



Advancing Wind Power in Illinois Conference 2011

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U.S. Department of Energy

Overview of the U.S. Department of Energy

Plenary Session

Thursday, July 21, 2011, 10:45 AM



U.S. Department of Energy Wind and Water Power Program Status Update



By
Gary Nowakowski
U.S. Department of Energy

July 21, 2011

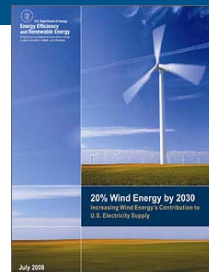
Agenda

- Wind and Water Power Program
- American Recovery and Reinvestment Act of 2009
- New Growth Areas
- Recent Funding Opportunity Announcements
- Summary

Wind and Water Power Program: Management Update

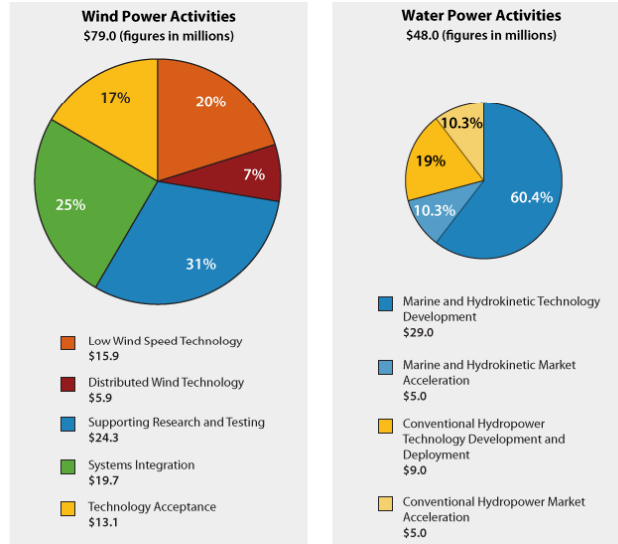
- Mark Higgins, Acting Program Manager
- Michele DesAutels, Wind Powering America
 - Over 12 years experience in business planning and program management in public and private sector
 - BBA in Finance and MBA and MPPA
 - Started at DOE June 20th, 2009

Wind Objectives



- **Program Objective:** Wind to generate 20% of electricity demand by 2030
 - 3 million MW of land-based resource potential
 - Over 40,000 MW installed in U.S.
- **Program Activities:** Facilitate installations, reduce electricity and system costs, address interconnection and grid impacts, and increase distributed wind deployment

Fiscal Year 2010 Wind and Water Power Program Estimated Budget
(Figures rounded down to nearest \$.1 million)



<http://erec.eere.energy.gov/>

Office of EERE Recovery Act Funding

Office of Energy Efficiency & Renewable Energy	Recovery Act (\$ Millions)
EERE Directed Funding	\$14,300
Energy Efficiency & Conservation Block Grants	\$3,200
State Energy Program	\$3,100
Weatherization Assistance Program	\$5,000
Energy Star Rebates	\$300
Transportation Electrification	\$400
Clean Cities Alternative Fuels Pilot Program	\$300
Advanced Battery & Hybrid Components Manufacturing	\$2,000
EERE Discretionary RD&D	\$2,500
Technology RD&D	\$1,300
Biomass	\$800
Geothermal Technologies	\$400
EERE Subtotal	\$16,800

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Recovery Act Funding: Wind and Water Power Program

• Wind 1 – Wind Turbine Drivetrain Testing	\$45M
• Wind 2 – NWTCT Drivetrain Testing Facility Upgrade	\$10M
• Wind 3 – Large Blade Test Facility	\$25M
• Wind 4 – Wind Universities R&D Centers	\$24M
• <u>Wind 5 - Wind Energy Technology Partnerships</u>	<u>\$14M</u>
Wind Total	\$118M
• Water 1 – Under 50 MW Hydroelectric Upgrades	\$7M
• Water 2 – Greater than 50 MW Hydroelectric Modernization Program	\$25M
Water Total	\$32M
Program Total	\$150M

<http://erec.eere.energy.gov/>

Recovery Act Results: Clemson Large Drive Train Testing Facility Groundbreaking



<http://erec.eere.energy.gov/>

Recovery Act Results: National Wind Technology Center Drive train Test Facility Upgrade



<http://erec.com.energy.gov/>

Recovery Act Results: Large Blade Testing Facility



<http://erec.com.energy.gov/>

Recovery Act Results: Tacoma Dam



<http://www.energy.gov/>

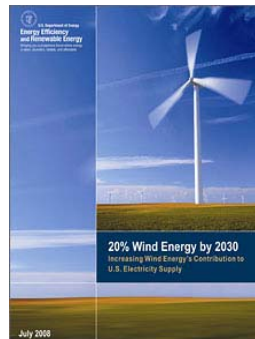
Recovery Act Results: Boulder Dam



<http://www.energy.gov/>

New R&D Growth Areas

Offshore Wind



Based on the analysis in the 20% wind by 2030 report, approximately 18% of the wind power, or 54 GW would be generated from offshore wind resources

Water Power Program

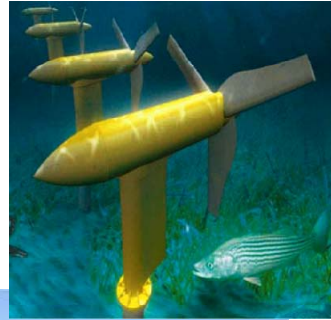
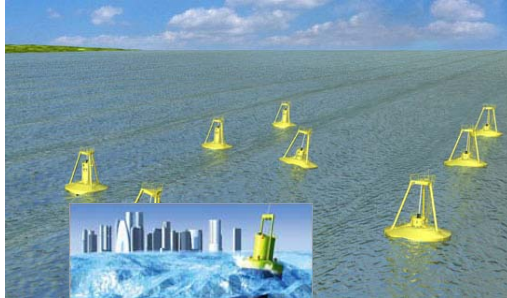


ILLUSTRATION: BRYAN CHRISTIE

<http://www.energy.gov/>

Water Power Research and Development

- Budget Growth
 - FY2008: \$10 Million
 - FY2009: \$40 Million
 - FY2010: \$50 Million
 - FY2011: \$38M (request)
- Expansion to Hydrokinetic R&D
 - Ways to tap the energy of moving water without impoundment (dams) or diversion required by many conventional hydroelectric facilities.
 - Three Marine Energy Centers (HI and OR and FAU)

<http://www.energy.gov/>

Recent Water Program Results

- Established Three MHK Marine Centers
- Conducting MHK studies to define potential Resources for rivers, tides and waves
- Defining baseline performance and economic data/models for MHK technologies
- Funding MHK R&D across various TRLs on components and systems – working with private industry, National Labs and academia
- Recent FOA to address Conventional Hydro R&D

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Sustainable Pumped Storage Hydropower

- One subtopic area within a CH FOA which recently closed
 - \$5M for each of two awards
- Promotes integration of variable renewable energy sources
- Provide full range of services including energy arbitrage, load following, voltage and frequency regulation, spinning reserve and reduced transmission congestion



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Recent Funding Opportunity Announcements

- Mid-size Wind Turbine FOA
 - Northern Power Systems
 - Texas Tech University
- Short Term Wind Forecasting FOA
 - AWS True Power (Texas)
 - Wind Logics (Minnesota/S and N Dakota)
- Marine Hydrokinetic FOA (27 awards)
- Next Generation Drivetrain FOA
- Offshore Wind Tech Development FOA
- Offshore Wind Market Barriers FOA
- Conventional Hydro FOA

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National Laboratory Support

Expanding to utilize expertise and technology from around the country through competitive Funding Opportunity Announcements



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Summary

- Recovery Act Funding/Results
 - ✓ Two new state-of-the-art wind testing facilities being completed
 - ✓ Seven Hydro modernization projects underway
 - ✓ 27 wind R&D projects
 - ✓ Three University Consortia projects underway
- Wind and Water Power Program Emphasis
 - ✓ Expanded industry competitive Funding Opportunities
 - ✓ Offshore Wind
 - ✓ Water Program
- Outlook for Future Program Funding