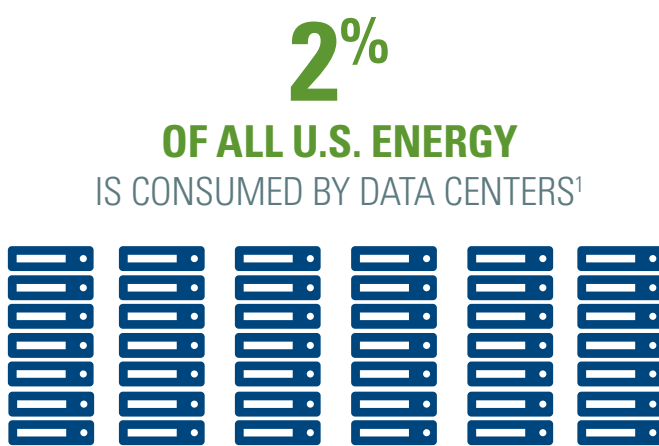


WIRELESS SENSOR NETWORKS FOR DATA CENTERS

OPPORTUNITY

How much energy is used by data centers in the U.S.?



~50%
GOES TO
NON-IT LOADS²

TECHNOLOGY

How do Wireless Sensor Networks save energy?

CAPTURE & DISPLAY CRITICAL INFORMATION IN REAL-TIME

OPERATORS IDENTIFY WAYS TO INCREASE ENERGY-EFFICIENCY

M&V

Where did Measurement and Verification occur?

LAWRENCE BERKELEY NATIONAL LABORATORY assessed the effectiveness of a wireless sensor network provided by Synapsence at the USDA National Information Technology Center in St. Louis, Missouri

RESULTS

How did Wireless Sensor Networks perform in M&V?

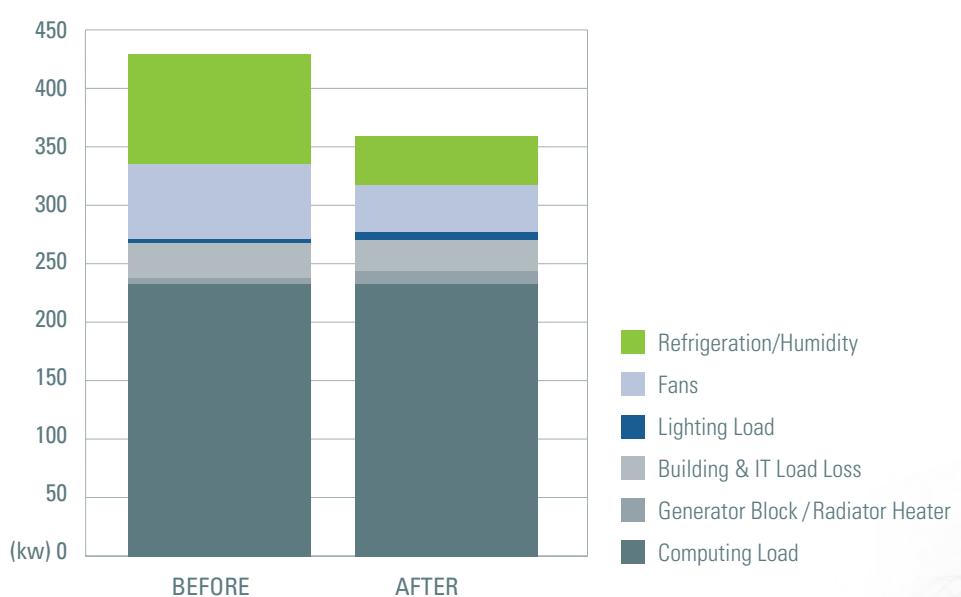
17%
ENERGY SAVINGS
48% REDUCTION IN COOLING LOAD³

EFFECTIVE TOOL
FOR ON-GOING OPTIMIZATION OF DATA CENTERS⁴

3.4 YEARS
PAYBACK AT \$0.045 kWh < 50% of national average \$0.11 kWh⁵

Data Center Power Usage Distribution

48% Cooling Load Reduction, 17% Overall Data Center Energy Reduction



DEPLOYMENT

Where does M&V recommend deploying Wireless Sensor Networks?

ALL DATA CENTERS*

Estimated \$61 million in annual savings and annual decrease of 532,000 metric tons of CO₂, if implemented by tenant agencies throughout the GSA portfolio

Data center assessment kit developed during study reduces deployment time and power interruptions during installation

¹McKinsey & Company, "Revolutionizing Data Center Efficiency", 2008 ²Wireless Sensor Network for Improving the Energy Efficiency of Data Centers. Rod Mahdavi, William Tschudi (LBNL), March 2012, p.27 ³ibid, p.29 ⁴ibid, p.7 ⁵ibid, p.29 *Subject to evaluation and approval by GSA-IT and Security