

# Quick Guide to Energy Logic

Enable up to 50% reduction on your data center power consumption

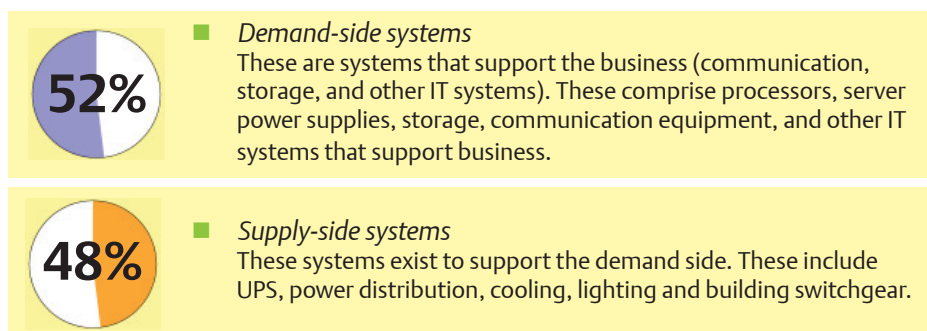
## What is Energy Logic?

Energy Logic is a holistic approach for reducing data center energy use without compromising performance or availability. It is a vendor-neutral roadmap that starts with the IT equipment and cascades across all supporting systems.

## Why is Energy Logic important?

- **Rising Data Center Energy Consumption**  
As data centers get packed with more complex equipment, more power is required to run these facilities.
- **Rising Energy Cost**  
Global electricity prices increased 56% between 2002 and 2006. The trend is expected to continue in the years to come.
- **Heightened environmental awareness**  
Regulations are pushing companies to lessen their footprint on the environment.

## How is energy consumption categorized in a data center?



Category	Power Draw
Computing	588 kW
Lighting	10 kW
UPS and distribution losses	72 kW
Cooling power draw for computing and UPS losses	429 kW
Building switchgear/MV transformer/other losses	28 kW
TOTAL	1127 kW

In a typical 5,000 sq. ft. (465 sq. m) data center, demand-side computing equipment accounts for 52% of energy usage and supply-side systems account for the remaining.

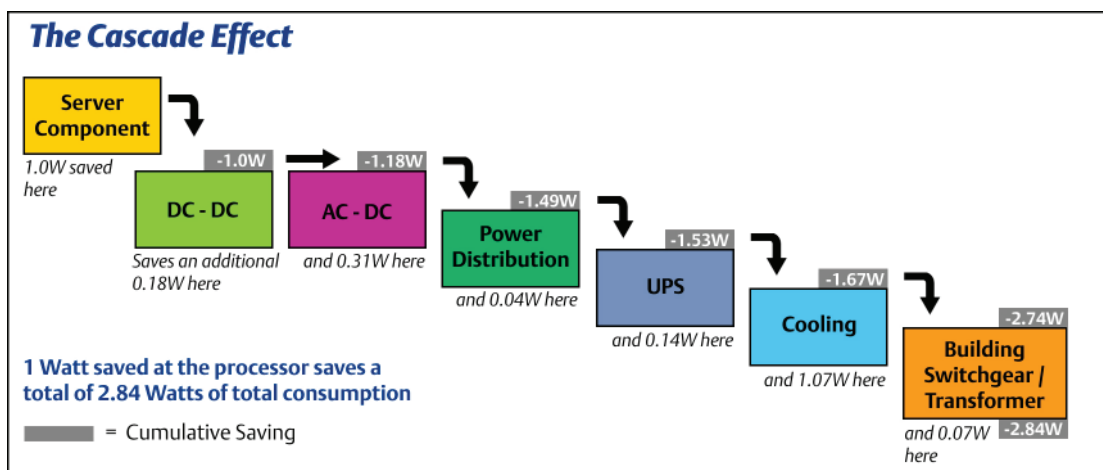
## Why is a distinction between demand-and supply-side systems important?

Reductions in demand-side energy use, cascade through to the supply side. For example, in the 5,000 sq. ft. (465 sq. m) data center\* used to analyze energy consumption, a 1W reduction at the server component level results in additional 2.84W reduction in the power consumed.

\*See white paper at [www.emersonnetworkpower-partner.com/EnergyLogic](http://www.emersonnetworkpower-partner.com/EnergyLogic)

## What does “cascade effect” mean in Energy Logic?

Cascade effect is the energy savings that occur in each supporting system caused by reductions in energy consumption at the IT equipment level.



With the Cascade Effect, a 1 Watt savings at the server component level creates a reduction in facility energy consumption of 2.84 Watts.

## Energy Logic is easy as 1...2...3

Up to 50% energy reduction via a cascade of savings

1

### Start at the equipment level

*Use energy-efficient equipment*

2

### Incorporate industry best practices

*Incorporate blade servers, server virtualization and other technologies in the data center to optimize efficiency, performance and manageability*

3

### Optimize IT infrastructure

*Through: AC power distribution; variable capacity cooling; supplemental cooling; monitoring and optimization*

## 10 Energy Logic Actions

Ten specific steps to enable your energy-efficient data center

1

#### Processor Efficiency

Low power processors create a 10% reduction in overall data center power consumption.

2

#### Power Supplies

Best-in-class power supplies reduce power draw within the data center by 124kW (11%) of the 1127kW total.

3

#### Power Management Software

Power management features integrated in server processors reduce power draw during idle period.

4

#### Blade Servers

Blade servers consume about 10% less power than equivalent rack mount servers because servers share common power supplies, cooling fans and other components.

5

#### Server Virtualization

Implementing virtualization increases server utilization by decoupling hardware and software.

6

#### Cooling Best Practices

Employing best cooling practices, such as hot-aisle / cold-aisle configuration, optimize airflow and prevent air leakages.

7

#### AC Power Distribution

Eliminate unnecessary step-downs in power distribution to reduce transformer losses and increase server power supply efficiency.

8

#### Variable Capacity Cooling

Fan strategy where the motor runs at a lower speed based on a fixed air flow improves efficiency.

9

#### High Density Supplemental Cooling

Supplemental cooling units can reduce cooling costs by 30% compared to traditional approaches to cooling.

10

#### Monitoring and Optimization

Base on the model, system-level monitoring and control provides an incremental saving of 1%.

## So what's in it for me?

- Reduces up to 50% in overall data center power consumption
- Frees up to two-thirds of floor space
- Saves up to two-thirds of UPS capacity and 40% of cooling capacity

For more information, go to [www.emersonnetworkpower-partner.com/EnergyLogic](http://www.emersonnetworkpower-partner.com/EnergyLogic)

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