

*EEMS HIGH LEVEL BENCHMARKING
OF US MUNICIPAL AND FEDERAL
PROGRAMS
PRESENTATION TO LEADERSHIP TEAM*

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Definition:

Energy management software encompasses a wide variety of approaches and information technology systems. The focus of this evaluation centers on:

Enterprise Energy Management System:

- EEMS systems provides a “system of record” of energy consumption
- Capabilities for in-depth analysis and management for enterprises
- Systems aggregate and analyze energy data on an enterprise-wide basis
- Monitor, analyze, visualize, and benchmark energy consumption across operations
- Track and manage energy consumption and emissions.
- In most cases, the data used in EEMS systems is derived from monthly utility billings, although most vendors are moving to accept real-time meter data.



Process for Benchmarking Analysis:

- Review of publically available information.
- Review of market research reports (non public)
- One-on-one in-depth interviews with:
 - 6 Cities: Tulsa (OK), Las Vegas (NV), Philadelphia (PA), San Jose (CA), San Francisco (CA), Palo Alto (CA)
 - Counties of Santa Clara (CA) and San Mateo (CA)
 - Federal Agencies: General Services Administration, Department of Defense
- Outreach to vendors on case studies examples: C3, Hara, Energycap, CASoftware, SAP, Enablon, JCI, Siemens, Global Carbon Systems, Levementum, Tangible Software.



Key questions:

- Which municipal and federal facilities have implemented an EEMS?
- What level of energy savings have been achieved?
- What key lessons have been learned from those implementations?
- What technical challenges or difficulties have occurred during those implementations?
- What are the best practices of municipalities and Federal agencies in planning for and implementing an EEMS?



Which municipal and federal facilities have implemented an EEMS?

- Philadelphia (PA) implemented in 2009.
- Tulsa (OK) – Implemented in 2010 a Hara SaaS application
- Las Vegas (NV) implemented in 2009
- Palo Alto (CA) – implemented in 2009
- San Jose (CA) implemented pilot in 2009, but cancelled program in 2010 due to budget constraints.
- San Francisco (CA) implemented in 2010
- Counties of Santa Clara (CA) and San Mateo (CA) are currently implementing systems
- Federal Agencies: General Services Administration (prospectively), Department of Defense

Case Study #1 – Philadelphia, Pa

1500 Utility Accounts – electricity, natural gas, steam, water
Energy Budget: \$80 million

- What level of energy savings have been achieved?
 - Energy savings have resulted from the process of taking the bills and putting them in system and looking across time.
 - \$160,000 in net savings from utility billing errors.
 - \$60,000 net water savings
 - Consumption reduction not summed for city
- What key lessons have been learned from those implementations?
 - Transparency has dramatic governance and process impacts.
 - Identify key user needs and develop small set of reports which are created monthly.
 - Track savings and investments at the facility, Departmental and Fund levels and by granting facility
 - Advanced system analytics are often complex – it may be easier to filter data and move into MS Excel workbook to generate automatic reports.



Case Study #1 – Philadelphia, Pa

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- What technical challenges or difficulties have occurred during those implementations?
 - System was unable to deal with weather (HDD) to normalize results
 - Few Departments able to use and generate reports on ad hoc basis
 - Bill processing – vetting data to put into system highlighted errors but bill processing itself a challenge
 - Couldn't breakdown charges – demand charges, distribution charges, etc.
- What are the best practices of municipalities in planning for and implementing an EEMS?
 - Manual data import must be avoided – work with utility to ensure automated data flow.
 - Limit reporting super users to a few– those from the largest energy consuming departments – these users issue reports to senior management.
 - Ensure that energy savings remain within Department in order to create organizational incentives.



Case Study #3 – Palo Alto, CA

600 Utility Accounts + 600 Vehicle Accounts – Electricity, natural gas, water, waste, paper, vehicle fuels + Community Emissions
Energy Budget \$5 million

- What level of energy savings have been achieved?
 - 10% savings on total energy spend in 2010 or roughly \$580,000 (goal of 5% savings)
 - 27% energy savings in 2012 (goal of 20%)
 - 15% reductions in Community Greenhouse Gas Emissions
- What key lessons have been learned from those implementations?
 - Obtain senior level support for implementation and the governance impacts.
 - Work internally with IT and Finance staff to ensure bill payment and verification processes are consistent with capabilities of chosen system.
 - Map each meter to physical address, Departmental responsibility and ERP asset identifier (i.e. SAP or Peoplesoft) to fix all billing and allocation errors up front.
 - Regular reports to Council promote engagement at all levels
 - Link operational efficiency and Community policy goals (i.e. emissions) to maximize impact.
 - Utilize cross functional team of all departments reporting back to senior manager in charge of implementation to ensure broadest stakeholder engagement.



Case Study #3 – Palo Alto, CA

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- What technical challenges or difficulties have occurred during those implementations?
 - Staff did not foresee the governance changes of system implementation. The system requires non-siloed approaches and reporting and the resulting transparency provides opportunities for new processes, roles and responsibilities.
 - Data came from multiple systems – Utility provider, City IT Department, Purchasing Manager and Fleet Manager. One senior staff member has to take the responsibility of ensuring all departments input data correctly and on time. This person must fully comprehend the data issues and also be able to enforce timely updates by data providers.
 - Putting every meter and every vehicle in system for 5 years as baseline intensified initial startup phase without meaningful increase in insight.
- What are the best practices of municipalities in planning for and implementing an EEMS?
 - Departments must be responsible for their own energy use, data input and be prepared for transparency.
 - Ensure that energy savings remain within Department in order to create organizational incentives. If incentives are absorbed into overall budget incentives are lost.
 - Consider EEMS a long-term process improvement – not short term.



Case Study #4 – Las Vegas, NV

5000 Utility Accounts + Vehicle Accounts – Electricity, natural gas, water, vehicle fuels. Energy Budget: \$15 million

- What level of energy savings have been achieved?
 - Savings on total energy spend in 2012 were net \$1.5 million
 - Savings on total energy spend in 2011 were net \$1.0 million
- What key lessons have been learned from those implementations?
 - Implement key performance indices for all departmental
 - Use the system to support economic arguments, within the community and with the City organization for long-term buy-in.
 - Use single point of responsibility to drive system implementation with support from stakeholders.
 - After implementation drive responsibility and reporting down to department levels.



Case Study #4 – Las Vegas, NV

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- What technical challenges or difficulties have occurred during those implementations?
 - Overly broad initial implementation – too many accounts overwhelmed limited City staff.
 - When key members of staff left, the City was not able to effectively use system.
 - Insufficient focus on primary energy consumptions.
- What are the best practices of municipalities in planning for and implementing an EEMS?
 - Implement key performance indices for all departmental managers to ensure adoption
 - Maximize cross departmental transparency in energy use – set up competitive environment.
 - Establish a communications and rewards strategy to maintain momentum.
 - Departments must be given responsibility for imputing and maintaining accurate data, even if utility is source, and reporting data.
 - Departments and facility managers must also be given the responsibility for meeting reduction targets since they have the ability to impact results through efficiency measures.



Summary Overview of Implementation

City	EEMS Product	SaaS – External Cloud	Supporting Software	Implementation Duration	FTE's in Implementation/On going (Staff)	Comments
Philadelphia	Hara	Yes	Stark – BVO Excel – Graphics and Reporting	6 months	5/1.2 Mayors Office of Sustainability	Next focus on EDI for data input
Tulsa	Hara	Yes	None	5 months - Top 200 Accounts	3/0.5 Implementation: External non-vendor consultants On-going: Mayor's Project Office	Used to identify and verify savings
Las Vegas	Hara	Yes	TriStem - BVO Excel – Data input management	12 months – lost key analyst	2/0.4 City Sustainability Office	Data input huge challenge – insufficient staff
Palo Alto	Hara	Yes	SAP - BVO Excel - Report preparation and Graphics	6 months including 5 years historic data	7/1.5 Implementation: Reps from all Depts. On-going: Mayors Office of Sustainability, Finance Dept, Utilities, Public Works and IT Dept.	Historic data input at start created additional pressures

Summary Overview of Implementation (Cont'd)

Government Entity	EEMS Product	SaaS – External Cloud	Supporting Software	Implementation Duration	FTE's in Implementation/ on-going	Comments
San Mateo/Santa Clara	Hara	Yes	None	18 months total, 8 Cities first 9 months, 10 Cities second 9 months	1 FTE per City Implementation and on-going: City and County staff in offices of Sustainability or Mayors Office	Multi jurisdictional, multi-year, combined with Climate Action Plans of each entity.
GSA	N/A	N/A	Complementary to MS Windows	Contract 1 yrs FFP, +1 option yr	N/A	
DOD	Tangible	No	Client software	16 months implement pilot; plus 12 months ops	N/A	Commercial Consulting for operations/ DOD personnel for operations

QUESTIONS?

THANK YOU

