



• August 15-18, 2010 • Dallas, Texas •
• Dallas Convention Center •



Strategic Use of Submetered Data

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Federal Campuses

Today



**Utility meters
at fence line**



Tomorrow



Building submeters

Valuable Uses of Interval Data

- Annual – Performance comparison, performance tracking, program improvement thru targeting
- Monthly – Billing, allocate usage/costs, savings analysis, weather normalization
- Daily – ID daily anomalies, performance verification, savings analysis, weekday vs. weekend comparison
- Hourly – ID hourly anomalies, validate setback responses, check on/off cycles, system assessment

Prominent Annual Performance Metrics for Building Total Energy Use

- Building energy use intensities (kBtu/sf-yr)
- Building performance ratings (e.g, Energy Star)

Use Performance Metrics to Improve Your Energy Management Business Strategy

- Building performance ratings allow:
 - ID of facilities with greatest need (opportunity)
 - Focusing of limited resources
 - Gauging of expectations/target setting
 - ID when you have succeeded
 - Motivation for improvement
 - Compliance with benchmarking requirement of EISA 2007

“Your business strategy should have these components”

Example: Portfolio of Navy Bureau of Medicine and Surgery (BUMED)

- BUMED Energy & Water Management
 - Utilities costs: ~\$100 million/yr
 - ~20 million sqft
 - ~800 buildings
 - 23 hospitals, 200+ clinics, & others
- 65 buildings comprise 75% of BUMED energy use



Generating Metrics Inside Energy Star Portfolio Manager

Approx. 80 Metrics Are Available for All Building Types

Sample of Metric Areas and Metrics	
Performance Ratings (1-100)	Energy Use (source)
Energy Use (site): Baseline Electric Use (kWh) Baseline Energy Intensity (kBtu/Sq. Ft.) Baseline Natural Gas Use (therms) Baseline Total Energy Use (kBtu) Current Electric Use (kWh) Current Energy Intensity (kBtu/Sq. Ft.) Current Natural Gas Use (therms) Current Total Energy Use (kBtu) National Average EUI (kBtu/Sq. Ft.) Target Energy Intensity (kBtu/Sq. Ft.)	Renewable Energy
	Financial Indicators
	Annual Energy Cost (\$)
	Total Energy Cost per Sq. Ft. (\$)
	Water Use
	Water use (kgal)
	Water use intensity (kgal/sqft)
	Water cost (\$)
	Performance: GHG Emissions
	Wastewater
Building Characteristics	

Screenshot of Useful Metrics in Portfolio Manager



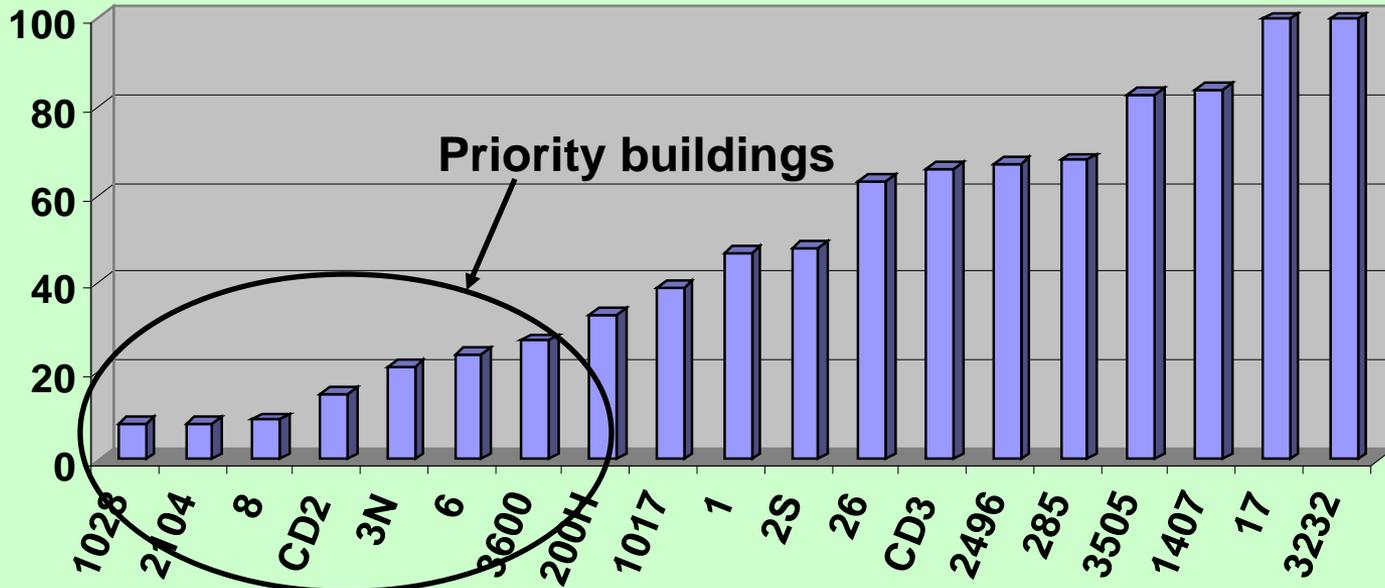
PORTFOLIO MANAGER

[Home](#) > My Portfolio

Facility	Current Rating (1-100)	Floor Space (Sq. Ft.)	Site Energy Intensity (kBtu/sf-yr)	Source Energy Intensity (kBtu/sf-yr)	Total Energy Cost (\$/sf)	Site Electric Use (kWh)
N00-BldgH1	87	75,262	104.2	184.7	\$2.47	613,000
N01-Bldg1	69	316,668	266.5	533.7	\$3.46	10,306,000
N02-Bldg 8	9	100,235	197.5	454.9	N/A	2,619,000
N03-Bldg 2	41	105,104	147.6	316.5	N/A	1,670,744
N04-Bldg 57	90	48,029	32.9	109.9	N/A	463,000
N05-Bldg 10	98	328,000	126.7	298.1	N/A	5,814,000
N06-Bldg 7	96	83,575	163.6	363.5	N/A	1,638,000
N07-Bldg 9	95	585,473	127.1	298.5	N/A	10,367,000
N08-Bldg 43	12	22,477	98.8	330.1	N/A	651,000
N09-Bldg 47	3	32,940	139.5	466	N/A	1,347,000
N10-Bldg 53	92	35,209	29	96.8	N/A	299,000
N11-Bldg 23	83	90,756	92.7	146.5	N/A	170,000
N12-Bldg 1	42	244,846	127.4	289.3	N/A	3,971,000

Comparison of Navy Clinic Energy Performance Ratings (Energy Star)

Clinic Energy Performance Rating



How BUMED is Using Metrics and Performance Ratings

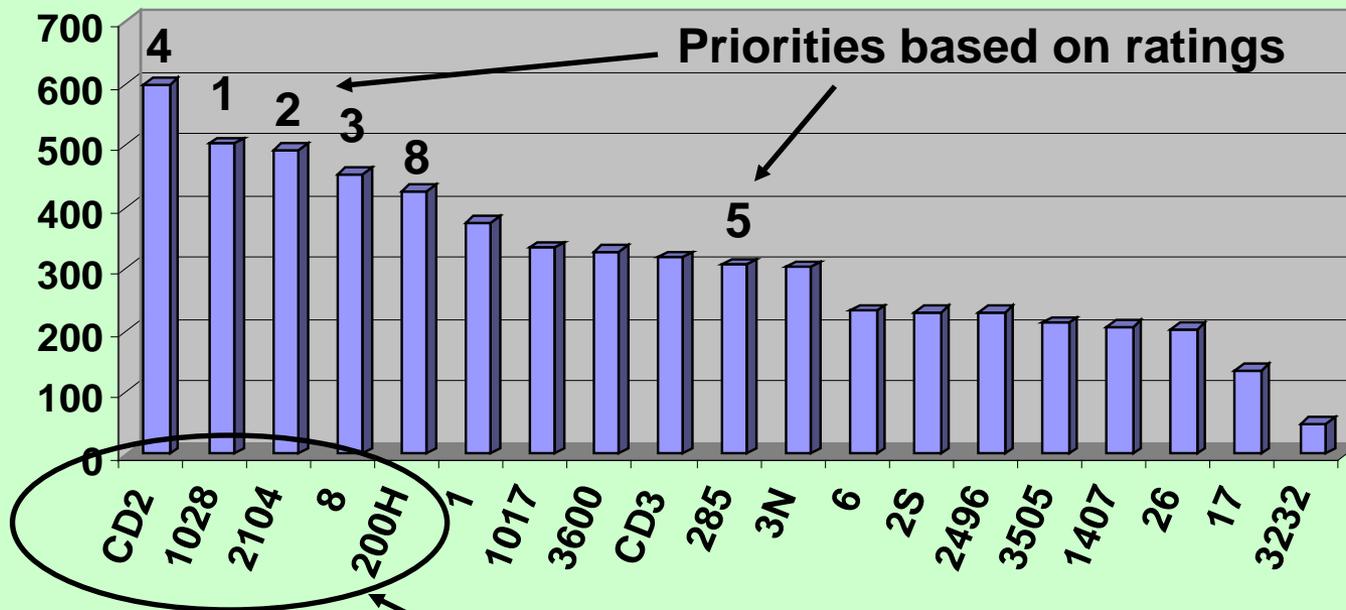
- Assess overall BUMED performance
- ID high and low performers
- ID priority targets
 - Where are the opportunities?
 - Where does audit team go first?
- Set audit expectations
- To reach beyond “covered” facilities
- “See” progress and ID when to stop auditing
- Validate allocations

OK, But Only 14 Building Types Can Be Performance Rated

- Office
- Bank/Financial Institution
- Dormitory
- Courthouse
- Data Center
- Hospital
- Hotel
- K-12 School
- House of Worship
- Medical Office
- Wastewater Treatment Plant
- Retail Store
- Supermarket
- Warehouse

Comparison of Navy Clinic Energy Use Intensity (source kBtu/sf-yr)

Clinic Energy Use Intensity (source kBtu/sf-yr)



Why Should I Use Energy Star Ratings Over EUIs?

- Rating is normalized for multiple drivers of energy use such as floor area, operating hours, worker density, number of PCs, etc.
- Can account for high or low intensity spaces (data centers, warehouse space, garages, etc.)
- Simple building EUIs do neither of above
- Other benefits: web-based, easy to use, data “warehouse”, shareable, data import and exports

Summary

- Simple, annual performance metrics can help you improve
- High-resolution data tell you little about overall building performance
- Prioritize with ratings when available, EUIs when not
- Ratings allow you to focus your program and efficiently serve your whole portfolio
- Benchmarking is required for metered, “covered” federal facilities and can be done via:
 - Direct or indirect (via electronic communication) use of Portfolio Manager
 - Via agency internal capabilities (via EUI comparison or internal use of “Energy Star” like rating engines)

Questions/More Information?

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