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

U.S. Data Centers
Save Energy Now

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In Cooperation with:

Annual source energy use of a 2MW data center is equal to the amount of energy consumed by 4,600 typical U.S. cars in one year.
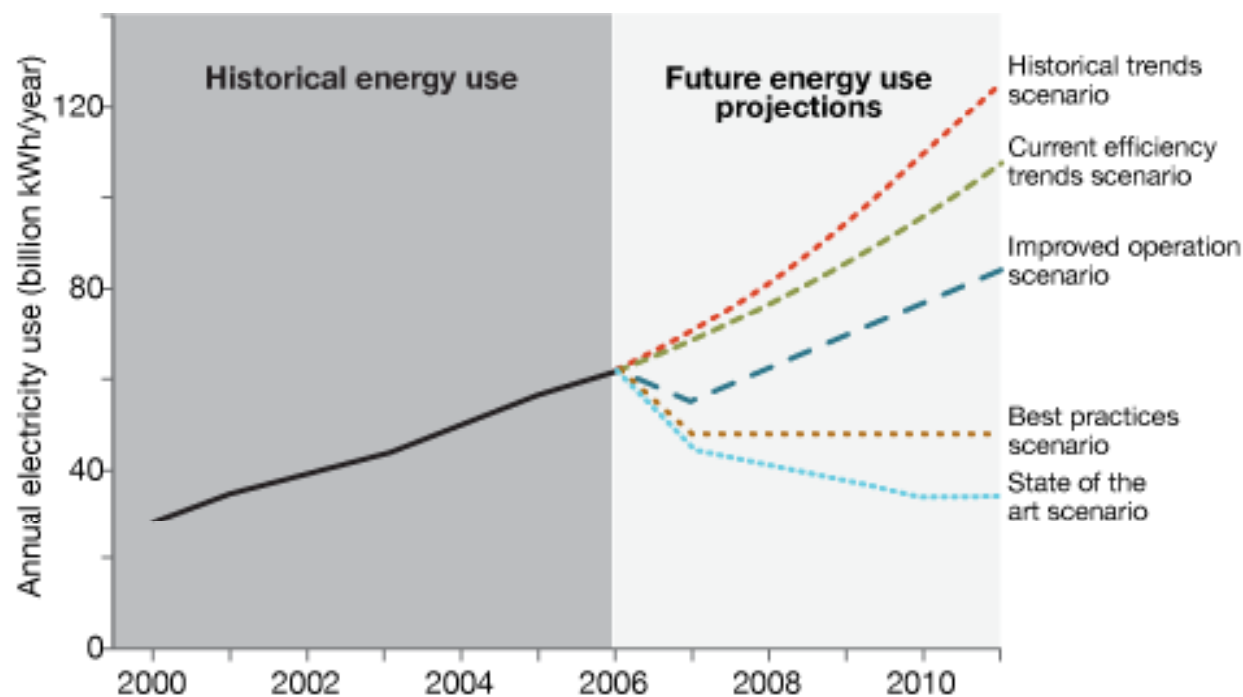

2MW data center   =   4,600 typical U.S. cars

Why Data Center Efficiency Now?

U.S. data center energy use could double to more than 120 billion kWh from 2006 to 2011, equal to annual electricity costs of $7.4 billion.

"Data center power and cooling infrastructure worldwide **wastes** more than **60 million megawatt hours*** per year of electricity that does no useful work powering IT equipment. This represents an enormous **financial burden** on industry and is a significant public policy **environmental issue**."

-*Neil Rasmussen, Founder of American Power Conversion Corp.*

* Cost of wasted energy estimated at $4 billion US per year.

Improving data center efficiency can help your company:

- Reduce business risk

- Lower utility bills

- Reduce carbon emissions

- Become more socially responsible

"If we **do nothing** to change our data center consumption, **10 more power plants** need to be built (over the next four years) to the tune of **$2 billion to $6 billion** each and their cost is ultimately going to get passed on to IT through **increased utility bills**."
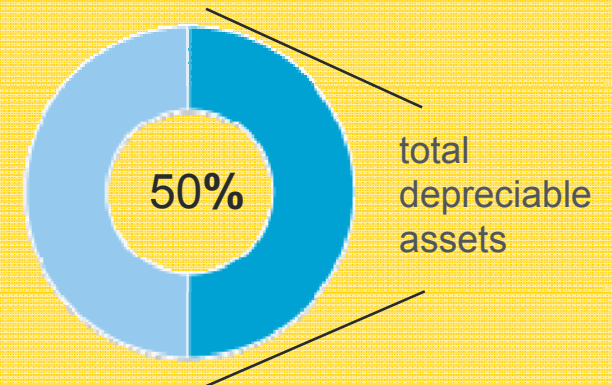
-Ken Brill, Forbes Magazine

- Improve company performance

- Integrate IT decisions into strategic plan

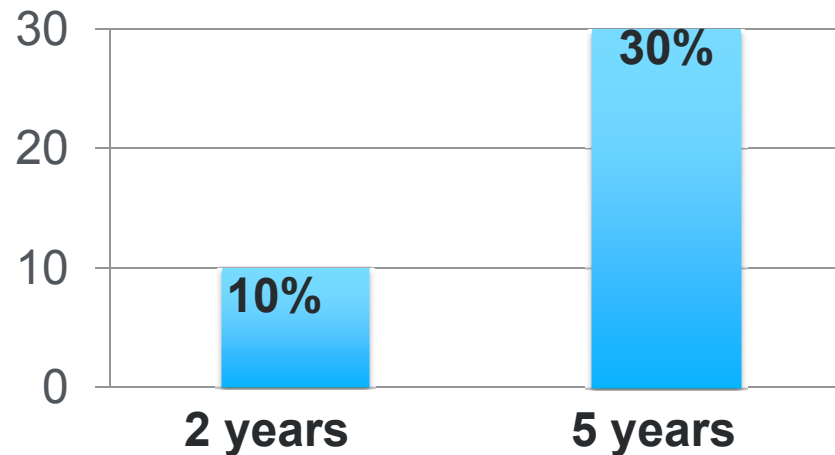- Be a leader in your industry in environmental sustainability and energy management

IT assets now represent 50% or more of total depreciable assets of the corporation.*

50%

total depreciable assets

Improving data center efficiency increases ROI for all IT related purchases.

*See notes.

- Improve data center energy efficiency by **10% in 2 years; 30% in 5 years**

- Integrate data center efficiency goals into business strategy for the next **3 to 5 years**

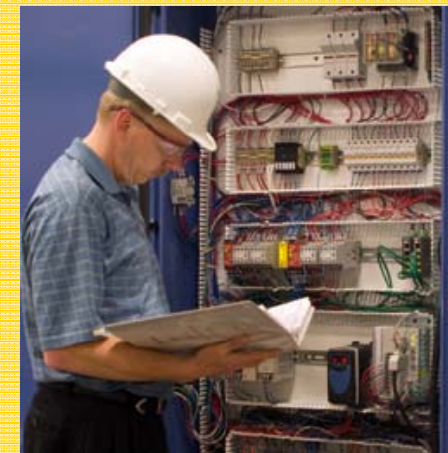- Assign a corporate data center lead

- How are we currently monitoring and measuring energy use?

- What are the annual energy expenses for data center operations?

- How can we reduce costs and improve efficiency now?

- What investments can we make with a reasonable ROI to improve efficiency?

- What best practices can we put in place to encourage continuous improvement?
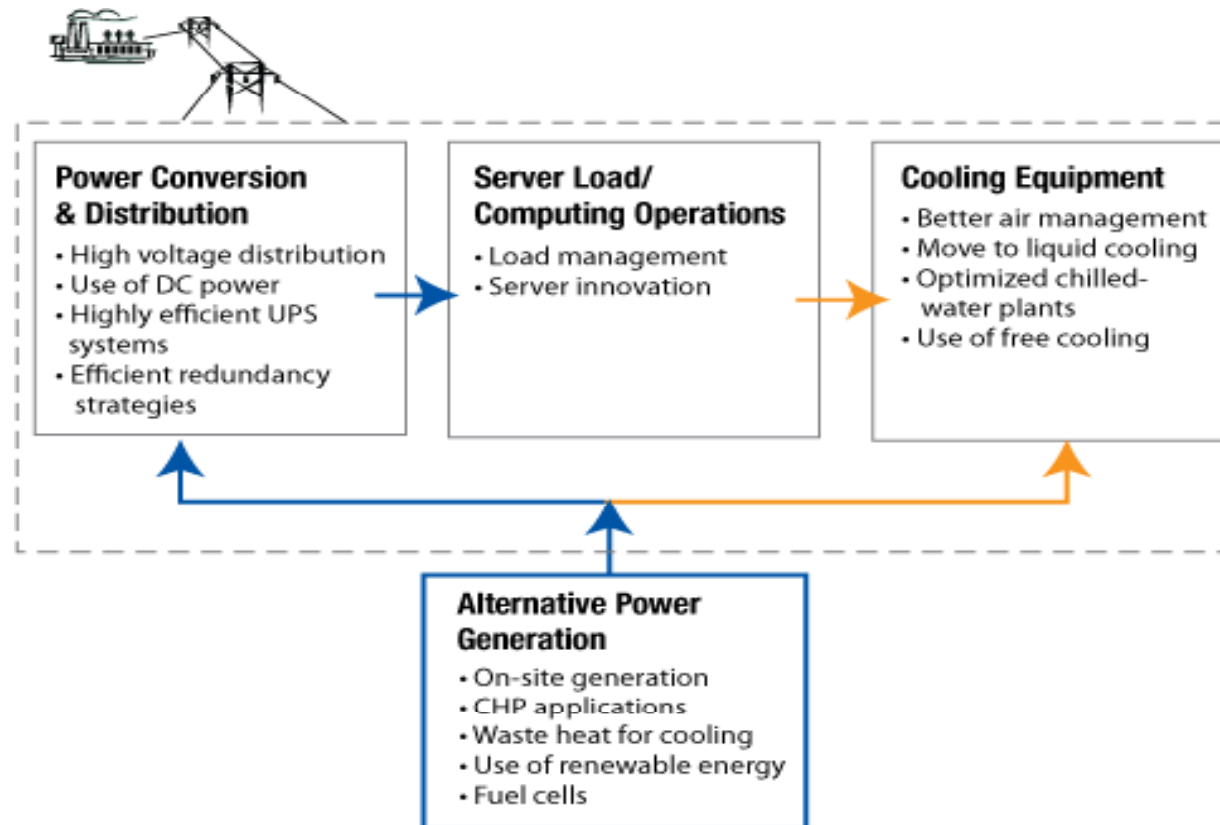
How DOE Can Help

- Save Energy Now: national initiative of the U.S. Department of Energy (DOE) Industrial Technologies Program (ITP)

- Provides energy efficiency resources, services, and tools to help reduce industrial energy intensity 25% in 10 years

- Similar tools and methodologies are being applied to reduce data center energy use

- More than 2,200 assessments completed since 2006

- $1.3 billion identified energy cost savings

- $209 million implemented cost savings

Through Save Energy Now, DOE aims to reduce energy use in U.S. data centers 10% by 2011 and is actively targeting energy savings potential in four main data center areas:

Power Conversion & Distribution
- High voltage distribution
- Use of DC power
- Highly efficient UPS systems
- Efficient redundancy strategies

Server Load/ Computing Operations
- Load management
- Server innovation

Cooling Equipment
- Better air management
- Move to liquid cooling
- Optimized chilled-water plants
- Use of free cooling

Alternative Power Generation
- On-site generation
- CHP applications
- Waste heat for cooling
- Use of renewable energy
- Fuel cells

- DC Pro Software Tool Suite for identifying and measuring data center savings

- Energy assessment protocols and methodologies

- Metrics to benchmark and track performance of overall data center energy intensity

- Data Center Certified Energy Practitioners

- Training curriculum for data center personnel

Inputs
- Description
- Utility bill data
- System Information
  - IT
  - Cooling
  - Power
  - On-site 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

Data center efficiency$_{im}$ provements helped these companies save:

Verizon (PDF)

- Cost Savings: $181,500/year
- Payback: 1.3+ Years

Lucasfilm (PDF)
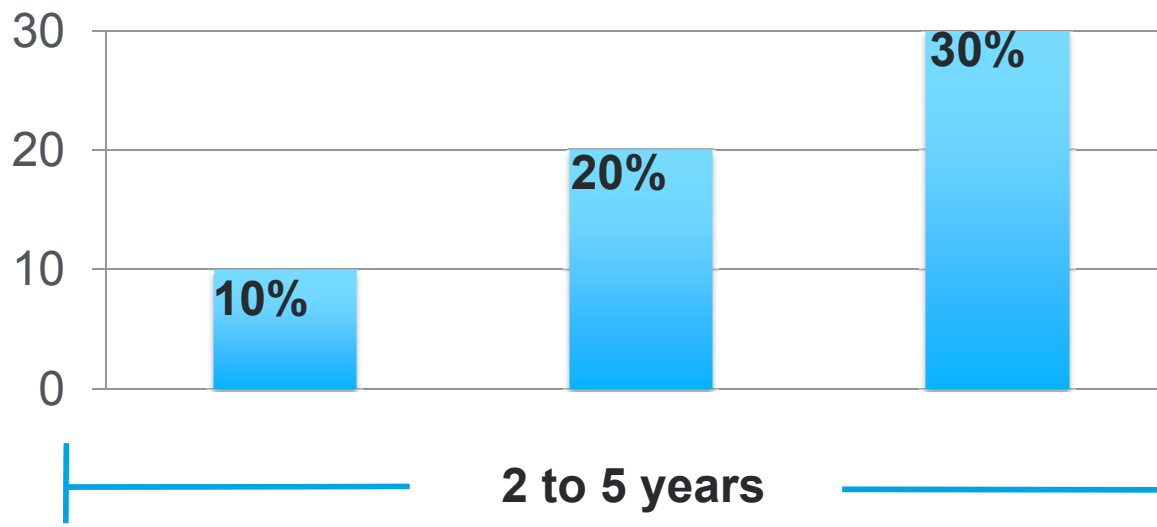
- Cost Savings: $343,000/year
- Payback: 1.2 Years

Sybase (PDF)

- Cost Savings: $262,000/year
- Payback: 2.2 years

What Next?

Can you publicly commit to **reducing** your company's data center energy use by **10%, 20%, or 30%** over **2 to 5 years**?

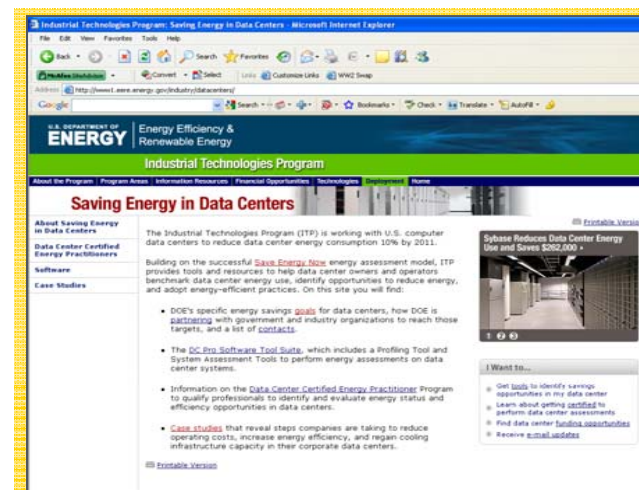Send an e-mail to DOE with your company name, PR contact, and Web site.

Companies that make this commitment will be recognized on DOE's Data Centers Web site at www.eere.energy.gov/industry/datacenters.

Partner with DOE

Are you interested in partnering with DOE to help U.S. industry reduce its energy$_{in}$ tensity$_2$ 5% in 10 years?

If so, contact ITP about becoming a Save Energy Now Leader.

Save Energy Now Leaders receive technical assistance from DOE to implement energy-saving methods.

www.eere.energy.gov/ industry/datacenters

Visit DOE's Web site for:

- DC Pro Software Tool Suite
- Case studies and other best practices publications
- Data center e-mail updates
- Events and training
- Information from DOE partnering organizations.

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www.eere.energy.gov/industry/saveenergynow

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www.us.joneslanglasalle.com/datacenters

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