

ORACLE®



Oracle and the Environment

Jeff Henley
Chairman of the Board

Oracle Corporate Citizenship

Oracle is committed to using our technology and resources to advance education in innovative ways, promote diversity, enrich the life of communities, and protect the environment





Oracle: Industry Leader in Environmental Issues

- First software company to participate in the U.S. EPA Climate Leaders Program
- Member of the U.S. EPA Green Power Partnership Program
- Member of the Climate Savers Initiative
- Participate in Demand Response Programs
- Best Workplace for Commuters Award Winner
- Carbon Disclosure Project (**go to website for logo**)
- Conservation and recycling programs ranging from water, paper, waste, etc.



Our Environmental Philosophy

*Focus on the intersection of
what's good for Oracle and
what's good for the environment*



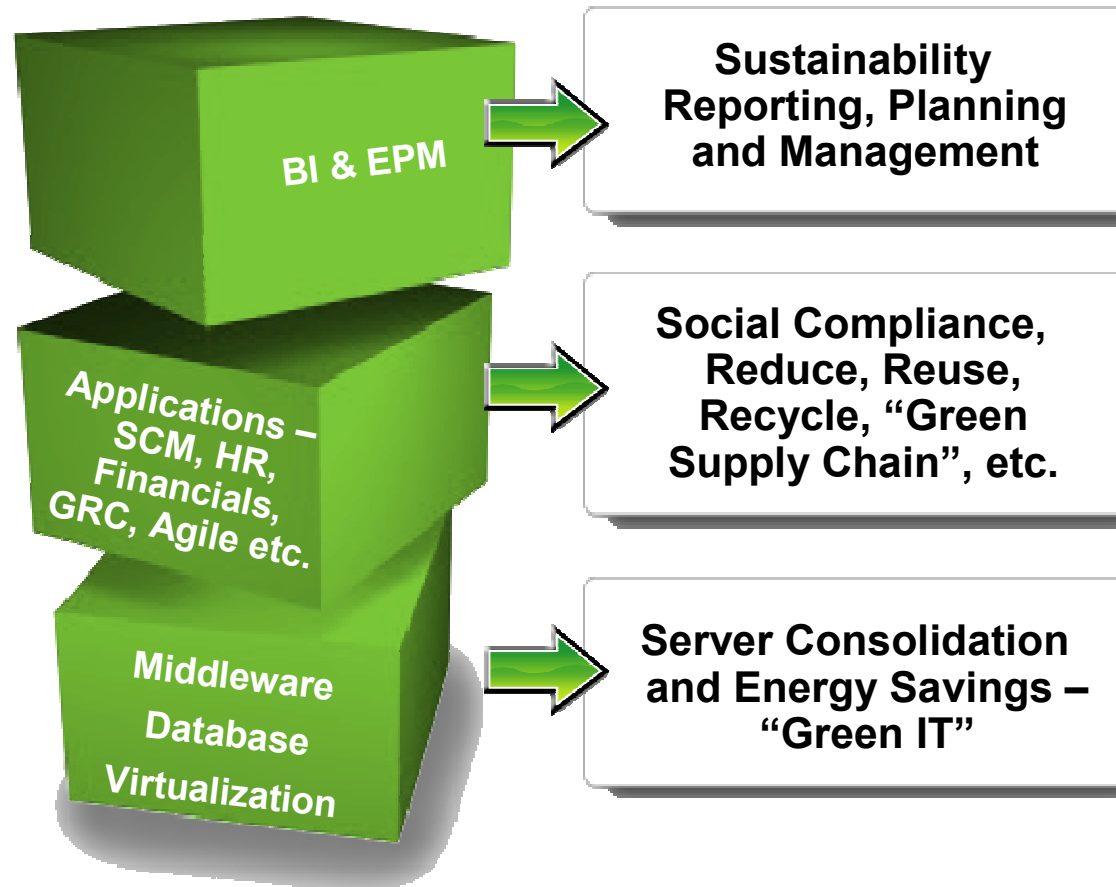


Learn More: Oracle's Corporate Citizenship

www.oracle.com/commitment

- Oracle's Corporate Citizenship Report
- Oracle's 2007 Corporate Citizenship Summary Report
- Oracle's 2007 Oracle and the Environment Summary

Empowering the **GREEN** Enterprise with Oracle



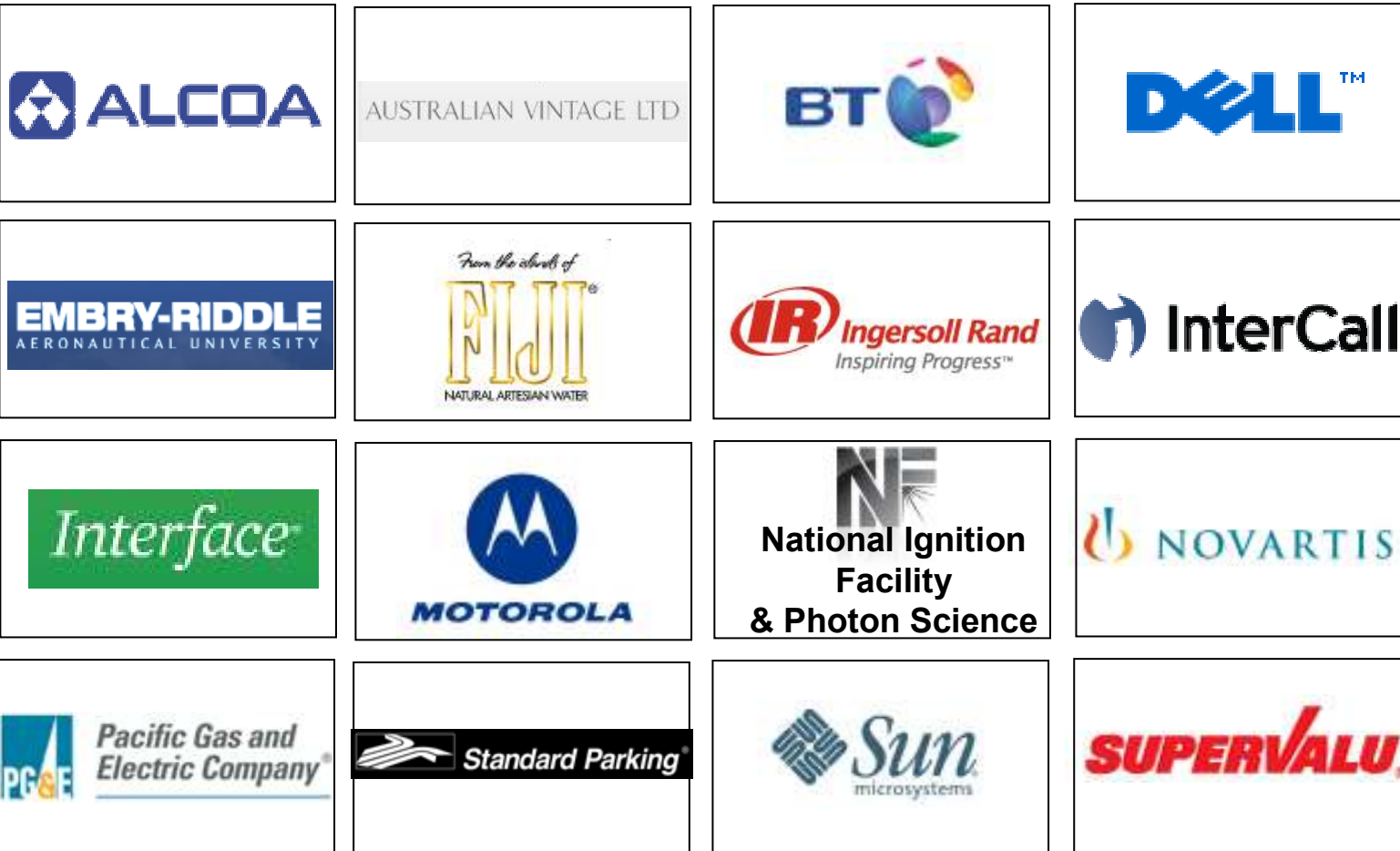
More information at www.oracle.com/applications/green/index.html

‘Empowering the Green Enterprise’ 2008 Awards

- Winners selected based on their use of Oracle products to help with their sustainability initiatives
- 7 Judges, including 3 sustainability experts
 - Daniel Esty: Hillhouse Professor of Environmental Law and Policy, Yale University
 - Cody Sisco: Manager of Advisory Services, Business for Social Responsibility
 - Mike Sweeney: Executive Director, The Nature Conservancy



Congratulations to the Green Award Winners & their Partners



Award Winners



- **Bruce Bales, Manager OTC Functional Application Design**
- **Partner: Robert Johnson, CEO of ESS**
- *By using Oracle Applications, Alcoa is able to track, control and report its green and sustainable efforts*

AUSTRALIAN VINTAGE LTD

- **Gregory Taylor, Oracle's GM of OFM Australia/New Zealand on behalf of Ryan Klose, the CIO of Australian Vintage Ltd**
- *Implementing Oracle's BAM for real-time reporting across their supply chain*
- *Providing real-time metrics – now including their carbon usage*



- **Carol Sams, Vice President of US GPS**
- *With Oracle's eBilling Manager, BT's customers are saving 60 tons of paper each year*

EMPOWER THE
GREEN ENTERPRISE

— 2008 AWARD —

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Award Winners



- **Tod Arbogast, Director of Sustainable Business**
- *Dell uses Oracle software technology to manage their supply chain to reduce transportation energy usage, packaging (5,440 tons reduction last year), maximize efficient use of materials, and reduce travel time*



- **Cindy Bixler, Chief Information Officer**
- *With Oracle Distributed Document Capture, student forms electronically captured & sent*
- *They've cut their paper usage in half as document duplication is no longer needed, saving 70 tons of trees & 175,000+ lbs. of greenhouse gas emission*



- **Julie Silver, Director IT Strategy & Business Process**
- **Partner: Judy Agnew with Conservation International**
- *While many businesses must rely on metrics such as 'average miles traveled', they can use Oracle data for raw materials purchasing, inventory management and logistics, and sales order management to develop a thorough carbon footprint assessment*



Award Winners



- **Michael Siebert, Global Director - Enterprise Technology Services**
- **Partner: Jeff Kannas with Deloitte**
- *11% increase in daily service calls scheduled and increased technician utilization*
- *Additional reduction in greenhouse gases expected using GPS technologies and technician skill matching*



- **Rob Ewing, VP of IT**
- *Using Oracle/BEA WebLogic SIP Server to run more than 4 billion minutes of conferencing this year – reducing travel & their carbon footprint*



- **Larry Wallace, Assistant VP - Global Financial and ERP Services**
- **Partner: Bill Franklin with CSS International**
- *Implementing Oracle products to improve the quality and speed of their decision making and reporting – critical to accelerate the creativity and innovation needed to radically reduce environmental impact*

EMPOWER THE
GREEN ENTERPRISE

— 2008 AWARD —

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Award Winners



MOTOROLA

- **Joe Piombino, Director, Business Process Optimization**
- **Partner: Nidal Haddad with Deloitte**
- *Deploying Siebel Field Service to their Partner Service Centers globally to promote and monitor efficient business processes*

**EMPOWER THE
GREEN ENTERPRISE**

— 2008 AWARD —
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National Ignition Facility & Photon Science



- **Timothy Frazier, Senior Software Architect**
- *Helping engineers & scientists understand how to generate power with fusion energy*
- *When fully operational, NIF will consist of 4000 scientists collaborating on a worldwide basis using Oracle's technology*



NOVARTIS

- **Jed Fish, CIO Americas**
- *"Without the software, a comprehensive and strategic approach to sustainability and improving our performance in eco efficiency and all other core areas of corporate responsibility would NOT be possible"*

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Award Winners



- **Pat Lawicki, SVP and CIO**
- *Smart meters encourage energy conservation and reduce usage during critical periods*
- *3 pilots reduced peak load 2 megawatts for four hours each day – or over a ton of greenhouse gas emissions*
- *Use Oracle database, RAC, and DataGuard to handle the increased volume of data that the SmartMeter initiative will deliver*



- **Keith Evans, SVP Strategy, Technology & Information**
- *Oracle Portal creates an electronic method for customers to manage their contracts and parking service needs*
- *Oracle products enable electronic billing and payment for their customers – estimated to reduce their consumption by up to 312 tons of paper, saving 624 tons of trees, 5.1M gallons of water, and 600,000+ pounds of solid waste*

Award Winners



EMPOWER THE
GREEN ENTERPRISE

— 2008 AWARD —

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- **Brian Day, Senior Program Manager and Chief of Staff for Sun's Global eco data Center Design Services**
- **Partner: David Flowers with Deloitte**
- *Sun's Open Work program prevented an estimated 29,000 metrics tons of CO₂, 365 tons in paper savings, and \$68 million in real estate cost savings*
- *Single database saving \$1.1 million in energy costs per year and reduces CO₂ emissions by 4,100 metrics tons*

SUPERVALU.

- **Shirl Stroeing - VP, IT Merchandising Applications**
- **Partner: Jo Krishna with Wipro Technologies**
- *Using Oracle's Internet Expenses, they no longer print over 100,000 pages of expense reports and 80,000 employee checks each year*
- *Estimated savings of ~2 tons of paper per year*

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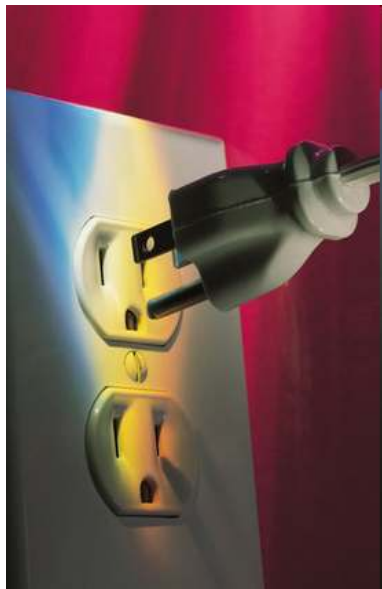
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The Green Data Center

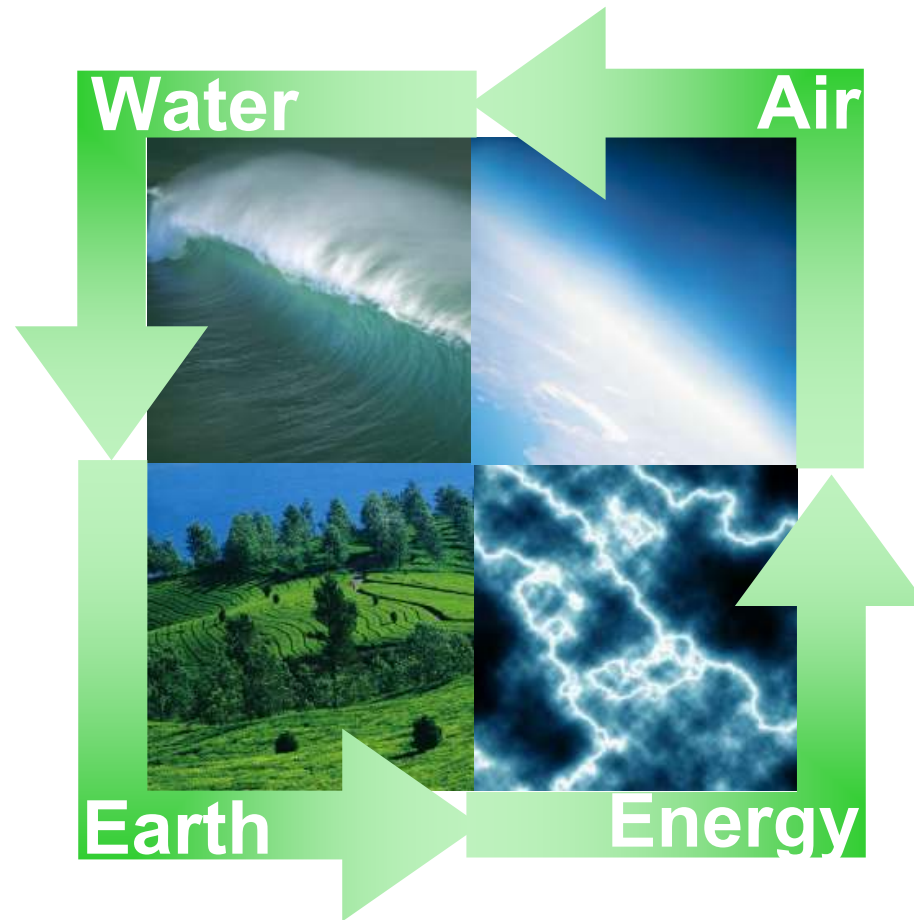
Mark Sunday

CIO and Senior Vice President, Oracle

IT and the Environment

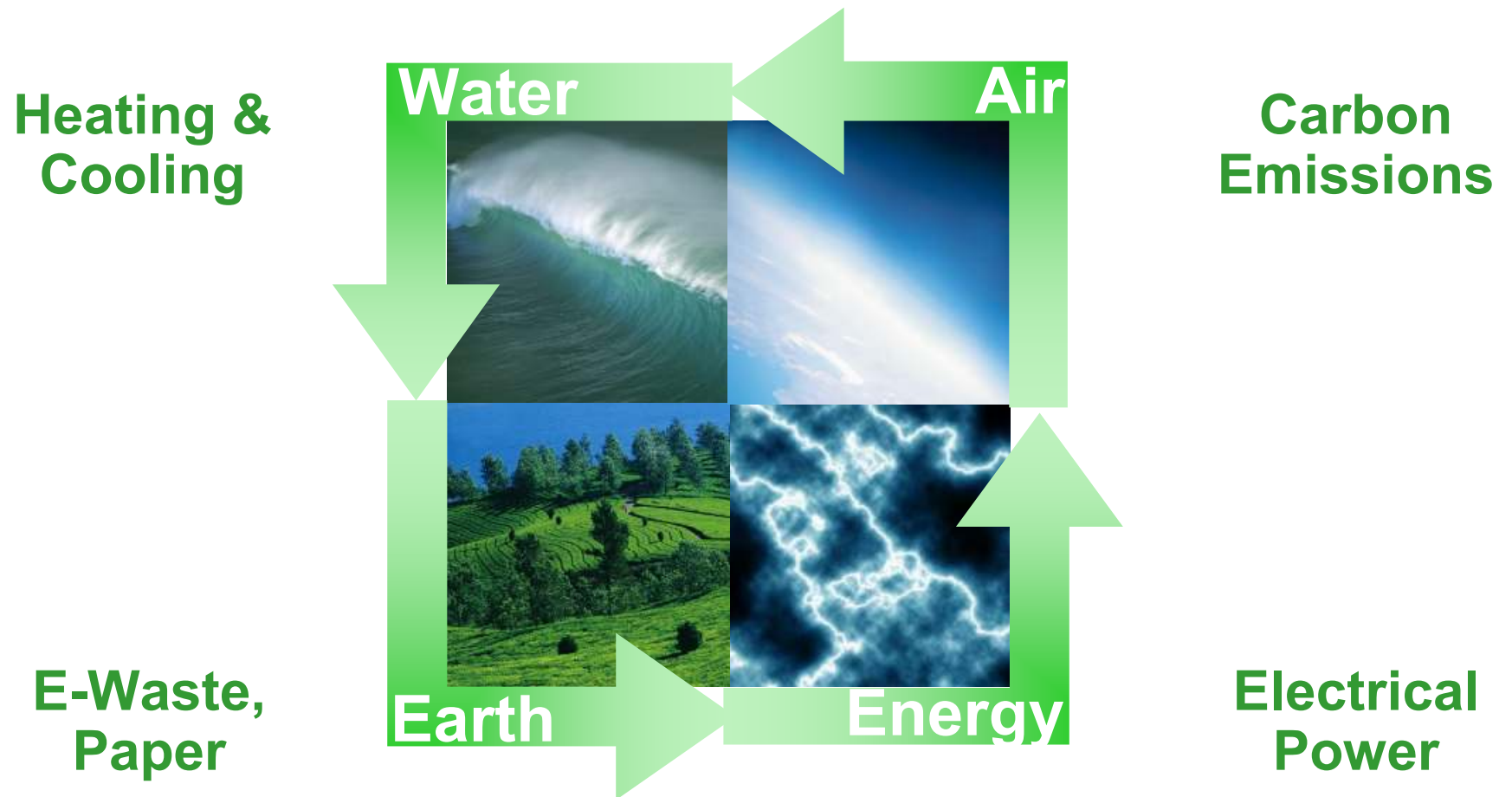


Consumer



Enabler

IT as a Resource Consumer



Global Impact



Information, Communication
& Telecoms

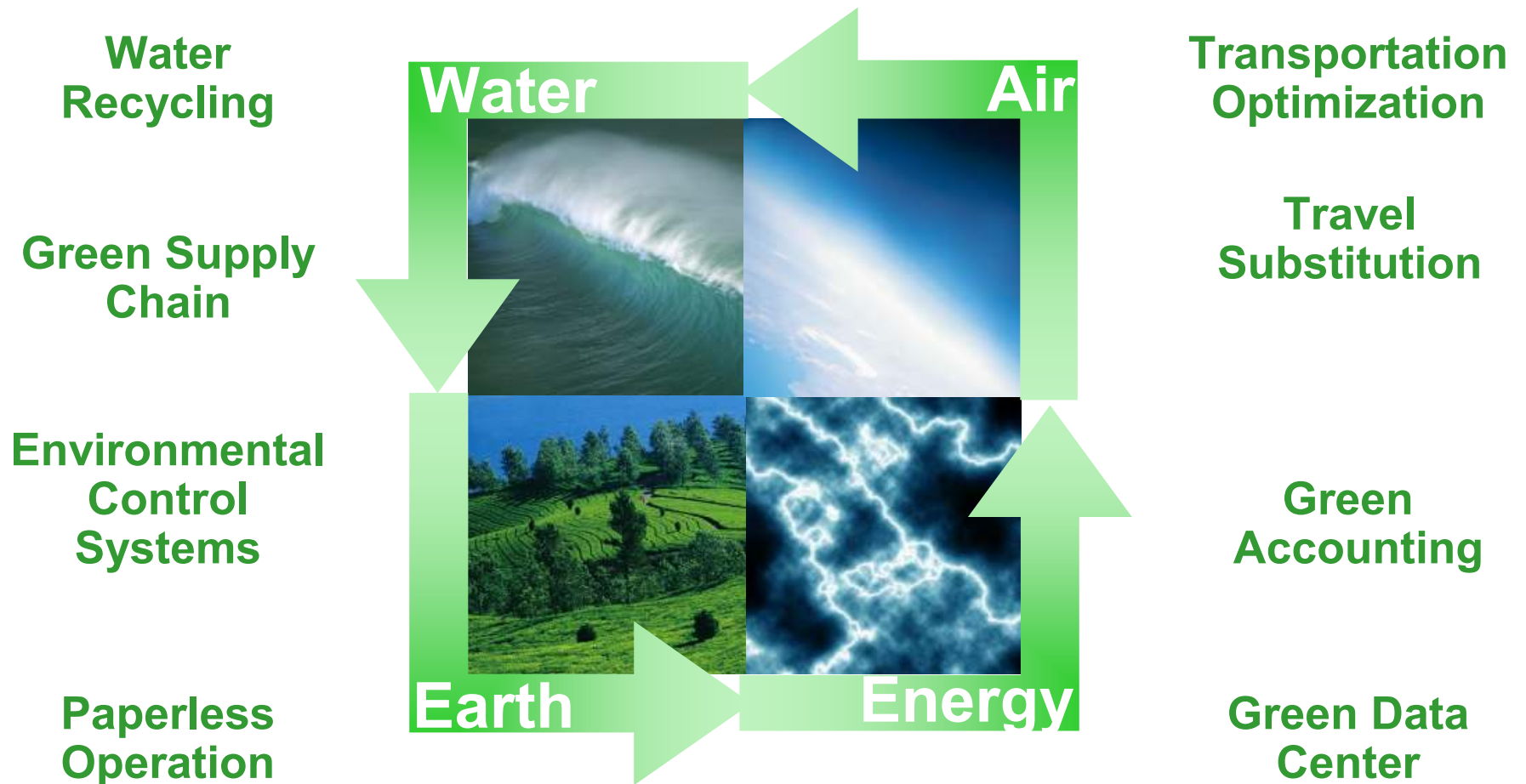
2% of Global CO₂ Emissions

Airline Industry



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IT as a Green Enabler



Global Impact



Could enable savings of

5^x its total CO₂ Emissions

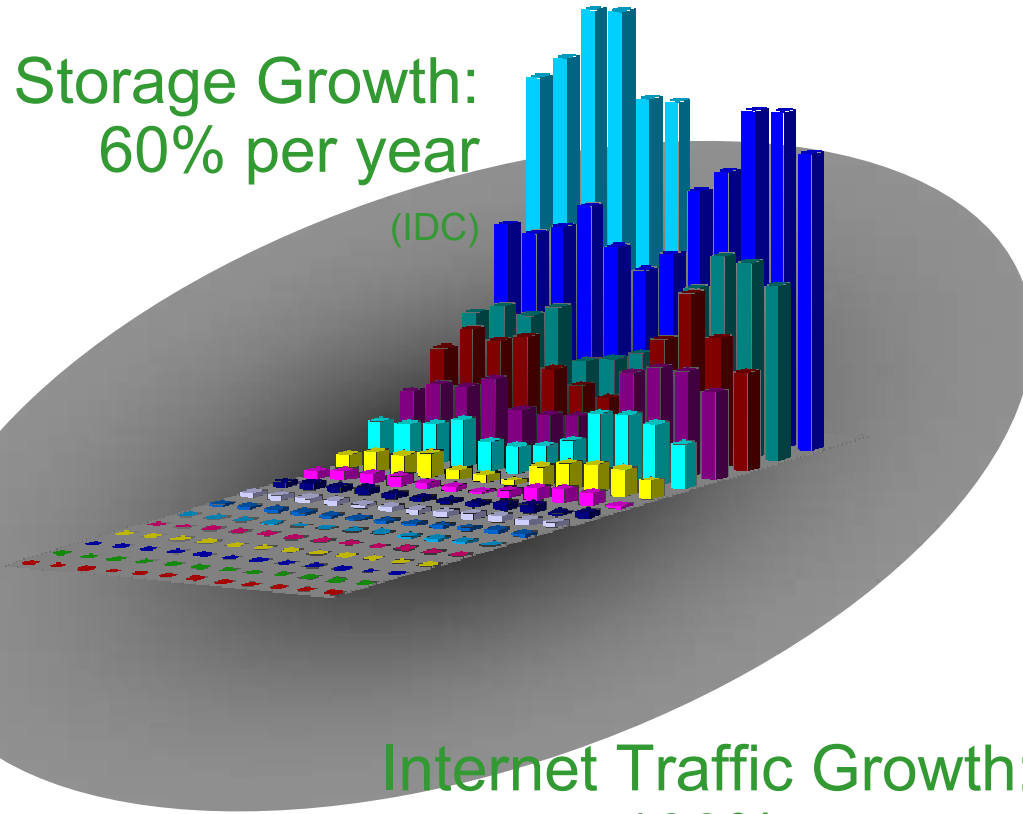


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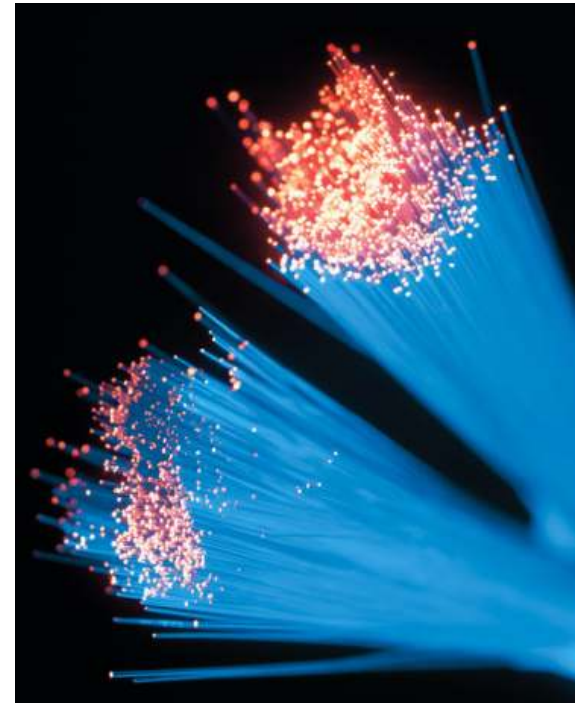
Data Volumes: The Exaflood

Data Storage Growth:
60% per year

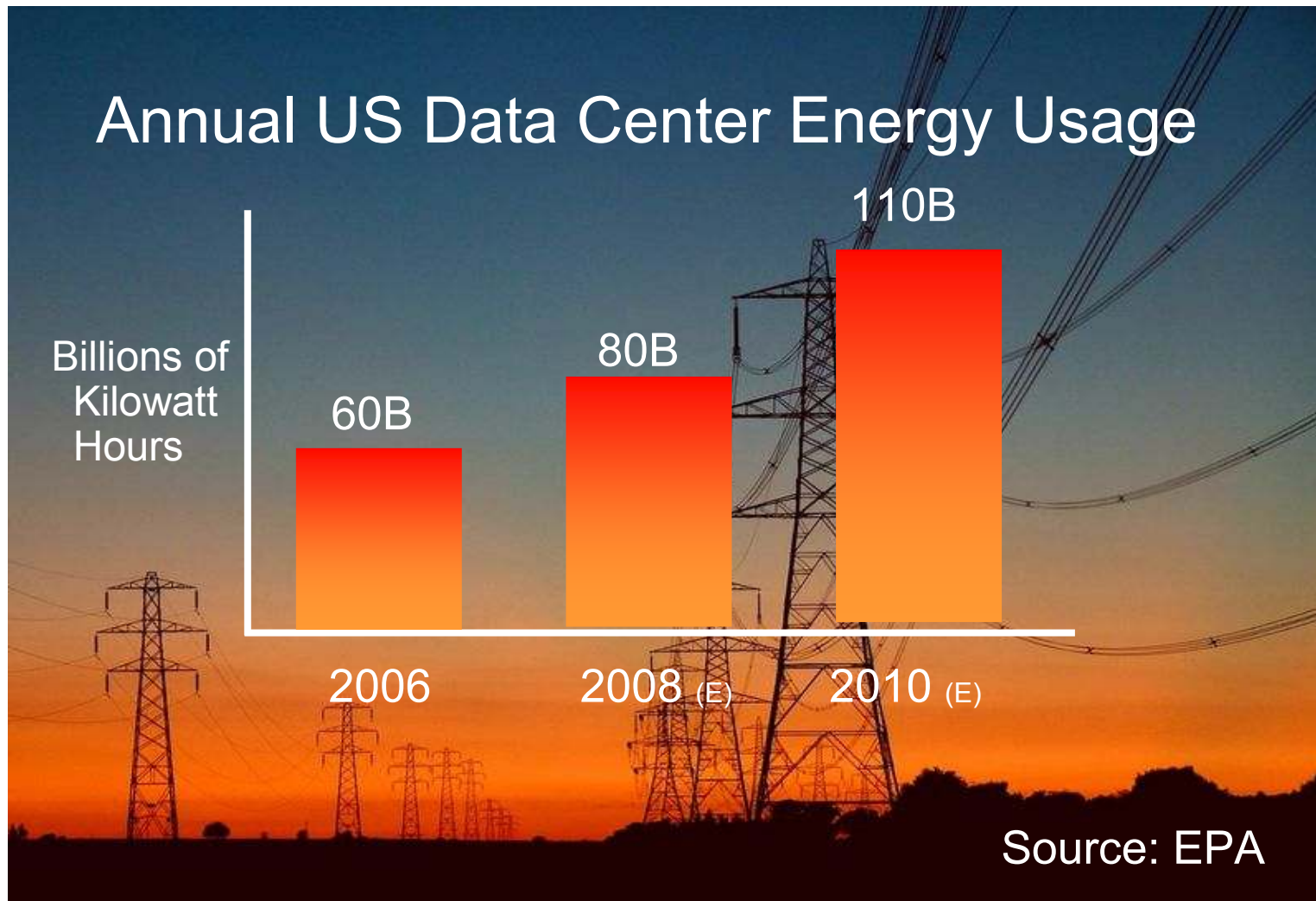
(IDC)



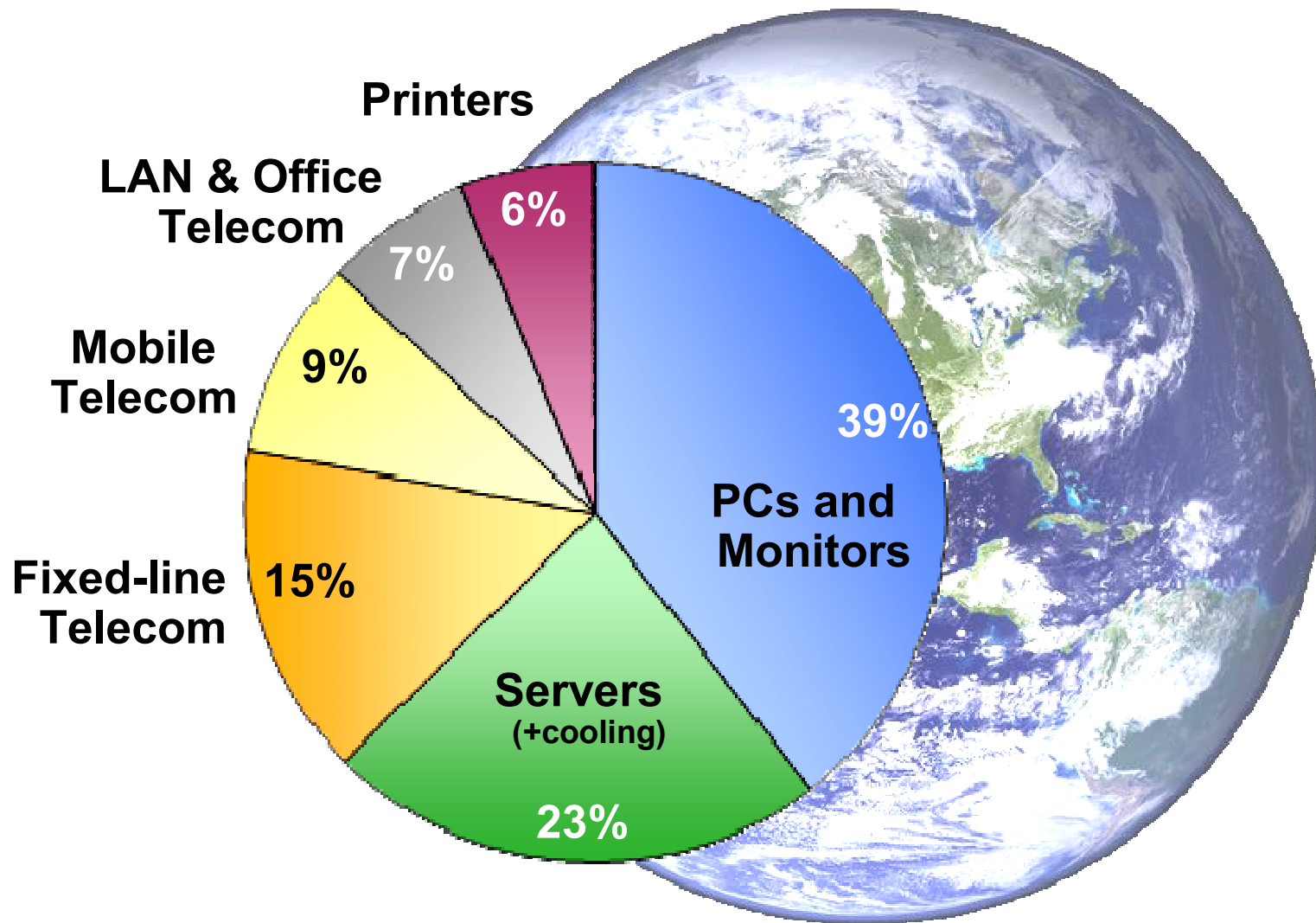
Internet Traffic Growth:
100% per year
Internetworldstats.com



Growing Energy Concerns



IT Power Usage



PCs and Monitors



A company with 10,000 PCs could save \$100k annually with simple power management strategies.

- Dell



Oracle has 100,000 Climate Savers compliant PCs

Data Centers

1 Megawatt



The average power consumed by a data center each month could power 1,000 homes

Oracle Austin Data Center

World class technology and operational excellence



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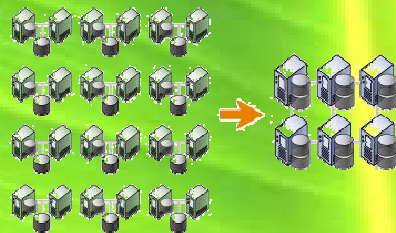
Taking Direct Action



Governance



Refresh/Reuse

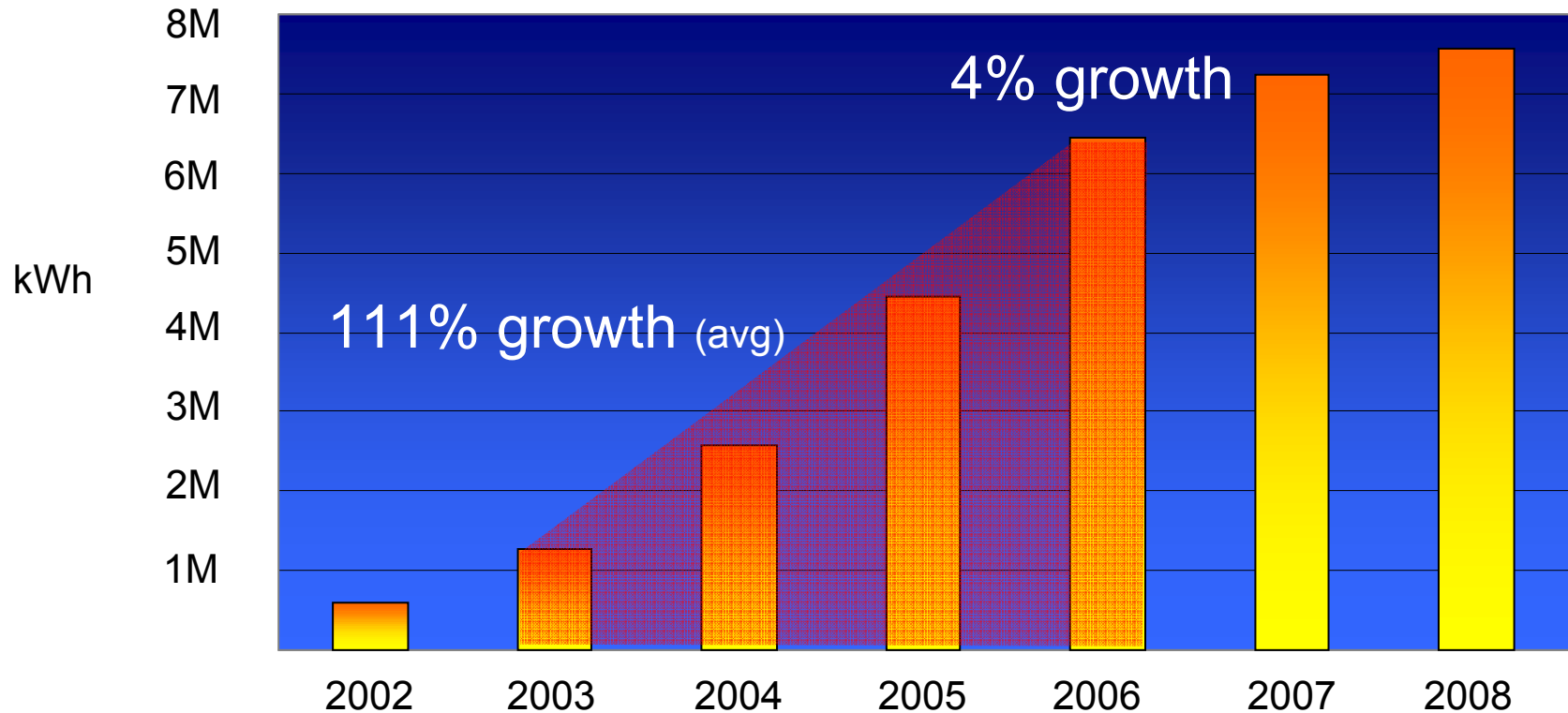


Consolidate



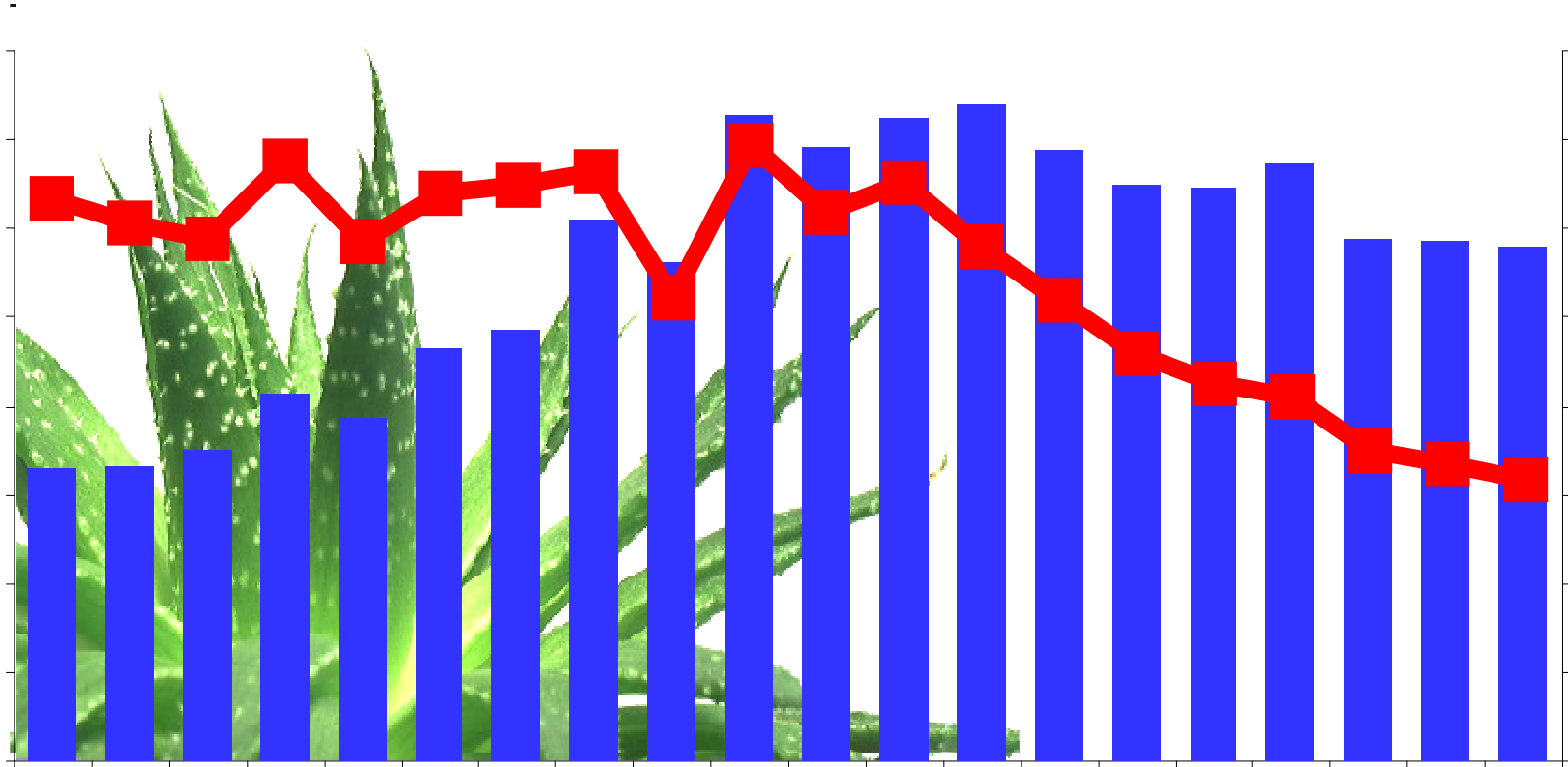
Virtualize

Capping Power Usage in Austin Data Center





Driving down the cost of computing

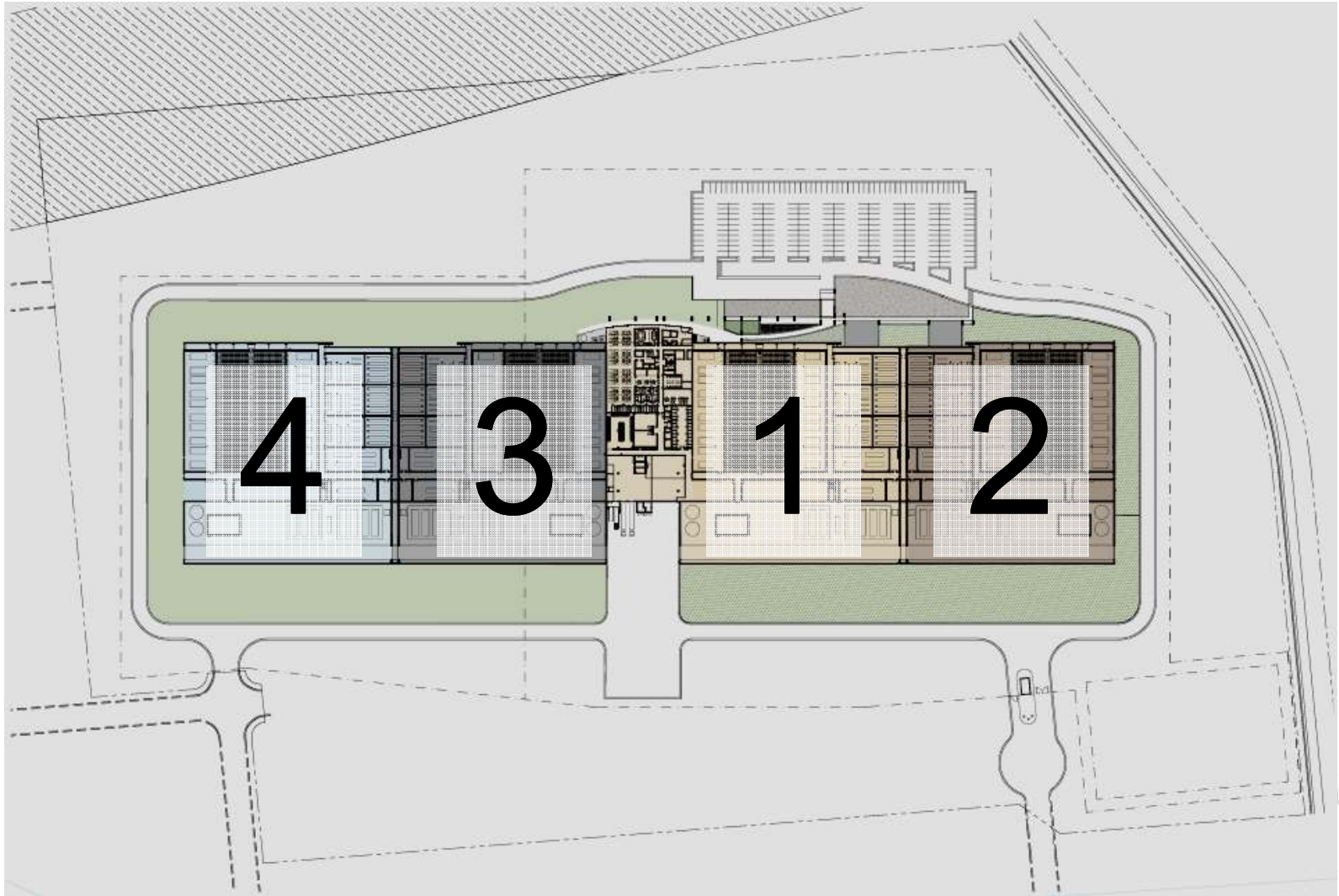


Building the Green Data Center

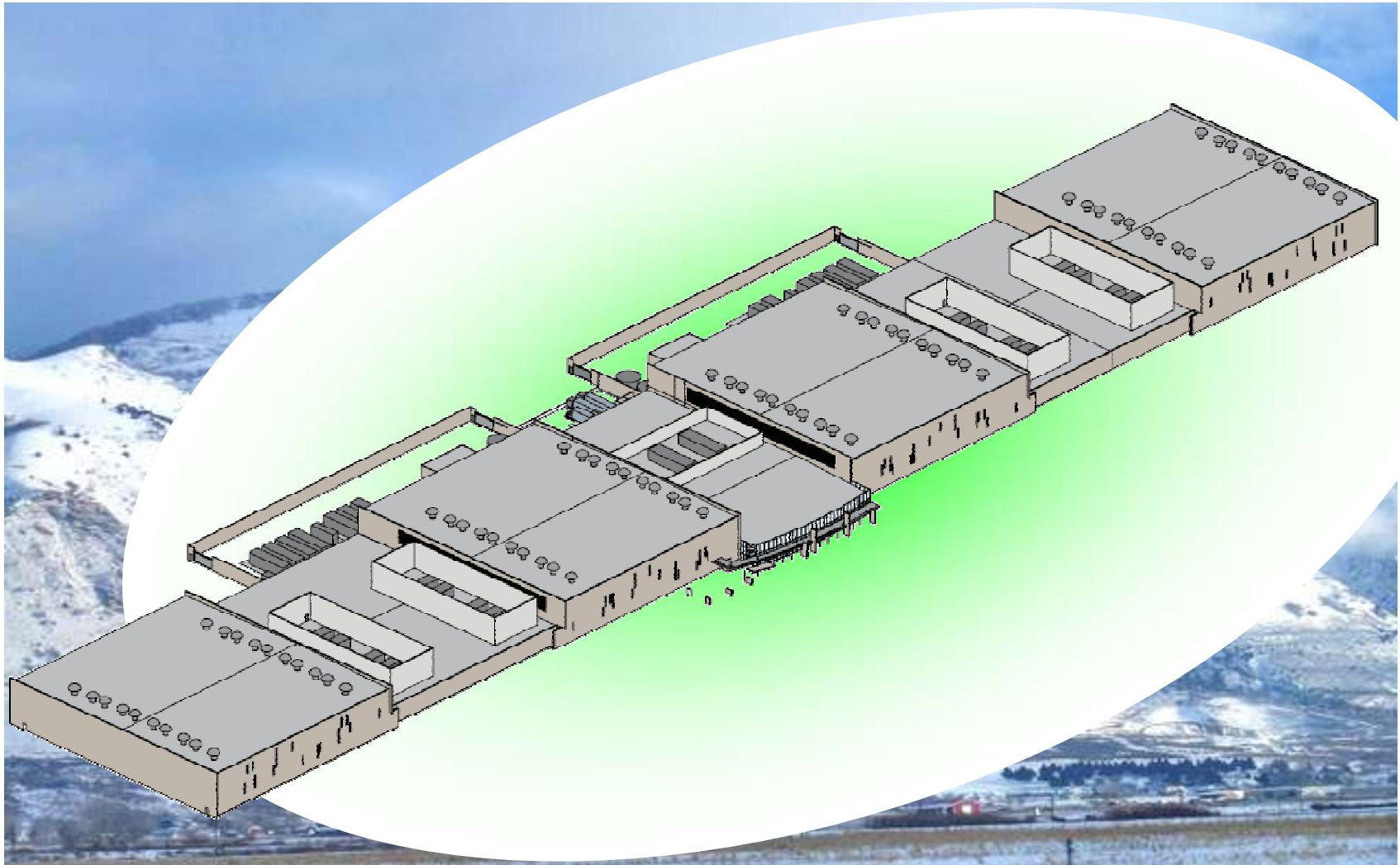
Project Sequoia: Oracle Utah Compute Facility



Project Sequoia Phased Expansion



Oracle Utah Compute Facility



Austin Data Center

Toward an Energy Efficient Benchmark

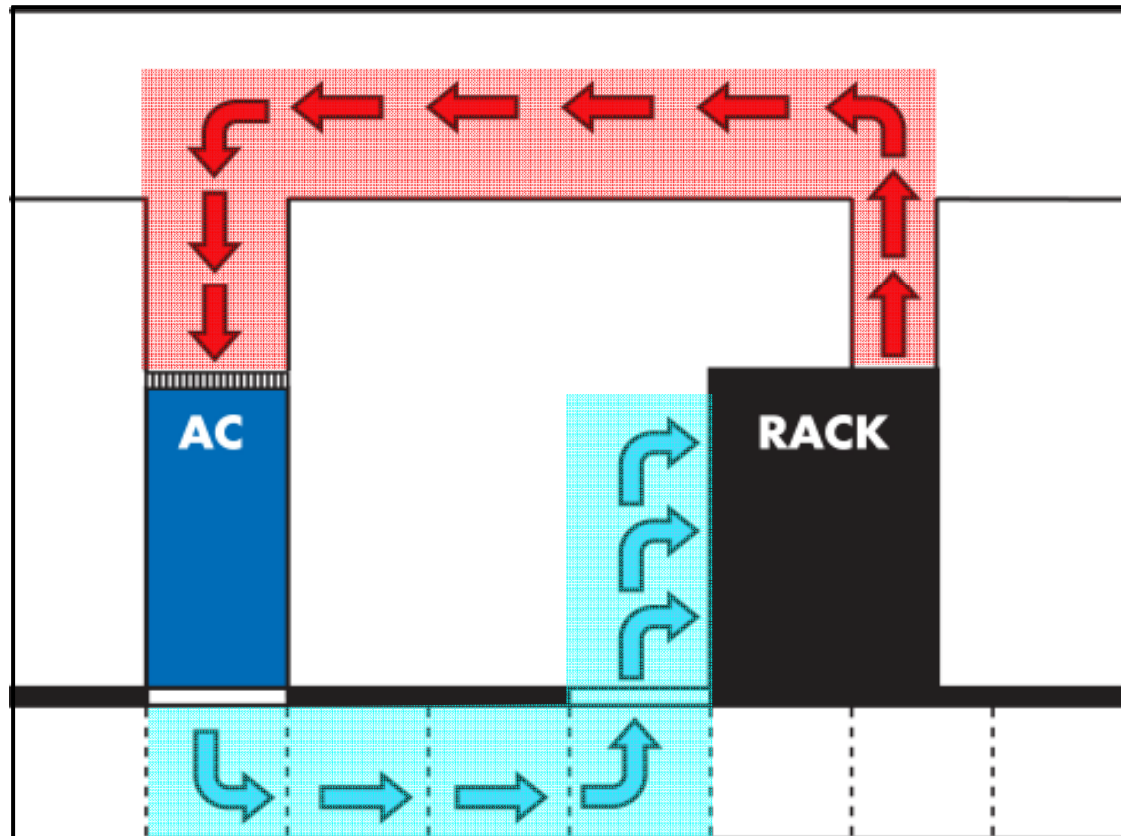
Energy usage reduced to
0.5kWh for each kWh of IT
equipment

Support energy 50% less
than industry average

6% of renewable energy



Rack Hot Air Enclosure

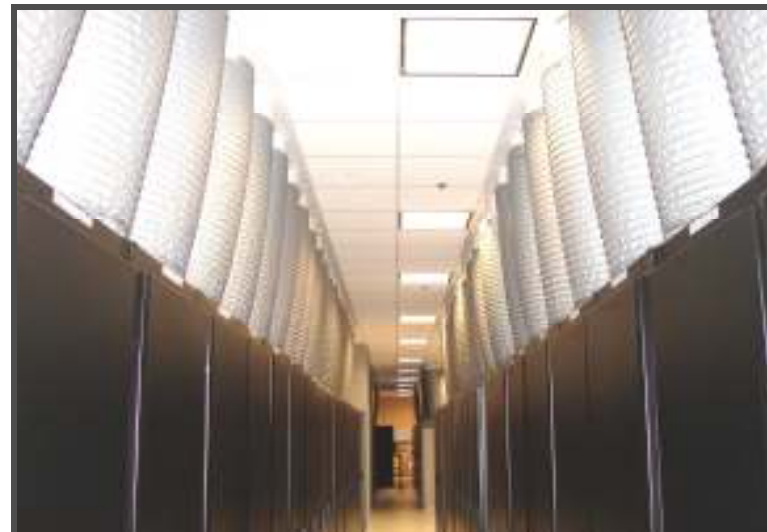
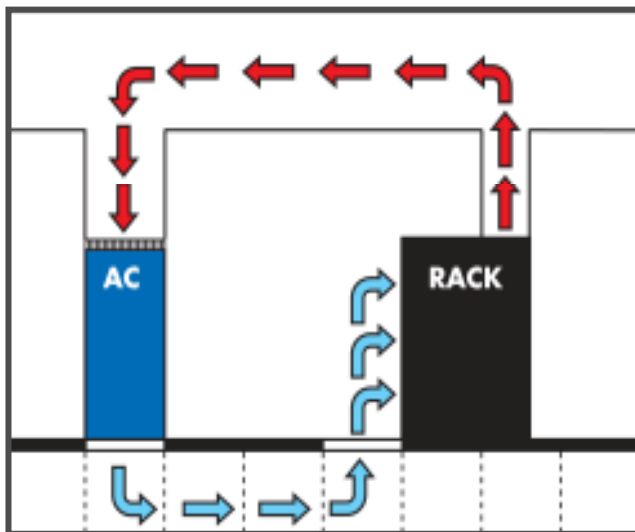


Isolate hot and cold air
Avoiding hot/cold air mixing

Rack Hot Air Enclosure at Oracle

Applied at Austin Data Center during expansion

- Eliminated excess air flow
- Permitted use of supply fan VFDs
- Supply air temperature raised to 68 F



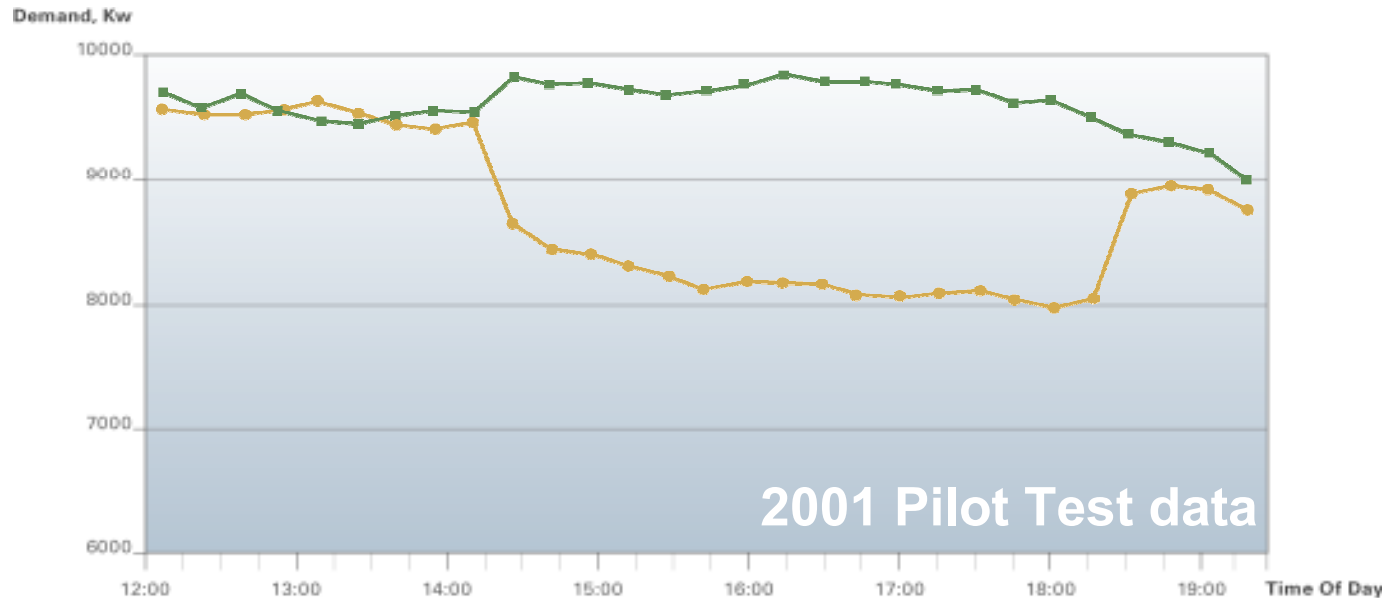
Project Sequoia Green Highlights



- Air Side Economizers
 - Maximize efficiency
 - 83% of the year will leverage outside air for cooling
- Overhead cooling with aisle containment
- Xeriscaping landscaping, minimize irrigation
- Recycled building content (steel, carpets, etc.)
- Local material focus to reduce transport costs
- Low emitting materials (low VOC)

Demand Response Programs

Helps stabilize power grid so no one loses power

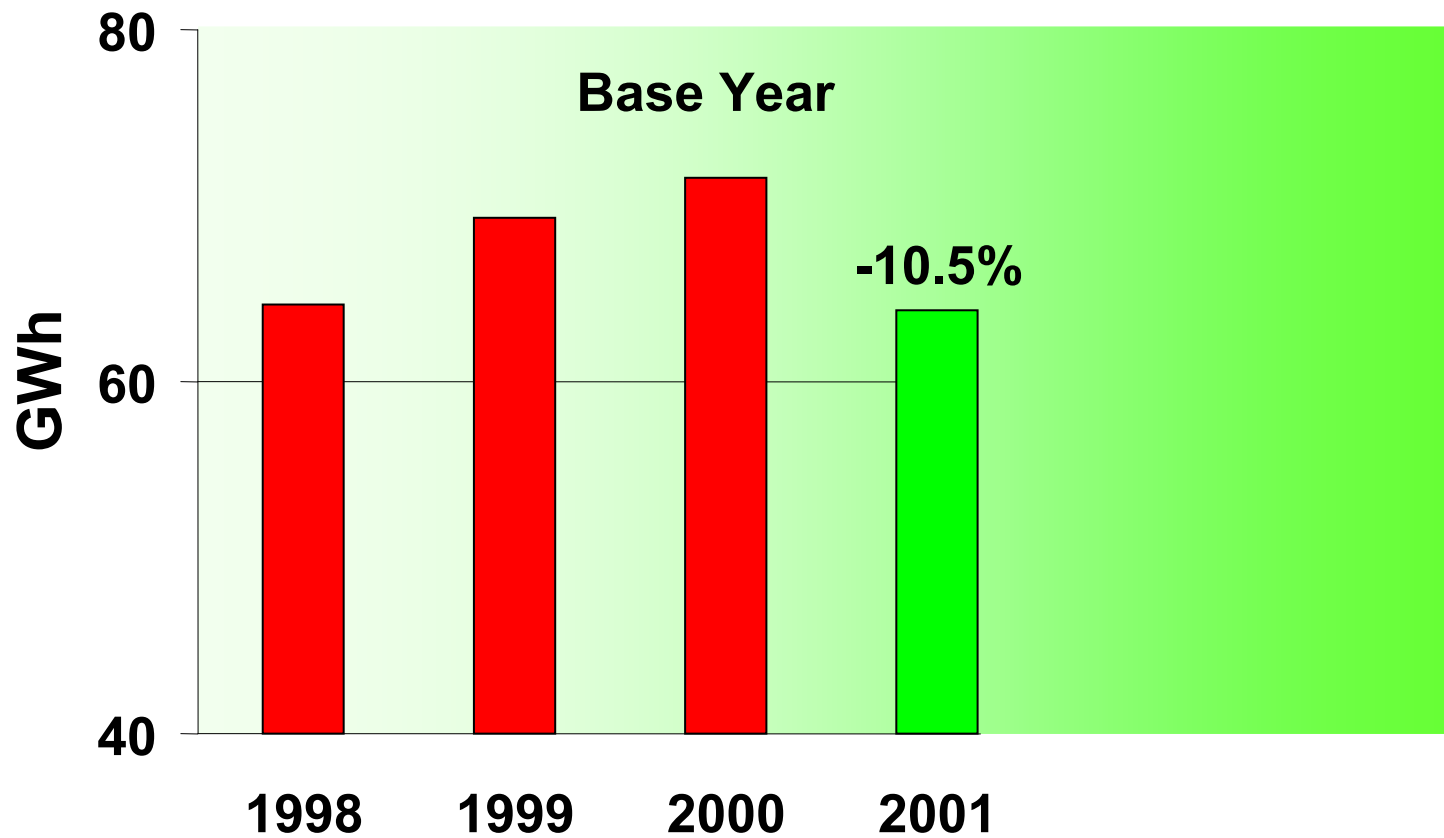


Oracle was among the first companies to demonstrate that power can be reduced during critical periods of short supply

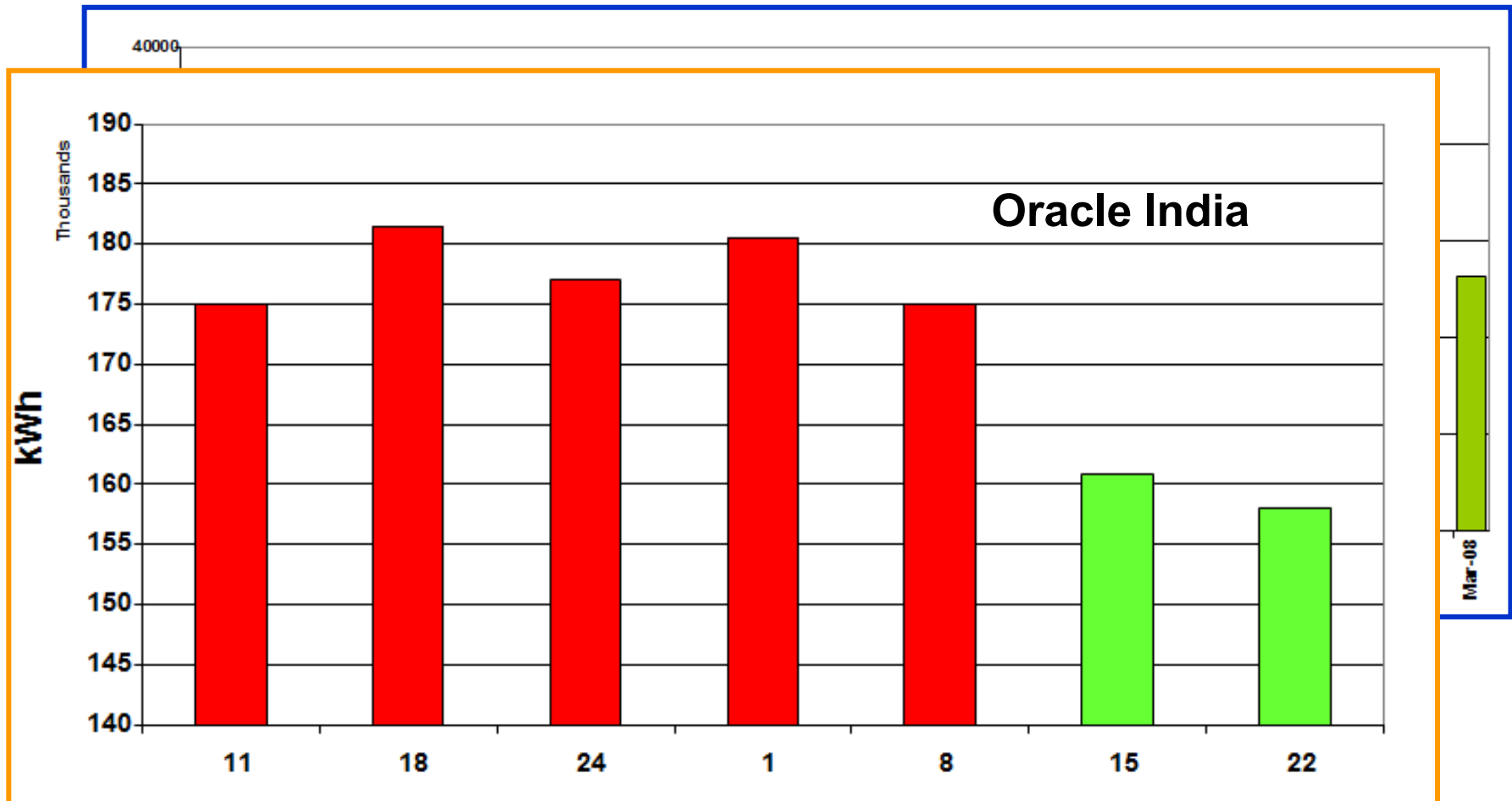


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Energy Efficiency Gains



Energy Efficiency Gains



U.S. EPA Climate Leaders Program



Requires

- Firm reduction commitment
- Third party verification of data
- Reporting of data



Oracle exceeded goals by 30% three years ahead of schedule!

Where do we go from here?



For Buildings

Top quartile of energy performance

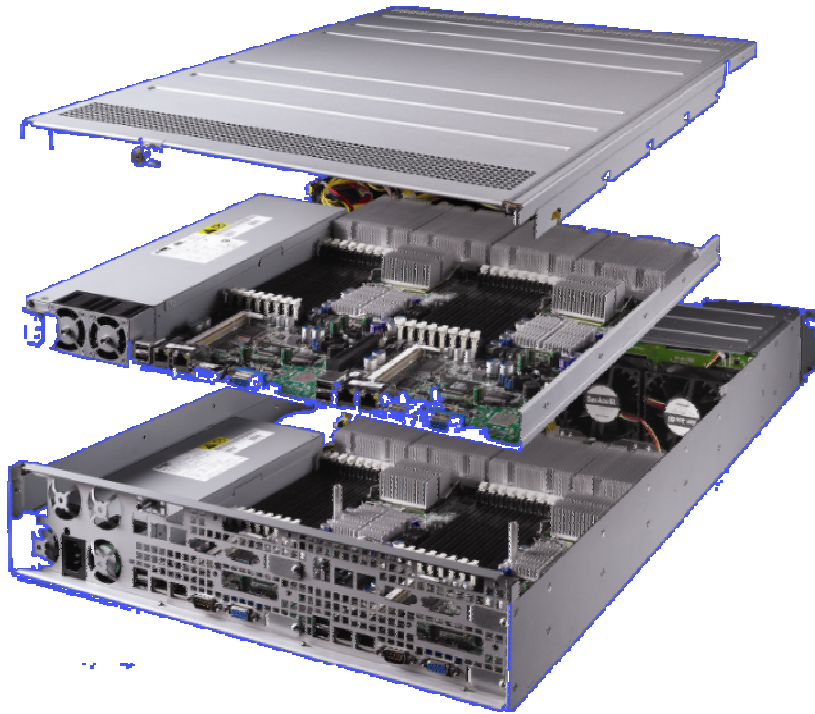
For Data Centers

Achieve a Support Power Ratio of 0.33 kW/kW

Long term goal: 0.25 kW/kW and below



Procurement



1.8 tons

of raw materials are used to
manufacture the average
desktop computer and monitor



Printers and Paper

Average office worker
prints 1,000 pages / month

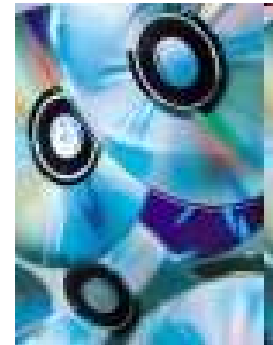
178 million printers and
copiers shipped in 2007

Gartner, 2008



7M per month pages saved by with duplex printing

Recycling



Approximately 71 tons of paper, cardboard, cans, bottles, and plastic are recycled each year at Oracle's California headquarters alone.

E-Waste

160M PCs disposed of in 2007
460,000 per day

It is estimated that 50% to 80%
of E-Waste collected in the U.S.
is exported to other countries



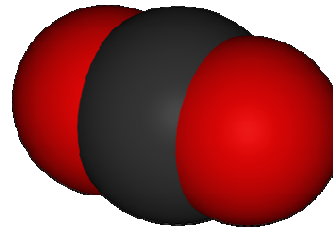
3.1M pounds of IT equipment disposed of over last 3 years
NONE of this equipment landfilled or shipped overseas

Travel Substitution



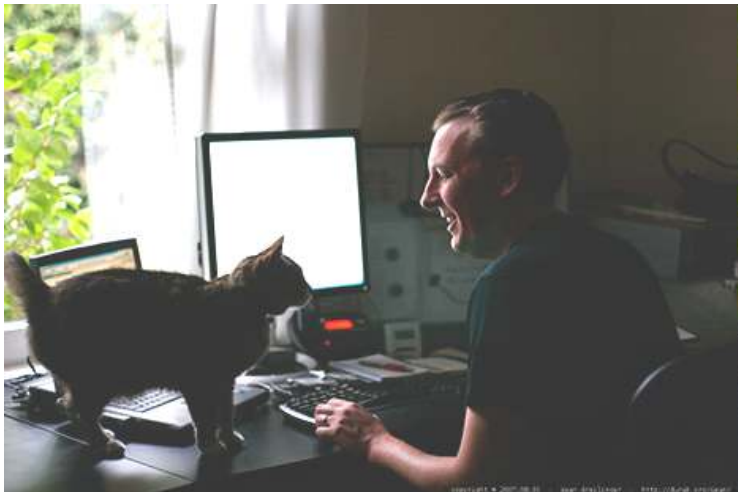
Telepresence Traffic

Web Conferencing
Security Link



CO₂

Flight Delays



A photograph of a large, modern classroom or training center. The room is filled with rows of white desks, each equipped with a computer monitor, keyboard, and mouse. The desks are arranged in a grid pattern, facing towards the front of the room. The walls are a vibrant red, and there are large windows on the left side. The ceiling is white with recessed lighting. In the foreground, a black rectangular box contains the Oracle University logo and statistics.

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UNIVERSITY

320,000 students trained per year
670 classes per week

ORACLE[®]

Case Study: Oracle University

With Grid:

- 1/6th the hardware
- CPU utilization increased from 7% to 73%
- Revenue per server increased 5X
- Servers to administrator ratio increased 10X




Electronic Student Kits

- Powerful search capability
- Color illustrations and text
- Active links within the document



Saves 100 million pages a year

Installing Oracle Service Registry



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Installing Oracle Service Registry

Oracle Service Registry is a Java EE application that can be installed into any Java EE-compliant container. The slide shows the Java command-line instruction that is used to start the installer. The installer requires the directory that contains the java executable to be included in the PATH environment variable:

```
java -jar oracle-service-registry-10.1.3.1.jar
```

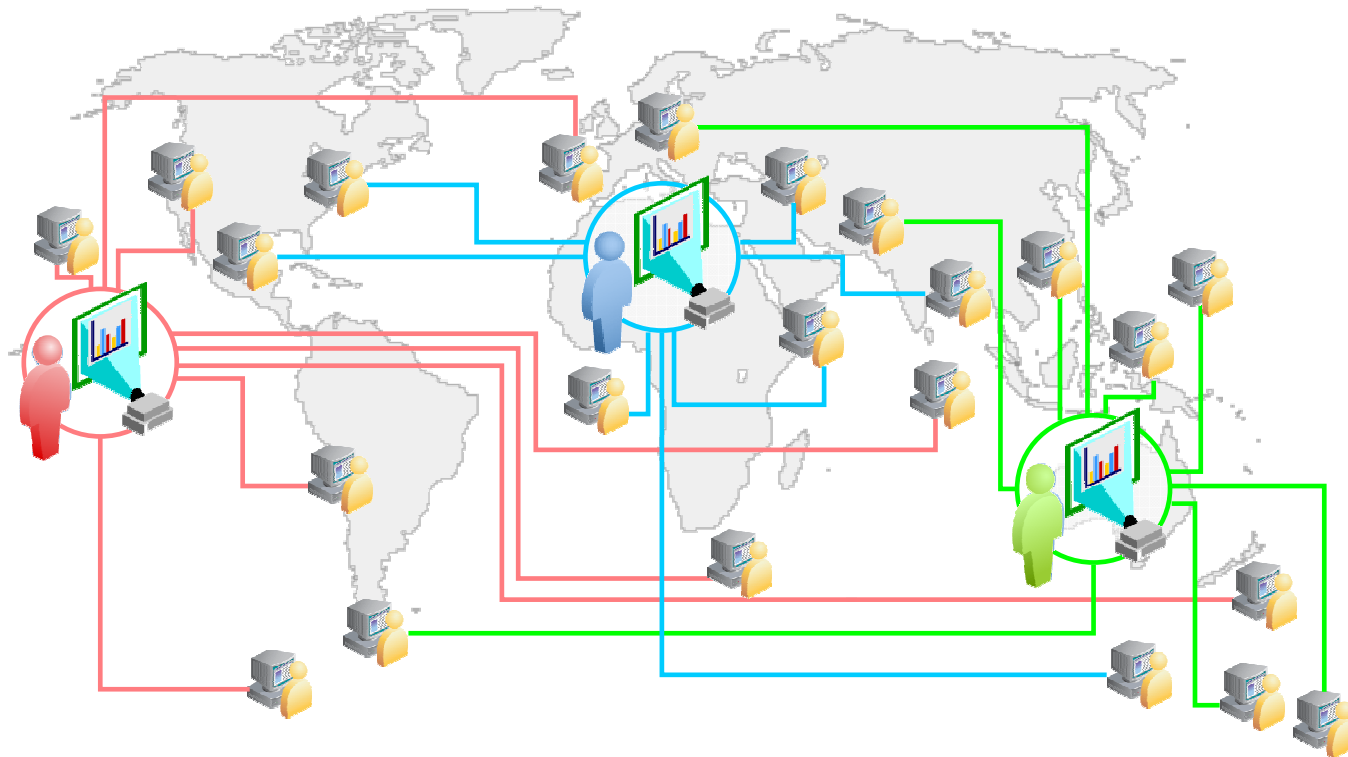
The slide also shows the Installation Type page on which you can select the Oracle Service Registry installation type. This Installation Type page appears just after the Welcome page. The installation type selected in the example is for a **Standalone registry**. This option creates a new stand-alone registry database.

Note: For more information about installation types, refer to the *Oracle Service Registry Installation Guide*.

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Oracle SOA Suite 10g: Services Orchestration 2-7

Live Virtual Class

Interactive online training with Oracle University Experts



- Saving travel costs
- Global reach

- Increased productivity
- Interactive



ORACLE®

DEVELOPMENT

20,000 Developers

Developing > 900 Products

Continuous Development and Test

ORACLE®

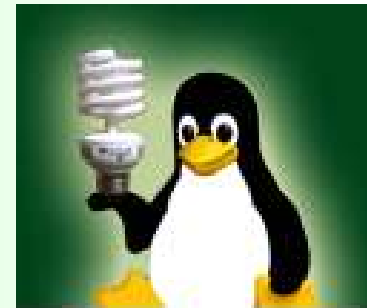
Server Refresh: Newer is Greener

Move Oracle primary development platform
from 32-bit Linux to 64-bit Linux

Reducing power by 1400kW

Reduce server counts
from 12,000 to 6,000

Rely heavily on Oracle VM and
Oracle Enterprise Linux.

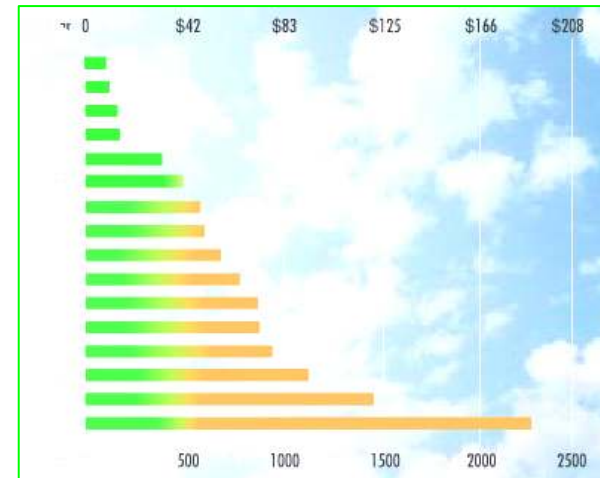


Next summer: Applications

Power Management



Oracle Enterprise Manager to manage power consumption of hardware



Limits each server to 380 watts or less

Supplies data to BI reporting

Performs workload orchestration

Desktop and Server Power Management

Institute power saving measures

- Turn off monitors
- Turn off hard drives
- Suspend laptops and desktops



Actively deploying thin clients



- Better management
- Improved Intellectual Property control
- Reduces power consumption from 80 watts for a typical desktop to 28 watts

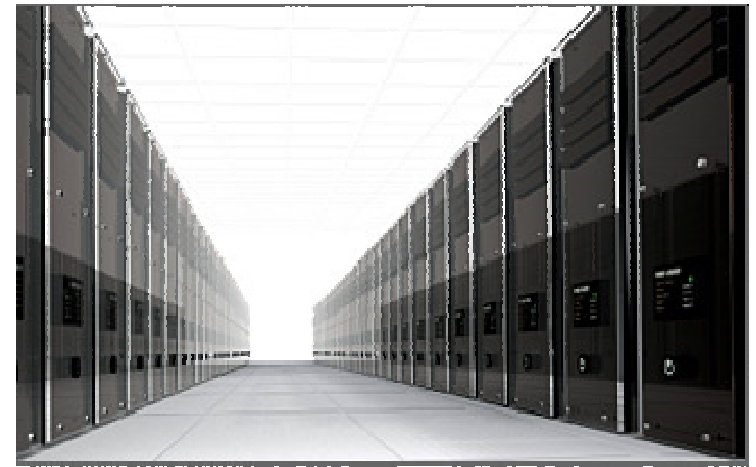
Data Center Consolidation

With Over 50 Acquisitions over last 4 years, lab and data center space has grown exponentially



2 year global consolidation plan

- One large 30,000 sq. ft. data center
- 38 smaller labs
- 5,000 servers
- Eliminate 42,000 sq. ft. of space
- Eliminate 1,000 kW of associated power



SOURCE: ISTOCKPHOTO



Green Education

Education program with Product Development

- Highlight power consumption by desktops, laptops, external hard-drives, desk lamps etc.
 - Random placement of inline power readers
 - Placement of e-posters that highlight device consumption
- Green e-Waste program
 - Install "green" e-Waste bins in lobbies

Building an **Eco-Advantage** with Oracle

Eco-Efficiency

- Optimize resource utilization
- Minimize carbon footprint



**Reduce Waste
& Cost**

Eco-Innovation

- Design green products
- Implement green processes



**Expand
Opportunity**

Eco-Transparency

- Protect business reputation
- Promote green brand



**Enhance &
Protect Brand**



AUSTRALIAN VINTAGE LTD



EMBRY-RIDDLE
AERONAUTICAL UNIVERSITY



Interface





Q&A

[illegible]

Examined By

Monday, September 22 through Thursday, September 25 (*Times Vary**)

Novellus Theater, Yerba Buena Center for the Arts

ORACLE®

Green Room Sessions: Monday September 22nd

- | | |
|----------|---|
| 11:30 am | Welcome to Green and the Green Data Center
Jeff Henley, Oracle; Mark Sunday, Oracle; Mukesh Khattar, Oracle |
| 1:00 pm | How Green Is Your House?
Steve Nunn, Accenture |
| 2:30 pm | Best Practices for Green Enterprises
Tod Arbogast, Dell; Mike Boyack, XEROX; Bill Morrissey, Clorox
Wendy Pulling, PG&E; Bruce Sanchez, Oracle |
| 4:00 pm | Local, State, and Federal Government and Agencies on Going Green
A Panel on Managing Sustainability Initiatives with Will Semmes, State of California; John Katz, Pollution Prevention Coordinator, US EPA Region 9; Chuck Reed, Mayor of San Jose California; Mary Manross, Mayor of Scottsdale, Arizona |

Green Room Sessions: Tuesday September 23rd

- | | |
|----------|---|
| 8:00 am | Championing Sustainability in Your Company
Nicola Acutt, Presidio School of Management; Steve Attinger, City of Mountain View; Jen Beauchamp, Mattel; Jamie Simon, Red Bull |
| 9:00 am | Empowering a Green Enterprise with Oracle Applications
Ed Abbo, Oracle Corporation |
| 11:30 am | How California and Its Businesses Lead the Nation and the World on Going Green
California State Treasurer, Bill Lockyer |
| 1:00 pm | Drivers of Change
Hunter Lovins, Natural Capitalism Solutions |
| 5:00 pm | The Great Debate: Economy or Environment
James E. Hartzfeld, InterfaceRAISE, LLC; Randy Hayes, Rainforest Action Network; Hunter Lovins, Natural Capitalism Solutions; Bonnie Nixon, Hewlett Packard; Rob Six, Fiji Water; Thomas C. Baloga, Vice President, Engineering, BMW of North America, LLC |

Green Room Sessions: Wednesday September 24th

- | | |
|-----------------|--|
| 8:00 am | Top 10 Things to Do to Green Your Life and Save Money
Jay Haynes, Presidio MBA |
| 9:00 am | Do You Really Need to Print That Document?
Cindy Bixler, Embry Riddle; Brian Dirking, Oracle ; Nancy Richards, Swedish Medical Center; Scott Robertson, Fairview Health Services |
| 11:30 am | The Green Enterprise: Enabling Eco-Advantage with Oracle Applications
Jon Chorley, Oracle; Lenley Hensarling, Oracle; Rich Kroes, Oracle; John O'Rourke, Oracle; Russell Stohr, Oracle; Daniel Esty, Yale University |
| 1:00 pm | Innovation for Sustainability, with Dan Esty
Daniel Esty, Yale University |
| 5:00 pm | Digitizing Corporate Ecosustainability Metrics in Support of GE Ecomagination
R Mukund, GE |

Green Room Sessions: Thursday September 25th

- | | |
|----------|---|
| 8:00 am | Treading Lightly on the Planet--How to Reduce Your Carbon Footprint
Jason Smith, LiveNeutral |
| 9:00 am | Building a Sustainable Business: A Contrarian View
Frank Buytendijk, Oracle |
| 10:30 am | The Future of Conservation
M.A. Sanjayan, Ph.D, The Nature Conservancy |
| 1:30 pm | Big Red Going Green: What Oracle Is Doing to Become a More Sustainable Enterprise
Paul Salinger, Oracle
Phyllis Davidson, Oracle |
| 2:30 pm | Eco-Best Practices Among the Global 500 Corporations
Dr. Ram Nidumolu, Corporate Eco Forum |

