

# 5 Benefits of Data Center Energy Management



There are over 5 million servers worldwide being run, managed and upgraded without being actively used on a daily basis. Those unused servers cost \$20.7 billion to run, plus consume another \$3.7 billion in energy costs. Furthermore, around \$21.4 billion is wasted each year on hardware, maintenance, management, energy and cooling for unused servers.

Managing energy actively can result in 40% or more energy savings in the data centre. When you consider that a data centre can consume 10 to 100 times more energy per square foot than the average office building, and in some cases up to 40% of an organization's carbon footprint, it is clear that managing energy in the data centre is of paramount importance.

Data centre managers generally don't have comprehensive management tools for monitoring and controlling energy. As a result, there's a lack of systematic analysis of energy usage to determine which tactics yield the greatest benefits or pose the greatest risk to ongoing operations. This impedes the decision making process, leaving many guessing or adopting ad-hoc strategies.

Once energy monitoring in the your data centre begins you can expose the biggest energy consumers, come up with plans to reach your goals, implement this plan and benchmark your progress.



## Benefit 1: Energy Efficiency

The first step to achieving these efficiencies is through the improvement of a data centre's Power Usage Effectiveness (PUE) ratio. PUE ratios can be used as a guide to define a data centre's efficiency or "green" credentials. Recent research has found that a data centre with a low PUE (between 1.5 and 1.7) that implements a lean design with established measurement data and demonstrable year-on-year improvements can be classified as green or energy efficient.

Elecenergy's EnergiWare® provides PUE tools. On the other hand, an inefficient data centre is anything with a PUE rating above two and which lacks legacy equipment, measurement tools and is made of inefficient components.

## Benefit 2: PUE Reduction

For organisations aiming to reduce their Power Usage Effectiveness rating, it is important to focus on the following three areas: external efficiency, internal efficiency and customer efficiency. Organisations should look to making energy measurements and PUE ratio monitoring a Key Performance Indicator (KPI) and aim to improve them continuously, following guidelines as described by the Uptime Institute, ASHRAE (The American Society of Heating, Refrigerating and Air-Conditioning Engineers) and the Green Grid.

Monitoring efficiency gains and losses and reporting these to the senior management team will create the awareness and the buy-in, which again will support optimisation within the organisation and highlight the technology and practices within the data centres that need to be improved upon or replicated, if applicable. This ultimately creates a working green gauge for an organisation.



## Benefit 5: Best Practices

The final piece of the efficiency puzzle is customer focus. An efficient data centre should provide hands-on expert support in energy efficiency implementation efforts as well as the best practice installation checklists.

Data centre staff should always be able to advise customers on how to reduce temperatures and energy usage through things like innovative hot- and cold-aisle designs. They need to have the tools in place to measure and analyse efficiency, implement the latest efficiency ratings, develop and implement first-phase actions, and integrate figures and ratings with customers' corporate social responsibility (CSR) targets. Without the expertise and monitoring tools in place, data centre providers will find it difficult to reach their desired efficiency gains.

## Benefit 3: Streamline Server and Storage Options

Recent research by McKinsey and Company and the Uptime Institute has identified five key steps to achieving operational efficiency gains. The first is to eliminate comatose servers; this will equal an overall gain of 10-25%. The second is to virtualize, which leads to gains of 25-30%. The third is to upgrade older equipment, leading to a 10-20% gain. Fourth is to reduce demand for new servers, which can also increase efficiency by 10-20%. The final is to introduce greener, more power-efficient servers and enable power-saving features, which also equates to a 10-20% gain.

1. Server reconfiguration. Because emphasis on energy is a recent development, most IT equipment is still configured without energy efficiency in mind. For instance, Elecenergy has observed savings of 33% by reconfiguring file servers to go in a low-power mode at night and during weekends, and savings of a few percent by changing server power management settings to match workloads. Energy management software can identify the right assets for this operation and determine low-impact changes that net energy utilization improvements.

2. Storage consolidation. As for servers, some storage units are never used. By profiling storage usage, you can identify duplicate data, old data, unused data and inefficient tiering strategies. With the energy and cost profiles of storage equipment at your fingertips, you can make conscious decisions on consolidation.

## Benefit 4: Delay Capital Expenditure

Many data centre executives worry about capacity on their Uninterruptible Power Systems (UPSs) and Backup Generator Sets. This type of power equipment requires major capital investments and necessitates significant resources during installation (it most likely involves interruption of IT services). Energy management tools directly follow power demand on the UPS and track capacity. A good tool will continuously monitor capacity on the UPS and give data centre executives all the information they need to reclaim stranded power (allocated but not being used).

**By following these 5 steps, an organisation can look to achieve an overall efficiency gain of over 50%, significantly improving its PUE ratio.**

