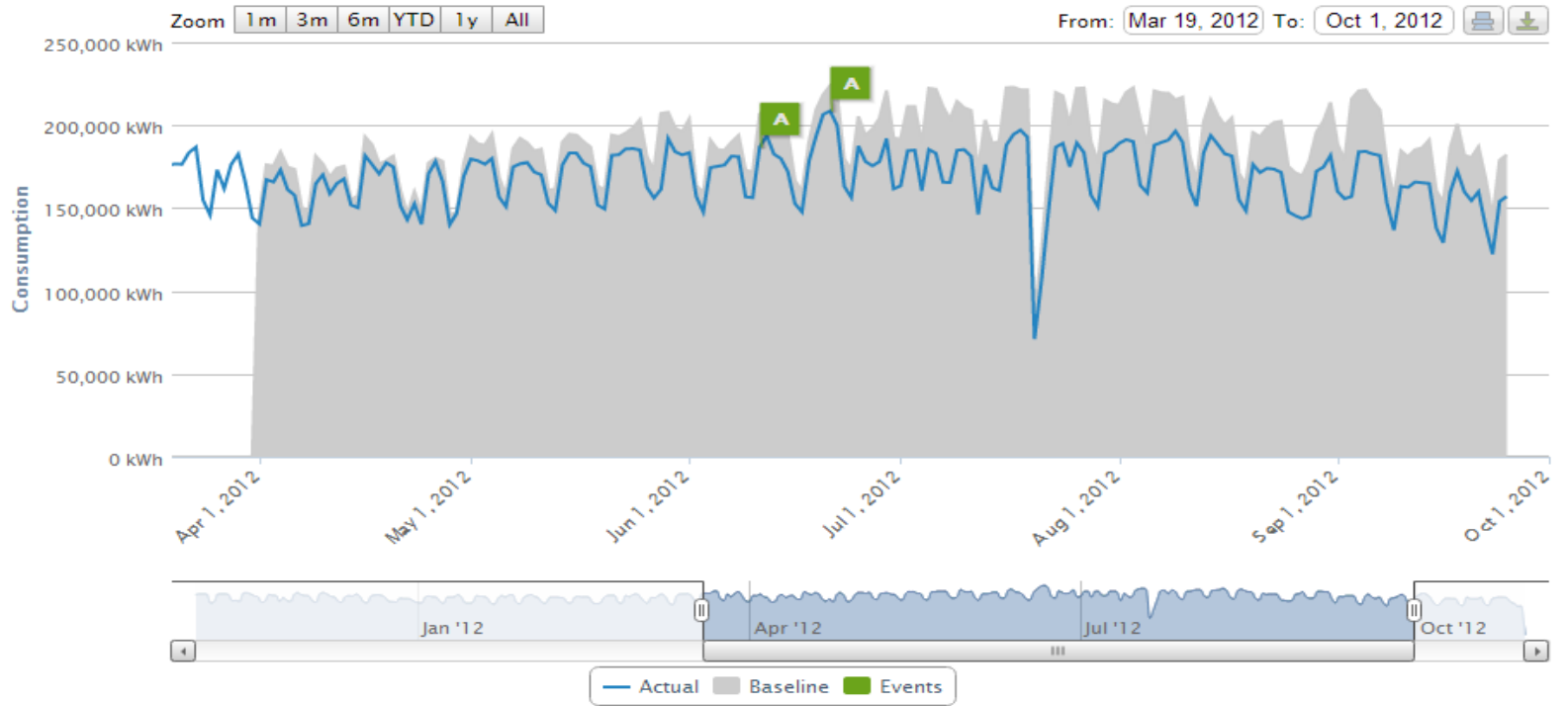
Cumulative Savings

💡 4,329,354 kWh

💰 \$519,523 (@ 0.12 USD/kWh)

🌿 1,954 tonnes

Savings (selected period): \$ 419,506



File Home Insert Page Layout Formulas Data Review View Acrobat

Clipboard Font Alignment Number Styles

Calibri 18 A⁺ A⁻ B I U Wrap Text Merge & Center General \$ % .00 .00

Conditional Formatting as Table Cell Styles

C14

	A	B	C	D	E	F	G	H
1	Operational or Retrofit	Operational						
2								
3	Row Labels	Sum of USD Savings						
4	AK0001ZZ Anchorage Federal Building	\$ 2,555						
5	AR0063RK Little Rock FB	\$ 16,154						
6	CA0041ZZ 312 N Spring Courthouse	\$ 85,682						
7	CA0088ZZ Weinberger	\$ 5,250						
8	CA0167ZZ Schwartz FB & Courthouse Updated	\$ 70,311						
9	CA0221ZZ Shea FB	\$ 11,669						
10	CA0260ZZ Peckham FB and Courthouse	\$ 22,548						
11	CA0306ZZ Matsui Federal Courthouse	\$ 20,091						
12	CA0309ZZ Coyle Courthouse	\$ 121,020						
13	CO0009ZZ Byron White Courthouse	\$ 20,837						
14	CO0061ZZ Arraj April 2012-March 2013 II	\$ 14,739						
15	CT0053ZZ AA Ribicoff	\$ 9,025						
16	DC0094ZZ Markey National Courts Bldg August 2012-July 2013	\$ 48,005						
17	DE0016ZZ Boggs Courthouse	\$ 17,295						
18	FL0010ZZ Wilkie Ferguson Building	\$ 51,470						
19	FL0017ZZ Simpson US Courthouse	\$ 115,353						
20	HI0011ZZ Prince Kuhio FB	\$ 705,738						
21	IA0027ZZ Davenport US Courthouse	\$ 4,248						
22	IA0030ZZ Des Moines Courthouse	\$ 3,663						
23	IA0087ZZ Sioux City Courthouse and Federal Building	\$ 3,143						
24	ID0025ZZ McClure Federal Building	\$ 8,850						
25	KS0070ZZ Wichita Courthouse	\$ 24,639						

PUE with Threshold evaluation

Chart

Aug 24 2011 to Aug 31 2011

