The Data Center Energy Profiler (DC Pro) Software Tool Suite

The U.S. Department of Energy's (DOE's) Industrial Technologies Program (ITP) offers a collection of software tools to help you identify and analyze energy system savings opportunities within your plant or facility. As part of ITP's Tool Suite, the Data Center Energy Profiler Software Tool Suite (DC Pro) enables you to evaluate energy efficiency opportunities at your data center using an unbiased approach. This, in turn, could lead to further private sector detailed engineering analyses and design specifications with the goal of implementing identified energy-saving opportunities.

Resources

The DC Pro Software Tool Suite is just one resource offered by DOE to help companies work toward a goal of reducing data center energy consumption 10% by 2011.

Download tools and other resources at www.eere.energy.gov/industry/datacenters/.

To learn more about the DOE's *Save Energy Now* initiative, view training sessions, and download free software tools and publications, please visit www.eere.energy.gov/industry/saveenergynow.

Save ENERGY Now ®

Improve the Energy Efficiency of Your Data Center with DC Pro

Developed through ITP's *Save Energy Now* initiative, the DC Pro Software Tool Suite features an energy profiling tool and a set of system assessment tools that can provide diagnostics on specific areas within a data center. The software is free and available for download on ITP's Web site.

DC Pro Profiling Tool

Use DC Pro to diagnose how energy is being used at your facility, identify potential savings, and reduce environmental emissions associated with data center energy production and use.

Based on information you provide, the Profiling Tool assesses the data center's energy use and generates a report of potential savings opportunities. The tool requires basic information about a data center, such as a description of the facility; utility costs; and system information on IT, cooling, power, and onsite generation. Once you have collected all your data, you can complete an energy-use profile in about one hour.
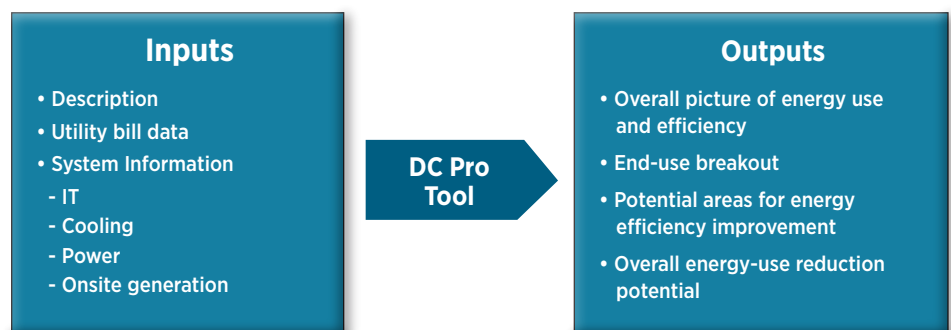
DC Pro features frequently asked questions, a checklist of the data you will need for input, and a tutorial to help you get started.

Inputs
- Description
- Utility bill data
- System Information
  - IT
  - Cooling
  - Power
  - Onsite generation

DC Pro Tool

Outputs
- Overall picture of energy use and efficiency
- End-use breakout
- Potential areas for energy efficiency improvement
- Overall energy-use reduction potential

The final step in the DC Pro Profiling Tool process is the results screen, shown below. The tool generates a customized, printable report that details
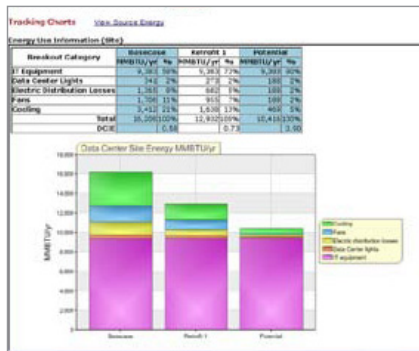
• Average amount of energy purchased or generated onsite, and the cost of that energy

• Annual energy consumption, broken down by each major energy-using system

• Potential annual energy and cost savings, categorized by each major energy-using system; and how this energy use compares to that of other data centers

• Suggested next steps that could be implemented to save energy and money.

DC Pro Assessment Tools

In addition to the DC Pro Profiling Tool, you can use the following tools to conduct a more accurate assessment of energy efficiency opportunities for major data center systems.

Air-Management Tool

Air management in data centers is important for both energy and thermal management. The Air-Management Tool is intended mainly for raised-floor cooling with hot/cold aisles. You can use this tool to

- Get air-management recommendations
- Pinpoint the potential for reducing supply airflow rate and increasing supply air temperature—both of which have an impact on energy use—without affecting the thermal equipment environment in a negative way
- Estimate the percentage of energy reduction for fans and chillers.

Electrical Systems Assessment Tool

This tool is designed to help data center owners assess the potential savings from efficiency actions in the electrical power chain of a data center, such as transformers, generators, uninterruptible power supply, and power distribution unit devices. The tool estimates savings based on typical practice; actual savings will vary based on site-specific conditions.

Additional Resources

These resources can help you conduct your own data center energy-use assessment:

- **Data Center Energy Assessment Process**—use this document as a step-by-step guide to performing an assessment and see which DOE tools are available to help you with each step
- **Master List of Actions for DC Pro**—this working master list contains many of the energy efficiency actions addressed by the DC Pro Tool Suite that you can copy and paste into your data center assessment report
- **Standard Report Template for Conducting a Data Center Energy Efficiency Assessment**—this fillable document provides a template for your own data center assessment report, including the type of data that should be included.

DC Pro will be a part of the upcoming Energy Management Toolkit, which will act as the primary delivery mechanism for additional tool access from the Energy Management Portal.

Why Data Center Efficiency is Important

In 2006, data centers used 61 billion kilowatt hours (kWh) of electricity, or 1.5% of all U.S. electricity consumption—double the amount used in 2000. National energy consumption by servers and data centers could double again by 2011, reaching more than 100 billion kWh, or an annual electricity cost of $7.4 billion.* This surge in electricity use results in increased costs, emissions, burden on the power grid, and capital costs for the construction of new data centers. By taking steps to measure data center energy use and apply best energy-management and design practices, energy consumption could be alleviated.

*Source: the U.S. Environmental Protection Agency.

A Strong Energy Portfolio for a Strong America

Energy efficiency and clean, renewable energy will mean a stronger economy, a cleaner environment, and greater energy independence for America. Working with a wide array of state, community, industry, and university partners, DOE's Office of Energy Efficiency and Renewable Energy invests in a diverse portfolio of energy technologies.

U.S. DEPARTMENT OF
ENERGY
Energy Efficiency & Renewable Energy

For more information, please contact:

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