

BEST PRACTICES IN LAND USE MANAGEMENT FOR WIND DEVELOPMENT IN THE WESTERN UNITED STATES

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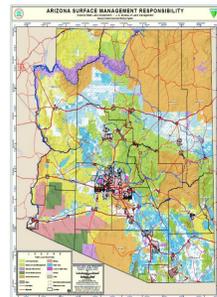
Institute for Sustainable Energy Solutions

Introduction

In this project, Northern Arizona University (NAU) undergraduates evaluated land use management policies and practices that govern the development of utility-scale wind projects across the western United States, to determine which policy tools best support wind development along with other land uses, and which could be replicated across the region. This research was conducted as a component of NAU's participation in the Department of Energy's (DOE) National Collegiate Wind Competition (CWC).

In developing wind projects, companies work with federal, state, and local agencies to comply with the rules and regulations set in place. The multiple jurisdictions governing land use across the West, as shown in Figure 1, create challenges for wind development.

To address these challenges, policies such as the Bureau of Land Management's (BLM) Restoration Design Energy Project (RDEP) take into account a range of stakeholder values and geographic criteria to identify renewable energy development zones in Arizona, using GIS mapping capabilities. Examples like this offer stepping stones for other jurisdictions (e.g. other BLM offices, Arizona State Land Dept. (ASLD), counties and tribal governments), providing them with a planning process that could be used across the region to promote the development of renewable energy in a smart and efficient way. Ultimately, this helps to preserve wildlife habitat, agriculture, recreation, and the development of both solar and wind.



Source: Arizona State Land Department
Figure 1: Multiple land jurisdictions of Arizona

Methods

Our team reviewed a wide array of policy documents and interviewed industry professionals to identify how planners and policy makers can best build and integrate wind energy in the West, while maintaining open space for wildlife habitat, recreation, and agriculture. By reviewing reports from federal, state, and county agencies, national laboratories and industry associations, we were able to gain a more thorough understanding of how different jurisdictions approached wind energy development and what key areas offer opportunity for complementary land uses. We selected Wildlife habitat, Agriculture, Recreation, and Transmission planning.

We then reviewed a number of additional policy documents, tools, and processes. This allowed us to identify the best complementary land management plans and practices for the integration of wind development with other land uses.

Documents reviewed to identify key focal areas

- 2012 Wind Technologies Market Report
- AWEA State RPS Market Assessment 2013 and Quarterly Reports
- Eagle Conservation Guidance Plan, American Wind Wildlife Institute
- Gila River Areas of Critical Environmental Concern Evaluation
- Land Use Planning Handbook- United States Department of the Interior
- Wind Energy Siting Handbook, American Wind Energy Association
- Model and Actual County Wind Ordinances

Professionals Interviewed

- Lane Cowger, Bureau of Land Management
- Jessica Gist, Arizona Game and Fish Department
- Tiffany Antol, Former Planner, Coconino County
- Jennifer Jenkins, Distributed Wind Energy Association
- Amanda Ormond, Ormond Group



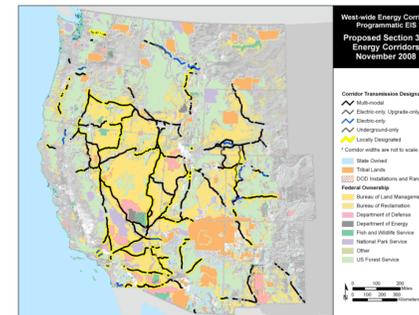
Results

Among the dozens of policy documents, processes and tools we examined, we selected the following key examples that proved to be the most effective.

Key policy processes and tools:

1. Transmission planning

- Federal Energy Regulatory Commission (FERC) Open Access Transmission Tariff (OATT)
- Electric Reliability Council of Texas (ERCOT) Competitive Renewable Energy Zones (CREZ)
- Mountain States Transmission Intertie (MSTI)



Source: WestWide transmission planning
Figure 2: Energy transmission in the Western U.S.

"The Commission's goal was to remove impediments to competition in the wholesale bulk power marketplace and to bring more efficient, lower cost power to the Nation's electricity consumers." –FERC's Open Access Transmission Tariff policy

2. Recreation/Agriculture

- Restoration Design Energy Project
- Coconino County Comprehensive Plan

"Public lands are to be managed for multiple uses that take into account the long-term needs of future generations for renewable and nonrenewable resources." –Restoration Design Energy Project

3. Wildlife

- Desert Renewable Energy Conservation Plan (DRECP)
- Comprehensive Guide to Studying Wind Energy/Wildlife Interactions, National Wind Coordinating Collaborative (NWCC)
- Guidelines for Reducing Impacts to Wildlife from Wind Energy Development in Arizona, Arizona Game and Fish Department



Source: NextEra Energy Resources
Figure 3: Perrin Ranch Wind Energy Project located in Williams, Arizona

"Comprehensive reviews of wind-wildlife interactions have defined research needs for better understanding impacts and for improving the siting of wind energy facilities."

–American Wind and Wildlife Institute

Discussion

1. Transmission planning

A great example of transmission planning was through ERCOT, which manages the flow of electricity to 23 million Texas customers through 40,500 miles of transmission. ERCOT used a land use filtering strategy to designate special zones called Competitive Renewable Energy Zones (CREZ) which were deemed excellent areas for solar/wind development.

2. Recreation/Agriculture

The RDEP did an excellent job at utilizing GIS mapping to assess all areas utilized for recreational purposes. In many cases tools, such as the GIS mapping software, are adopted because of their ability to consolidate multiple sources of data into one location.

3. Wildlife

The DRECP is a viable policy because it adheres to federal and state statutes such as, California's Natural Community Conservation Planning Act (NCCPA), the Endangered Species Act (ESA), the Federal Land Policy and Management Act (FLPMA), the California Environmental Quality Act (CEQA), and the National Environmental Policy Act (NEPA) in order to support policy tools like the Natural Community Conservation Plan (NCCP), Habitat Conservation Plan (HCP), and the Bureau of Land Management's (BLM) Land Use Plan Amendment (LUPA).

Recommendations

It is critical that planners and policy makers work together with the public and wind developers to find smart, safe and reliable opportunities for the construction of wind. Our recommendations for planners and policy makers regarding wind development in the Western United States include the following examples listed below.

Our recommendations:

1. Consolidate data into one accessible location through data sharing
2. Reduce fragmentation within the wind industry by streamlining communication amongst invested stakeholders
3. Identify research needs for multi-use wind development
4. Define county policies and ordinances to provide developers with clear guidelines
5. Establish positions within county departments that share employees with other agencies that influence wind development (e.g. Game & Fish)
6. Prioritize the public participation process and community interests
7. Continue to utilize GIS layering and mapping software



Source: Electrical Engineering Portal
Figure 4: Wind and wildlife research

