

Appendix A

Green IT-Related Web Sites

This appendix covers web sites related to energy-related topics including green IT. The web sites may be related to green in a direct or indirect way. A direct example is The Alliance to Save Energy (ASE) at www.ase.org. An indirect example is SQLCAT at www.sqlcat.com which covers, among other topics, SQL Server consolidation which is related to consolidation and green IT but also covers other topics.

The web sites are presented in no particular order. These are sites I've visited over the years that have useful information about saving power, sustainability, IT-related savings, and a variety of other green-related topics.

SQLCAT Covering SQL Server Topics

www.sqlcat.com is a web site covering SQL Server related topics including SQL Server consolidation and optimization which could potentially result in more efficient SQL Server implementations and thereby reduce hardware and save energy. This web page is organized with the following main areas:

- Top 10 Lists
- Blog

- Technical Notes
- White Papers
- Toolbox

Energy Star for Office Equipment, Green Buildings, and Other Topics

Among the business-related topics covered at www.energystar.gov are office equipment and building considerations. The computers section under office equipment covers some of the power management topics I cover in the simple green chapter. The following are some areas of particular interest:

- Computers
- Copiers and Fax Machines
- Digital Duplicators
- Enterprise Servers
- Monitors and Displays
- Printers, Scanners, and Faxes
- Development of a green building policy
- Rating Building Energy Performance
- Facility Energy Assessment Matrix
- Guidelines for Energy Management
- Building Design Guidance Checklist

Recovery Act Web Site Including Green Projects

The official web site of the U.S. government's Recovery Act is www.recovery.gov. This web site covers all aspects of Recovery Act spending. A search of "green" on the web site reveals the many green-related projects that are part of the Act:

- Energy efficient vehicles

- Public building green initiatives
- Enhanced energy independence

Find and Apply For U.S. Government Grants

www.grants.gov is the web site to apply for an find U.S. government grants. This site is run by the U.S. Department of Health and Human Services. Searching for "green" on this web site reveals several green-related grants including the following:

- Public transportation research
- Green retrofit of existing housing
- Healthy homes-related study
- Numerous conservation-related studies

Measuring Data Center Efficiency

The Green Grid focuses on all aspects of data center efficiency at **www.thegreengrid.org**. The group consists of IT companies focusing on data center efficiency. The focus is on topics such as metrics, processes, methods, and technologies to achieve efficiency goals. Among the most important contributions of The Green Grid are Power Usage Effectiveness (PUE) and Data Center Infrastructure Efficiency (DCIE) metrics. PUE has gained increased adoption as a means of measuring data center efficiency. In order to improve data center efficiency you have to be able to measure it and these metrics assist in determining efficiency. The following are some interesting topics on the web site at www.greengrid.org:

- A white paper on PUE and DCIE
- Measuring the equipment in the data center
- Measuring the data center as a facility
- Many tools peculiar to geographies such as Japan an Europe
- Information about the annual Green Grid Forum
- Tools that can be downloaded to measure data center power usage

- A data center design guide
- A list of board members working together for green endeavors

U.S. Green Building Council (USGBC)

The U.S. Green Building Council (USGBC) is devoted to all things related to green buildings at www.usgbc.org. Among the topics on this web site are the following:

- Certify a green building
- Reduce waste
- Conserve Energy and water
- Reduce emissions
- Qualify for tax rebates

Leadership in Energy and Environmental Design (LEED)

The U.S. Green Building Council (USGBC) developed a framework for green building related endeavors called LEED (Leadership in Energy and Environmental Design.) It is a certification system built around energy savings, water efficiencies CO₂ emission reduction, improved indoor environmental quality, and other related green topics at www.usgbc.org/DisplayPage.aspx?CategoryID=19. Some of the topics include the following:

- The LEED rating system
- Green building research
- Chapters of this organization
- LEED case studies

The Uptime Institute

The Uptime Institute web site at www.uptimeinstitute.org has a wealth of information on it including many documents that cover the details of the tiers of data centers including the following:

- Tier I is composed of a single path for power and cooling without redundant components that provides 99.671% availability
- Tier II is a single path for power and cooling distribution with redundant components providing 99.741% availability
- Tier III has multiple active power and cooling paths but only one active path with redundant components providing 99.982% availability
- Tier IV has multiple active power and cooling paths with fault tolerance providing 99.995% availability

American Society of Heating Refrigerating and Air Conditioning Engineers (ASHRAE)

ASHRAE is an organization that focuses on heating, ventilation, air conditioning, and refrigeration. ASHRAE performs research, writes standards, publishes, and trains on their core topics. You can get lost at www.ashrae.com with all the great material on the site. As an example the following is a partial list of special projects you can review:

- Advanced Energy Guide
- Indoor Air Quality
- Commercial Aircraft Air Quality
- Carbon Emissions Calculation Tools
- Performance Measurement Protocols
- Hot and Humid Climate Design Guide

Carbon Footprint Calculation

The Nature Conservancy web site has a lot of useful information on it including a carbon footprint calculator at www.nature.org/initiatives/climate_change/calculator. The output gives a rough estimate of your buying and waste total and greenhouse gas emissions. When using the calculator you enter information such as the following:

- The number of people in your household
- The type of home in which you live
- Steps you have taken to improve efficiency
- The geography in which your home is located
- Information about your vehicles, maintenance, and driving habits
- Travel information such as flying

Department of Energy (DOE)

www.energy.gov covers the mission of the DOE including the following list of key areas on the web site:

- Energy security
- Nuclear security
- Scientific discovery and innovation
- Environmental responsibility
- Management excellence

Under the Science and Technology heading is information on the following topics:

- Research and Development
- Supply of radio isotopes
- Research in environmental science

Association For Computer Operations Management (AFCOM)

www.afcom.org is a jumping point to web sites that have material on data center management. Among the useful information on this web site is the following:

- Top rated data centers
- Data center relocation
- Data center education
- Co-location facilities
- Data center monitoring
- Data center migration
- Data center curtains which are barriers for cooling only the part of the data center you want to cool

Alliance to Save Energy (ASE)

www.ase.org has information on it related to saving energy in general. Some information on the web site of particular interest at the time of this writing are the following:

- Information for energy professionals on products and practices
- Information on federal loan guarantees for buildings that are retrofitted using Property Assessed Clean Energy (PACE) bonds.
- Hybrid and diesel tax credits
- Geothermal heat pumps, solar energy, and fuel cell information
- Driving smarter contest

Hewlett-Packard Information on Green

Hewlett Packard has information on many different areas of green. A link of particular interest is related to small and medium business topics at

www.hp.com/sbso/solutions/pc_expertise/energy-efficient-computing.html?jumpid=hpr_R1002_USEN which includes the following information:

- Trading in old an inefficient equipment
- Recycling programs
- Returning or donating old PCs
- Electronic Product Environmental Assessment Tool (EPEAT) for evaluating electronics
- Efficient power supplies and the advantages of efficient conversion of AC to DC power

Microsoft Technet and Green

Microsoft has produced a lot of information on green. One informative document in particular is the paper "Build a Green Datacenter" at <http://technet.microsoft.com/en-us/magazine/2009.gr.datacenter.aspx> which has the following information in it:

- Energy monitoring systems
- Essentials of a green data center
- Best practices for getting started

CDI Green Material

My company web site at www.cdillc.com/Green/Greener_index.html has a green section on it which contains information in this book, updated information, and various other green information including the following:

- A simple calculator for G6 servers whereby you enter how many old servers you have, such as G2, and the calculator gives you an estimate of the number of G6 servers that act as a replacement
- A simple green presentation
- New green material that will appear in the next revision of this book