



Testimony of

**Tom C. Wray**  
**Project Manager**  
**SunZia Southwest Transmission Project**

Before a  
**Joint Oversight Hearing**  
Of the  
**Subcommittee on Energy and Mineral Resources**  
And the  
**Subcommittee on Water and Power**

Of the  
**Committee on Natural Resources**  
**United States House of Representatives**

*November 5, 2009*

***“Getting Past Gridlock: Models for Renewable Energy Siting  
and Transmission”***

## **INTRODUCTION.**

Chairwoman Napolitano, Chairman Costa, ranking Members McClintock and Lamborn, and Members of the House, my name is Tom Wray. I am the Project Manager for the SunZia Southwest Transmission Project. I appreciate the assistance of your Staff giving me the opportunity to provide this Joint Hearing with information that may be useful in your discussions and possible development of policies that serve to expedite the commercial operation of significant new transmission infrastructure. I continue to believe that *transmission is the most necessary precondition to materially advance supply-side renewable energy development in our country.*

## **BACKGROUND.**

SunZia is an interstate extra high voltage transmission project providing strategic grid interconnections in New Mexico and Arizona. The facility is planned as two 500 kilovolt alternating current transmission lines with several interconnecting substations along the course of the project. These substations create on-and-off ramps for utilities and renewable generators seeking customers in southwestern markets. The project is nominally 460 miles in length and is undergoing an environmental impact statement ("EIS"), being administered by the Bureau of Land Management as the lead federal agency.

SunZia will create up to 3,000 megawatts of needed transmission capacity to transport wind generation in central New Mexico, and solar generation in southwestern New Mexico and southeastern Arizona, to western power markets. Without SunZia, or a project like it, these renewable resources will remain largely undeveloped



and stranded from markets. The western terminus of SunZia will be strategically interconnected to existing and planned 500 kilovolt transmission lines that in turn make key grid connections to utility customers in Arizona, California and Nevada.

We are also examining the technical and commercial feasibility of designing one of SunZia's two transmission circuits as a direct current bipolar 500 kilovolt facility. Such a hybrid arrangement will increase total project capacity to approximately 4,500 megawatts. An AC-DC hybrid project will have much higher termination capital costs, but will double the transfer capacity otherwise achievable by a single AC circuit. The EIS discussed below provides for both the AC-only base case and the AC-DC hybrid project case.

We conceived the need for SunZia in late 2007 and conducted an open season for ownership participation during the following year. The project formally came together in May 2008 when five organizations joined to sponsor and fund the licensing and permitting activity necessary to bring SunZia to its current level of development. Our initial siting assessment was based on a fatal-flaw analysis and study of land management areas likely to be impacted by the project. This effort culminated with SunZia's filing of a right-of-way application with the BLM in September 2008, and the agency's issuance of a notice of intent in the federal register in late May of this year.

Since that time, a sixth development partner has joined the effort resulting in an ownership group of three utilities and three merchants:

- *Salt River Project Agricultural Improvement and Power District*
- *Tucson Electric Power Company*
- *Tri-State Generation and Transmission Association, Inc.*



- *Shell WindEnergy Inc.*
- *Energy Capital Partners*
- *SouthWestern Power Group*

The latter two merchant owners comprise eighty percent of the project's ownership. SunZia is preparing a petition for a declaratory order for filing with Federal Energy Regulatory Commission later this year.

### ***SITING TRANSMISSION.***

For decades new transmission infrastructure has been the subject of benign neglect. Emphasis has been focused primarily on development of power generation and demand-side management programs. Other than construction of generator tie-lines, the extra high voltage grid in the Western Interconnect has largely gone unimproved or expanded in capacity.

The approval process for siting new transmission facilities resides almost entirely with the states, unless right-of-way across federal lands is involved and NEPA is triggered. Due to the large expanse of federal lands in the West, practically every large transmission project will encounter federal jurisdiction under NEPA. Even in the latter case, state public utility commissions and siting boards exert authority over final licensing and permitting of these facilities. Finally, county governments also assert jurisdiction through zoning and local planning laws and rules.

The enactment of the Energy Policy Act of 2005 provided siting authority to the FERC in certain limited instances. However the practical application of this new authority has faced uncertainty in our federal courts (see *Piedmont v. FERC* in the Fourth Circuit). Thus today a project proponent faces substantial and intimidating

challenges for developing, licensing, permitting, marketing, financing, constructing and operating a large interstate EHV transmission project. Interstate transmission line siting authority remains balkanized resulting in a regulatory patchwork of siting jurisdiction governing transmission line placement and determination of purpose and need. The result of this uncoordination inevitably includes areas with a regulatory bias that favors projects for those receiving the direct benefits, and that which opposes projects for areas bearing the inconvenience of line passage and its environmental impacts.

For projects such as SunZia which are subjected to public scoping and analysis of reasonable and feasible alternatives in an EIS, including that of “no action”, it is largely left to the project proponent to convince state and local siting officials that the public interest is not better served by having additional routes analyzed outside of those already performed and documented in the EIS record itself. On occasion such additional analysis is not only unnecessary but may be the result of government fiat to satisfy a local political influence desirous of changing the original siting determination in the EIS. If state or local siting orders result in routes that do not conform with the preferred alternative arising from the EIS, an interminable process can result causing expensive and time-consuming iteration among local, state and federal authorities.

### ***NEPA STILL WORKS.***

Much has been written about the need to vacate parts or all of NEPA to create more transmission infrastructure to provide access to markets for renewables. The argument goes that the process itself is too expensive and time-consuming to ever be responsive to the Nation’s growing reliance on renewable energy supplies.

While it is true that most renewable resources, particularly developable Class 4 and 5 wind resources, are remotely located and require new transmission infrastructure, it does not follow that environmental resources must be sacrificed or compromised in the interest of expediency. A well-planned and conceived project can successfully proceed through its licensing and permitting phase on both a reasonable budget and schedule. The wise developer must exercise diligence in project planning and conduct an extensive outreach effort to groups that traditionally have been opponents to transmission projects. Listed below are some areas transmission projects ought to evaluate and implement, and are ones that continue to produce success for the SunZia project.

***Successful transmission projects are those vetted in a regional planning process.***

There are stark differences among the Eastern and Western Interconnections, and the Electric Reliability Council of Texas in the planning protocols necessary to create and operate a reliable, interconnected grid. Regional planning is a necessity born out of these differences.

In the Western Interconnect the existence of extra high voltage transmission facilities can largely be traced to the decision to construct central base-load generating facilities near their fuel sources, usually sub-bituminous coal beds. Long-distance EHV lines were then constructed from the plants to load centers.

In the Desert Southwest many of the most desirable wind and solar resources are not co-located with these older transmission facilities. Thus irrespective of national policy regarding the future use of carbon-based fuels for power generation, new transmission infrastructure will be required to provide access to most renewable

energy resources. As mentioned previously, in most cases such new linear facilities proposed in the West will trigger examinations under NEPA.

The regional planning group with which I am most familiar is the Southwest Area Transmission Subregional Planning Group, or SWAT. This organization is comprised of utilities, merchants, conservationists, regulators and other stakeholders. SWAT is the main driver for accomplishing coordinated grid planning across state lines, recognizing the interconnected nature of the system and the interdependence of control areas in the Desert Southwest.

Over the past two years SWAT has created special committees and task forces with targeted planning assignments for evaluating and recommending the most developable renewable resource zones within SWAT's planning footprint of Arizona, New Mexico, and parts of Colorado, west Texas, southern Nevada, and the Imperial Valley area of California. Particular emphasis has been directed to developing transmission plans for accessing renewable resources for transportation of their energy products to market hubs and load centers in the Desert Southwest.

In 2006 the SunZia Southwest Transmission Project was the subject of such examination and planning, receiving valuable scrutiny and critical assessment that can only come from a peer community. In many ways SunZia owes much of its veracity as a necessary transmission project for development of renewables to this history of regional planning.

***Seek early involvement of the environmental and conservation community in project planning.***

Engineers take for granted peer criticism and evaluation of their studies and recommendations. Indeed most regional planning



protocols make special allowance to ensure that this occurs. The rationale here is that the wider the stakeholder assessment, the more worthwhile the product. This also has the benefit of universal acceptance of the engineered result.

It turns out that the environmental community is no different. Once they are made a part of the project planning and their recommendations are seriously evaluated with all other related project imperatives, the result is a better one for all involved. This is not to suggest that every recommendation offered will be reasonable or feasible, but it is indeed surprising how many are. In SunZia's case, we sought the direct participation of the conservation community almost a year prior to the publication of the BLM's notice of intent to prepare an EIS. Meetings with numerous groups and representatives continue today, as they will in the future. The sharing of GIS shape file mapping data alone has resulted in routing guidance from these groups that the project would not necessarily have had on its own. The contributions provided to SunZia by these important stakeholders have been immeasurable.

***Avoidance is the preferred mitigation protocol.***

During the environmental and constructability screening, and fatal flaw analysis undertaken last year by SunZia, many possible routes were eliminated. The result was identification of a project "study area" in which numerous alternative routes have been identified. The project's original proposed route was approximately 460 miles. To date over 2400 miles of alternative alignments are under study. Criteria for elimination of many of these routes have been developed by the BLM and the cooperating agencies. Based on involvement of the environmental community, additional criteria have been added for acceptance or rejection of alternatives. These include requirements beyond those found in regional resource management



plans and laws protecting biological and botanical species or cultural resources. They also include such protocols as routing towers and lines around citizen-proposed wilderness areas.

NEPA requires that the applicant identify mitigation measures for impacts caused by the proposed action. These mitigation measures can be planned to be implemented at the site itself, or if deemed appropriate, off-site of the impact. Preference should be accorded to on-site mitigation where feasible. Off-site mitigation does not necessarily replace the lost or compromised wild-land experience that local citizens enjoyed prior to the project's placement. Although it is important to identify mitigation measures, is also essential that methods for evaluating their effectiveness be implemented. Sometimes certain measures suggested by the applicant and accepted by the agency may in the long run prove to be ineffective, exacerbating the original environmental impact targeted for the mitigation in the first place.

***Interstate transmission projects need access to federal powers of eminent domain.***

Transmission of energy across state lines is affected with interstate commerce. Although this reality is similar in practice to that found in the interstate gas pipeline industry, the regulation of facility siting is quite different. Largely the domain of the states, interstate transmission projects face segmentation at state lines where jurisdiction for siting is handed off from one state public utility commission to the other. Arguments of "purpose and need" made by the project proponent often become difficult and unpersuasive, particularly in a state experiencing few of the project's benefits and most of the environmental impacts of the project's passage through that state.

Most project organizations formed to undertake interstate transmission project development do not include a party with unambiguous legal access to powers of eminent domain in the subject land jurisdiction, which flow to the project company itself. Although the application of eminent domain to fee property is always deemed an act of last resort, the absence of its availability weighs heavily on the possibility of a successful outcome in securing a right-of-way from the owner of the fee lands involved.

Congress should examine remedies to this issue as a small portion of unperfected fee right-of-way can halt a project that has otherwise obtained all other permits to construct across federal and state lands.

## ***OTHER OPPORTUNITIES TO STREAMLINE THE PROCESS UNDER NEPA.***

### ***Environmental Surveys in the Record.***

Those who have experienced an interstate, multi-jurisdictional EIS for an extra high voltage transmission line in excess of a hundred miles can identify specific opportunities to reduce the time necessary to reach a record of decision (“ROD”) for the proposed action and obtain right-of-way permits and leases across federal lands.

These are almost all procedural and have more to do with *when* documents are required as a precondition to the lead agency issuing the Draft EIS, declaring the Record closed and complete, issuing the Final EIS, executing the ROD (along with the

Cooperating Agencies and the Council on Environmental Quality) and publishing it in the federal register.

The changes below are not intended to shortcut the necessary examination of environmental impacts on land use or visual, biological (botanical, wildlife and wetlands), and cultural (Native American and archaeological) resources.

*Rather, these are procedural modifications which, if consistently applied by the lead federal agency acting in an EIS, will significantly reduce the time required for a project to reach its ROD under NEPA.*

### **Cultural Resource Surveys.**

There are a number of federal laws addressing the protection of cultural resources. Compliance with Section 106 of the National Historic Preservation Act of 1966, as amended (16 USC 470 et. seq.) is the primary regulatory requirement in the permitting of extra high voltage transmission line projects on federal lands. For large scale interstate projects the amount of time required to conduct field inventories, consult with Native American groups and prepare reports to support consultation with each state historic preservation office can delay the issuance of a ROD by several months, if not years. Furthermore, detailed field studies cannot be conducted feasibly on all project alternatives, and can only be initiated once a *preferred alternative has been identified*. There is an existing vehicle for expediting Section 106 compliance, and that is the development of a *Programmatic Agreement (PA)*.

The PA records the terms agreed on to implement a particular agency program to resolve effects of a complex project or multiple undertakings (see 36 CFR §800.14 (b)). The regulations state that it is appropriate to use a PA when an undertaking is interstate or

regional in scope or when effects on historic properties cannot be fully determined prior to approval of the project.

Once a PA has been executed, compliance with Section 106 has been completed and a ROD can be issued without having to wait for the completion of all field studies.

Given the current state of cultural resource databases in the West, especially for utility corridors, the PA should specify that Class I data from previously conducted studies would be sufficient to support the analysis of alternatives and the development of NEPA documents, and that Class III field surveys would occur *after* the ROD has been issued. The use of PAs for these types of projects will not require any changes to current laws or regulations.

### ***Biological Resource Surveys.***

Section 7 of the Endangered Species Act directs all federal agencies to use their existing authorities to conserve threatened and endangered species and, in consultation with the US Fish and Wildlife Service (USFWS), to ensure that their actions do not jeopardize listed species or destroy or adversely modify critical habitat. Section 7 applies to management of federal lands as well as other federal actions that may affect listed species, such as federal approval of private activities through the issuance of federal permits, licenses, or other actions. Before a ROD is issued for a project, federal agencies must complete their Section 7 consultations with the USFWS, which in the case of interstate transmission projects will require the preparation of a Biological Assessment and the issuance of a Biological Opinion.

Because some biological field studies can only be conducted during specific times of the year, and may have to be conducted over a number of years requiring installation of field monitoring

equipment, the completion of these studies as a requirement to the issuance of a ROD may result in delays of several years. Given the development of GIS technology and agency databases that inventory biological resources, there is sufficient secondary information to support the analysis of alternatives and the development of most NEPA documents. Field studies in some cases will still be necessary to specifically identify the location of impacts and the mitigation measures that should be applied. *However, it is much more efficient to conduct these studies in support of the development of Construction Operation and Maintenance Plan prior to construction when routes are finalized, and a more detailed engineering and project design is available.*

Any specific requirements for biological studies can then be incorporated in stipulations of a ROD. Incorporating stipulations in the ROD for biological field studies to be conducted prior to construction will not require any changes to current laws or regulations.

### ***Construction, Operations and Maintenance (COM) Plans.***

In recent years federal agencies have required that the COM Plan be completed *prior to the execution of a ROD*. Although not a requirement of NEPA, a COM Plan (sometimes referred to as a “Plan of Development”) is an important document because it serves as the manual in which the mitigation measures developed during the NEPA process are specifically applied during the construction of the project. An effective COM Plan, therefore, can only be developed *after* resource studies, engineering, design and private land acquisition have been completed. It is not necessary to require the submittal of this document as a precondition to execution of a ROD.

*Instead, the development, review and approval of a COM Plan should be incorporated into the ROD as a condition before a Notice to Proceed with construction will be issued by the agency.*

**Closing Comments.**

Finally, I have included an Appendix to this testimony that contains four maps depicting the SunZia Southwest Transmission Project and a timeline related to the NEPA EIS process:

Page 16 SunZia's Proposed and Alternative Routes

Page 17 SunZia's Arizona Portion

Page 18 SunZia's Southwestern New Mexico Portion

Page 19 SunZia's Eastern New Mexico Portion

Page 20 SunZia's NEPA EIS Timeline

I want to extend my sincere appreciation to the Subcommittees and Staff for the opportunity to provide these comments for your consideration and would be happy to answer questions and provide any follow-up information necessary.

Respectively submitted,



Tom C. Wray

Project Manager

SunZia Southwest Transmission Project

November 5, 2009

## **APPENDIX**







**[ORAL STATEMENT]**

Testimony of  
**Tom C. Wray**  
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November 5, 2009

***“Getting Past Gridlock: Models for Renewable Energy Siting  
and Transmission”***

Good Morning Chairwoman Napolitano and Chairman Costa, and Ranking Members McClintock and Lamborn, and Members of the House. My name is Tom Wray. I am the project manager for the SunZia Southwest Transmission Project. Through the assistance of your very able Staff, I very much appreciate the opportunity to speak with you today. My comments will be directed toward the development of extra high voltage transmission facilities and means available today to expedite such projects to commercial operation.

SunZia was conceived to provide transportation of primarily new renewable energy generation from New Mexico and Arizona to customers and markets across the southwestern United States. SunZia is a 460-mile parallel 500 kV alternating current transmission project that will provide new power transfer capacity of up to 3,000 megawatts, or as much as 4,500 megawatts under an AC-DC hybrid model we are considering.

The SunZia project is comprised of six partners: three utilities and three merchants. Eighty percent of the project is being funded by two of the private merchant owners. Current planning indicates the Draft EIS will be published by summer 2010 with a Record of Decision by fall of the following year. Construction would begin in late 2011 with commercial operation by late 2013.

SunZia is preparing an environmental impact statement. This effort is being led by the Bureau of Land Management, with the involvement of several cooperating agencies. Both state BLM offices and five field offices are participating in the NEPA process and are examining approximately 2400 miles of alternative routes.

The agency's coordination and management of this complex EIS has been exemplary. At every level of the Interior Department, the project has found cooperation to oversee an environmental review process that is robust, efficient and timely. Projects like SunZia require careful examination of the environmental impacts, alternatives and mitigation protocols. This examination was contemplated by Congress when NEPA was enacted and requires sufficient time for public involvement and proper development of the Record to support findings, conclusions and a recommended action.

BLM is very cognizant of their responsibilities under NEPA and holds this applicant to a high, but fair, standard of performance in the EIS process. At the same time it is worth noting that they clearly understand the importance of Secretary Salazar's policies addressing the need for transmission projects that are necessary to advance development of renewables.

As today's topic is how proponents confront challenges presented by these large interstate transmission projects for delivery of renewable generation, I have provided a statement in your record covering some suggestions. However I will summarize four of them here for further discussion.

***1. Subject your transmission project to the rigors of regional planning.***

FERC has long recognized the value of peer review and stakeholder involvement that derives from effective regional grid planning. Indeed Order 890 places special emphasis on open and transparent planning processes that examine the feasibility of new project entrants and how they will provide efficient and reliable grid integration and operation. There are successful regional planning venues active in the Western Interconnect, such as the Southwest Area Transmission Subregional Planning Group, which itself is part of WestConnect. It is in these planning groups, for example, that developing smart grid technologies are most wisely applied. The concept for the SunZia Project was a product of such regional planning efforts in 2006.

## ***2. Secure the early involvement of the conservation and environmental community in your project.***

Participation of these stakeholders should be based on a sincere willingness by the proponent to communicate project objectives and change plans to accommodate their suggestions where reasonable and feasible to do so. I consider SunZia's undertaking in this regard, taken almost a year before the BLM issued the EIS notice of inquiry, to be one of the most important actions we have taken to date. Members from some of the groups we have worked with have provided time-saving recommendations that have materially lessened environmental impacts, without undue increases in cost or delays in schedule. As an example, SunZia has shared our GIS shape file data and mapping information with these groups and continue regular briefings to maintain effective communication with the conservation community.

## ***3. Make avoidance the project's preferred form of mitigation.***

Resource management plans provide a guide for transmission developers to design alignments away from Wilderness Areas, WSAs, ACECs, exclusion/avoidance areas and other regions of significant environmental value. Wildlife and botanical habitat intrusion, damage and fragmentation should be avoided. Project proponents unable to provide on-site mitigation for impacts should seriously consider off-site mitigation. Environmental mitigation costs must be seen as normal and expected costs of any project's development and construction.

More important than merely selecting these measures is that of ensuring that, when they are implemented, they are indeed effective and produce the long-term curative effects that were originally anticipated and represented by the applicant and accepted by the agency. SunZia has found that early consultation with the conservation community has allowed us to avoid unnecessary environmental impacts, and has even provided opportunities to place the project's towers and lines away from citizen-proposed wilderness areas.

***4. Provide project-specific eminent domain powers to interstate transmission projects.***

In the Energy Policy Act of 2005 Congress extended to FERC certain limited authority to issue approvals for interstate transmission projects. In February this standby siting authority met with uncertainty in the Fourth Circuit in *Piedmont v. FERC*. Nonetheless as the inherent risks associated with development of large interstate transmission projects are indeed ominous, the provision of eminent domain authority to such projects is increasingly necessary to project success. Congress should revisit the model used for interstate gas pipelines, administered today by FERC, for possible policy solutions.

I greatly appreciate the opportunity to contribute to the subcommittees' efforts today and look forward to further discussion on the means to provide this critical energy infrastructure. Transmission has and will continue to be the limiting factor to widespread development of supply-side renewable resources in our country.

I would be happy to answer any questions.

Tom C. Wray

Project Manager

November 5, 2009



ENERGY AND MINERAL RESOURCES SUBCOMMITTEE

WATER AND POWER SUBCOMMITTEE

**“GETTING PAST GRIDLOCK: MODELS FOR  
RENEWABLE ENERGY SITING AND TRANSMISSION”**



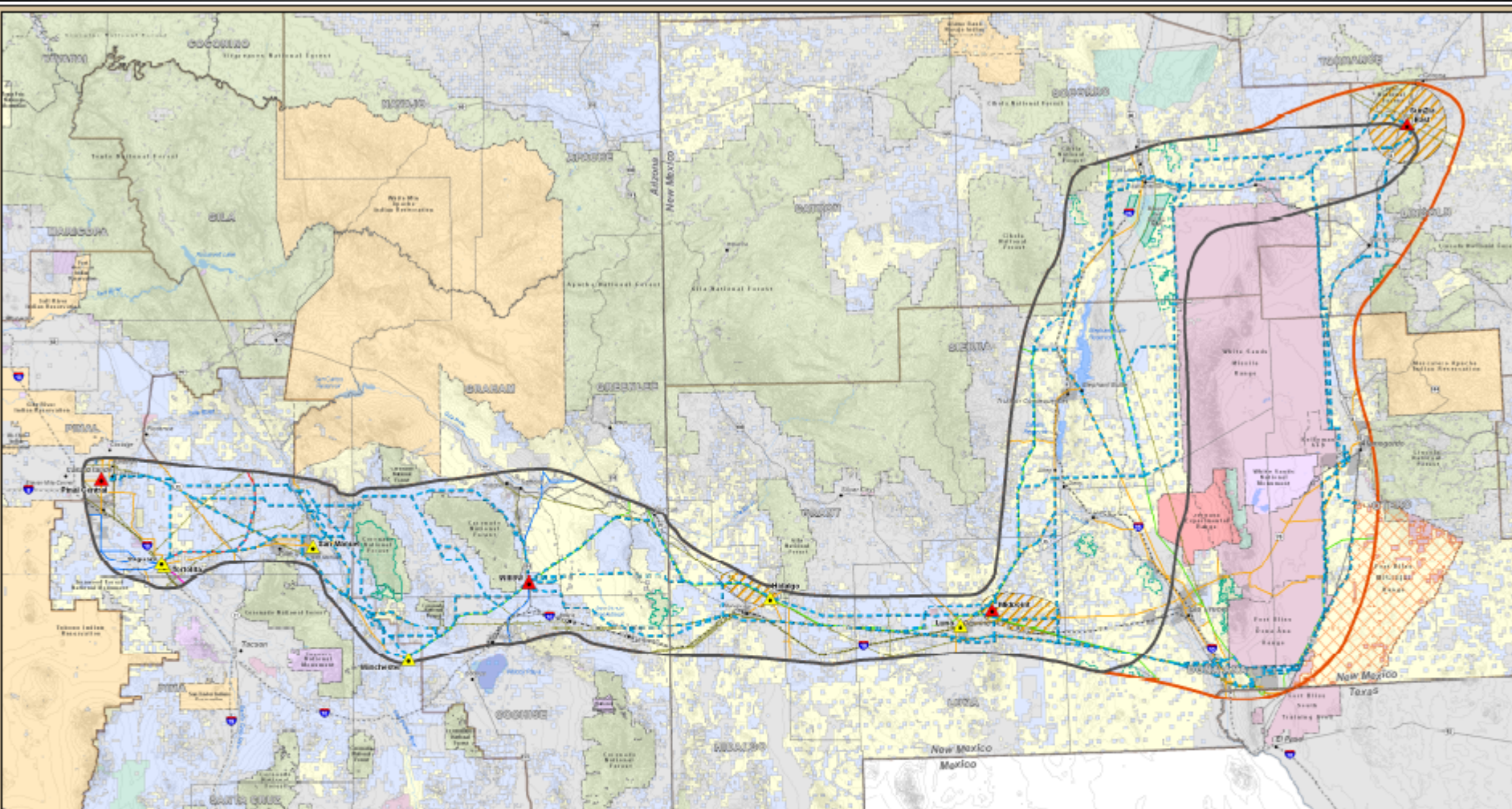
**SUNZIA SOUTHWEST TRANSMISSION PROJECT**



**Tom C. Wray**

**NOVEMBER 5, 2009**





**SunZia Southwest Transmission Project**  
**Proposed and Alternative Routes**  
 Preliminary Scoping-October 2009



October 20, 2009



**LEGEND**

- BLM Field Office Boundary**
- Land Ownership**
- Bureau of Land Management
  - U.S. Dept. of Defense
  - McGregor Range Withdrawal
  - National Park Service
  - U.S. Forest Service
  - U.S. Fish and Wildlife Service
  - Federal/Other
  - Indian Reservation
  - State/Trust Land
  - Local or State Parks
  - Private/Other

**Base Features**

- Project Features**
- Proposed and Alternative Routes
  - Study Area
  - Proposed Study Area Expansion
  - Substation Siting Area

**Substation**

- Proposed Substation
- Existing Substation
- Pipeline (Diameter 6"-4")

- 500kV Transmission Line
- 345kV Transmission Line
- 230kV Transmission Line
- 138kV Transmission Line
- 115kV Transmission Line

**Reference Features**

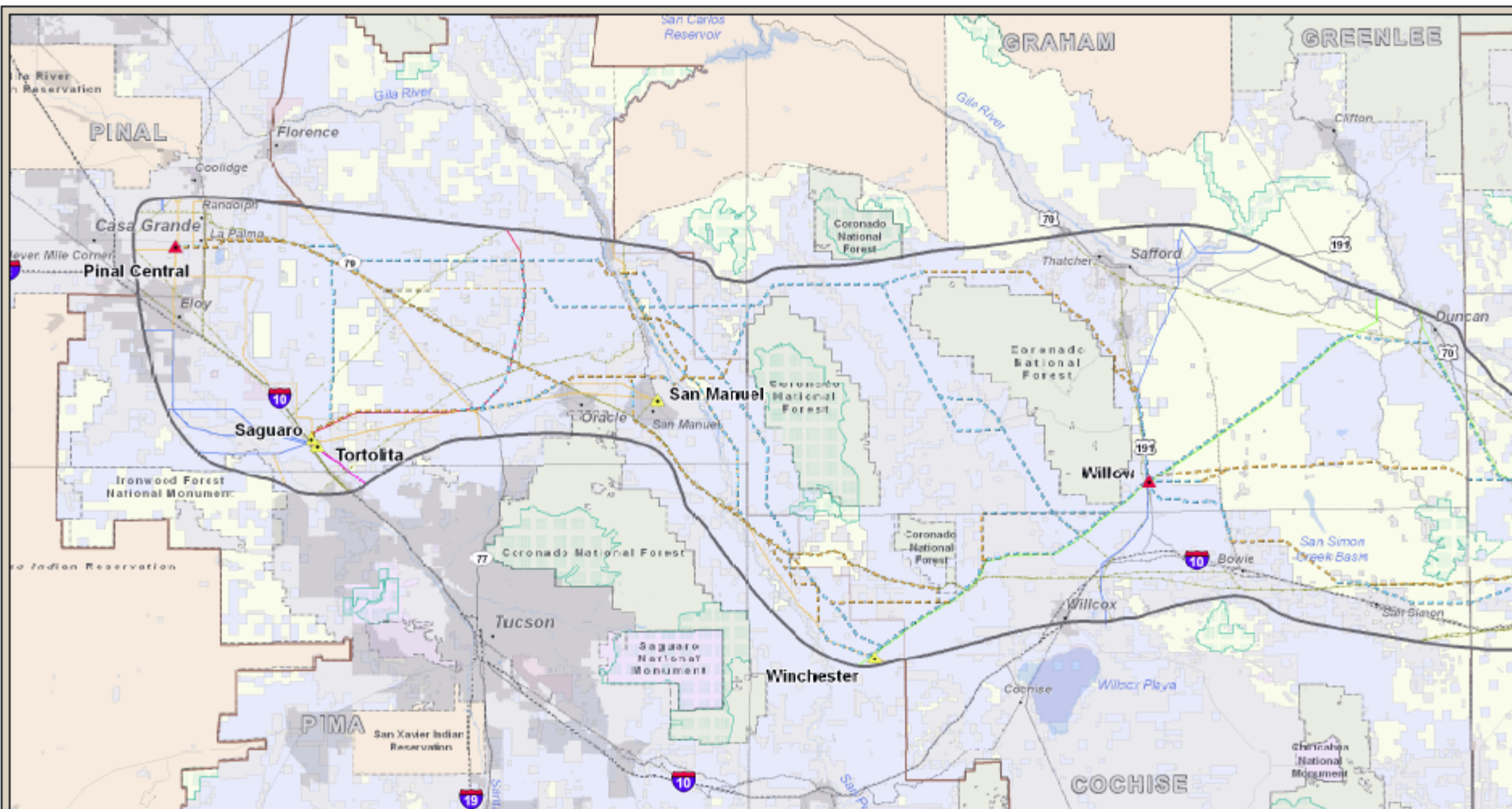
- City
- River/Stream
- Lake/Reservoir
- Urban Area
- State Highway
- US Highway
- Interstate
- Railroad
- County Boundary
- State Boundary
- Wilderness Area
- Wilderness Study Area (WSA)
- Jurisdictional Boundary

**SOURCES:**

AZ BLM 2009  
 AZ State Land Department and AURS 2008  
 ES&S Drawings 2008, Montrose RMP 1999  
 NM BLM 2004, Socorro RMP 2006  
 Tri-County RMP 2006  
 POWERS/Power, powermap@blm.gov  
 ©2008 Powell, A Division of The McGraw-Hill Companies  
 USGS, EPA, Inc. 2009



Contour Interval 200 feet



## SunZia Southwest Transmission Project

### Proposed and Alternative Transmission Line Routes Considered and Eliminated

September 18, 2009

#### LEGEND

BLM Field Office Boundary

#### Land Ownership

Bureau of Land Management	U.S. Forest Service
Military	State/Trust Land
National Park Service	Local or State Parks
U.S. Fish and Wildlife Service	Private/Other
Indian Reservation	

#### Base Features

##### Project Features

Study Area
Proposed and Alternative Routes: Preliminary Gisting (May 2006)
Routes Added or Modified
Proposed Substation
Substation Siting Area

#### Existing Utilities

Existing Substation
500kV Transmission Line
345kV Transmission Line
230kV Transmission Line
138kV Transmission Line
115kV Transmission Line
Pipeline (Diameter 6")

#### Reference Features

City
River/Stream
Lake/Reservoir
Urban Area
State Highway
US Highway
Interstate
Railroad

#### Arizona Panel

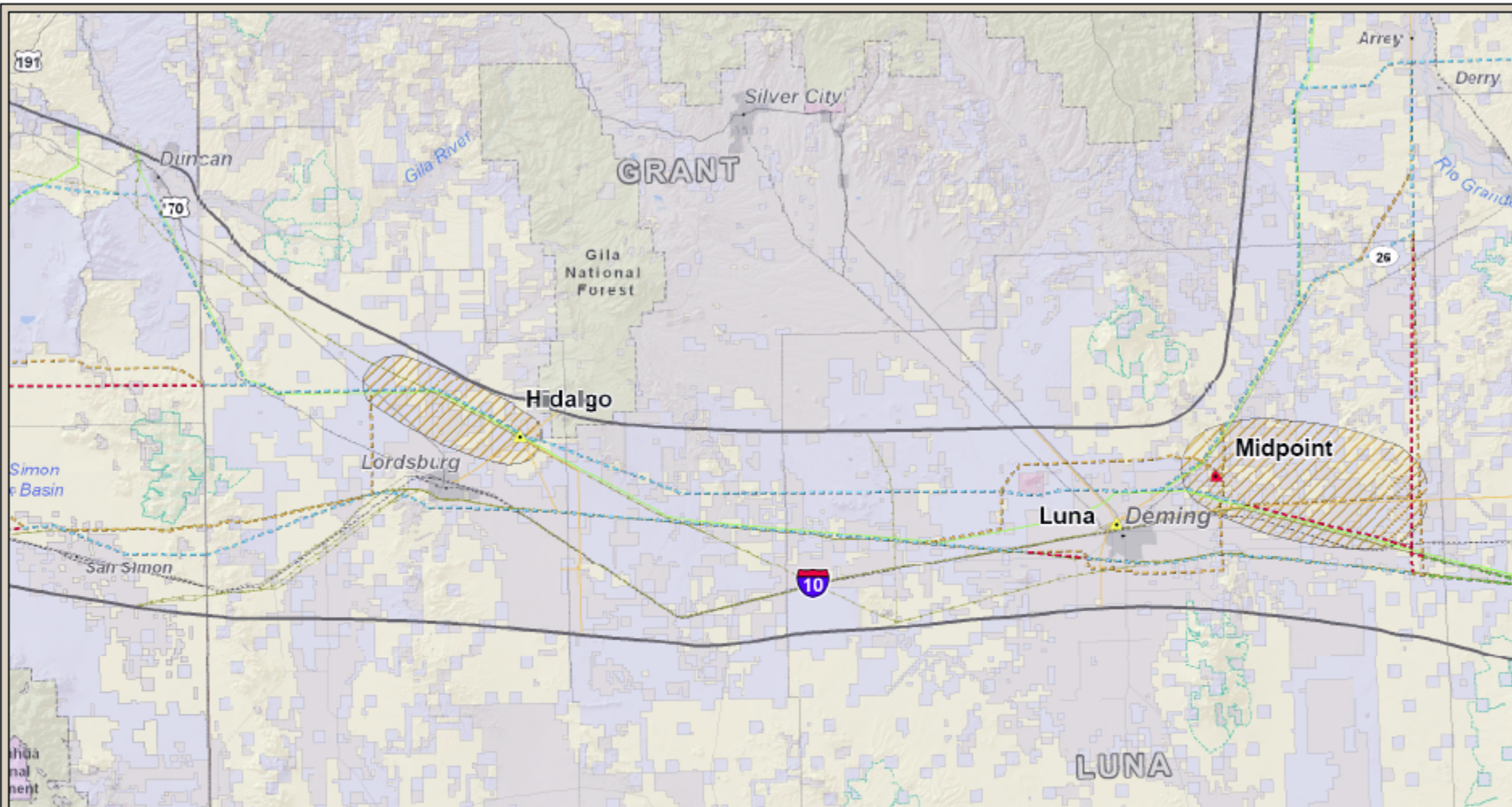


#### Sources:

AZ BLM 2009  
AZ State Land Department and AUPD 2008  
B200, December 2008, National Road 1909  
NM BLM 2009, Socorro PUMP 2009  
Si County PUMP 2009  
P2009, Bureau of Land Management (BLM) 2009  
G2009, Bureau of Land Management (BLM) 2009  
USGS, BPA, Inc. 2009







## SunZia Southwest Transmission Project

### Proposed and Alternative Transmission Line Routes Considered and Eliminated

September 11, 2009

#### LEGEND

BLM Field Office Boundary

#### Land Ownership

Bureau of Land Management

BLM Military Withdrawal/McGregor Range (BLM/MCGR)

National Park Service

U.S. Fish and Wildlife Service

Indian Reservation

U.S. Forest Service

State/Trust Land

Local or State Parks

Private/Other

#### Base Features

##### Project Features

Study Area

Proposed and Alternative Routes: Preliminary-Scoping (May 2006)

Routes Considered and Removed

Routes Added or Modified

Alternative Routes Within Expanded Study Area

Proposed Substation

Substation Siting Area

##### Existing Utilities

Existing Substation

500kV Transmission Line

345kV Transmission Line

230kV Transmission Line

138kV Transmission Line

115kV Transmission Line

Pipeline (Diameter 6")

##### Reference Features

City

River/Stream

Lake/Reservoir

Urban Area

State Highway

US Highway

Interstate

Railroad

County Boundary

Wilderness Area

Wilderness Study Area (WSA)

Jurisdictional Boundary

### Western New Mexico Panel



#### Sources:

AZ BLM 2009

AZ State Land Department and ALRS 2008

ESRI 2008/2009, National Road 1999

Mal BLM 2008, Sonoran Project 2009

TA County RMP 2008

POWRI Policy, powri.com/jctn

GIS Data, a Division of The McGraw-Hill Companies

USGS, EPA, etc. 2009





