



pennsylvania
OFFICE OF ADMINISTRATION

EnergyCAP Utility Bill Analysis
Business Process Innovations

State: Pennsylvania

Project Initiation: 02/08/2018

Contact: Julie Snyder

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Executive Summary

Pennsylvania Governor Wolf has demonstrated his commitment to protecting citizens, the economy, and the environment from the impacts of climate change through Executive Order 2019-1; which set greenhouse gas reduction targets for the state, identified specific energy efficiency and clean energy goals for state agencies, and established the GreenGov Council.

Pennsylvania state government spends approximately \$125 million annually on electricity and natural gas to run state operations. Each agency was responsible for managing its own utility usage and spending, which led to different and disparate ways of reporting this information. The state did not have a comprehensive view into energy spending and consumption across agencies, making it difficult to collectively implement energy reduction and sustainability measures.

To accomplish the Governor's goal to reduce energy consumption by state agencies, the Department of General Services, working with the Penn State University Facilities Engineering Institute (PSFEI), implemented EnergyCAP, a web-based utility bill analysis tool that state agencies can leverage to monitor their utility bills and make better decisions regarding energy utilization.

The project team identified over 7,900 electricity and natural gas meters across 18 agencies for tracking in EnergyCAP. Utility invoice records were integrated into EnergyCAP via Electronic Data Interchange and OCR scanning to digitally read paper invoices. The invoices, along with the aforementioned utility meters and associated accounts, were grouped by agency and location and loaded into EnergyCAP for ongoing utility bill monitoring.

With the implementation of EnergyCAP, the state was able to baseline its energy consumption across all agencies and locations for the first time. The data insights that EnergyCAP offers make it easier to report on energy consumption, anticipate energy demand, drive more competitive utility pricing, and give facility managers a sense of ownership in efforts to reduce energy consumption.

Using EnergyCAP, DGS and state agencies were able to identify immediate opportunities to reduce energy consumption by 2.9%, for a savings of \$2 million, in the fiscal year. The insights provided by EnergyCAP will also support the measurement and reporting of outcomes from targeted efficiency projects in the future, enabling state agencies to track their progress towards meeting the goals of the Governor's executive order and better utilize taxpayer dollars.

Project Narrative

Concept

In fiscal year 2016/2017, the Pennsylvania state government spent approximately \$75 million on electricity and \$50 million in natural gas to provide services across the state. Despite implementing many actions over the years to improve energy usage and encourage responsible spending on energy resources, Pennsylvania felt that more could be done to improve energy management.

On January 8, 2019, Governor Tom Wolf signed *Executive Order 2019-01: Commonwealth Leadership in Addressing Climate Change and Promoting Energy Conservation and Sustainable Governance*. The order established goals to reduce the overall energy consumption of agencies under the Governor's jurisdiction by 3% per year, and 21% by 2025 from 2017 levels. As a result, state agencies needed a way to be able to baseline, track, analyze, and report energy usage year by year to meet these goals.

At the time, the state did not have a comprehensive picture of its energy purchasing and usage across all agencies and facilities, nor did it have consistent data to be able to prioritize energy savings projects or facility improvement needs. Without a comprehensive utility bill management system, the state was not able to baseline its current energy usage, measure the success of efforts to reduce energy usage, or identify unmanaged utility accounts that should be incorporated into statewide contracts.

The Department of General Services, working with Penn State Facilities Engineering Institute (PSFEI), implemented a tool called EnergyCAP. EnergyCAP is a web-based utility bill analysis tool that agencies can leverage to monitor their utility bills and make better decisions regarding energy utilization.

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To promote adoption of EnergyCAP, the project team met individually with agency energy managers and administrative executives to discuss the benefits of EnergyCAP. These benefits include:

- **Visibility of Utility Bills** – Many facilities managers did not have access to view utility invoices previously. EnergyCAP enables them to see spikes in utility consumption and identify facility issues or improvements that may be needed.

- Trend Dashboards – Agency leadership can view dashboards showing energy trends to promote various energy efficiency efforts and gauge the success of these efforts. Agencies can track their contributions towards the Governor’s goals to reduce energy consumption.
- Budget Planning – Agencies are able to better plan budget resources for energy and identify true cost savings to justify and prioritize capital improvements.

Significance

Through the direction of Governor Wolf’s Executive Order, the project increased awareness of how state government manages energy consumption and efforts to reduce energy costs. EnergyCAP will quantitatively determine if state agencies are successful in achieving the order’s energy reduction goals.

The core benefit of EnergyCAP is to give energy managers a clear picture of energy utilization throughout the entirety of their organization. By having a central, statewide repository of energy data, energy managers across all levels of the organization can go to the same application to see their current energy utilization. The data is available to be viewed for a single facility, or rolled up to results enterprise-wide.

Agency facility managers, working with the DGS Energy & Resource Management Office, now have a place they can go to graphically see where best to improve their infrastructure. Prioritizing facility improvements and capital projects can take advantage of EnergyCAP for data-driven decision making. EnergyCAP can also demonstrate the true ROI of facility improvements by showing the before and after data for each project.

Through EnergyCAP, state agencies can monitor their progress towards meeting the Governor’s goals on energy efficiency by providing the baseline from which the goals are set and measuring the year-to-year changes in electricity and natural gas usage to meet the estimated 3% yearly reduction.




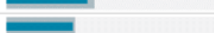
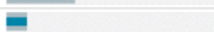
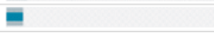
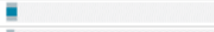
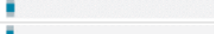

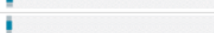
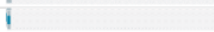

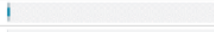
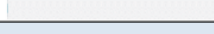


Impact

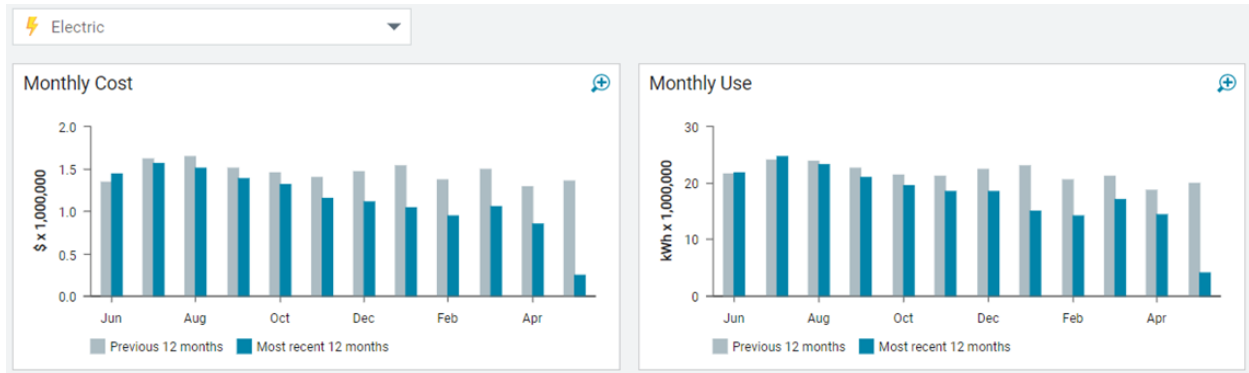
Understanding the energy usage across state agencies and work locations is much simpler with EnergyCAP. Pennsylvania’s Department of General Services produces an annual “Energy & Utility Usage Report” which showcases energy utilization, as well as highlights energy conservation programs and how they impacted energy needs. In the first few years of this report’s publication, it could only be produced for the the Capitol Complex in Harrisburg due to the months of manual effort involved in collecting and organizing the data. With EnergyCAP, energy utilization data can easily be generated on an executive level to show statewide results.

The same reports can be easily generated for each sub-organization to see their team’s results. The heightened data visibility helps to drive accountability across all facilities and energy management teams and professionals.

Through the implementation process, the team uncovered an additional 2,100 meters that were being paid through agency credit cards. In many cases, these meters were not using the correct utility rate. By uncovering these meters, they are now available to be included in statewide contracts for competitive pricing. Managers were also able to locate two energy utility accounts which were being paid by state agencies, but belonged to someone else entirely.

Using the tools within EnergyCAP, Pennsylvania was able to set a baseline of electricity and natural gas usage by measuring the MMBtu's over the initial fiscal year. By comparing the first follow-on fiscal year, Pennsylvania was able to determine that it had reduced its energy footprint by 2.9% in the first year. This translates to about \$2 million in energy savings. This reduction was profound in that this occurred simply because we were able to collect and see data. More meaningful projects and improvements to reduce energy usage have since gotten underway.

Known Electric Meters	Known N. Gas & Steam Meters	State Reporting Agency	Normalized Use (MMBtu)	FY 2017 Baseline MMBtus	FY 2018 Current MMBtus	% Change	Metric Tons CO2 Reduction	Number of Known Meters
220	70	Dept of Corrections		669,213	655,073	-2.1%	1,352	290
47	29	Dept of General Services		598,249	588,601	-1.6%	1,082	76
191	657	Dept of Military and Veterans Affairs		446,876	434,087	-2.9%	530	848
71	17	Dept of Human Services		346,091	318,019	-8.1%	1,558	88
3,245	141	Dept of Transportation		269,549	260,334	-3.4%	619	3,386
1,876	45	Dept of Conservation and Natural Resources		80,593	80,108	-0.6%	84	1,921
7	3	Dept of Labor and Industry		65,085	64,572	-0.8%	65	10
1,051	79	PA State Police		42,364	41,164	-2.8%	100	1,130
80	18	PA Fish and Boat Commission		31,110	30,847	-0.8%	(53)	98
145	12	PA Historical and Museum Commission		28,147	27,506	-2.3%	106	157
7	5	PA Emergency Management Agency		25,026	25,320	1.2%	(65)	12
113	7	Dept of Environmental Protection		20,362	21,228	4.3%	(77)	120
5	2	Dept of Revenue		12,340	11,547	-6.4%	64	7
224	10	PA Game Commission		10,139	10,279	1.4%	(42)	234
22	1	Dept of Health		9,475	9,778	3.2%	(88)	23
10	5	Dept of Agriculture		1,141	1,092	-4.3%	7	15
7,314	1,101			2,655,761	2,579,554	-2.9%	5,242	8,415



Through the success of EnergyCAP, Pennsylvania is preparing to add additional utilities to the application. Plans have begun to also measure coal, propane, heating fuel, biofuels, water, and sewer bills.

Governor Wolf’s executive order set a goal was to reduce overall energy consumption by 21% by 2025. Through the implementation of EnergyCAP, state agencies will be able to show that they have met this requirement through improving facilities, taking advantage of competitive pricing, and better managing limited resources.