



The Stella Group, Ltd.

The Stella Group, Ltd.. is a strategic technology optimization and policy firm for clean distributed energy users and companies which include advanced batteries and controls, energy efficiency, fuel cells, geoexchange, heat engines, microhydropower (including tidal and wave), modular biomass, photovoltaics, small wind, and solar thermal (including CSP, daylighting, water heating, industrial preheat, building air-conditioning, and electric power generation). The Stella Group, Ltd. blends distributed energy technologies, aggregates financing with a focus on system standardization. Scott Sklar serves as Steering Committee Chair of the Sustainable Energy Coalition, composed of the renewable and energy efficiency associations and analytical groups, and sits on the national Boards of Directors of the non-profit Business Council for Sustainable Energy, Renewable Energy Policy Project, teaches a unique interdisciplinary sustainable energy course at George Washington University, and appointed by Sec Locke onto the DOC RE/EE Advisory Committee.

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Energy Investments 2009

'Investments in renewable energy increased from \$39.24 billion in 2001 to \$336.78 billion in 2009 at a CAGR of 30.8% during this period. (5\11\10)

Clean Energy Reports

1. **GREENPEACE/DLR**

The world could eliminate fossil fuel use by 2090 by spending trillions of dollars on a renewable energy revolution, the European Renewable Energy Council (EREC) and environmental group Greenpeace said. The 210-page study is one of few reports -- even by lobby groups -- to look in detail at how energy use would have to be overhauled to meet the toughest scenarios for curbing greenhouse gases outlined by the U.N. a Climate Panel. "Renewable energy could provide all global energy needs by 2090," according to the study, entitled "Energy (R)evolution." EREC represents renewable energy industries and trade and research associations in Europe.

2. **ASES/NREL** U.S. Energy Experts Announce Way to Freeze Global Warming

On January 31, 2007 at a press conference in Washington, D.C., ASES unveiled a 200-page report, Tackling Climate Change in the U.S.: Potential Carbon Emissions Reductions from Energy Efficiency and Renewable Energy by 2030. The result of more than a year of study, the report illustrates how energy efficiency and renewable energy technologies can provide the emissions reductions required to address global warming. U.S. Carbon Emissions Displacement Potential from Energy Efficiency and Renewable Energy by 2030 - 57% Energy Efficiency, 43% Renewables

3. **GOOGLE** Google.org, the philanthropic arm of the search giant, has unveiled a plan to move the U.S. to a clean-energy future. The vision: In 2030, electricity will be generated not from coal or oil but from wind, solar, and geothermal power. Energy demand will be two-thirds what it is now, thanks to stringent energy-efficiency measures. Ninety percent of new vehicle sales will be plug-in hybrids. Carbon dioxide emissions will be down 48 percent. Getting there will cost \$4.4 trillion, says the plan -- but will recoup \$5.4 trillion in savings. The Clean Energy 2030 plan would require ambitious national policies, a huge boost to renewables, increased transmission capacity, a smart electricity grid, and much higher fuel-efficiency standards for vehicles.

MORE REPORTS - 2009

National Research Council Renewables Report - June 09

Renewable energy resources in the U.S. are sufficient to meet a significant portion of the nation's electricity needs says a new report from the National Research Council. Press and link to report at:

<http://www8.nationalacademies.org/onpinews/newsitem.aspx?RecordID=12619> or <http://tinyurl.com/neka69>

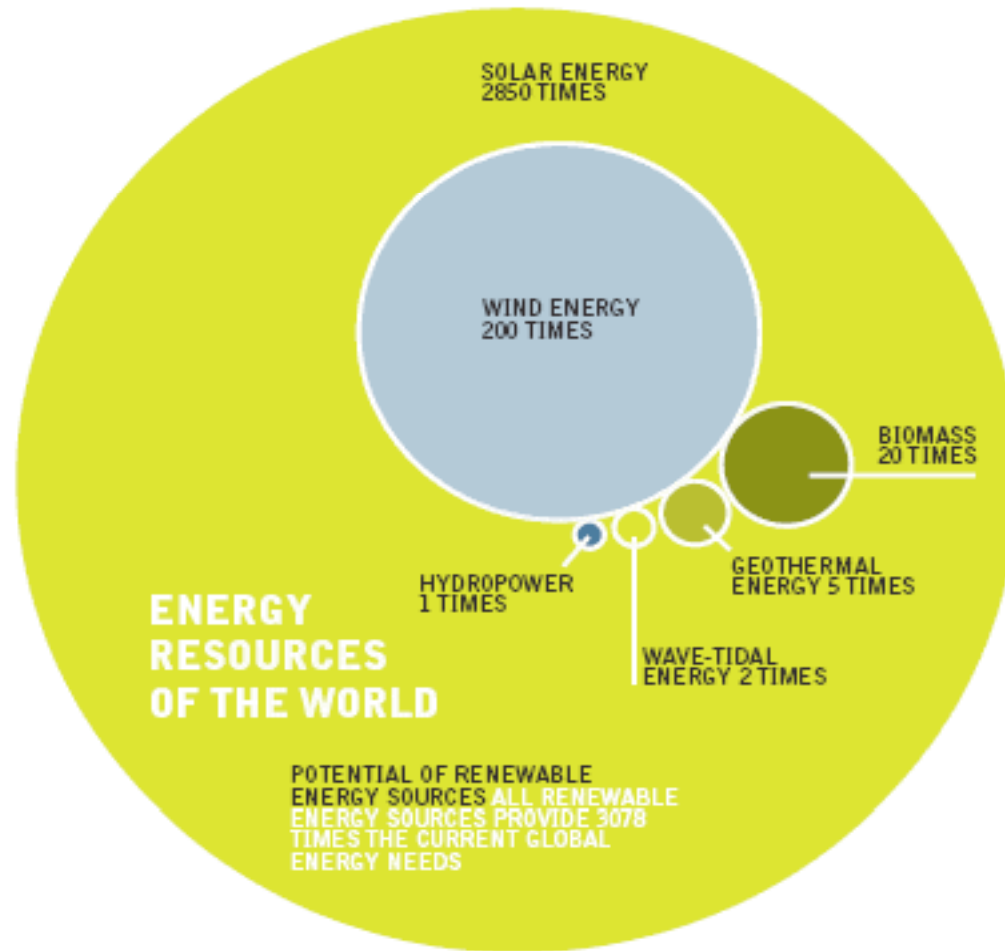
INSTITUTE FOR LOCAL SELF RELIANCE (October 2009) report by David Morris

“SELF RELIANT STATES” -- Excerpted Executive Summary Conclusion:

"All 36 states with either renewable energy goals or renewable energy mandates could meet them by relying on in-state renewable fuels. Sixty-four percent could be self-sufficient in electricity from in-state renewables; another 14 percent could generate 75 percent of their electricity from homegrown fuels. Indeed, the nation may be able to achieve a significant degree of energy independence by harnessing the most decentralized of all renewable resources: solar energy. More than 40 states plus the District of Columbia could generate 25 percent of their electricity just with rooftop PV. In fact, these data may be conservative. The report does not, for example, estimate the potential for ground photovoltaic arrays – although it does estimate the amount of land needed in each state to be self-sufficient relying on solar – even though common sense suggests that this should dwarf the rooftop potential..... It is at the local level that new technologies like smart grids, electric vehicles, distributed storage, and rooftop solar will have their major impact.”

Contact for David Morris at: cell 612-220-7649 or dmorris@ilsr.org

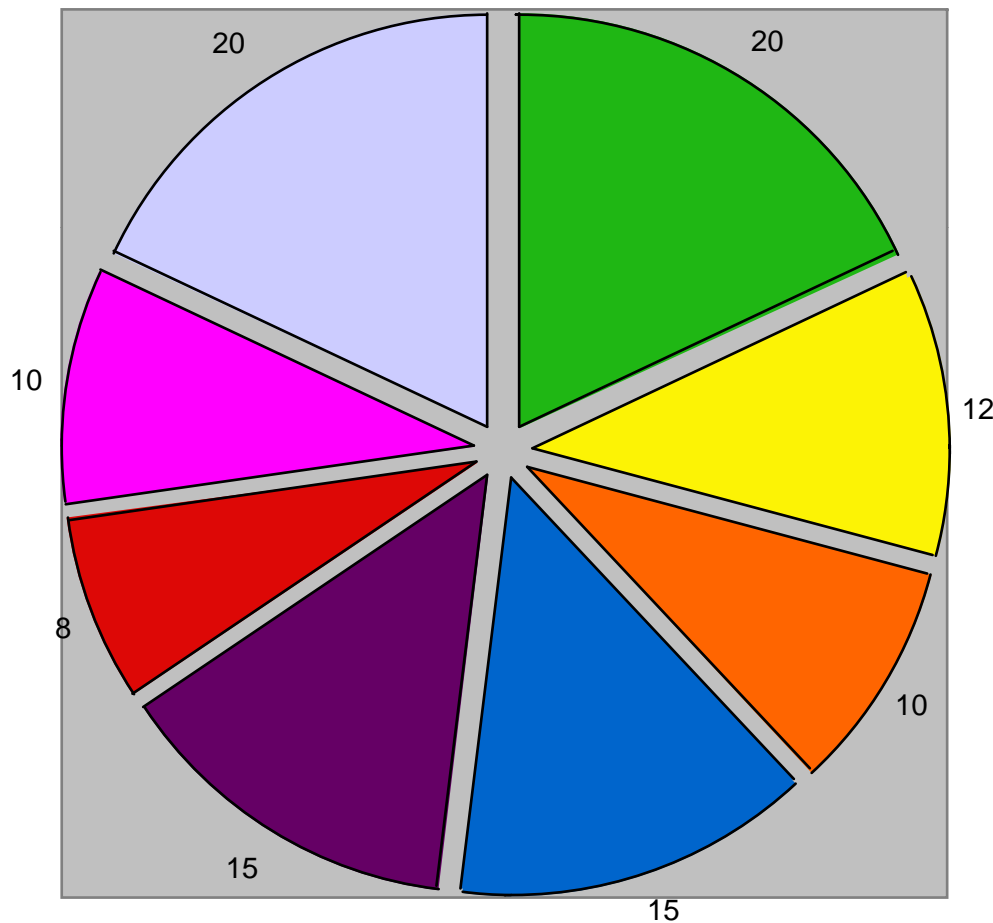
figure 30: energy resources of the world



source WBGU

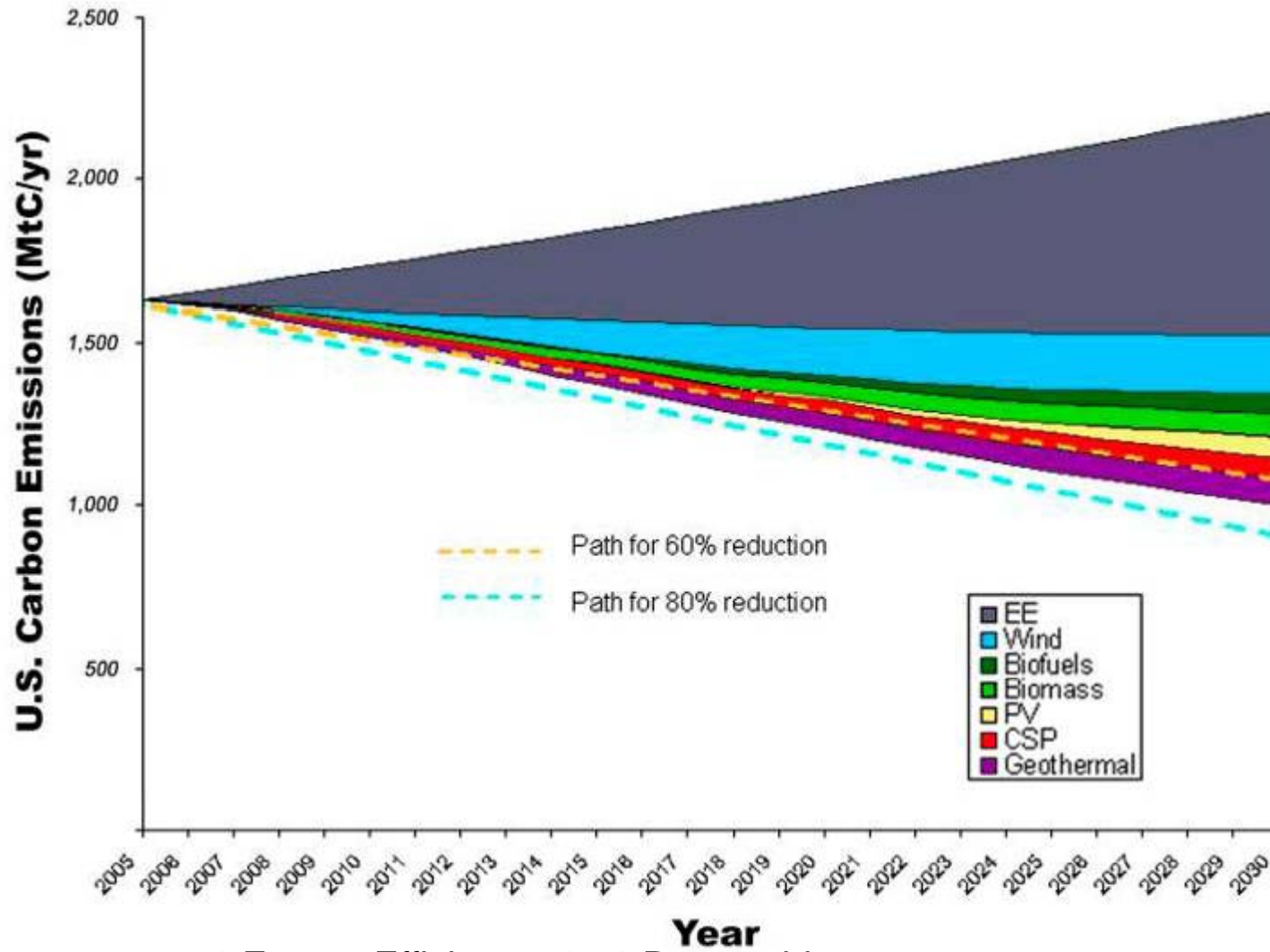
Institute DLR, Institute of Technical Thermodynamics, Department of Systems Analysis and Technology Assessment, Stuttgart, Germany
Ecofys BV, P.O. Box 8408, NL-3503 RK Utrecht, Kanaalweg 16-G

Percentage of Clean Energy in 21st Century



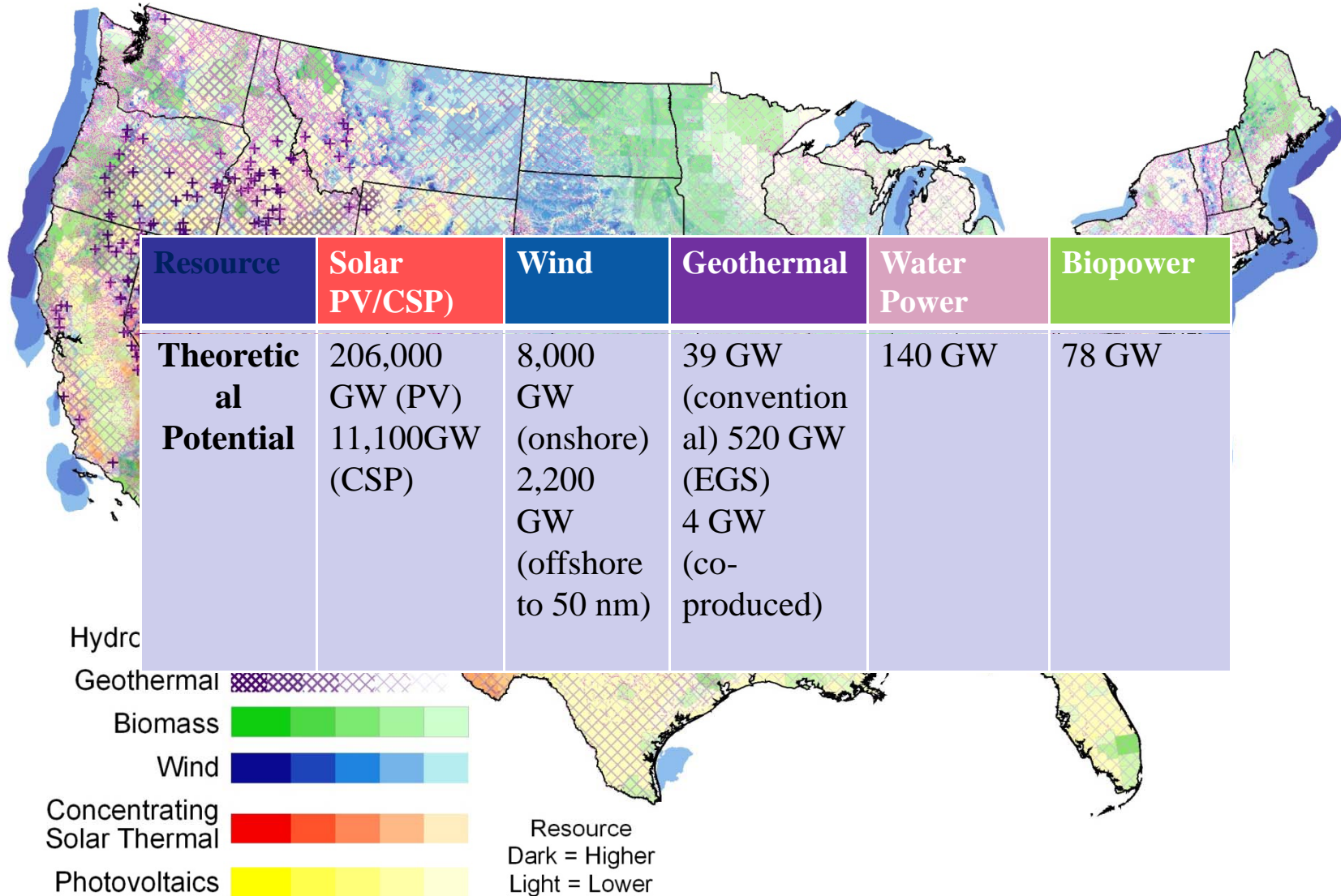
- **20% Biomass Power**
- **12% Building RE: GCHP/ST**
- **10% Geothermal**
- **15% Solar-Concentrated Sol**
- **15% Solar-Distributed PV/S**
- **8% Waste Heat**
- **10% Water Energy**
- **20% Wind Energy**

U.S. Carbon Emissions Displacement Potential from Energy Efficiency and Renewable Energy by 2030



57% Energy Efficiency, 43% Renewables

U.S. Renewable Resources



STORAGE IS ESSENTIAL FOR SMART GRID and RENEWABLE ENERGY

Just like energy efficiency and renewable energy - we need the entire portfolio of storage options -

- pumped storage (hydropower)
- advanced batteries - LiOn, Advanced AGM, blends with supercapacitors and ultracapacitors
- flywheels
- thermal salts (power tower) but multi-resource uncluding CHP
- hydrogen (carrier) just like electric lines - gas, liquid, solid (NiMH)

Water Energy — 10% of US Electricity

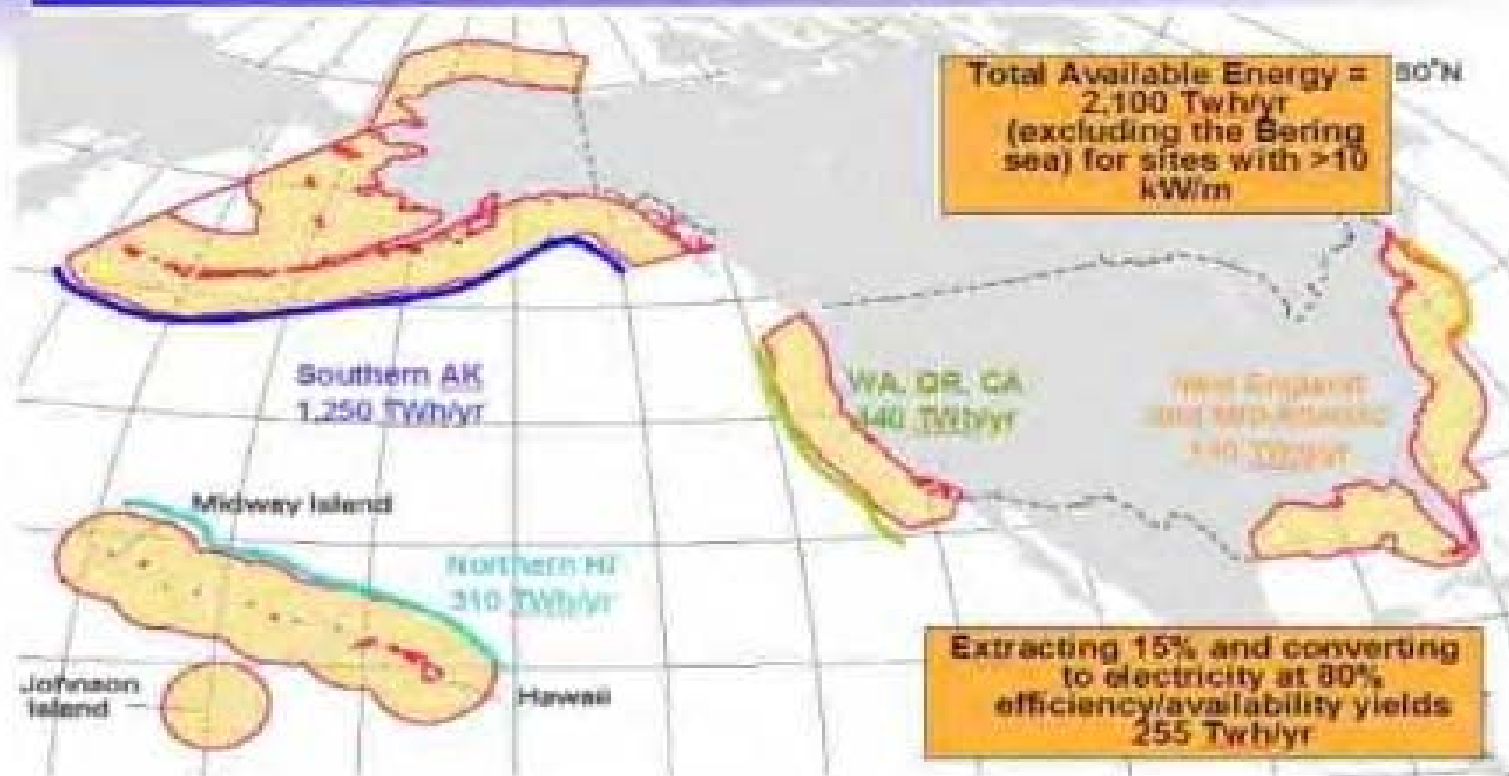
Water Energy - EESI, EPRI, NHA, OREC
www.eesi.org/060807_Hydropower

Several studies conclude that upgrading existing dam turbines, installing free-flow hydropower (no dams or diversions) tidal, wave and ocean currents and thermal could produce 10% of US energy.

MASSIVE WATER ENERGY RESOURCES

Kinetic Hydro, Tidal, Wave, Ocean Thermal & Currents

U.S. Offshore Wave Energy Resources



COMPETING WITH CHINA and INDIA

USDOE Industrial Program - and Other Federal Agencies

Two principles for global competition in US manufacturing -

- 1) Drive innovation - Administration's budget on target
Corollary: create more portals within USDOE, within other federal agencies and ALL our national laboratories
- 2) Since we can't compete on labor - reduce fixed inputs primarily energy and water -- highest performance energy efficiency including CHP and renewables
Corollary: USDOE is drifting to long term high risk research - not addressing valley of death and applied



Good planets are hard to find.