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Mr. Adrian Garcia, Project Manager
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Dear Adrian:

Attached are two separate analyses that I have done on the SunZia economic assessments included in Appendix G1 of the SunZia Draft Environmental Impact Statement, "SunZia Economic Impact Assessment and EIA Supplement: Impacts of Potential Renewable Generation Facilities." This appendix contains two separate reports, one on the economic impacts of building the transmission project itself and the second on hypothetical renewable generation facilities that might be built in the area of SunZia.

I submitted both of my reports to you in January 2012 for inclusion in the SunZia DEIS if that were possible. Since they were not included, I am submitting them again for formal review and inclusion in the EIS by the Bureau of Land Management. These reports document serious deficiencies in both reports. I herein also offer additional comments on references to these reports in the SunZia DEIS as well as on Appendix G2, a new study that attempts to assess the economic impacts of constructing SunZia along individual route segments considered in the DEIS.

The reports included in Appendix G1 need significant revision and recalculation in places to be worthy of inclusion in a federal environmental impact statement. If the authors of these reports cannot correct and revise them to meet publication standards and if they are not removed from the DEIS, it is imperative that my reports be bound with them to explain their weaknesses and errors. Not doing this will result in a gross misrepresentation of the economic potential of the SunZia project for Arizona and New Mexico.

Thank you for including this.

Sincerely,

A handwritten signature in black ink that reads "Norm 'Mick' Meader". The signature is written in a cursive, slightly slanted style.

Norm "Mick" Meader
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SunZia Economic Impact Assessment Appendices G1, G2 and References to Them

Introductory Overview Comments

Lack of External Review

As a fundamental criticism, this work was done primarily by interns and graduate students, and it has never been professionally reviewed. It has many glaring deficiencies because of this. I worked for more than 20 years at the University of Arizona on manuscripts with faculty, graduate students, and editors, and from that experience I know that the main report, “SunZia Economic Impact Assessment,” could not be published without revision. The accessory report, “EIA Supplement: Impacts of Potential Renewable Generation Facilities,” would be summarily rejected for publication because it is so deeply flawed. The authors would have to completely redo it before any journal would reconsider it for publication.

For any work like this to be included in a published government document intended to be objective and well researched, it needs to be reviewed by outside reviewers, preferably three, and then the authors need to revise it according to reviewer recommendations in order to bring it up to professional standards. While the comments that I provide in the two attached reports can help with this, I am not a professional economist and cannot provide the in-depth analysis that economists can. This additional analysis is especially critical for tax revenue calculations, which I did not investigate.

SunZia paid the University of Arizona \$105,300 for these studies, and it presumably paid New Mexico State University a similar amount. SunZia then used these studies to sell the project to both policy makers and the public. The numbers that SunZia has used are in many places erroneous and, as presented, highly misleading. The Bureau of Land Management has then taken these studies directly from SunZia and incorporated them into the DEIS without reviewing or questioning them, portraying them as an objective assessment of the project’s economic potential. It is essential that the BLM obtain outside professional reviews of this work to maintain objectivity and the BLM’s independence from the project proponent. Again, much of this work was done by graduate students as part of student training, and their advisers did not carefully and critically review it using the editorial standards of the economics profession.

Ramifications of Using the EIA Supplement for Cumulative Effects Analysis

Of particular relevance and concern here is the use of the energy development scenario in the “EIA Supplement: Impacts of Potential Renewable Generation Facilities” to determine cumulative effects in section 4.17.3.3 and subsequent sections. The scenario used in this supplement for new generation facilities that might use SunZia is highly unrealistic and not a reasonable basis for projecting actual impacts. While this project provides the potential to facilitate renewable energy generation and while it is reasonable to assume that some will occur in response to the project, this project also passes through prime natural gas generation territory. Expansion of this non-renewable generation is inevitable and likely to be significant, yet no analyses are projected for a scenario that realistically incorporates it. This is especially important for greenhouse gas calculations.

A cumulative effects analysis that assesses several mixes of renewable and non-renewable generation is needed to determine potential impacts. Using a mix of 50% renewable and 50% nonrenewable generation is one reasonable mix to consider and include. This is a far better scenario to use for modeling the end use of SunZia. The fundamental importance of an environmental impact statement is to assess actual impacts as closely as possible, not to accommodate and evaluate a highly idealized and unrealistic scenario chosen by the project proponent to sell the project.

Problems with Appendix G2

Editorial Considerations

Appendix G2 is a new study that was done subsequently to the Economic Impact Assessment and Supplement. It contains numerous flaws and omissions that should be addressed. Most importantly, the appendix contains no descriptive title or introduction that explains what it contains and is meant to address. By looking at the tables, one can deduce that it assesses the economic impacts of the project by route segment and by county for the final alternatives considered for the project, but the appendix does not state this up front. The appendix also contains no map of the segments being considered to help explain the text and tables. While one can page through the main DEIS to find maps to match the calculations, this is an unnecessary burden to place upon the reader when replicating these and including them here would allow the reader to easily determine the locations of route segments.

The economic figures in this appendix were presumably calculated using the same assumptions used in the primary Economic Impact Assessment study included in Appendix G1 and therefore should be consistent with it. The appendix does not explain what “Option A” and Option “B” are. Appendix G1 instead uses Scenario 1, Scenario 2, and Scenario 3. Only by paging through the 900+ pages of the main DEIS can one determine that Option A refers to two 500-kV AC lines with 3,000 MW of capacity and Option B refers to one 500-kV AC line with 1,500 MW of capacity and one 5000-kV DC line with 3,000 MW of capacity. This needs to be stated in an introduction.

This appendix purports to give income tax revenues by county and labels the tables as such, but then these tables break down these taxes into two categories, (1) Direct Sales Tax (sometimes labeled just “Direct Tax”) and (2) Induced Tax. Neither of these tax categories constitutes income tax. Both sales tax and income tax are types of induced taxes because they change when an economy's real gross domestic product changes. Thus these tables should be labeled “Average Induced Tax Revenues,” not “Average Income Tax Revenues,” and within the tables, the term “Induced Tax” should be replaced with “State Income Tax,” as these tables are specifically tied to Arizona and New Mexico. These tables do not appear to contain federal income tax revenues. All nine tables that give “income tax revenues” are mislabeled.

What is most disturbing again is that the appendix uses the word “jobs” throughout to describe employment when in reality all numbers are job-years or man-years of work. **None of the numbers contained in this appendix actually refer to jobs even though they are prominently labeled as such.** This needs to be clearly explained in an introduction or footnotes,

and the term “job-years” should be used throughout rather than “jobs.” Values should be labeled as to what they are.

Also, this appendix does not give the number of years over which this work takes place. It is important to give this so that the reader can determine the average number of jobs associated with the project. Appendix G1 uses 4 years as the basis for calculating job-years of work, and presumably Appendix G2 does also, but this is not stated. This creates an inconsistency in the Executive Summary because in referencing Appendix G2 to summarize employment, the summary states that these will occur over a 2-3 year period. While a 2- to 3-year construction period is part of the project’s timeline, this was not the basis for the original economic calculations. The Executive Summary should reference the actual length of time used to derive the numbers.

Apparent Calculation Errors

In comparing the economic numbers obtained in Appendix G2 with Appendix G1, it appears that gross errors have been made in Appendix G2 in calculating employment numbers and the revenues derived from them. The total job-years of work for the preferred alternative should roughly equal the total job-years of work obtained in the initial economic impact study because the total length of the project remains essentially the same. While the number of job-years of construction labor for Option A (originally Scenario 2) is essentially equivalent (roughly 1950), the number of Other Direct job-years is 200-250 less, and the combined total of Indirect and Induced job-years is about 1,700 less, for an overall reduction in job-years of about 2,000. The total now is around 4,150 vs. 6,200 before. If the underlying assumptions for Appendix G2 are the same as for Appendix G1, these numbers should be nearly the same.

I alerted the study’s principal author Alberta Charney to this by email on May 31, 2012, and she said that she would look into it. She did not, however, and I reminded her again on July 7, 2012. She did not respond to my second inquiry. She apparently lacks the time and personnel to isolate the errors and make the necessary corrections. This appendix should be removed from the DEIS unless these discrepancies can be resolved or explained and the recommendations noted above are incorporated.

County Economic Impact Projections

A particularly egregious problem occurs with the number of jobs attributed to each county for construction of the project. For Example, the tables in Appendix G2 give the total number of jobs for Cochise County as 775 (substation and transmission line construction for route segments 3B and 4C). These are prominently labeled “jobs” without clarification and are attributed entirely to Cochise County. However, these are the global job-years of work required to complete the project across the county and are unrelated to jobs created in the county. A similar problem is associated with labor income. This labor income is attributed to the county when it actually occurs world-wide. The actual labor income for Cochise County residents is a tiny fraction of the total given. Direct sales taxes and induced taxes (state income taxes, in reality) are, again, not those derived solely within and attributable to the county. Only property tax revenues are actually attributable to the county as given.

When one converts job-years to jobs, calculates the actual number of people hired in the county for construction (5 average, 8 peak), removes the jobs associated with materials manufactured outside the county (almost all of them), and removes other jobs created outside the county, the total jobs available in Cochise County will be 20-30. County officials, however, have been led to believe that 775 jobs will be created in the county and are using this number for economic projections¹. These tables are nearly useless for county purposes if the authors do not determine the actual economic benefit for the counties themselves.

Comments on References to Appendices G1 and G2 in the DEIS

Misrepresentation of Job-Years as Jobs

What is most disturbing about these studies is that nowhere do they give the actual number of jobs that will be available in Arizona and New Mexico. They do not provide even the most fundamental employment number associated with a project: how many people SunZia will hire for construction. The only actual employment numbers given in the entire DEIS for SunZia occur on page 4-211 under section 4.13.4.1 *Population Impacts*, which is associated with housing. Here it says the following:

The construction of the transmission lines and substations is expected to take place over a span of 2 to 3 years at various locations throughout the study area, and will employ a maximum of 206 workers per transmission line and 55 workers per substation site.

The only actual job numbers given in the entire 327 pages of economic study itself occur in Tables 6.1 and 6.2, and then only a sum of jobs for all four job categories is given for each year. No where does the SunZia Economic Impact Assessment state how many people SunZia will employ.

To make clear how deceiving this economic assessment is, I use the following example from page 4-219 of the DEIS:

The total number of jobs that would be created in New Mexico and Arizona during construction of the proposed Project would range between 4,555 and 5,310 (including transmission lines and substations between Option A and Option B).

The numbers stated here are actually global job-years of work created throughout the world associated with building the project. They are not jobs, and they do not occur exclusively in New Mexico and Arizona. These include the job-years of work involved in fabricating the steel for the transmission towers and the transmission cable. All of the steel for the transmission

¹ For an example of this misunderstanding, see “SunZia Transmission Project moves to next phase” by Jon Johnson in the June 6, 2012 edition of the *Eastern Arizona Courier*. Graham County officials believe that if SunZia is routed through the county that it will create 810 county jobs. Both the Safford mayor and city manager have accepted these numbers at face value and have worked to bring the project to the county because of them. This story is available at http://www.eacourier.com/news/sunzia-transmission-project-moves-to-next-phase/article_e9df7a9c-af7d-11e1-959f-0019bb2963f4.html. Accessed August 16, 2012.

towers will be manufactured in China or India, and the cable is likely to be manufactured overseas also. All of the job-years of work required to manufacture these materials are included in the numbers above. This demonstrates the enormity of the deception in such quotations.

If one converts job-years of work to jobs, subtracts those jobs created outside Arizona and New Mexico, and subtracts those people hired from outside these states, for Option A the total employment in Arizona and New Mexico for all job categories combined will average ~500 and peak at ~800. The numbers given in the DEIS for Arizona and New Mexico are unrelated to actual jobs. Associated tax revenues are presumably also be exaggerated. I have made no attempt to calculate those and do not know the magnitude of the error.

Including Actual Employment Numbers

While the authors of this study defend giving all potential employment in terms of job-years of work because they say it is a common way of quantifying employment, this does not inform policy makers or decision makers of how many people can be employed. Economic modelers cannot determine job-years of work without first estimating actual employment. Because actual employment underlies all of the numbers given in these tables, this can and should be given because the modelers already have the numbers for it. It is the number of jobs, not job-years of work, that is critically important to policy makers and the public.

Concluding Statement

The use of economic assessment numbers in this way calls into question the validity of their incorporation into a draft environmental impact statement. How the numbers in these studies are portrayed is profoundly misleading and deceiving. These studies were commissioned by SunZia itself, in large part to use for promotional purposes for the project, and they have been fully incorporated into the DEIS without question or examination. They do not meet rigorous publication standards for economics and could not be published as they stand. The main economic impact study may have some merit, but it requires significant revision, enlargement, and explanation to make it worthy of official publication. The Supplement to the EIA, however, is so greatly flawed that it should be discarded. The starting numbers used for calculations are grossly in error, and the mix of generation facilities that is modeled is entirely unrealistic for how this project will actually be used.