Cisco EnergyWise

Environmental Concerns

Energy demand is unsustainable

"World energy demand will double by 2030."

Mark Ellis , International Energy Agency, March 2007

"To satisfy world energy demand in 2030, production must increase 82%."

Energy Information Administration, U.S. Dept. of Energy, 2007

GhG emission projections pose climate changing threat

"World CO_2 emissions are projected to rise from 28.1B metric tons in 2005 to 42.3B metric tons in 2030."

Energy Information Administration

"Commercial buildings are third- fastest growing CO_2 emissions source."

IEA, Emissions by Sector

New Energy Regulatory Mandates

Canada Energy Efficiency Act – external power supplies, battery chargers, TV set-top boxes, and digital TV adapters

EU EuP Directive – energy-using products, including set-top boxes

**Japan** – networking equipment

U.S. Energy Policy Act of 2005 – battery chargers and external power supplies

China – TV receivers, set-top boxes, and DVD players

Mexico evaluating efficiency standards for electronic products

Australia – DVD players and recorders, hard disk recorders, AV receivers, other audio/video equipment

U.S. HR 3221 – external power supplies, promote energy-efficient data centers
HR 6 – energy efficiency labeling for set-top boxes and DVR products
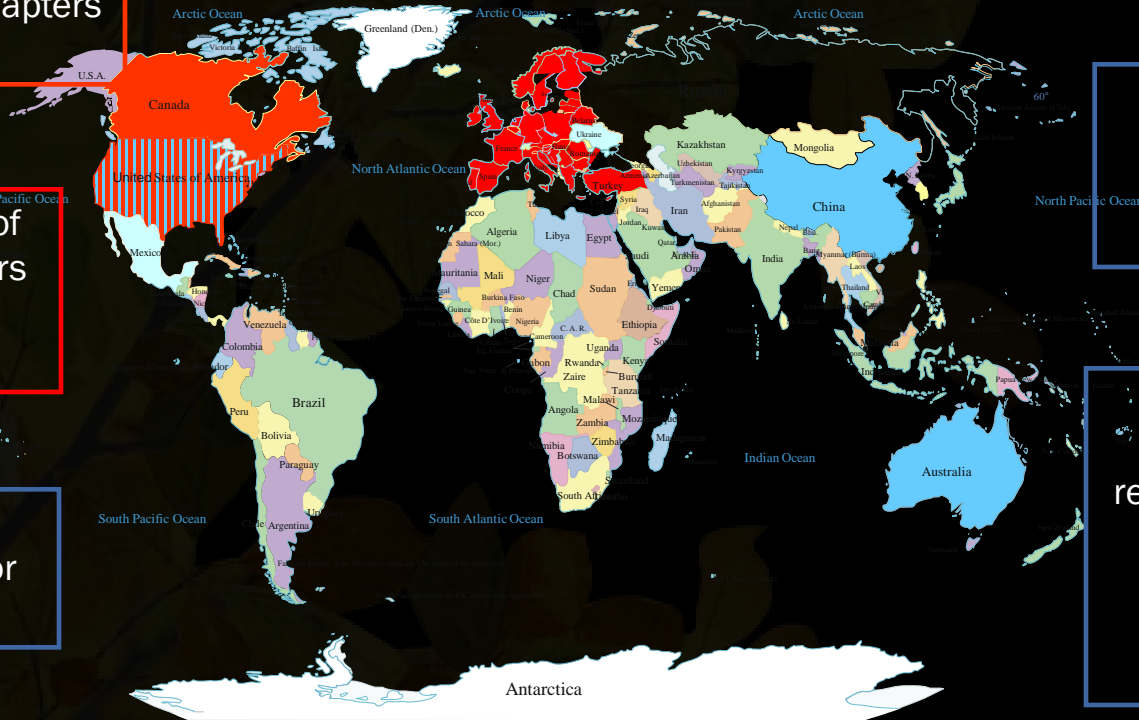
Enacted / **Proposed**

Start Now to Avoid Regulatory Penalties in the Future

Customer Green Goals

Green economics: optimize business operations, cut costs

Reduce greenhouse gas emissions
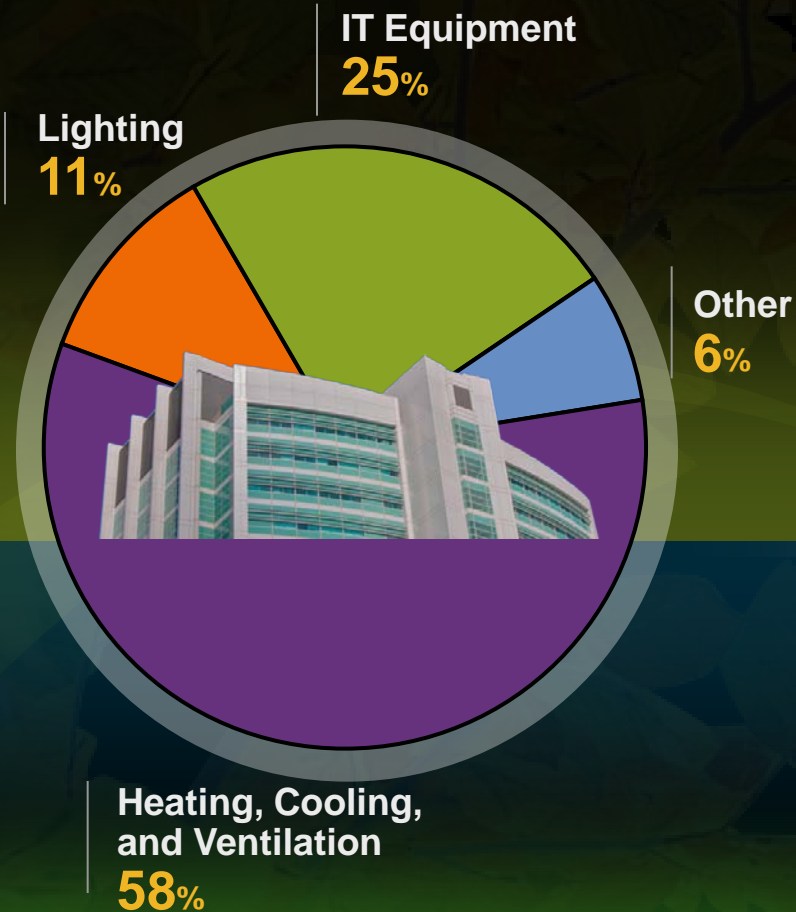
Reduce energy consumption and cost
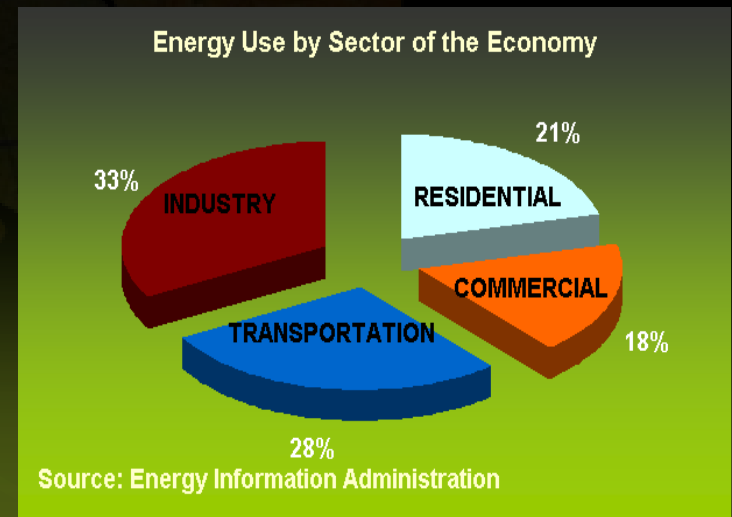
Comply with government directives

Identify new revenue opportunities

Energy and Carbon Footprint

IT Equipment
25%

Lighting
11%

Other
6%

Heating, Cooling, and Ventilation
58%

Source: UK Energy Efficiency Best Practice Program; Energy Consumption Guide 19: Energy Use in Offices

Energy Use by Sector of the Economy

33% INDUSTRY

21% RESIDENTIAL

18% COMMERCIAL

28% TRANSPORTATION

Source: Energy Information Administration

"It takes twice as much energy to remove the heat generated … as it takes to run the equipment."

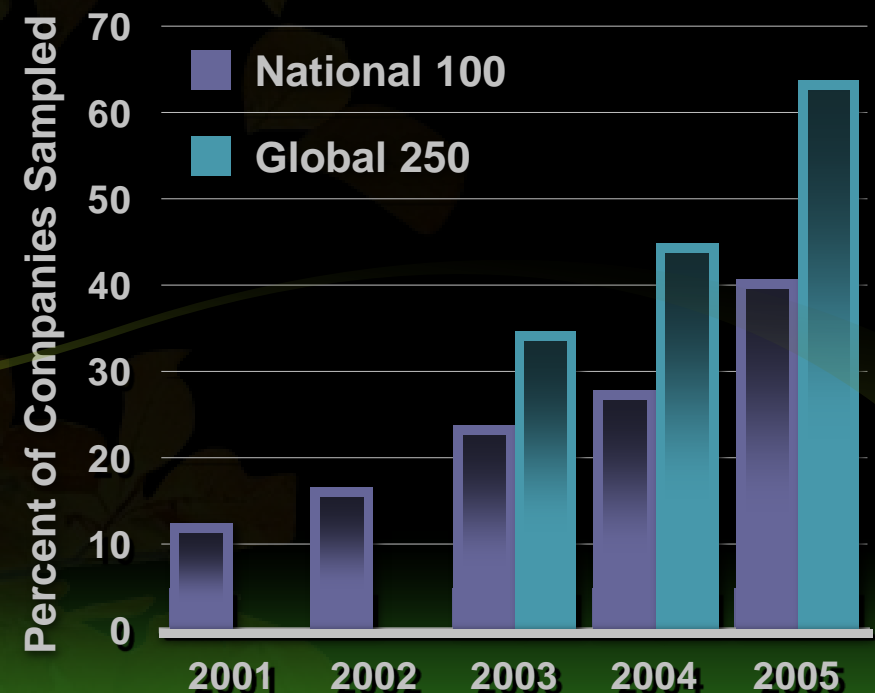*UK Department of the Environment, Good Practice Guide 118*

Environmental Management Systems and Corporate Reporting

Use of environmental management systems and corporate responsibility reporting is increasing worldwide at 30%+ a year

Worldwide ISO14001 EMS Certifications

ISO14001 Certifications

Year	
2001	~35000
2002	~49000
2003	~65000
2004	~89000
2005	~110000

Growth in Corporate Responsibility Reporting

Percent of Companies Sampled

- National 100
- Global 250

Year	National 100	Global 250
2001	12	
2002	16	
2003	23	35
2004	27	45
2005	41	64

Corporations Are Aligning Business Strategies For…

Green building standards

Environmental management systems

Corporate responsibility and reporting

Environmental initiatives

Cisco® EnergyWise
Reducing Enterprise's Global Carbon Footprint

Reduce:
Cost
Complexity
Environmental Impact

Gas

Electricity

Water

Information

Essential Utilities

New Utility

Converging Disparate Networks

Cisco EnergyWise

Industry First

- Innovative technology added to Cisco® Catalyst® switching portfolio
- Company-wide optimization of GhG emissions – well beyond the 2% IT impact
- Measure, reduce, and report energy usage across the entire corporate infrastructure
- Support for both Cisco and non-Cisco devices
- The network as a platform for cross-industry energy management

Cisco EnergyWise
Converges IT and Facility Networks

Tenant Services and Technologies
IP Based

Building Services and Technologies
Non-IP

High-Speed Internet	Lighting
Wireless	Elevators
VPN	24/7 Monitoring
IP Telephony	HVAC Sensors
Audio & Video Conferencing	Fire
Visitor Management	Video Surveillance
Interactive Media	Access
Digital Signage	Energy

The Network Is the Platform

Cisco EnergyWise Operating Cycle

Regulate — Optimize Power Delivery with Policies

Monitor — Poll Power of Network Attached Devices: Phones, APs, PCs, Building Systems

Map — Correlate Power and Actions for Use Cases

Advise — Show Power and Cost Savings

Real-time Granular Power Management **Location**
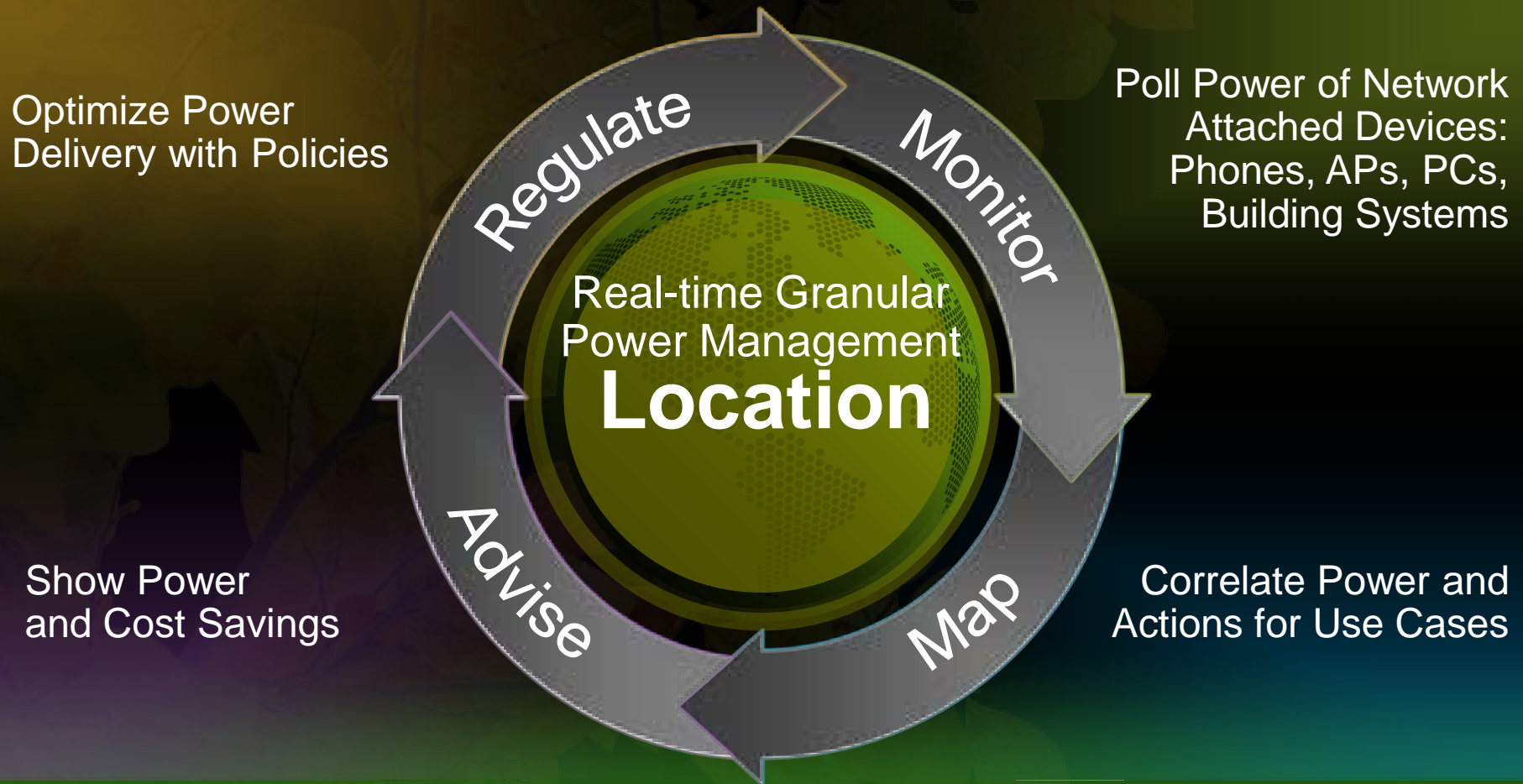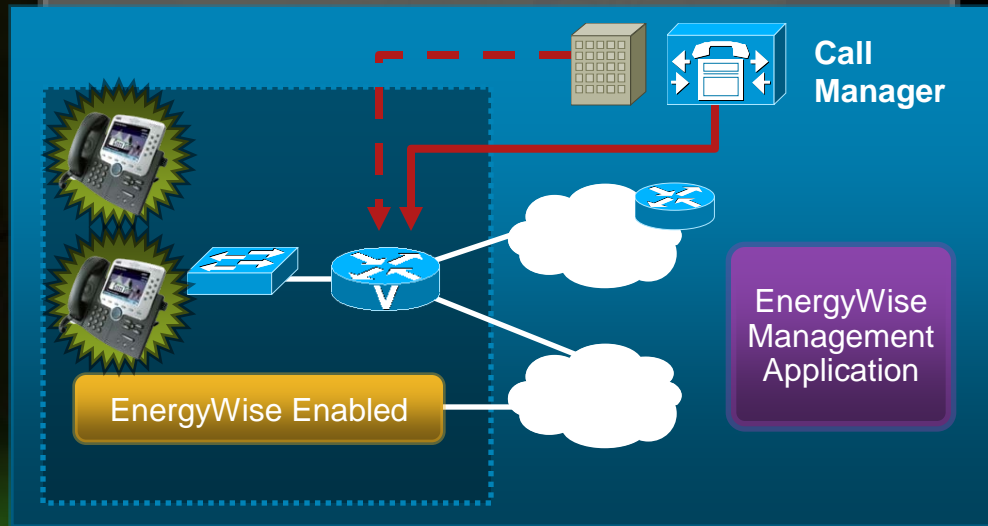
Reducing Bank Branch Carbon Footprint

- Operation 9 to 5

- Power off phones after hours and power on phones next day

- Legacy phone and switch

Branch Office

Call Manager

EnergyWise Management Application

EnergyWise Enabled

EnergyWise Application Asks to Turn Off Power at 7 PM

Policy Added to Network

Policy Communicated Across Switches
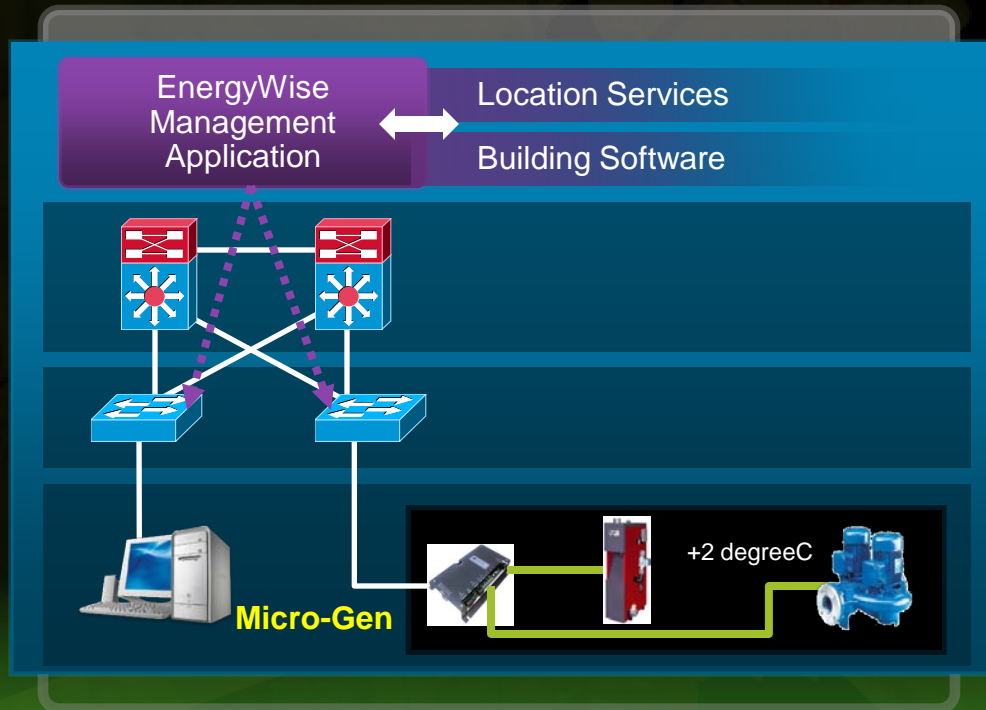
Time Is 7 PM Switch Identities Phones Executes Policy

Switch Turns Off Port Power

Time is 7 AM Switch Executes Policy
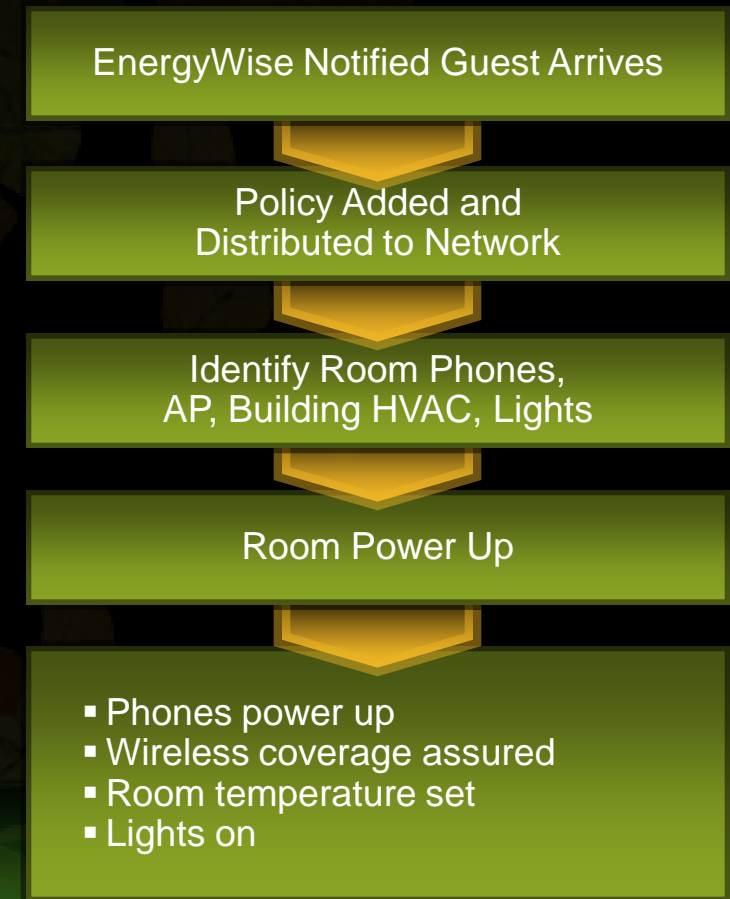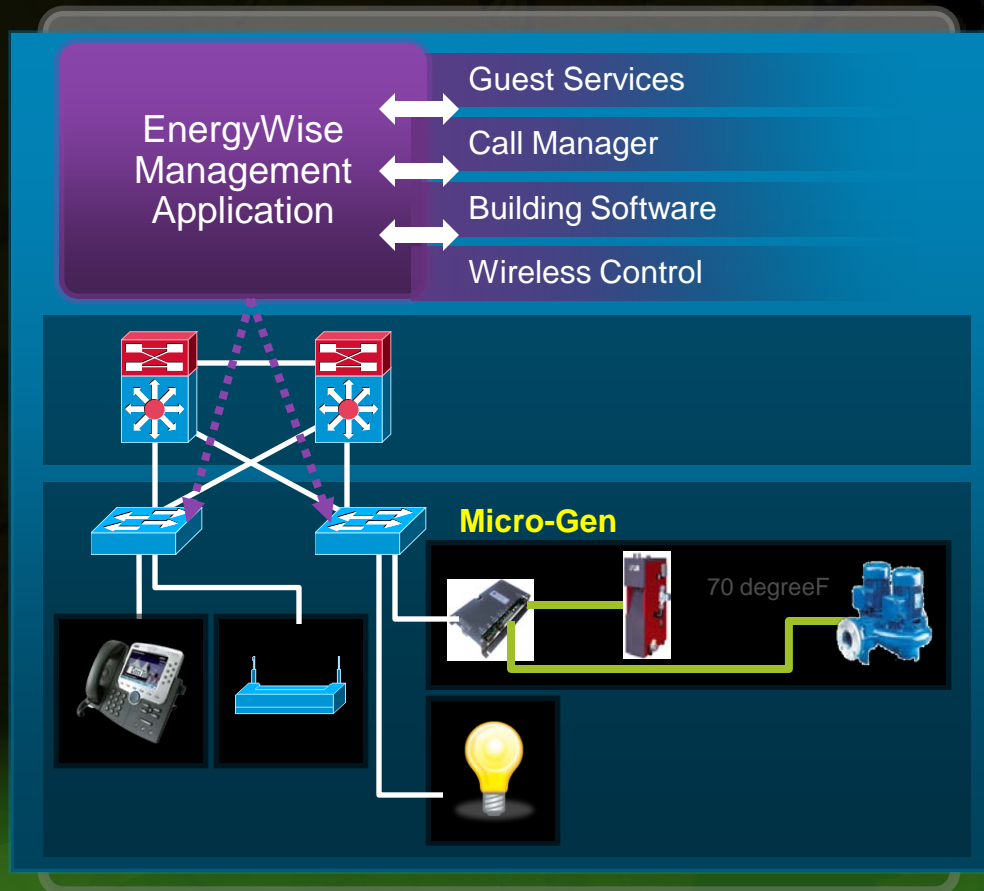
Switch Turns On Port Power

Reducing Headquarters Peak Power Usage

- EnergyWise controls laptops, phones, and building cooling

- Peak power reached – smooth and time shift power use

EnergyWise Management Application

Location Services

Building Software

Micro-Gen

+2 degreeC

EnergyWise Management Monitors Power

Peak Power Alert

Policy Added and Distributed to Network

Identify Eligible Phones, Laptops, Building HVAC

- Laptop to battery power
- Eligible phones to night sleep mode
- Building temperature increased

Optimizing Hotel Power Usage

- Room setting customized for frequent guest

EnergyWise Management Application

Guest Services

Call Manager

Building Software

Wireless Control

Micro-Gen

70 degreeF

EnergyWise Notified Guest Arrives

Policy Added and Distributed to Network

Identify Room Phones, AP, Building HVAC, Lights

Room Power Up

- Phones power up
- Wireless coverage assured
- Room temperature set
- Lights on

Business Requirements and Power Consumption Correlation

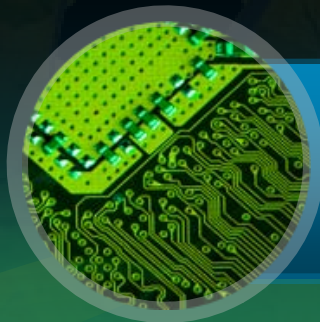**Central Power Control Plane: IT & Non-IT**

Cost Savings

Future Device, Apps, Management Integration

Fine-Grained and Real-Time Control

Carbon Footprint Reduction

Business Reputation

Cisco EnergyWise – The Impact

Watts Savings

15.4W x 5,000 off hrs x (5,000 IP phones + 500 APs) =
423,500kW savings per year

Cost Savings

15.4W x 5,000 off hrs x $.12/kWhr x (5,000 IP phones + 500 APs) =
$50,820 savings per year

GhG Savings

kW savings per year x 0.15 kgCO2e/kWh x EB1 =
194,024 trees saved per year
12,498 mid-size automobile annual emissions removed

Based on 5000 color IP phones, 5K employees, 10 employees/AP,
1 kgCO2e reductions = 3.0542986425334 trees (Environmental Benefit factor 1 = EBF1),
1 kgCO2e reductions = remove 0.1967435549525 mid-size automobile (Environmental Benefit factor 2 = EBF2)

Seeing the Impact – Carbon and $ Savings

- **Create a customer profile**
- **Correlate power usage to typical vertical use**
- **Demonstrate cross-enterprise watts, $s, and carbon savings**

www.cisco.com/go/energywise

Cisco EnergyWise Components

EnergyWise Management Application

EnergyWise Management Communications (SSL for Network-wide)

Domain – logical grouping of entities (Child/ Neighbor)

Entity (unique ID) under one domain (Parent/Child) MIB (power usage, policy, alarm)

Location **MSE** **LMS** **Third Party Power Management Applications**

SNMP **TCP** **Management API**

Wireless Controller

AP

EnergyWise Domain

Building Field Controller

EnergyWise Entities

Wireless Client

Cisco EnergyWise Event Flow

Management applications for IT or Facilities

Management APIs Used for Switches and Routers Communication

Network Software Aggregates Status and Power Data

Client Software Reports Status and Receives Policies

MSE

LMS

Location

Third Party Power Management Applications

SNMP

TCP

Management API

Wireless Controller

AP

Building Field Controller

EnergyWise Domain

Wireless Client

EnergyWise Entities

EnergyWise Summary

Converged IT and Buildings Centralized Policies

Environmental Benefits Power Optimization

Lower Operating Costs

Cisco Public

     Cisco Public