Streamlining Utility Data Access: Best Practices from State and Local Governments and School Districts

Preliminary Results

NEEP High Performance Public Buildings Leadership Meeting

November 12, 2014
WIP – Who we are and what we do

**Mission:** Accelerate deployment of energy efficiency and renewable energy technologies over a wide range of stakeholders in partnership with states and local governments.

**Strategic objective:** “Deploy the clean energy technologies we have” through near-term activities that result in greater energy efficiency, expanded renewable energy capacity, and economic development.

**Pathways:**
- **Financial assistance:** Formula and competitive awards > $200 M per year to weatherize low-income homes, and assist states to deploy EE and RE projects and programs
- **Voluntary programs:** Better Buildings Challenge (BBC) & Accelerators
- **Technical assistance:** Resources to assist the public sector with planning, financing, evaluating and deploying EE and RE programs and projects

**Goal for this work:**
Identify and characterize effective and replicable solutions that states, locals and K-12 are using to enhance their energy data management practices
Outline

• Best Practice study methodology
• Why track energy use and streamline data access?
• Solutions for automating and streamlining utility data transfer
• Feasibility and efficacy comparison
• State, city and K-12 examples
• Key takeaways
Best Practices Study Methodology

- **Approach:** Primary research through in-depth interviews with ~60 state and local governments, school districts and subject matter experts
  - 10 states (NY, CA, DE, MA, MD, MN, RI, WI, NC, IA)
  - 26 local governments (14 large cities, 7 medium, 5 small)
  - 3 school districts (one small, one medium, and one large)
  - 18 subject matter experts from public and not-for-profit organizations

- **Best Practice Criteria:** Solutions screened against specific criteria:
  - Replicability
  - Effectiveness
  - Sustainability
  - Impact

- **Metrics:** Specific metrics to compare and rank solutions
  - Entities provided data/results as evidence of level of efficacy
  - Principal metric: Energy and cost savings;
  - Secondary metrics: time savings; change in resource requirements (cost, time, human capital); etc.
Why track energy data: value proposition

- Improve strategic energy management capabilities
- Build the case to leadership on the value of energy management and gain additional support
- Improve control and transparency of energy costs and budgets
- Improve operational efficiency
- Facilitate demand response and energy purchasing by leveraging knowledge of consumption and rate information

“Measuring your energy usage and cost is the first step to properly managing energy”

- City of Virginia Beach Mayor William Sessoms, Jr.
How did they get there?

Best Practices in Energy Data Management
Five Elements for Success

- **Asset Inventory**: Comprehensive, Centralized, Verified, Up to Date
- **Data Access**: Comprehensive, Streamlined, Automatic, Prompt
- **Tools and Analytics**: Flexible, Secure, Accessible, QA/QC
- **Organizational Structure**: Integrated, Centralized, Dedicated Staff, Streamlined
- **Engagement Communication**: Targeted, Clear, Transparent, Mission-focused
How did they get there?

Best Practices in Energy Data Management
Five Elements for Success

- Asset Inventory
- Data Access
- Tools and Analytics
- Organizational Structure
- Engagement Communication
Why streamline data access?

• What do we mean by “streamlined data access”?
  – Electronic data transfer from utility to customer (no data privacy concerns as data collected is primarily owned by the customer)
  – Efficient and timely access to comprehensive utility billing data
  – Monthly or more frequent energy use intervals
  – Minimal manual data entry
  – Data for all commodities and all energy- and water-using assets
Why streamline data access?

• Benefits:
  – **Speed to data receipt**: lower time gap between usage period and point in time data can be reviewed to identify usage anomalies
  – **Cost savings**: use consumption, cost, demand charges, rate schedules, etc. to maximize savings
  – **Data quality**: Reduce errors introduced during data transfer and incorporates quality checks supporting accurate analysis
  – **Operational efficiency**: save staff time, reduce redundancy in operations saving the organization limited resources and adding value
Solutions for streamlining data access

**Consolidated Billing**
Utility aggregates the customer’s accounts and corresponding utility bill data into a single spreadsheet file and delivers it to the customer on a monthly basis.

**Electronic Data Interchange (EDI)**
Electronic billing solution that allows entities to automatically receive and read utility bill data in a machine-readable format. All data contained in the bill is captured and transmitted.

**Portfolio Manager Data Exchange Web Services**
Application programing interface that allows utilities to export cost, consumption, and billing period data directly into EPA’s Portfolio Manager via software-to-software communication.

**Green Button Connect My Data**
An electronic data access solution that uses a standard XML format to share interval or monthly bill data between utility and a third party on the customer’s behalf.

**Third Party Services**
A service provider aggregates utility bill data for accounts on behalf of the client. Companies can use a variety of data formats and proprietary technology to read and translate data.
**Solution Applicability**

- **Consolidated Billing**
  - Most common approach for entities with municipal utilities with no other data access options
  - Feasible to develop custom solutions

- **Electronic Data Interchange (EDI)**
  - Good option for entities with >100 accounts with EDI-capable utility
  - Generally limited to electric and some natural gas IOUs

- **Portfolio Manager Data Exchange Web Services**
  - Streamlines data transfer to Portfolio Manager facilitating benchmarking; additional sectors and functionalities added
  - A growing number of utilities offer this solution

- **Green Button Connect My Data**
  - Emerging best practice solution for sharing near real-time and comprehensive bill data
  - A growing number of utilities are adopting Green Button

- **Third Party Services**
  - Best option for medium to large entities with many vendors and data formats
  - Least common but effective
City of Knoxville, TN: Consolidated Billing

**Goal:** Track and manage the city’s progress in achieving a 20% reduction in energy intensity by 2020

**Solution:** The City of Knoxville worked with the municipal utility to develop a consolidated bill containing electric, natural gas, water, and sewer cost and consumption data for the city’s facilities and non-metered fire hydrant and outdoor lighting infrastructure

---

**Ability to Track Progress**

- The city tracks energy consumption, cost and rate structure for more than 1,000 utility accounts
- Achieved a 13% reduction in GHG in 2014 relative to 2005

**Energy Project Savings Verification**

- Verification of savings from ESPCs and other retrofit projects
- Data demonstrates savings from EE upgrades to buildings and other city infrastructure

**Efficient Use of City Staff Time**

- It takes 1 hour per month to import data into the tracking software
- Project Manager spends 8-10 hours per month on data management activities centered on data analysis, reporting, and entry updating.
The City of Virginia Beach, VA: EDI

- **Goal:** Improve efficiency of operations and control of energy budget
- **Solution:** The City of Virginia Beach has eliminated nearly 1,000 paper bills monthly, reducing staff time needed for data entry by 85%. VB metropolitan area is now ranked fourth among mid-sized cities for ENERGY STAR certified buildings. CVB received the Government Finance Officers Association’s Award for Innovation in Government for the utility bill management process

### Energy Management and Conservation
- Track energy usage
- Perform energy savings verification on completed retrofits
- Energy reports to motivate occupants to take action

### City Planning, Budgeting and Operations
- Make wise energy purchasing decisions
- Eliminate billing errors and late payment
- Improve budgeting, accruals, accounting

### Bill Processing Time (Hours per Month)

![Graph showing the reduction in bill processing time from 158 hours to 24 hours with EDI.]
Goal: Track consumption across all facilities (124 vendors, >16,000 utility accounts, 120 accounts payable departments, 58 agencies)
Solution: A centralized energy data collection and tracking process using a third party to assist in the compilation of a central energy database, development of streamlined utility data access solutions, and maintenance of a transparent web-based portal.
Annual energy budget >$200MM, Cost of contract: $0.8-1MM
Key takeaways

- A robust data tracking strategy is a foundation for strategic energy management, and pays additional dividends
- Dialogue and collaboration with utilities is critical to develop and implement data access solutions
- Medium-large entities use a combination of approaches to gain access to data depending on the options available from their utilities
- A third party can facilitate implementation of data access solutions and integrate data for large entities
- Implement available solutions, but remain flexible to adopt new and more efficacious solutions as they become available
- Green Button resolves a number of other solution’s shortcomings and provides new functionalities, and is gaining steam
Mona Khalil
Policy and Technical Assistance
Weatherization and Intergovernmental Program
DOE EERE

Mona.Khalil@ee.doe.gov
Phone: 202-586-7983