Energy Readings AU 2010

Overall Energy

Energy Story California Energy Commission http://www.energyquest.ca.gov/story/index.html

Mother Jones May/June 2008 issue devoted to energy. http://www.motherjones.com/toc/2008/05

Statistical Review of World Energy 2010 -- BP Reports and Publications
http://www.bp.com/productlanding.do?categoryId=6929&contentId=7044622
By Energy Type http://www.bp.com/multipleimagesection.do?categoryId=9023754&contentId=7044554
[Be sure to review the slide shows for each energy type.

Annual Energy Outlook 2010 with Projections to 2030 http://www.eia.doe.gov/oiaf/aeo/index.html

U.S. Energy Information Administration – Everything you want to know about all types of energy sources
http://www.eia.doe.gov/

Fuel and Energy Source Codes and Emission Coefficients
http://www.eia.doe.gov/oiaf/1605/coefficients.html

Energy flow charts show the relative size of primary energy sources and end uses in the United States.
https://publicaffairs.llnl.gov/news/energy/energy.html

U.S. Overview and State Energy Profiles U.S. Energy Information Administration **[Amazing amount of information at the state level.]** http://tonto.eia.doe.gov/state/index.cfm

Energy Information Administration/State Electricity Profiles This report profiles the electricity generation of each State, with statistics from 2006. Data are presented for a number of areas including generating capability, electricity generation, fuel use, retail sales, nuclear power, capacity factor, and pollutant emissions. http://www.eia.doe.gov/cneaf/electricity/st_profiles/e_profiles_sum.html

Reinventing Fire – Rocky Mountain Institute (RMI) http://www.rmi.org/rmi/ReinventingFire

Clean Energy -- Union of Concerned Scientists http://www.ucsusa.org/clean_energy/

Public Policy

Energy Subsidies Favor Fossil Fuels Over Renewables Environmental Law Institute (ELI)
http://www.eli.org/Program_Areas/innovation_governance_energy.cfm

Energy Subsidies Black, Not Green [Graphic of U.S. Federal energy subsidies 2002-2008.]
http://www.eli.org/pdf/Energy_Subsidies_Black_Not_Green.pdf

Perverse Incentives: The Untold Story of Federal Subsidies to Fossil Fuels, Environmental Law Institute, Woodrow Wilson International Center for Scholars, September 18. 2009
http://wilsoncenter.org/events/docs/ELI_event.pdf

Renewables

Low Carbon Energy: A Roadmap – Christopher Flavin, Worldwatch Institute, 2008
http://www.worldwatch.org/press/prerelease/EWP178.pdf

Unleash the Future, Environmental Defense Fund text and videos on new renewable energy sources.
http://www.edf.org/page.cfm?tagID=22080

Renewable Energy World http://www.renewableenergyworld.com/rea/home

Today's Alternative Energy—Promising technologies to wean the world from fossil fuels, including offshore wind, solar, geothermal and hydrogen cars, among others Scientific American Online
http://www.sciam.com/report.cfm?id=alternative-energy

The Power of Renewables; March 2009; Scientific American Magazine; by Matthew L. Wald; 6 Page(s)
Renewable energy, such as from photovoltaic electricity and ethanol, today supplies less than 7 percent of U.S. consumption. If we leave aside hydroelectric power, it is under 4.5 percent. Globally, renewables provide only about 3.5 percent of electricity and even less of transportation fuels. But increasing that fraction for the U.S.—as seems necessary for managing greenhouse gases, trade deficits and dependence on foreign suppliers—has at least three tricky components. The obvious one is how to capture the energy of wind, sun and crops economically. After that, the energy has to be moved from where it is easily gathered, such as the sunny American Southwest or the windy High Plains, to the places it can be used. And the third is to convert it into convenient forms. Most prominently in the last category, electricity for transportation has to be loaded into cars and trucks, either through batteries or perhaps as hydrogen.

The Renewable Energy Policy Network for the 21st Century (REN21) is a global policy network that provides a forum for international leadership on renewable energy. Its goal is to bolster policy development for the rapid expansion of renewable energies in developing and industrialised economies.
http://www.ren21.net/default.asp

Renewables 2010 Global Status Report – REN21 http://www.ren21.net/globalstatusreport/g2010.asp

International Renewable Energy Agency (IRENA) IRENA aims at becoming the main driving force in promoting a rapid transition towards the widespread and sustainable use of renewable energy on a global scale. Acting as the global voice for renewable energies, IRENA will provide practical advice and support for both industrialized and developing countries, help them improve their regulatory frameworks and build capacity. The agency will facilitate access to all relevant information including reliable data on the potential of renewable energy, best practices, effective financial mechanisms and state-of-the-art technological expertise. http://www.irena.org/home/index.aspx?mnu=hom

U.S. Department of Energy- Energy Efficiency and Renewable Energy Network (EREN) – **Energy Information Portal** -- Includes information about energy and technology. Also, contains the newsletter, subscriptions, and links to other resources; consumers, environment, kids, education, small business, etc.
http://www.eere.energy.gov/

10 Everyday Technologies That Can Change the World Who knew that providing energy and water for all could be a matter of foot cranks and dirt power? by Karen Rowan; extra reporting by Andrew Grant published online September 8, 2008, Discover http://discovermagazine.com/2008/oct/08-10-everyday-technologies-that-can-change-the-world/

Greenlight Planet is combining cutting-edge technology with innovative distribution networks to commercialize low-power LED lanterns. The new lights are bright, long-lasting, and practical. But more importantly, they are affordable enough that villagers can purchase them immediately in cash, meaning the technology can profitably scale to help hundreds of millions. http://www.greenlightplanet.com/

Wind

Picken's Plan http://www.pickensplan.com/theplan/

See also USEIA, and Renewables section above

Solar

SkyFuel -- As a solar thermal energy supplier, SkyFuel designs, delivers and operates the solar field up to the heat exchanger that generates steam for the power block. Our two thermal Concentrating Solar Power (CSP) technologies, SkyTrough™ (parabolic trough) and Linear Power Tower™ (linear Fresnel) employ arrays of reflectors that focus 50-100 times the Sun's normal radiation onto heat-absorbing pipes. This creates clean, renewable solar-generated steam that can be used for electric power generation or industrial processes. **[Be sure to watch video]** http://www.skyfuel.com/

Solar Cookers Archives: Sponsored by Solar Cookers International the Solar Cookers Archives offer simple instructions to build your own solar oven, some fun recipes to try out and adventurous experiment for all ages. (English site but online translation available through AltaVista/babelfish service)
http://solarcooking.org/
http://solarcooking.wikia.com/wiki/The_Solar_Cooking_Archive_Wiki

A Solar Grand Plan; Scientific American, January 2008, p. 64-73; by Ken Zweibel, James Mason and Vasilis Fthenakis; 10 Page(s). An ambitious scheme would enable solar power to end U.S. dependence on foreign oil and slash greenhouse gas emissions by 2050.
http://www.sciamdigital.com/index.cfm?fa=Products.ViewIssue&ISSUEID_CHAR=B64BB284-3048-8A5E-1062ECCCB570ABE8

Tucson Electric Power currently has 4.6MW of solar at the Springerville Generating Station Solar System (SGSSS) in northeastern Arizona. This site generates enough electricity to power 727 homes annually. The SGSSS is the most productive photovoltaic array in Arizona. [Site refreshes every two minutes for almost-real-time performance data.] http://www.tep.com/Green/GreenWatts/solaroutput.asp

WORLD PV INDUSTRY REPORT SUMMARY 2010 Solarbuzz Reports World Solar Photovoltaic Market Grew to 7.3 Gigawatt in 2009 (*revised to 7.5 GW in June 2010)*
http://www.solarbuzz.com/Marketbuzz2010-intro.htm

Wave/Tidal

The Ocean Energy Council http://www.oceanenergycouncil.com/

Tidal Power in the UK http://www.sd-commission.org.uk/pages/tidal-power.html

Finavera Renewable's Offshore Plants consist of patented wave energy converters that are based on proven, survivable buoy technology. Clusters of these small, modular devices called AquaBuOYs are

moored several kilometers offshore where the wave resource is the greatest.
http://www.finavera.com/en/wavetech

Tidal Power http://home.clara.net/darvill/altenerg/tidal.htm

Alternative Energy and Alternate Use Guide An introduction to ocean energy resources, the Outer Continental Shelf, offshore renewable energy technologies, with photos, maps, and links.
http://ocsenergy.anl.gov/guide/index.cfm

Verdant Power's ***Free Flow*** **Kinetic Hydropower System** is a renewable energy technology that uses axial-flow turbines deployed underwater to convert the kinetic energy of tides and rivers into electricity. The Free Flow System is installed fully underwater and operates automatically and invisible from shore. The system does not require dams, impoundments or major civil works, and does not redirect the natural flow of the water. Simple and modular in design, Free Flow Systems can be scaled in unit size and number to generate clean energy in a wide range of sites worldwide. [online animations]
http://verdantpower.com/what-systemsint
Video of the installation of Verdant Power's first tidal turbine http://www.verdantpower.com/what-initiative

Fuel Cells

How Fuel Cells Work http://www.ballard.com/About_Ballard/Resources/How_Fuel_Cells_Work.htm
Video http://www.ballard.com/files/How_Fuel_Cells_Work.wmv

Geothermal/Ocean Thermal

Ocean Thermal Energy Conversion, World Watch, May/June, 2009

Ocean Thermal Energy Conversion (OTEC),
http://www.energysavers.gov/renewable_energy/ocean/index.cfm/mytopic=50010

Geothermal energy, Working Knowledge: Heating Up; Scientific American, October 2007, pp. 108-9; by Mark Fischetti; 2 Page(s)
http://www.sciamdigital.com/index.cfm?fa=Products.ViewIssue&ISSUEID_CHAR=E0C330CD-3048-8A5E-10EBF483808010BE

US Geothermal Projects and Resource Areas -- clickable maps http://geoheat.oit.edu/dusys.htm

Geothermal Electricity National Renewable Energy Laboratory (NREL), The Department of Energy's (DOE) Geothermal Energy Program http://www.nrel.gov/learning/sr_geo_elec_production.html

Geothermal Loop Systems for Residential Heat Pumps (horizontal, vertical, lake, and open loop)
http://www.climatemaster.com/index/res_geo_loops

The AC of Tomorrow? Tapping Deep Water [deep lake] for Cooling, Julian Smith for National Geographic News, September 10, 2004
http://news.nationalgeographic.com/news/2004/09/0910_040910_deeplake.html

Best Practice: Deep Lake Water Cooling System New York City Global Partners
http://www.nyc.gov/html/unccp/gprb/downloads/pdf/Toronto_DLWC.pdf

Storage

Vanadium Batteries—The Element That Could Change the World – Making green energy work may depend on three unlikely heroes: an Australian engineer, a battery, and the element vanadium., by Bob Johnstone, published online September 29, 2008 Discover Magazine.
http://discovermagazine.com/2008/oct/29-the-element-that-could-change-the-world

The Cellennium (Thailand) Company Limited is the sole licensee to commercialize in Thailand a number of new inventions associated with **vanadium fuel cells**. These inventions are owned by Squirrel Holdings Limited and are protected by patents or by applications for patents worldwide. The new inventions provide efficient and low cost methods for electricity storage and conversion of DC and AC inputs and outputs.
http://www.vanadiumbattery.com/

Energy Storage Systems, Sandia National Laboratories,U.S. Department of Energy
http://www.sandia.gov/ess/Technology/technology.html

Coal

iLoveMountains.org Local, state, and regional organizations across Appalachia are working together to end mountaintop removal and create a prosperous future for the region. Through iLoveMountains.org, 7 grassroots organizations from 5 Appalachian states have come together to use cutting edge technology to inform and involve Americans in their efforts to save the mountains. http://www.ilovemountains.org/

Appalachian Voices http://appvoices.org/

The Future of Coal: An Interdisciplinary MIT Study (Summary Report) [Overall Report]
http://web.mit.edu/coal/] http://web.mit.edu/coal/The_Future_of_Coal_Summary_Report.pdf

Liquid Coal Fact Sheet, Friends of the Earth
http://action.foe.org/dia/organizationsORG/foe/content.jsp?content_KEY=3202

Coal Gasification diagram The Dakota Gasification company has signed an agreement with PanCanadian Petroleum Limited to sell and ship carbon dioxide to oil fields in Saskatchewan, Canada. DGC is studying other CO_2 markets in the United States as well. Production capacity is in excess of 200 million standard cubic feet per day. http://www.dakotagas.com/Gasification/Gasification_Process/index.html

Nuclear

Nuclear Power: Climate Fix or Folly? Amory B. Lovins, Imran Sheikh, and Alex Markevich
This 15-page January 2009 update and expansion of "Forget nuclear" in RMI's Spring 2008 Solutions Newsletter adds the latest data, expands the discussion of capital-cost escalation, and includes June 2008 cost comparisons by preeminent financial advisors Lazard. It summarizes why nuclear power cannot in principle deliver the climate-protection or energy-security and reliability benefits claimed for it. (January 2009), Rocky Mountain Institute http://www.rmi.org/rmi/Library/E09-01_NuclearPowerClimateFixOrFolly

Nuclear Power in a Warming World Union of Concerned Scientists
http://www.ucsusa.org/global_warming/solutions/nuclearandclimate.html
http://www.ucsusa.org/assets/documents/nuclear_power/nuclear-power-in-a-warming-world.pdf

Methane

Coalbed methane development in the intermountain west: primer Ecos Consulting
http://www.colorado.edu/Law/centers/nrlc/CBM_Primer.pdf

Natural Gas Reforming – EERE
http://www1.eere.energy.gov/hydrogenandfuelcells/production/natural_gas.html

Hydrogen from Natural Gas and Coal: The Road to a Sustainable Energy Future OFFICE OF FOSSIL ENERGY - HYDROGEN PROGRAM PLAN HYDROGEN COORDINATION GROUP, JUNE 2003, US Dept. of Energy [good explanations of processes]
http://www.fossil.energy.gov/programs/fuels/publications/programplans/2003/fehydrogenplan2003.pdf

10 Ways Methane Could Brake Global Warming—or Break the Planet, The enigmatic gas is a valuable fuel and a dangerous digestive waste product. by Susannah Locke, published online *Discover* July 4, 2008
http://discovermagazine.com/2008/aug/04-10-ways-methane-could-brake-global-warming?utm_campaign=DISCOVER%20Magazine%20Environment%20Newsletter%2007%2E21%2E08&utm_content=jvann@bsu.edu&utm_medium=Email&utm_source=VerticalResponse&utm_term=10%20Ways%20Methane%20Could%20Brake%20Global%20Warming--or%20Break%20the%20Planet
How Natural Gas Works, Union of Concerned Scientists
http://www.ucsusa.org/clean_energy/technology_and_impacts/energy_technologies/how-natural-gas-works.html

Biofuels/firewood/charcoal

Renewable Energy Needs Land, Lots Of Land, [3 min 40 sec], by Christopher Joyce, NPR Morning Edition August 28, 2009. **[Audio]**
http://www.npr.org/templates/player/mediaPlayer.html?action=1&t=1&islist=false&id=112323643&m=112323623

Biofuels Primer U.S. Department of Energy Office of Science, Genomics:GTL, Systems Biology for Energy and Environment http://genomicsgtl.energy.gov/biofuels/placemat.shtml
(Overview http://genomicsgtl.energy.gov/biofuels/index.shtml)

BP-DuPont biofuels fact sheet (butanol)
http://www.bp.com/liveassets/bp_internet/globalbp/STAGING/global_assets/downloads/B/Bio_bp_dupont_fact_sheet_jun06.pdf

Butanol Replaces Gasoline – Environmental Energy Inc. http://www.butanol.com/

Charcoal Burning, Health, and Greenhouse gases, Discover Data by Kathy A. Svitil, published online July 24, 2005 http://discovermagazine.com/2005/jul/discover-data

Get Beyond Firewood http://www.facebook.com/beyondfirewood

Why Biofuels Are the Rainforest's Worst Enemy – Forget petroleum. The next planet-destroying fuel is already here. by Heather Rogers, *Mother Jones,*
http://www.motherjones.com/environment/2009/03/why-biofuels-are-rainforests-worst-enemy

Is oil palm the next emerging threat to the Amazon?, Mongabay.com, Conservation Letter Open Access Journal - Tropical Conservation Science Vol.2(1):1-10, 2009, Tropical Conservation Science | ISSN 1940-0829 | tropicalconservationscience.org, Rhett A. Butler1* & William F. Laurance2
http://tropicalconservationscience.mongabay.com/content/v2/09-03-23_butler-laurance_1-10.pdf

Biofuels Deemed a Greenhouse Threat, February 8, 2008, By ELISABETH ROSENTHAL, New York Times
http://www.nytimes.com/2008/02/08/science/earth/08wbiofuels.html?ex=1203138000&en=66d0030c0b190f67&ei=5070&emc=eta1

Is Algae Worse than Corn for Biofuels? A new analysis suggests so because of the need for copious fertilizer By Katie Howell January 22, 2010, SciAm http://www.scientificamerican.com/article.cfm?id=algae-biofuel-growth-environmental-impact&page=2

Part 1: The Argument for Biofuels (33:32); Part 2: Cellulosic Biofuels (48:15) – Technical Issues Associated with Future Large-Scale Cellulosic Biofuels Production, Chris Somerville, May 2007 Carnegie Institution for Science http://www.ascb.org/ibioseminars/somerville/somerville1.cfm

Jatropha The Cinderella Plant: Africans used to think **jatropha** was a worthless bush. Now it may be an important new source of energy**,** By Karen Palmer, Newsweek International, Feb. 19, 2007 issue
http://www.msnbc.msn.com/id/17081620/site/newsweek/from/ET/

Chinese Factory Turns Environmental Bane into Boon, Yingling Liu – February 1, 2008 – 6:00am, World Watch Institute, *Eye on Earth, a joint project of the Worldwatch Institute and the blue moon fund.*
http://www.worldwatch.org/node/5599

Efficiency

The **Home Energy Saver** (HES) is an interactive decision-support environment for residential consumers. Its aims are to increase consumer interest in energy efficiency and to foster market activities that capture those opportunities. The site is developed and maintained by the Lawrence Berkeley National Laboratory with past and present sponsorship from the U.S. Department of Energy (DOE), the U.S. Environmental Protection Agency (EPA), and the California Energy Commission (CEC). http://HomeEnergySaver.lbl.gov

U.S. Department of Energy- Energy Efficiency and Renewable Energy Network (EREN) – **Energy Information Portal** -- Includes information about energy and technology. Also, contains the newsletter, subscriptions, and links to other resources; consumers, environment, kids, education, small business, etc.
http://www.eere.energy.gov/

Federal Energy Management Program The Department of Energy (DOE) Federal Energy Management Program (FEMP) facilitates the Federal Government's implementation of sound, cost-effective energy management and investment practices to enhance the nation's energy security and environmental stewardship. http://www1.eere.energy.gov/femp/

Energy Star Products Ratings http://www.energystar.gov/products

Combined Heat & Power (CHP) Resource Guide September 2005, Midwest CHP Application Center University of Illinois at Chicago Energy Resources Center and Avalon Consulting, Inc.
http://www.chpcentermw.org/pdfs/Resource_Guide_10312005_Final_Rev5.pdf

Oil

***Winning the Oil** Endgame* Please login in order to download your complimentary copy of the complete book, *Winning the Oil Endgame*, as a PDF (portable document format). If you do not have a username and password, please register. http://nc.rmi.org/Page.aspx?pid=269&srcid=269

Interview with Lovins www.ted.com/index.php/talks/amory_lovins_on_winning_the_oil_endgame.html
www.youtube.com/watch?v=kMTCNOlozTA

Association for the Study of Peak Oil & Gas (ASPO) http://www.peakoil.net/

Hubbert *Peak* of Oil Production http://www.hubbertpeak.com/