Agenda

- Sustainability management at DOE
- Dashboard implementation
- Dashboard tools
- Challenges and benefits
- Future enhancements
DOE has had a headquarters energy management program since 1978

- Over the years the organization has changed and its efforts for conservation and efficiency have expanded beyond energy
- In 2011 the Sustainability Performance Office (SPO) was established as the DOE lead for sustainability, including energy, water, waste, and other related issues

Several tools were used to collect sustainability data

- Energy Management System 4 (EMS4), a database for collecting energy, water, and non-fleet fuel consumption from 1985 to 2010
- Excel files that supplemented EMS4
With the expansion of responsibilities to sustainability management, the SPO needed to optimize its resources for maximum impact and benefit to the Department... It needed a tool that could:

- Automate data aggregation from laboratories and sites
- Calculate goal progress at different organizational levels
- Improve data quality
- Be easily accessible
- Provide analytics and standard reports
- Be compatible with existing systems
After considering several systems and testing an out-of-box system, the decision was to build a custom system. The DOE Sustainability Dashboard (Dashboard) has been built to serve several functions for DOE sustainability reporting:

- Maintain historical data sets.
- Collect current year data and plans for each site and national laboratory.
- Analytics to provide DOE sustainability personnel with tools for managing sustainability at their site or within their program.
- Programming language is SQL.
- The application resides on DOE servers maintained by DOE OCIO at the Germantown location.
- System successfully completed DOE OCIO’s Security Assessment & Authorization process.
- It is an internet based application that is accessible to DOE users, including off-site DOE M&O contractor teams. Currently there are over 400 users.
- 4 types of user roles, ability to distinguish between Federal or contractor employment type, and flexibility with access rights (read, write, approve).
System service life is projected to be 20-25 years.
- EMS4, the predecessor database, was functional for nearly 25 years
- Enhancements and updates can be easily implemented

Department-wide annual savings estimated at $500K based on streamlined reporting and analyses

Total system development cost including advanced analytics is estimated at $2.6M.
- Actual FY 2013 to FY 2016 cost of $1.3M
- Projected FY 2017 to FY 2019 estimated cost of $1.3M or less

Based on preliminary departmental-wide cost saving estimates the simple payback of a fully functional Dashboard is less than five years.

Over the estimated service life of the system, the cost of the Dashboard is 1/5 of the tested out-of-box subscription system.
Tools: Information Collected

The Dashboard collects 25 types of data sets and pulls 4 from other systems to provide a holistic picture of sustainability progress for all of DOE.
Sample data entry screen. Can enter data by quarter or month. The table on the left provides a summary of information entered. Ability to save and when fully done select complete for start of approval process.
In addition to data, the Dashboard collects narratives with focus on successes, challenges, and plans for meeting sustainability goals. The system will generate a report, has the capability to format text and add graphics.
The Dashboard provides two types of scorecards, OMB style and comprehensive with details for all sustainability goals.
QA/QC trend graphs and tables that display historical data, allow for maintenance of data, and can be adjusted for view by category, units, and years. Flagging capability with notices and justification or correction process.
Data review and approval tracker that is customized based on program process. As well as provide assurance that the information is accurate and reviewed by management.
Key challenges that had to be accounted for:

- Different operational methods and hierarchy for each site, national laboratory, and program.
- Numerous sustainability requirements and goals set by legislation, regulations, policy, orders.
- Several reporting systems and need for interoperability for a holistic view of status.
- Balancing short term reporting needs with longer term Dashboard development.
- Managing different components including finalizing development, fixing bugs, and providing training for users.
The Dashboard has been beneficial in many ways:

- Enhanced accessibility and visibility of data and goal performance through the web interface and capability for access by multiple users.
- Streamlined data collection, improved data quality with instant data anomaly identification.
- Secure repository of information along with supporting documents that is backed up regularly.
- Integration of information from other systems for one stop shop through upload templates.
- Develop and disseminate useful information with data analysis and performance metric calculations.
The Dashboard has aided in saving time which has improved efficiency and effectiveness:

- Reduced time spent on data collection and aggregation.
- Streamlined data review and correction.
- Eliminated need to manually reproduce key reports.
- Increased time for specialized data analysis.
- Provided more time for strategizing and decision making with better data.
“Overall, the Dashboard seems to be working well and continued improvements should make it even better for future reporting. Maintaining 100% Dashboard next year is a good idea. The CEDR was not only inefficient but also largely confusing, hard to read, etc. Being able to see data graphed in various more friendly ways, and being able to download that data and graphs is a great benefit now. I am planning on doing away with our internal scorecard and just point to the Dashboard for ongoing status/data checks, etc.” –Program Dashboard User

"...Each group responsible of entering data has one or more than one accounts and can enter data independently of other groups and even at the same time which saves time and effort. The tool is easier to use than the excel version of the CEDR (More visual). The tool displays the graphs almost automatically once the data is entered and it's easy to compare results with previous years. The status of each of the sections is easy to track.” –Site Dashboard User

“Best thing for me was the concise summary of all the goals on the Comprehensive Scorecard with last year’s data right there for ease of comparison. Same thing for the data tabs which has the historical data compiled as QA/QC graphics and tables has been very useful for reporting and doing sanity checks when entering current data.” –Site Dashboard User
Since both the historical and current data are summarized in a user friendly format, I don’t have to hunt around in a spreadsheet and find specific columns of data. Also I don’t have to guess which data to include in some of the calculations since the Dashboard already does the calculations and has the correct units (i.e.) Scope 2 and Scope 3 GHG emissions are less confusing to calculate since the Dashboard pulls all the relevant data from the data tabs to do the calculations…” -Site Dashboard User

“Templates to enter/upload data... Custom reports let you select the “categories” you want to see and the multiple years in one excel export... Nice to be able to see the OMB Scorecard in real time... Completion Status module is pretty helpful for at-a-glance status of each section and for keeping track of what’s left to do.” –Site Dashboard User
Future Enhancements

Dashboard enhancements will continue into the future and will include:

- Improve functionality reducing errors/glitches along with overall operations.
- Refactoring of code for ease of use, update, and transfer to other developers.
- Additional standard reports with specialized analysis or tailored for external reporting.
- Transparency of calculation methodology and associated factors.
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