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Enabling Rural America to Capture the Value of Renewable Energy Projects

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Discussion Document

Enabling Rural America to Capture the Value of Renewable Energy Projects

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Booz Allen was engaged by USDA to evaluate business models that enable rural America to maximize and retain the value of renewable energy projects

Key Topics Addressed

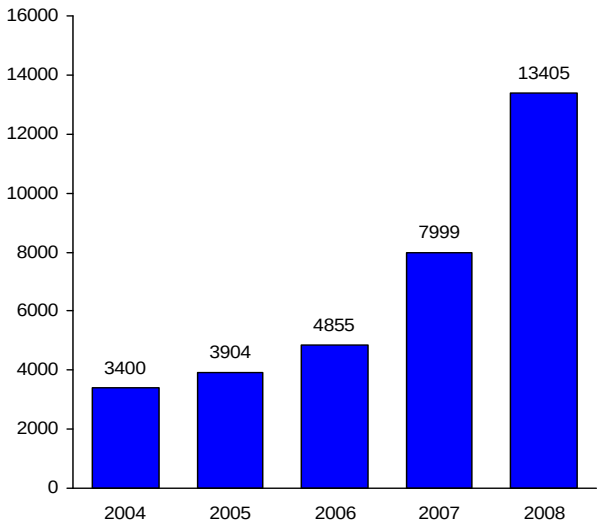
- Existing and emerging business models used to finance and construct renewable energy projects
- Barriers to greater participation by rural communities and farmers
- Actions USDA can take to increase the "value capture" by rural communities and farmers from renewable projects

Underlying Principles

- The paper considered only those resources capable of "utility scale" applications (rather than just on-farm applications)
- Concentration was on business models that could be adopted by individual farms, farm cooperatives, or rural electric cooperatives
- Business models analysis focused on those that offered greatest opportunity to capture value at each stage of the renewable energy value chain
- Booz Allen's analysis of the regulatory barriers concentrated primarily on those that could be overcome using market-oriented tools and did not rely on legislative or regulatory mandates.

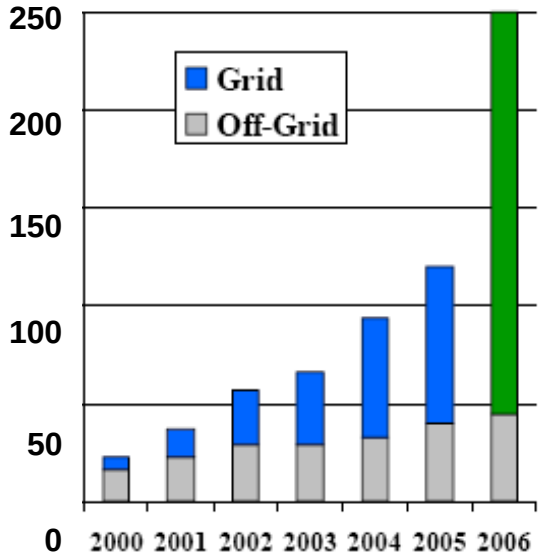
The renewable energy market has demonstrated remarkable growth potential, particularly in biomass, solar and wind

Historical Ethanol Production and Future Total Announced Capacity

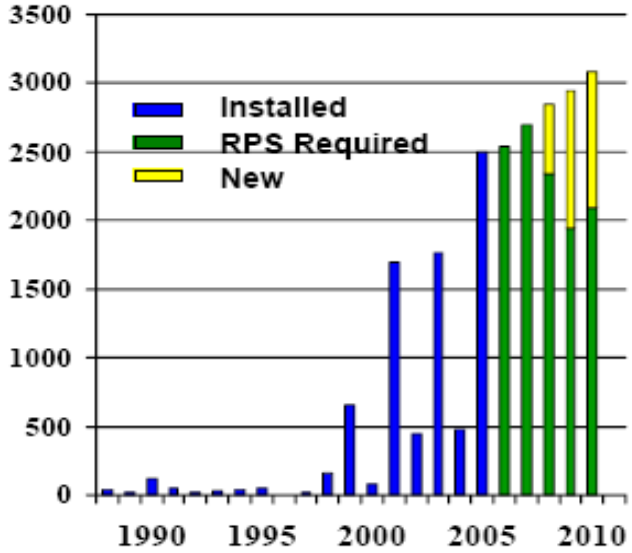


Historical Production 2004-2006
2007 Total Current Capacity
2008: 2007 Total Current Capacity plus 5,406 announced additional capacity

U.S. Solar PV Installations (MW/Year)



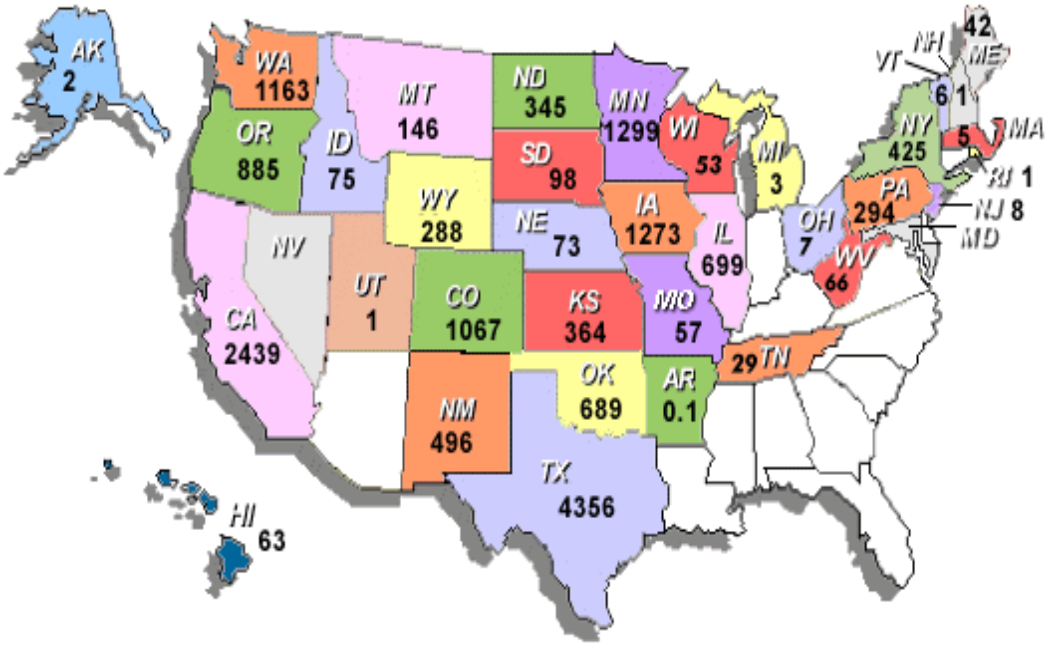
U.S. Wind Power Installations (MW/Year)



Source: Statement of Keith Collins, Chief Economist, USDA, Before the US Senate Committee on Appropriations, Subcommittee on Agriculture, Rural Development and Related Agencies, 8/26/06, NREL, AWEA, GE Wind, ACORE

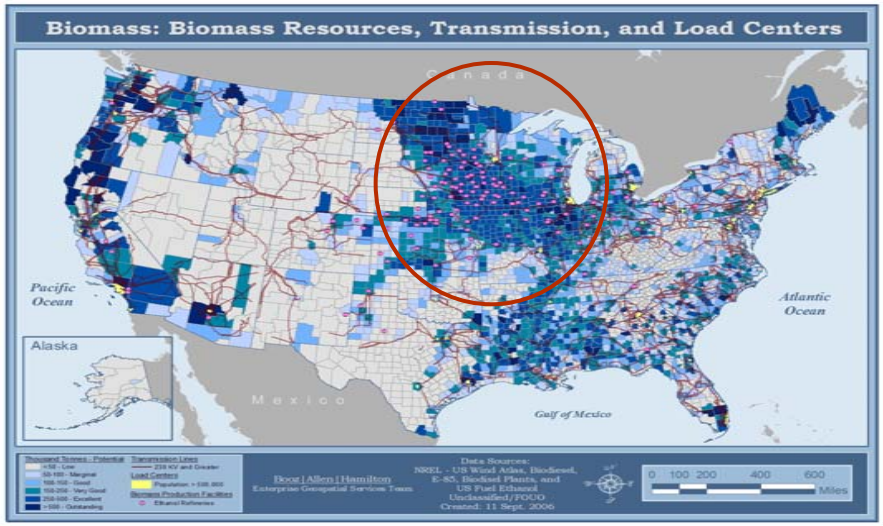
Renewable resources are land dependent, and if capitalized on effectively, can greatly benefit Rural America

Wind Farms and Installed Capacity by State

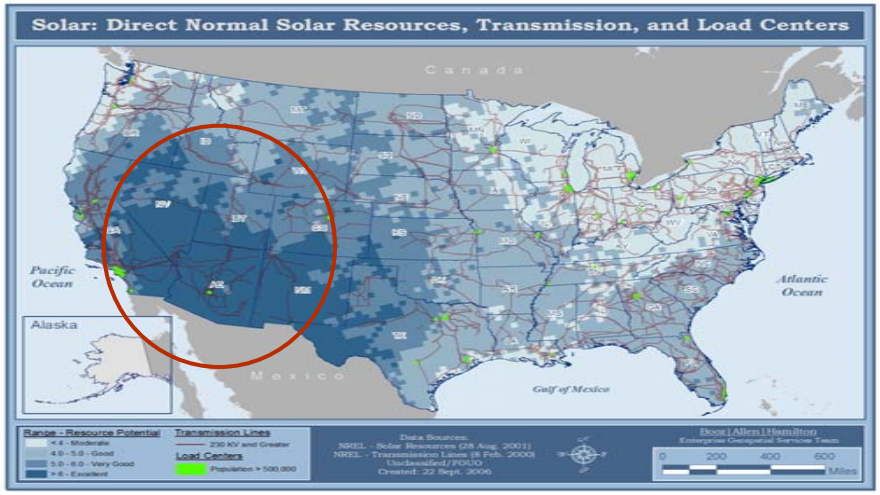


Sources: American Wind Energy Association

Biomass Resources and Load Centers



Solar Resources and Load Centers



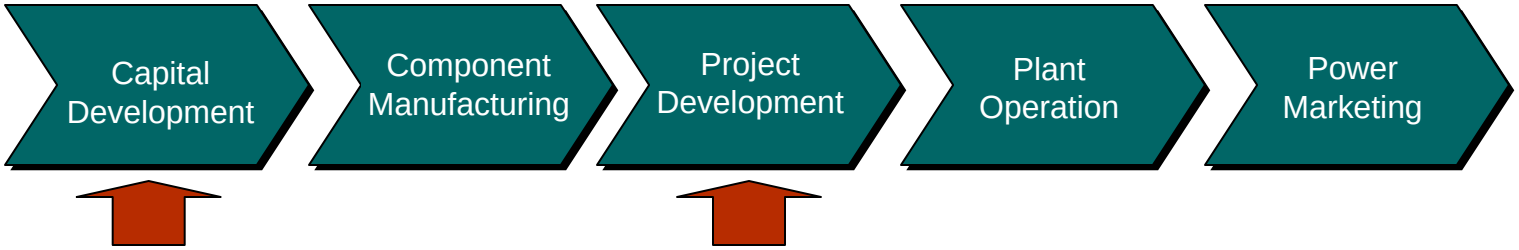
Despite its potential, significant barriers remain in capturing the value of renewable energy production…

- Cost-effective transmission access remains the greatest single barrier
  - Lack of comprehensive regional planning
  - Complex allocations rules for transmission investment
  - Inadequate financial incentives for transmission development
  - New capacity siting challenges
- Complexity of negotiating profitable power purchase agreements
- Ensuring proper site selection
- Increasing size of market for rurally-generated renewable energy output

…and the business models traditionally used by rural America to tap into renewable energy have often resulted in low-value capture

- **Lease Models** are currently the primary renewable energy business models, under which farmers lease land for development, largely by outside entities
  - Low risk and cost model but lease models result in capture of less than 5 percent of total value of project, on average
  - Aggregation of landholding rights can result in greater value capture by rural constituents, but only marginally
- **Flip Models**, under which rural entities work with private developers
  - Upfront costs are shared, private entities take advantage of production tax credit, then turn project over to rural entities after 10 years
  - Greater potential for revenue capture, but still foregoes a good deal of revenue capture

Rural America must develop and implement business models that seize opportunities in the renewable energy value chain…



- The greatest opportunity for profit comes from capital and resource pooling arrangements similar to those used in ethanol plant development.
- **New Generation Cooperatives,** which developed in order to build capital intensive facilities such as ethanol plants have allowed farmers to move up the value chain.
  - Model easily transferable to renewables
  - Allows greater value capture, but are more complex to establish and require considerable technical and legal expertise
- However, USDA rural constituents need greater access to expertise in power plant development, power purchase agreements, financial mechanisms to maximize tax incentives and other complexities of renewable energy development if rural ownership of projects is to be more widespread

…though inevitably there are higher risks involved

USDA can take several steps to assist rural constituents efforts to overcome these barriers…

Provide Access to Technical Expertise for Rural Constituents

- On-farm energy generation will entail a number of technical decisions including:
  - Appropriate energy source technology, and project size
  - Siting and connecting to the grid
  - Aggregation of financing
  - Negotiating a power purchase agreement
- USDA can help rural constituents make these choices by creating mechanisms to make it easier for rural constituents contract with qualified legal, technical and financial service providers on a national basis

Facilitate the Capture and Transfer of "Best Practices"

- USDA can help spread creative business models by creating more vehicles for transferring best practices
  - Partnerships with other organizations (utilities, states, other federal agencies) to create more avenues for sharing information with rural citizens
  - Create a website that can function as a "virtual community" of rural developers to share insights and success stories
- Develop in-depth training on important renewable energy topics and deliver them with partners or through web.

…thereby accessing a greater portion of the potential wealth created by rurally-based renewable projects

Generate Greater Demand for Renewable Energy Through "Green" Branding

- USDA can also assist in developing markets for rurally-owned and operated renewable projects by creating a marketing label for renewable energy owned and operated by rural communities or individual citizens
  - Based on EPA/DOE's successful ENERGY STAR label model
  - Develop marketing messaging and campaigns around the value of rurally-owned/operated renewable energy projects to rural communities
  - Work with intermediaries (rural cooperatives, states and others) to help build recognition of branding efforts and visibility with consumers

Take Action to Increase Attractiveness of Financial Incentives for Renewable Projects

- Work to make the PTC, CREB and REPI long-standing and consistent
  - Currently, the Federal Production Tax Credit (PTC), does not have consistent authorization which creates boom and bust periods in the industry
- To avoid such cycles in the future, the federal government can develop guidelines for a consistent set of financial incentives targeted specifically at renewables and on-farm generation