



Sandia Wind Farm Feasibility Project

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Sandia is a multiprogram laboratory operated by Sandia Corporation, a Lockheed Martin Company, for the United States Department of Energy's National Nuclear Security Administration under contract DE-AC04-94AL85000.





Industry Day Agenda

- Welcome
- SNL Industry Day - Federal Project Drivers
Brian Connor, DOE
- Sandia Wind Farm Feasibility Project
Roger Hill, Sandia National Laboratories
- RFI Identified Issues
- Google Earth Tour
- Questions and Answers
- Maps

Sandia Wind Farm Feasibility Project -Overview

Goal:

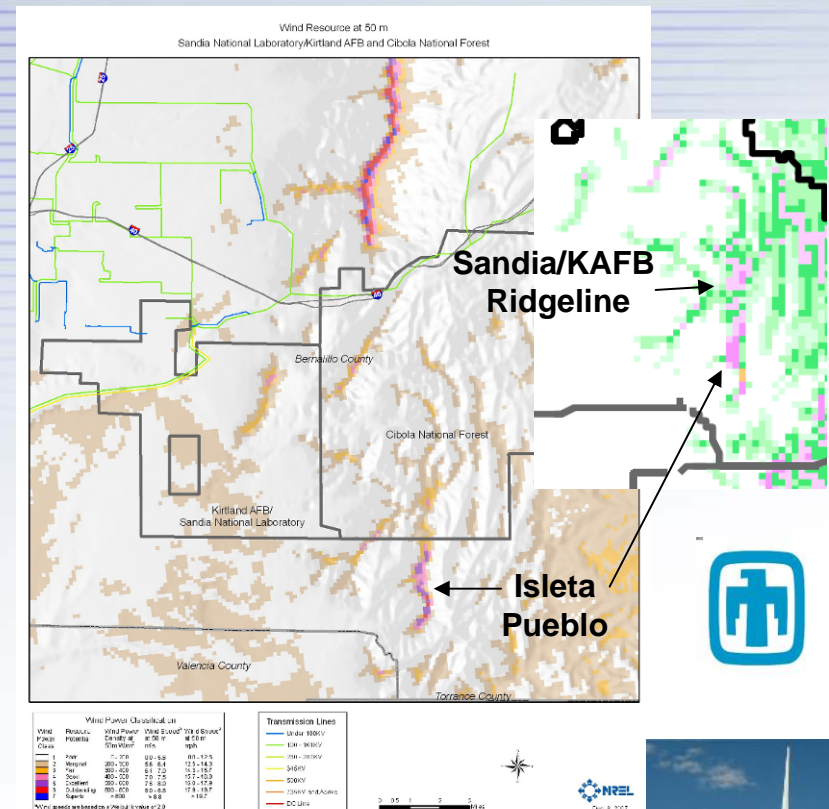
- Assess the viability of on-site wind generation to meet EPACT and TEAM Renewable energy goals with cost competitive generation for Sandia, DOE/NNSA, and the Kirtland Air Force Base
- Meet or exceed EPACT 2005 renewable energy goals with viable wind turbine installations at Federal Facilities at Sandia :
 - 3% of electric energy by 2007
 - 5% of electric energy by 2010
 - 7.5% of electric energy by 2013
- *“Maximize installation of secure, on-site renewable energy projects at all DOE sites”* Secretary Samuel W. Bodman, Transformational Energy Action Management (TEAM) goal

Current Status:

- Request for Information (RFI) now issued on Sandia and Fed Biz Opportunities websites
- Industry day scheduled June 10 in Albuquerque
- Sandia Lab News article written
- MET station(s) installation process started
- KAFB interfaces with base operations being assessed

Unique Features of this Project:

- Site is a wholesale energy customer (not ratebased) and may support higher prices under a demand side supply concept than the highly competitive utility sector
- Long term power purchase offers potential energy cost hedge
- 20% or more of base loads potentially powered by this project
- Wind forecasting will be needed under wholesale energy buys



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A graphic of the American flag, showing the stars and stripes, positioned in the upper left corner of the slide.

Request for Information

Issues of consideration: Sandia seeks to solicit industry input regarding the type of information, data, conditions, resources, contracting mechanisms or parameters, etc. that potential industrial partners would expect/require to be in place in order to respond to a RFP for a wind farm(s) installation and operation on Federal land.

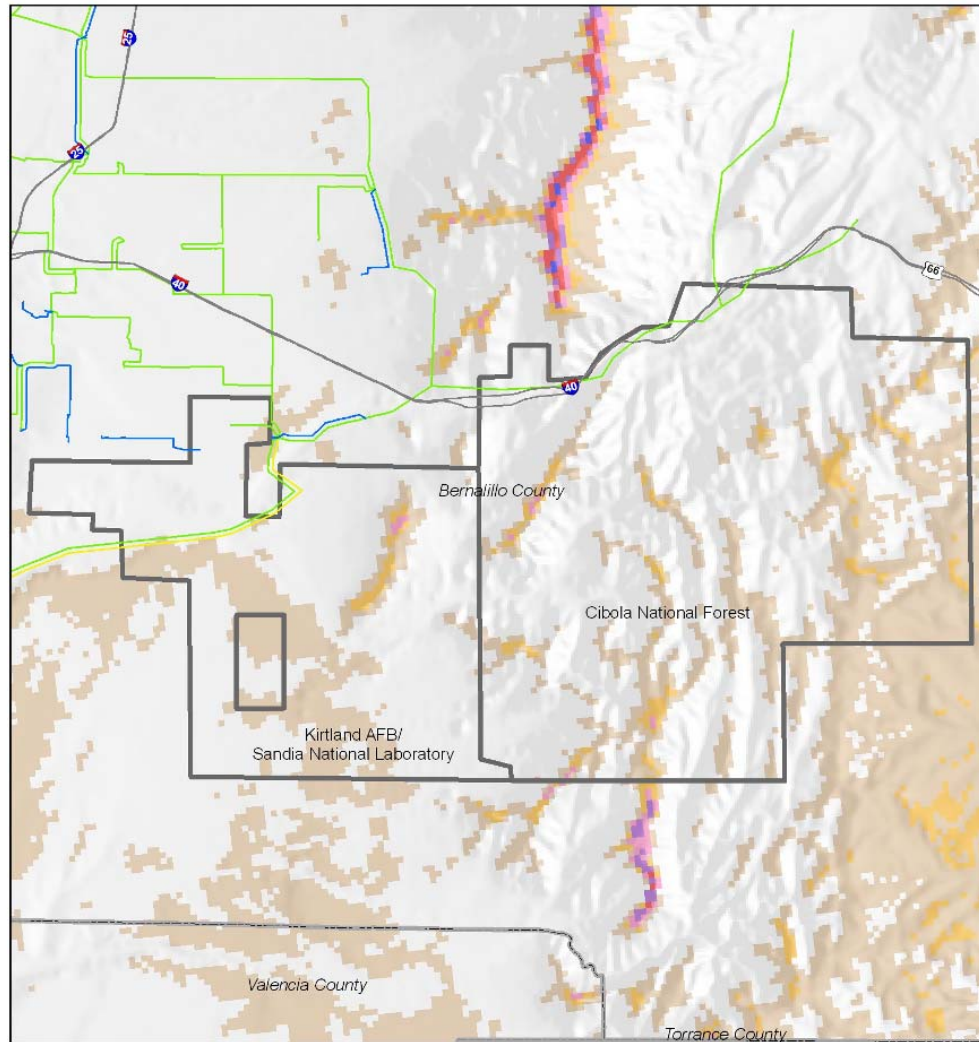
Information to be Provided Today

- **Wind Resource**
- **Electrical Features and Interfaces**
- **Land Area / Land use / Constraints**
- **Plans**

Wind Resource at 50 m

Sandia National Laboratory/Kirtland AFB and Cibola National Forest

Map



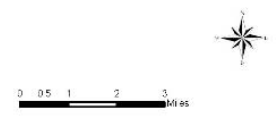
Wind Power Classification

Wind Power Class	Resource Potential	Wind Power Density at 50m ^{W/m²}	Wind Speed ^a at 50 m m/s	Wind Speed ^a at 50 m mph
1 Poor	< 200	0.0 - 5.8	0.0 - 12.5	
2 Marginal	200 - 300	5.6 - 6.4	12.5 - 14.3	
3 Fair	300 - 400	6.1 - 7.0	15.3 - 15.7	
4 Good	400 - 500	7.0 - 7.5	15.7 - 16.0	
5 Excellent	500 - 600	7.8 - 8.0	16.0 - 17.9	
6 Outstanding	600 - 800	8.0 - 8.8	17.9 - 19.7	
7 Superb	> 800	> 8.8	> 19.7	

^aWind speeds are based on a Weibull k value of 2.0

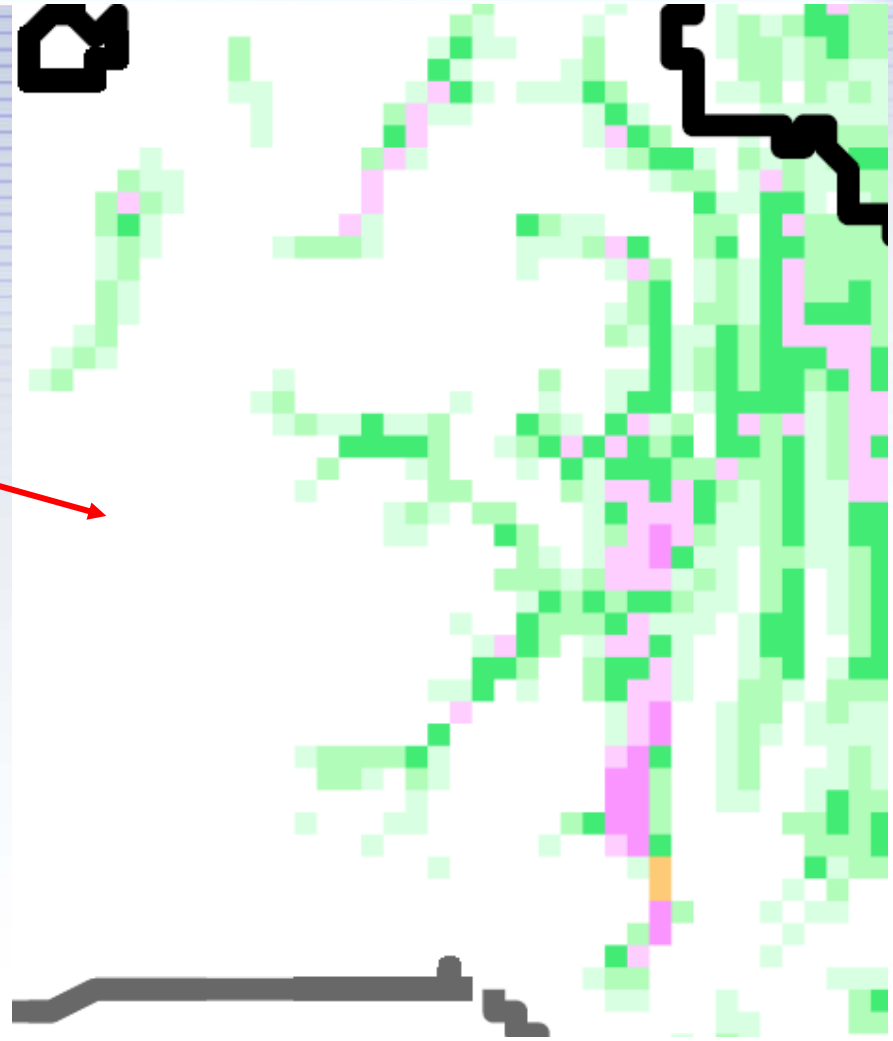
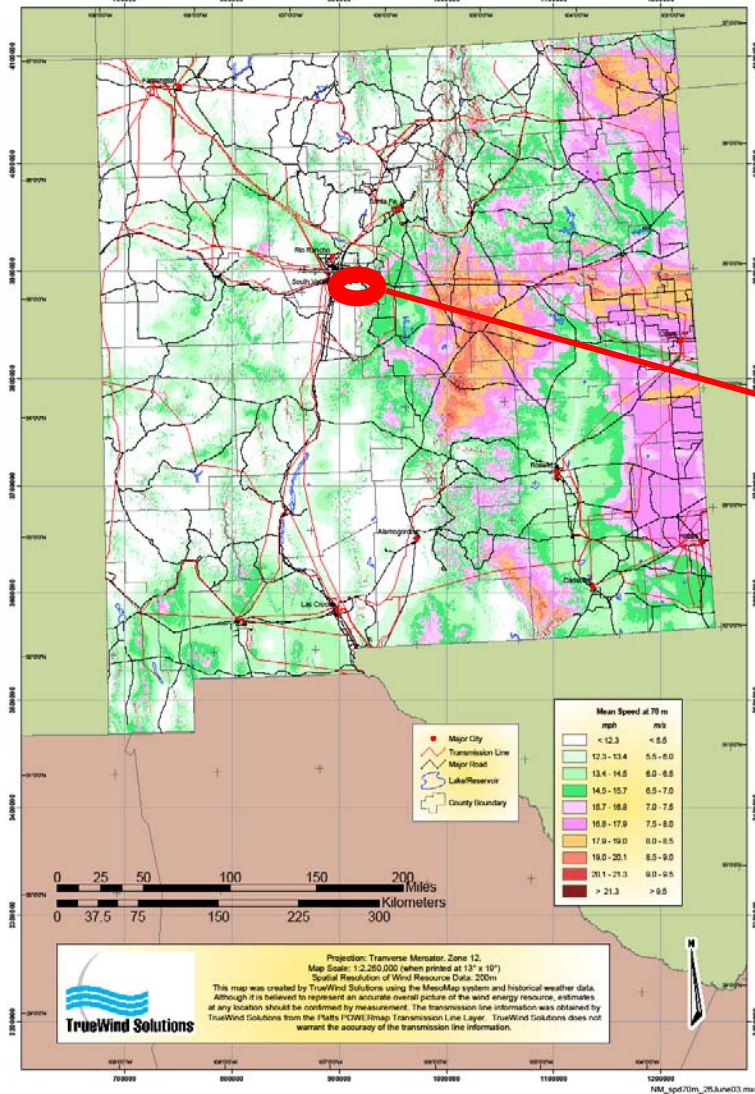
Transmission Lines

Blue line	Under 100KV
Green line	100 - 161KV
Yellow line	230 - 243KV
Orange line	345KV
Red line	500KV
Dark red line	735KV and Above
Black line	DC Lines



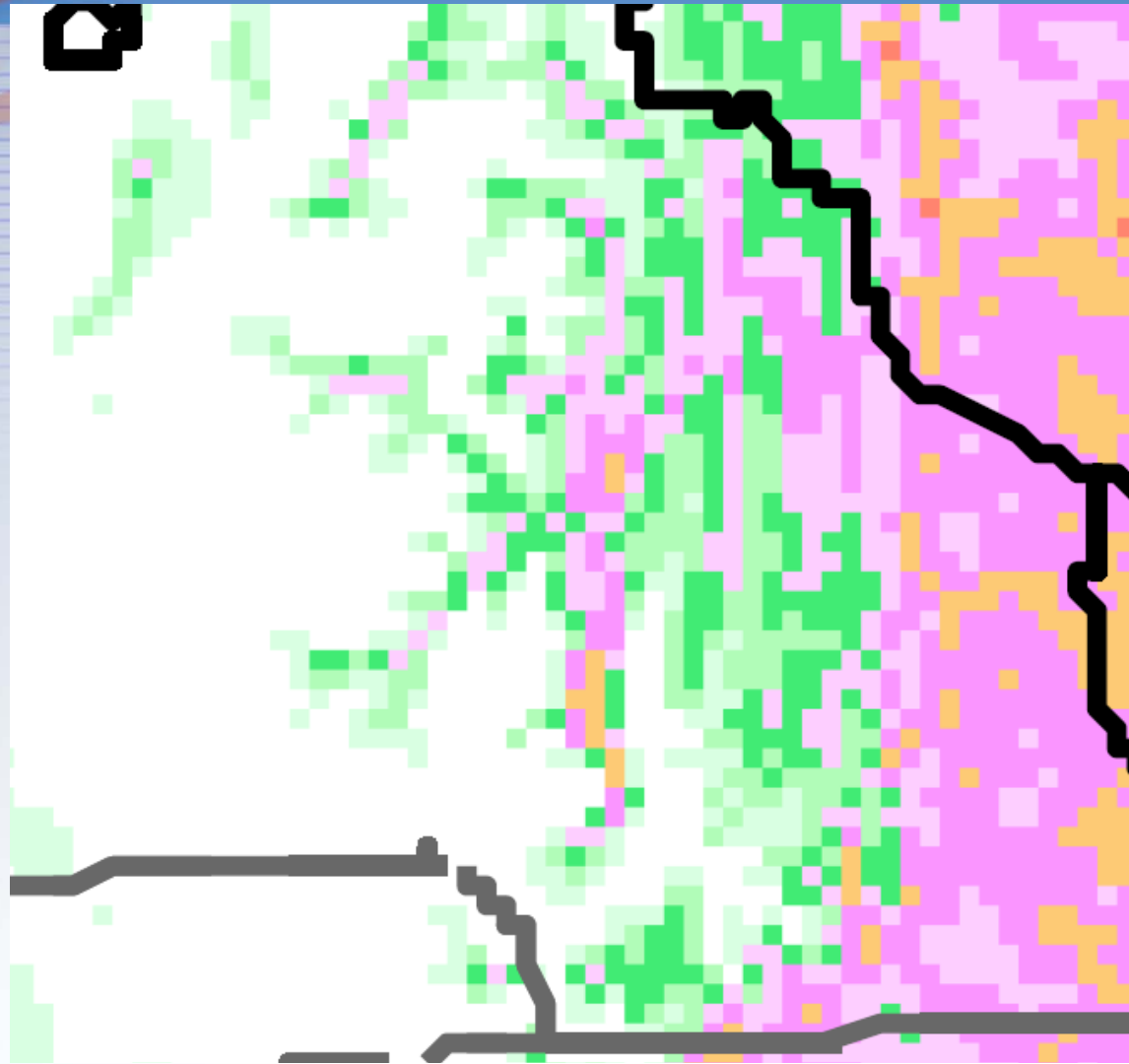
Wind Resource Maps

Wind Speed Map of New Mexico at 70 meters



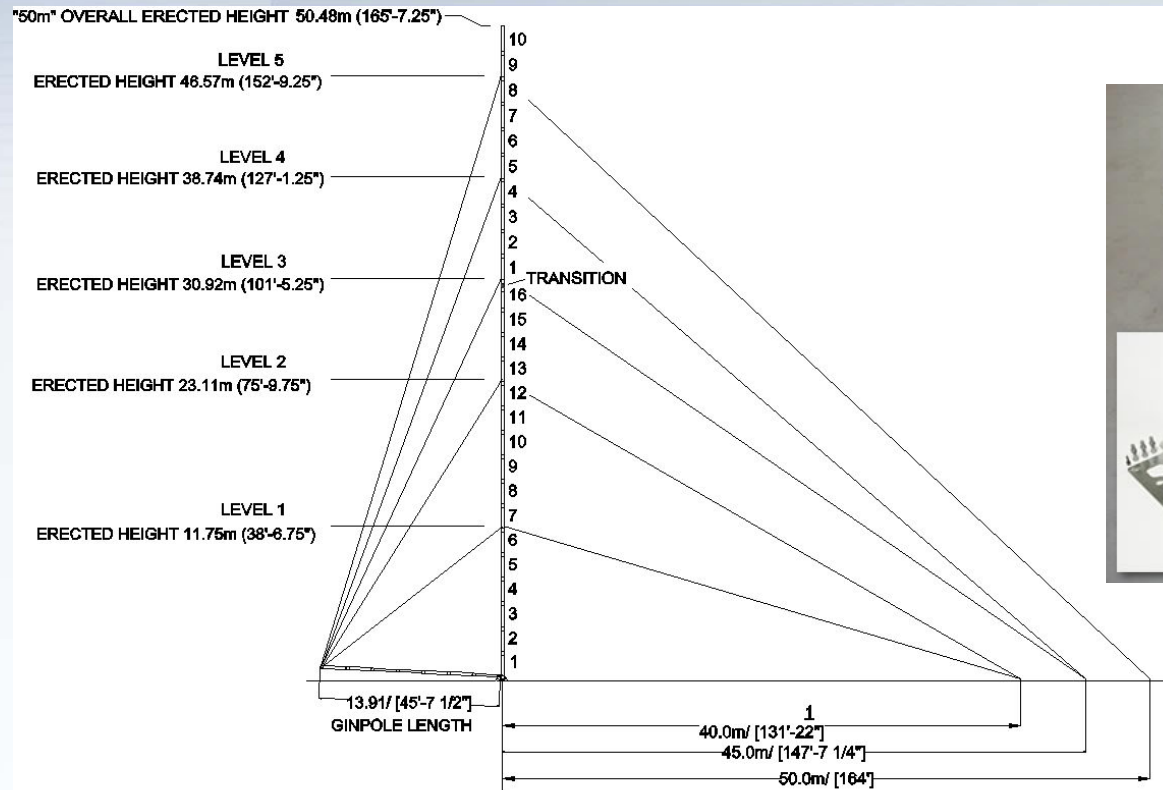
70 meter

Wind Resource Maps



100 Meter

NRG Anemometer



50m XHD TallTower™
Standard Footprint

SODAR USE?
LIDAR USE?

Electrical Features and Interfaces

- **72 MW peak loads for KAFB/SNL/DOE/NNSA**
- **Wholesale electric customer**
- **40 to 50 MW base load**
- **Power purchased in blocks**
- **30 MW+ nominal Wind Plant**
- **Forecasting function and market desk**
- **46 kV and 115kV transmission on site**
- **Sandia and KAFB have facility engineering staff**
- **PNM has Sandia Switching Station on South end of Eubank Blvd**

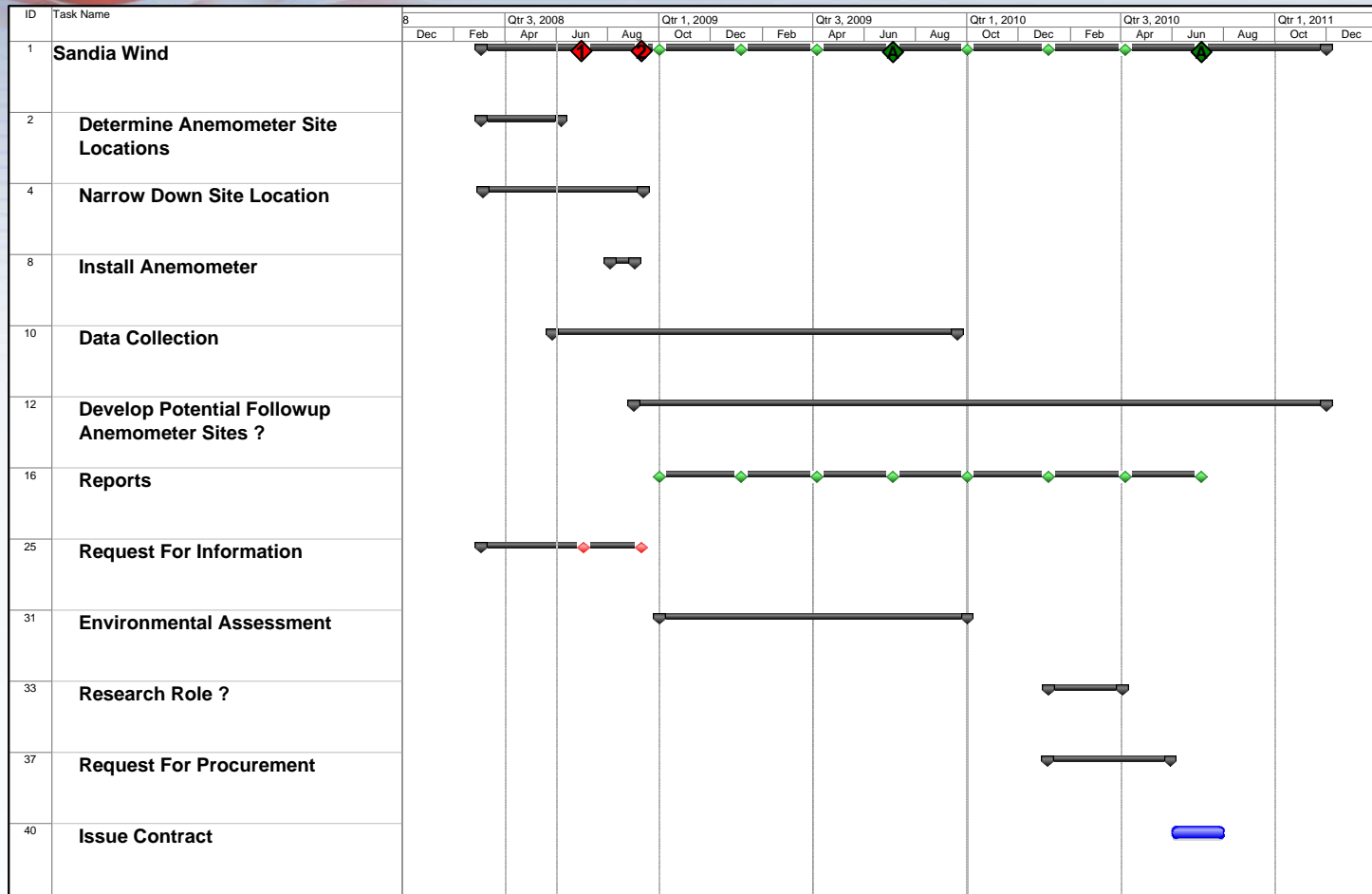
Land Use Constraints

- **Kirtland Air Force Base operations**
- **DOE/NNSA operations**
- **Sandia operations**
- **Surface danger zones**
- **Safety and security**
- **Environmental**
- **Roads and traffic**
- **Bureaucracy**

Sandia wants to move forward on wind farm development and interact with industry to pro-actively work through issues



Preliminary Project Schedule



RFI Application Deadline



RFI Evaluation Complete



Quarterly Reports



Annual Reports



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RFI Identified Issues

- **Sandia will install a 50 meter MET tower and a comprehensive wind data set will be made available to all parties interested in the RFP**
- **Sandia will consider requests by interested parties to allow approvals for siting of bidder-supplied MET towers for additional wind assessment**
- **What additional information would a bidder require regarding the wind resource at a particular DOE/NNSA site to be able to respond to an RFP for a wind farm at that site?**

RFI Identified Issues

- **Maps of electrical plot plans provided for examination at the industry day. What other information would a bidder need regarding electrical transmission and distribution at the site to be able to respond to an RFP for a wind farm at that site?**
- **Interconnect approval will obviously be necessary for any turbines. What other information would a bidder need regarding permission for transmission or distribution systems interconnection?**

RFI Identified Issues

- **What type(s) of contracting mechanism(s) and terms would a bidder envision in contracting with DOE/NNSA for wind farms at DOE/NNSA sites? Potential contracting mechanisms for federal agencies include:**
 - Energy Savings Performance Contract
 - Enhanced Use Lease
 - Power Purchase Agreement
 - Power Brokering Agreement
 - Renewable Energy Credits in exchange for lease and royalty payments
 - Other contracting arrangement of interest?

RFI Identified Issues

- **What length of contract would a bidder envision for a viable wind farm project?**
- **How would the type of contract affect desired length of contract?**
- **What is a reasonable time frame for a bidder to develop and implement a wind farm project?**
- **Comment on land use issues and the value to be received for land use in return for the energy to be purchased**
- **Comment on Environmental Assessment (EA), Environmental Impact Statement (EIS) requirements and/or processes**
- **Comment on tax incentives and Renewable Energy Credit (RECs) and the ownership structure needed in terms of contracts to maximize benefits of such incentives**
- **Other issues?**

Next Steps

- **July 3 - RFI Response**
- **September 10 - RFI evaluation and feedback**
- **Wind data collection**
- **Environmental Assessment**
- **Request for Proposal**